

**LAC STE. ANNE COUNTY
PROVINCE OF ALBERTA
BYLAW #22-2011**

A BYLAW TO CONTROL LAND USE.


WHEREAS, under the provisions of the Municipal Government Act, being Chapter M-26.1, Division 5, Sections 639 and 640 of the Revised Statutes of Alberta 2000 R.S.A, a municipality may adopt an Area Structure Plan.

AND WHEREAS the Council of Lac Ste. Anne County has decided to consider and adopt the Alberta Beach Estates Area Structure Plan as a means to facilitate country residential and commercial growth in the Alberta Beach Area.

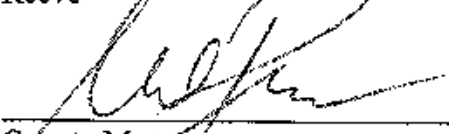
NOW THEREFORE the Council duly assembled hereby enacts as follows:

1. Lac Ste. Anne County Bylaw 22-2011 is hereby amended in accordance with attached Schedule "A":
2. Prior to third reading, the Developer shall enter into an agreement with Lac Ste. Anne County to ensure compliance with the standards and requirements of the related *Alberta Beach Estates Area Structure Plan (ASP)* as described in attached Schedule "B".
3. That this Bylaw comes into full force and effect upon third reading of this Bylaw and registration of a plan of survey for Phase I of Alberta Beach Estates.

First Reading carried the 1st day of January, A.D. 2012.

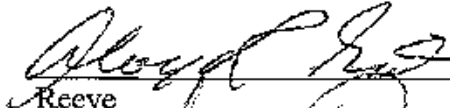


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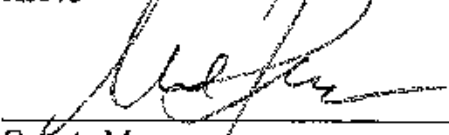


County Manager (Seal)

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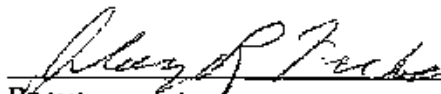


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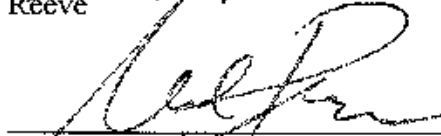


County Manager (Seal)

Read a third and final time this 5th day of September, A.D. 2012.



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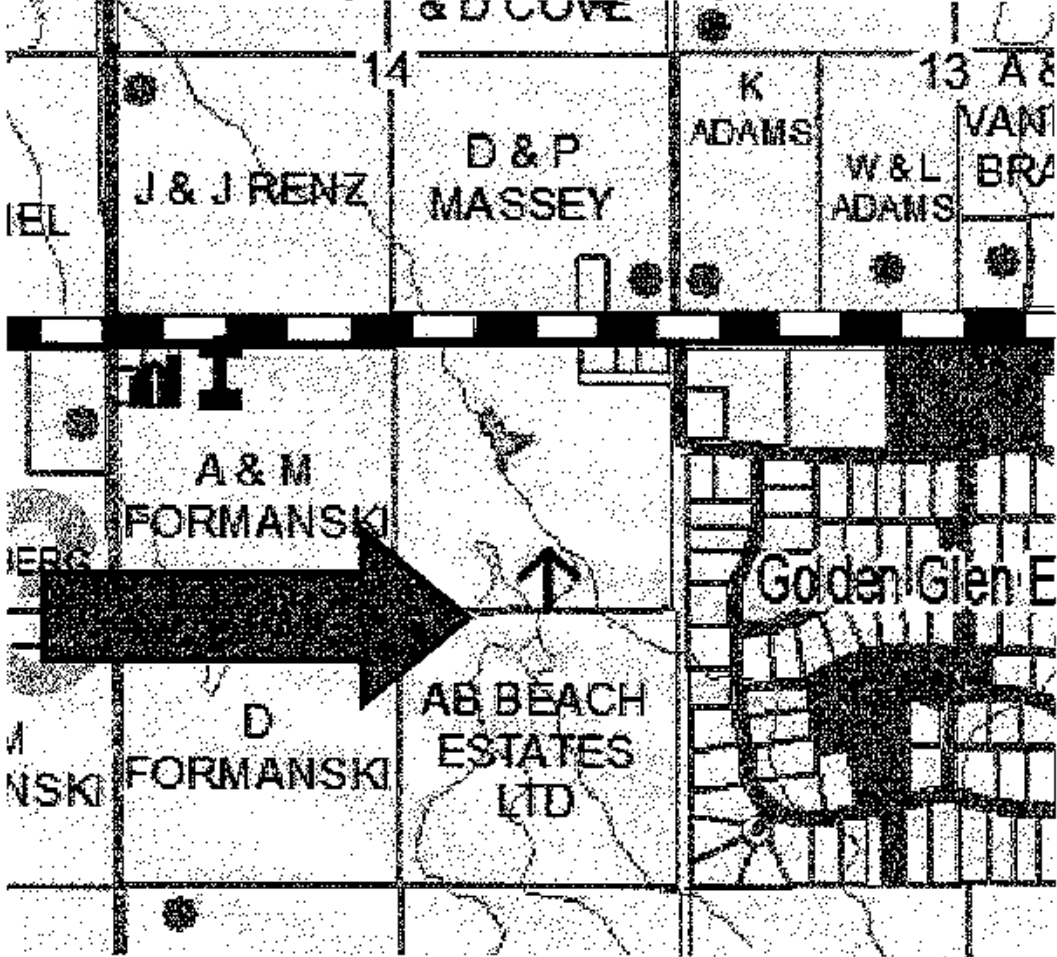


County Manager (Seal)

SCHEDULE "A"

BYLAW NO. 22-2011

E 1/2 of Section 11 Township 54 Range 03 West of the Fifth Meridian



SCHEDULE "B"

BYLAW NO. 22-2011

Area Structure Plan for

ALBERTA BEACH ESTATES

E1/2-11-54-3-W5
Lac Ste Anne County



PART 1



AFFILIATED PROFESSIONAL
PLANNERS, ENGINEERS, PROJECT MANAGERS, SURVEYORS
ENVIRONMENTAL SCIENTISTS & ARCHITECTS

REC'D - LSAC
JUL 25 2011

ALBERTA BEACH ESTATES AREA STRUCTURE PLAN

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Shallow Water Table	Hagstrom Geotechnical Services Ltd.
Geotechnical Study	Hagstrom Geotechnical Services Ltd.
Condensed Servicing Brief	Altime Engineering Ltd.
Biophysical Assessment	Bruce Thompson and Associates
Traffic Impact Assessment	Darcy Paulichuk Engineering Services
MagWall Building Systems	Richards Consulting & Associates Ltd.
Renewable Energy Considerations	Threshold Energies Corporation
Storm Water Report	River Engineering Consulting Ltd.

PART ONE: INTRODUCTION

1.1) Preamble

This Area Structure Plan ("ASP") or ("Plan") has been prepared to assist with the further development of the parcel of land legally known as the East Half of Section 11, Township 54, Range 3, West of the Fifth Meridian. This ASP provides a land use framework for future country residential development with supportive commercial and institutional services on the lands. The parcel is located adjacent to Golden Glen Estates on Range Road 31 and Township Road 542 (Highway 633), 1.6km (1.0 mi.) east of the Highway #633 entrance into Alberta Beach.

1.2) Purpose & Scope

The purpose of the Alberta Beach Estates Area Structure Plan is to establish policy and objectives that will form the basis for future development of the Planning Area. This ASP includes clear policy directions to guide on-going development within the subject parcel and to minimize potential impacts on surrounding lands.

(Part I) Part I of this Plan will introduce Alberta Beach Estates and describe the current land use criteria that exists on the subject lands. This will include a review of relevant provisions of the Alberta Beach Regional Inter-municipal Development Plan, Lac Ste. Anne County Municipal Development Plan and the County's Land Use Bylaw. Part I will also include an introduction to the various components of the County's Ecological and Conservation standards that facilitate higher density subdivision.

(Part II) Part II of this Plan describes the physical characteristics of the subject property and adjoining land uses and ownership, subdivision and development history, highway and local road access, topography and vegetation characteristics, geotechnical and groundwater analysis and a summary of environmental

issues that are present on the parcel.

(Part III) Part III of this Plan describes the land use concept for Alberta Beach Estates and includes a description of:

- The Alberta Beach Estates design concept, both graphically and with detailed written description,
- The ecological and design principles that are to be applied at Alberta Beach Estates,
- Environmental sustainability standards that are to be employed,
- Open space and recreational opportunities for residents,
- Utility and transportation networks,
- Storm-water management and solid waste disposal, and
- Potable water supply.

(Part IV) Part IV of this Plan will provide a detailed analysis for compliance to Lac Ste. Anne County's Ecological and Conservation Standards for rural residential design. This shall include among others, the use of district water and waste-water services, dedication of additional parkland, establishment of building pockets and vegetative planning.

(Part V) Part V of this Alberta Beach Estates ASP will address the adoption and approval process for the ASP as well as reasoning for each of the amendments proposed to the Municipal Development Plan and Land Use Bylaw.

1.3) Access

The Plan Area is accessed currently through Range Road 31 off of Highway #633 which effectively provides paved access to the lands. The nearest urban centre is the Village of Alberta Beach which is approximately 3.2 kilometres (2.0 miles) from the (west) Golden Glen Estates access.

Currently, Range Road 31 is only developed approximately 330 metres (100 ft.) south of the intersection with Highway No. 633. The remainder of the roadway is developed only to a trail status and is heavily treed.

Map No. 1: Location provides a graphical description of the location of Alberta Beach Estates within the Alberta Beach area.

1.4) Development Concept

The parcel of land to be developed, E1/2-11-54-3-5, will consist of two parts. The north portion of the land adjoining Highway #633, approximately 11.63 hectares (28.7 ac.) of land, will be developed for neighbourhood and highway commercial use; principally for the benefit of Alberta Beach Estates Residents and the travelling public.

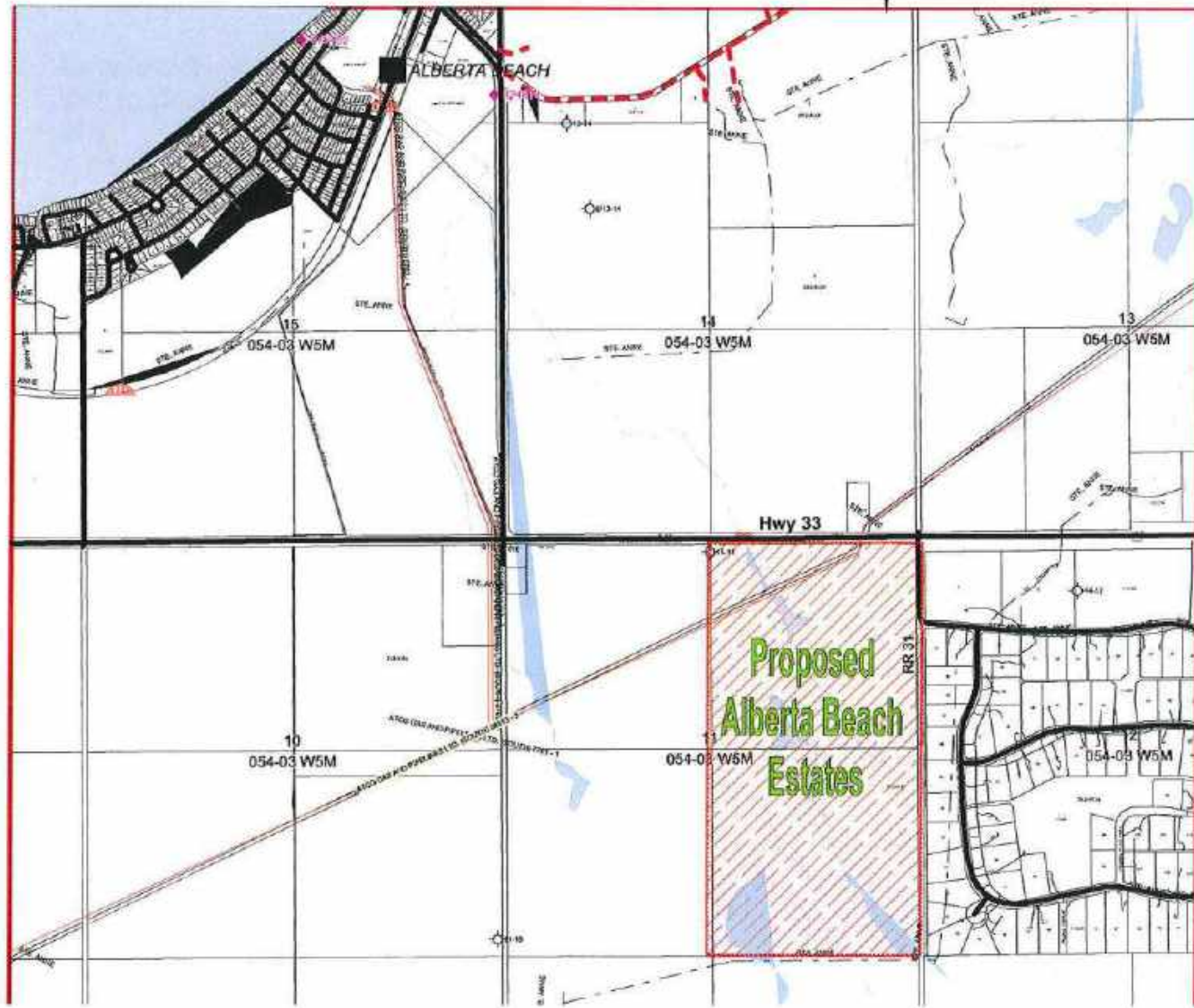
The remaining 116.07 ha (286.7 ac.) of land will be developed for a variety of residential land uses and conservation lands including: traditional country residential, independent adult, more affordable and supportive living residences in traditional fee-simple as well as a bare-land condominium setting.

The entire development, both residential and commercial/institutional, will be fully serviced as part of a future regional network.

1.5) Legislative Compliance

This Plan has been prepared in accordance with the provisions and requirements of provincial legislation, municipal bylaws and regulations. Potential conflicts are highlighted below. Where required, reasoning and recommended

Location Map



W1/2-11-54-3-W5
Lac Ste Anne County

solutions are provided in Part IV of this Plan.

(Land Stewardship Act) This ASP has been prepared with regard to the Land Stewardship Act.

It is noted that the Act is now under review and that may lead to further issues in the future. Should implementation strategies for this legislation be in force prior to formal bylaw consideration of this ASP, the Plan will be updated to incorporate any necessary amendments.

(Land Use Framework) To date, the land use framework regional plan for the Upper Athabasca region has not been initiated. It is unable to be certain at this stage if this ASP will comply with the future land use plan that will eventually be prepared.

However, examination of the draft Lower Athabasca Plan shows that it would be reasonable to anticipate little impact on future development within existing development areas.

(MGA & LUP) This ASP has been prepared in accordance with the provisions of the Municipal Government Act ("the Act"). The Act enables municipalities to adopt area structure plans to provide a framework for future subdivision and development. Section 633, 636, 638 and 692 of the Act relate specifically to area structure plans.

This plan has been prepared in accordance with the Province of Alberta Minister's Land Use Policy.

The Act also allows municipalities to require other matters to be addressed in the ASP besides those specified in the Act. Accordingly, Lac Ste. Anne County has adopted its own "land use development policies and guidelines". Where possible and applicable, these guidelines

have been implemented within Alberta Beach Estates.

(Municipal Development Plan) This Area Structure Plan has been prepared in accordance with the policies of the County's Municipal Development Plan (MDP) No. 19-2008, as amended. Specific regard has been given to the policy directions for area structure plan requirements, future land use and servicing.

It is noted that the future land use for the parcel of land is country residential. A conflict exists within this designation for the proposed commercial land use in the northern portion of the Plan area; and on the Future Land Use Map (Schedule "E", LSAC MDP¹).

As well, a potential conflict exists with the development of a fronting service road adjoining Highway No. 633 (Policy 3.18.3(i), LSAC MDP).

Finally, definitions and policy related to supportive housing, affordable housing, independent adult and alternative energy sources are provided to accommodate the requirements of Alberta Beach Estates.

These issues are discussed in detail in Part V of this Plan.

(Alberta Beach Regional IDP) A portion of the Plan area is within the limits of the Alberta Beach Regional Inter-municipal Development Plan boundary ("IDP"), adopted by Lac Ste. Anne County under Bylaw No. 16-2008. The portion of the land subject to the IDP is the north 400 metres (1312 ft.) of property within NW-11-54-3-5. This land is defined as a "Future Development Area" and subject to Section 3.4 that requires the land to be developed to a rural residential standard

¹ LSAC means Lac Ste. Anne County.

with non-fronting service roads.

It is noted that the land in question is not identified for residential development within this Plan and that a portion of the subject lands are to be developed to a non-residential land use. This presents a conflict with the policy directions of the IDP and will require amendments to that document in order to achieve compliance.

These conflicts are discussed in detail in Part V of this plan.

(Land Use Bylaw) The land is currently zoned (districted) to the Agricultural "A" District under the LSAC Land Use Bylaw No. 16-2008. This zoning does not allow for the land use proposed as an allowable use. A site specific draft Direct Control District is proposed for the residential portion of Alberta Beach Estates (Appendix "A") for consideration. Commercial uses within Alberta Beach Estates may be accommodated through the Highway Development District.

Proposed amendment descriptions are provided in Part V of this Plan.

(Alberta Transportation) In accordance with the Subdivision and Development regulation Section 14(e) this Area Structure Plan has been prepared in support of consideration by Alberta Transportation. Traffic Impact and transportation infrastructure improvements are discussed in detail further in this Plan.

(Alberta Environment) Preliminary engineering plans for water and waste-water services as well as surface water drainage are included as part of this ASP in support of detailed design drawings to be included as part of the detailed design process.

(New Policy & Regulation) A key component of Alberta Beach Estates is the development of higher density adult-only

and supportive living housing. This type of development is not currently permitted through policy and regulation within Lac Ste. Anne County in the numbers of housing units proposed within this Plan.

In order to address this issue, Part V of this Plan includes a written description for both a policy and regulatory direction to incorporate both housing types into the Municipal Development Plan and Land Use Bylaw for Lac Ste. Anne County.

1.6) Interpretation It is not intended that the policies of this Plan be "fixed in stone" or inflexible. As changing conditions dictate, this Plan will be reviewed and amended as required by Lac Ste. Anne County. In addition, minor variances to criteria including" lot area, lot width and depth, setback criteria, floor area, etc. may be considered where determined reasonable in the opinion of the approving authority.

1.7) Consultation Process The following consultation process has been followed prior to acceptance of this Plan by Lac Ste. Anne County for formal public review purposes:

- Several informal meetings with Council and Administration during 2009, 2010 and 2011,
- Consultations with local authorities, school divisions, utility providers, etc., and
- A community leaders meeting with teamed contractors and architectural facilitators through a charet process.

Following acceptance for information purposes by Lac Ste. Anne County, the Developer and Consultants have hosted public open house(s) and direct consultations with affected stakeholders including:

- A meeting with the members of the IDP Municipal Planning Commission, and

A meeting with the Alberta Beach and area community.

The content of these meetings have been summarized and feedback and input from area stakeholders and residents has been included as an appendix to this plan. Summaries also include responses to the comments and suggestions that were offered.

In addition, this Plan has been advertised electronically and is able to be downloaded through the internet and discussed through a community electronic bulletin board hosted by The Norcan Group.



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PART TWO: PHYSICAL INVENTORY

- 2.1) Location & Context** Alberta Beach Estates is located near Alberta Beach within Lac Ste. Anne County. The parcel (East Half of Section 11, Township 53, Range 3, West of the Fifth Meridian) is adjoining Golden Glen Estates and Highway No. 633. The property is approximately 2.4 km (1.5 mi.) from the Village of Alberta Beach, 13km (8 mi.) from the Town of Onoway and 33 km (21 mi.) from the Town of Stony Plain.
- 2.2) Ownership & Improvements** The subject property is currently under the ownership of Alberta Beach Estates Ltd., under Certificate of Title No. 082-377-801 with a total of 127.7 hectares (315.4 acres) and lands under Plan No. 102-4139.
- The principal artificial feature on the property is a gas-line right of way under the ownership of Atco Gas Pipelines Ltd. The gas line affects the northeast quarter of section 11 (NE11) and extends from a point 275.8 metres (904.9 ft.) south of the NW corner of the property to 210 metres (688 ft.) west of the NE corner of the property.
- 2.3) Subdivision History** A partially constructed road and two lots are planned for the northeast corner of the parcel and are registered under Plan No. 102-4139. These two lots form the northeast portion of the commercial area for Alberta Beach Estates.
- Municipal Reserves under this application were deferred to the balance of the quarter-section.
- This Plan recognizes the road and lots to be created under this subdivision approval.
- 2.4) Agricultural** The subject land is uniformly rated as Class

Capability

III under the Canada Land Inventory for Agricultural Capability. Under the Rural Farmland Assessment Rating, the land is marginal for agricultural use and is not rated as "prime agricultural land". The highest rating on both quarter-sections is 29 to 30% R.F.A. As such, there are no conflicts with "prime agricultural land" use with this proposed land use plan.

2.5) Biophysical Evaluation

A bio-physical evaluation was performed by Bruce Thompson and Associates Inc. in December 2010. The purpose of the report was to:

- identify and evaluate existing ecological features on the site as they appear at the present time,
- provide practical recommendations for preserving or enhancing ecologically significant features within the context of the ASP, and
- provide general recommendations for mitigation of potential adverse environmental effects resulting from the development, on the site and on surrounding lands.



Alberta Beach Estates lies within the Dry Mixedwood Sub-Region of the Boreal Forest Natural Region of northeastern Alberta, characterized by short cool summers and long cold winters. The growing season is between 80 and 90 days on a typical year and precipitation averages 38 cm (15 in.) annually.

The land is typically a hummocky landscape with local depressions, gullies and knolls. Soil cover varies from 6 to 25 cm (2.3 to 10 in.) in depth.

It was determined (see Shallow Water Report) that 35 to 40% of the parcel is

undevelopable for conventional homes and basements in its current state.

The land is within the Sturgeon River system as part of the Big Lakes Drainage Basin.

Overall drainage of the site is from the SE to NW. Due to topographic features, there are a number of low marshy areas on the property and adjoining lands. The most significant surface drainage route is a seasonal watercourse that extends from the southeast of the property, across the land towards the northwest corner of the property.

None of the drainage would constitute a permanent naturally occurring watercourse as defined under the Water Act. Further, no standing water is expected throughout the year other than an existing dugout.

Trembling Aspen and Balsam Poplar are the dominant tree species on drier to moist areas. Dogwood, Beaked Hazelnut, Willow, Gooseberry and other species are more common in wetter areas. Conifers such as Black Spruce are also found on the property.

As most of the land has been cleared for agriculture, the wildlife habitat value is expected to be modest. Further, the land is unlikely to represent important habitat for rare or endangered species of plant (Note: A summer survey has not been completed).

For bio-diversity, the two black spruce bog areas on the property are the best candidates for preservation. A buffer area around the bog areas is recommended.

Vegetated areas are described on Map No. 2: Aerial View and Map No. 3: Aerial Site View.

(Recommendations) Subdivision Design:



- to retain the natural contours as much as possible to conserve natural drainage patterns and flows and to moderate stormwater drainage flows,
- cluster design is encouraged to conserve habitat and ecology, and
- use of bio-swales to promote natural surface run-off.

Habitat Conservation:

- use low lying lands for groundwater recharge and to support the biodiversity in those areas,
- preservation of wet-meadows with a mixture of dry and wet ponds to allow for an increased bio-diversity of small mammals, amphibians, insects and birdlife,
- preservation of tree stands (F2) and (F3).
- maintaining moisture levels in areas selected for preservation,
- development should include erosion, siltation and sedimentation,
- implementation of a water conservation strategy,
- groundwater recharge strategies should be implemented, and
- fire prevention measures should be taken to reduce risk of wildfires.

Design Standards:

- buildings should be advanced in the area of environmental sustainability,
- xeriscaping should be a preferred landscaping technique,
- lighting should be installed in a manner that reduces light pollution, and
- park and ecological areas should be linked to promote connectivity.

Please refer to the design plan and development standards plan to see how the

1.3) Access

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1.4) Development Concept

The parcel of land to be developed, E1/2-11-54-3-5, will consist of two parts. The north portion of the land adjoining Highway #633, approximately 11.63 hectares (28.7 ac.) of land, will be developed for neighbourhood and highway commercial use; principally for the benefit of Alberta Beach Estates Residents and the travelling public.

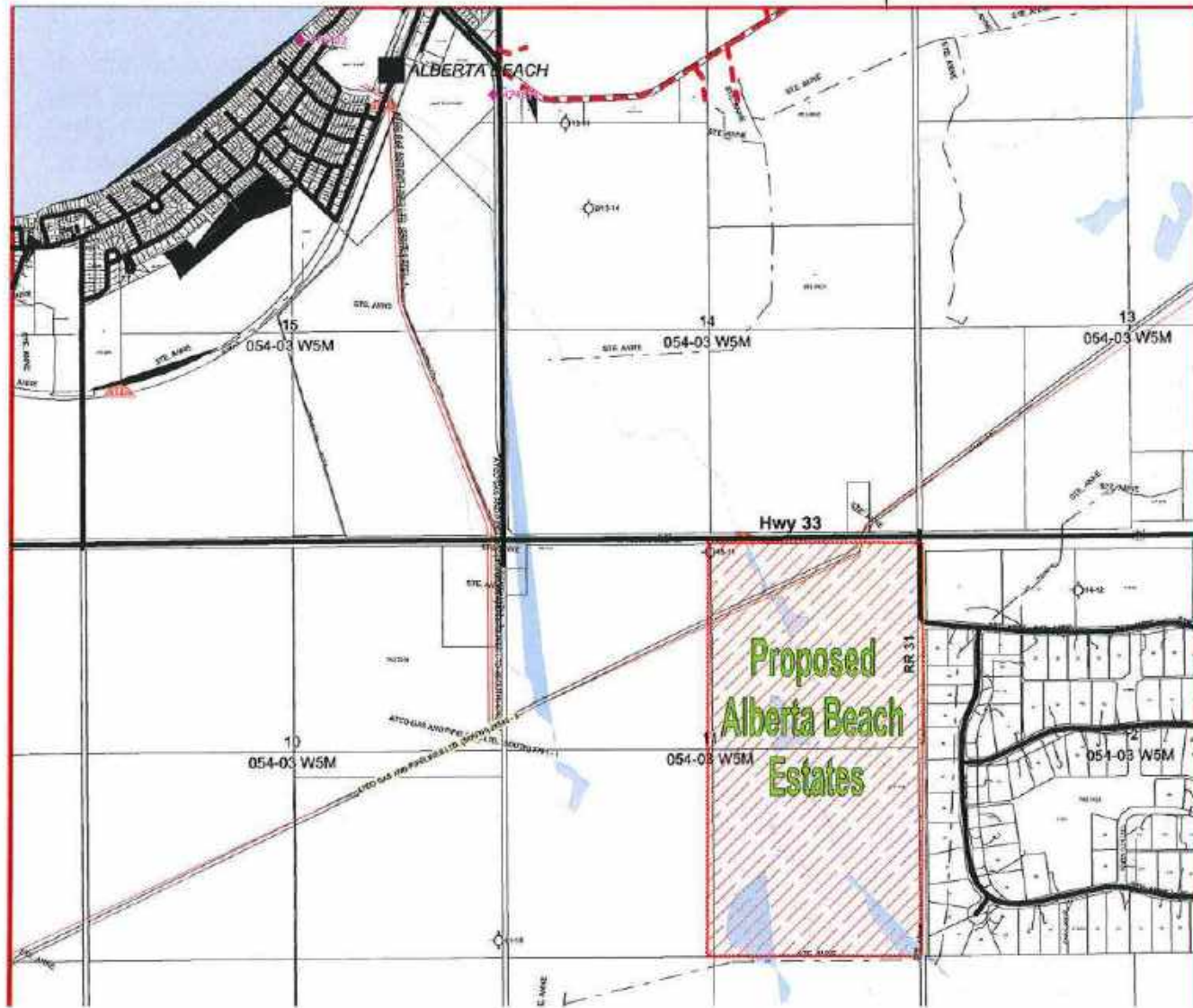
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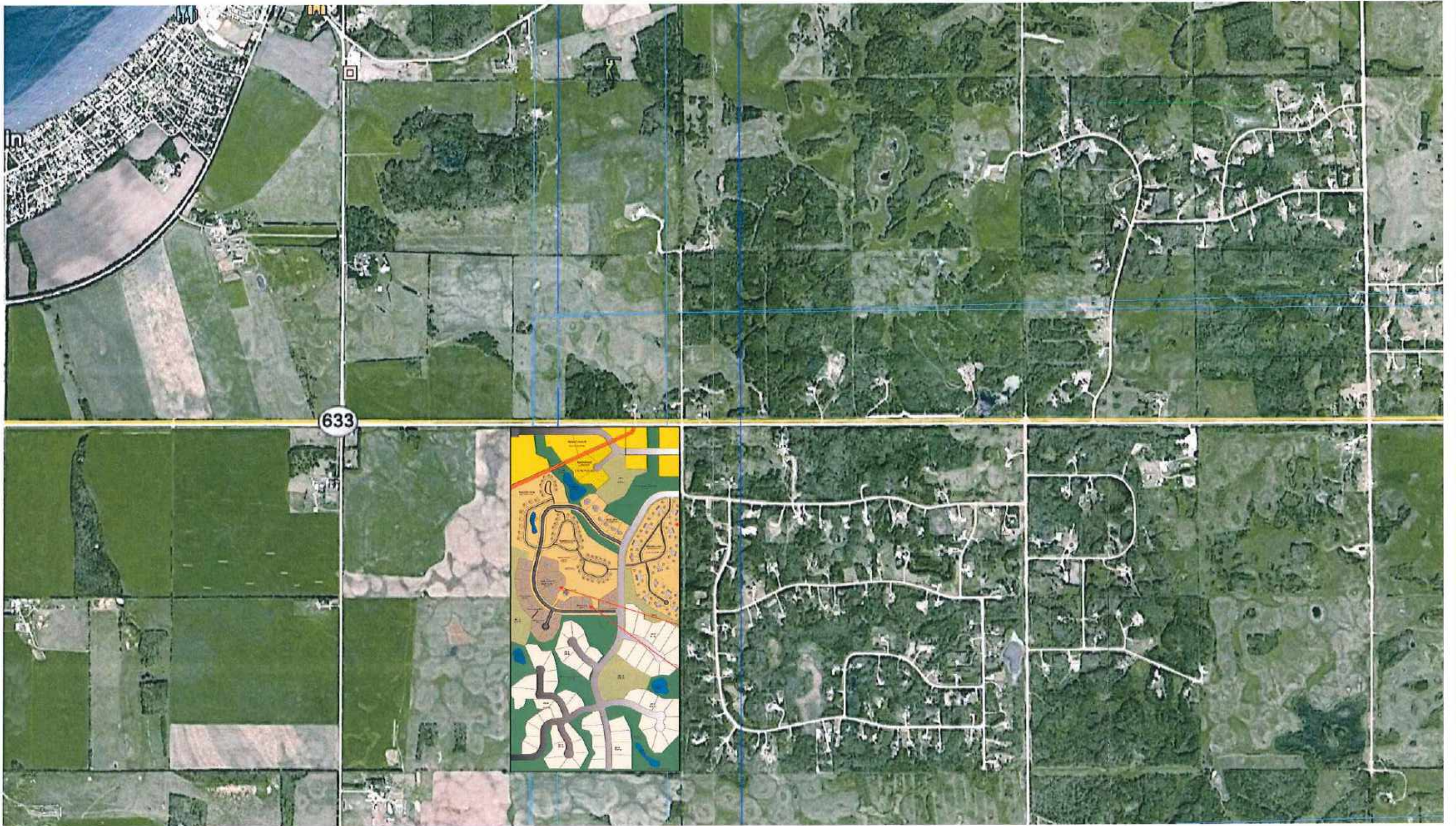
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Lac Ste Anne County



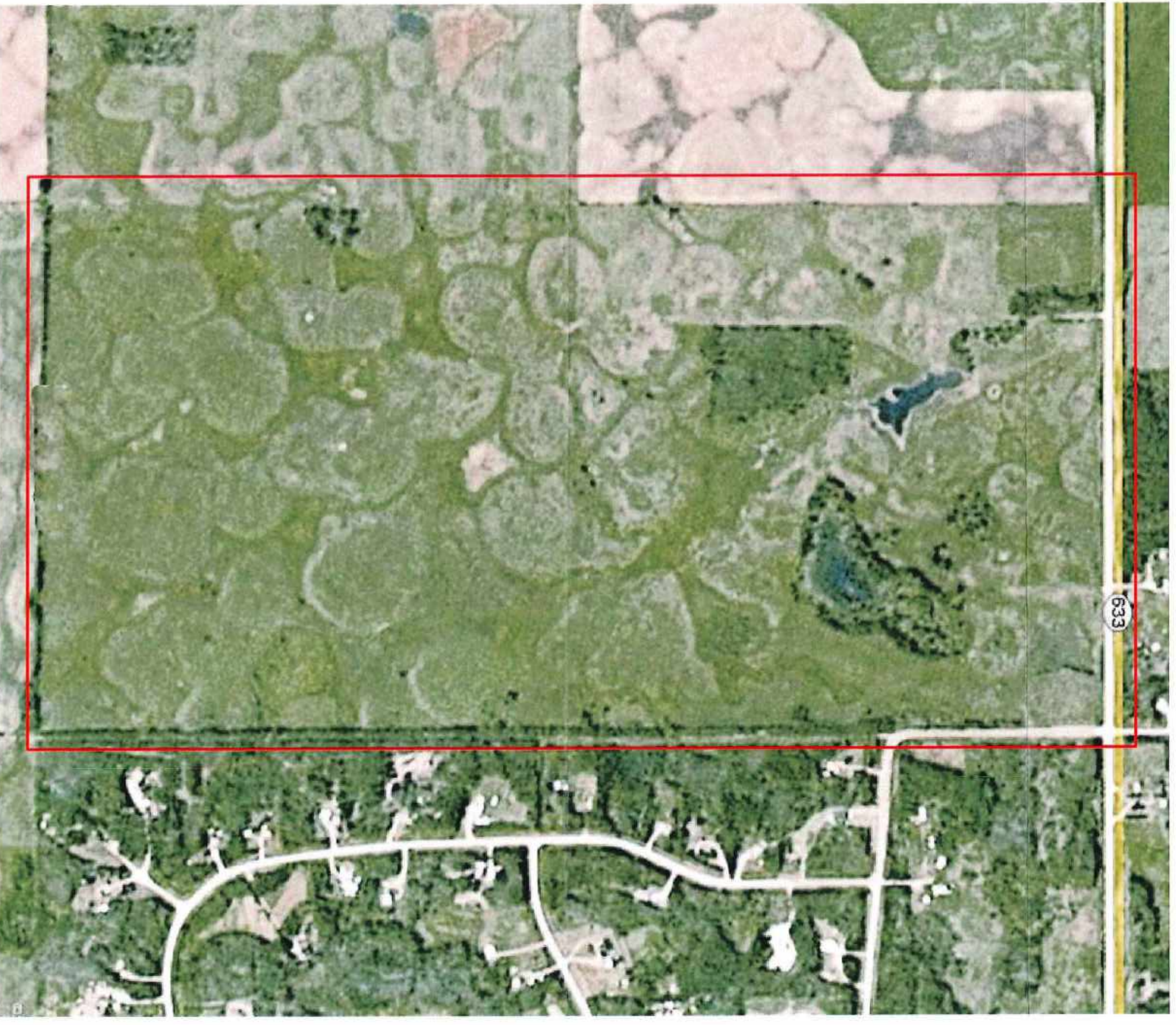
ALBERTA BEACH ESTATES
Lac Ste Anne County

E1/2-11-54-3-W5

THE NORCAN GROUP



Site Aerial
2005





various recommendations are being implemented. For a complete list of recommendations from the Bio-physical study, please refer to the study included as part of the Alberta Beach Estates submission.

2.6) Environmental Investigation

Hagstrom Geotechnical Services Ltd. prepared a Phase I Environmental Site Assessment under File No. HO0810-210 dated January 24, 2009.

The investigation which included a review of historical records, regulatory agency searches and personnel interviews has not revealed any obvious potential sources of contamination.

No impediments to development were revealed as part of this investigation.

2.7) Shallow Water Table

Hagstrom Geotechnical Services Ltd. prepared a shallow water table evaluation under File No. HO0710-210, completed on December 5, 2008.

Fifty-seven boreholes were drilled on the property during October, 2008 to a depth of 4.5 metres below surface in areas where the water table was anticipated to be at depths of 1 to 3 metres below grade.

None of the lands intended for development feature a water table less than 1.0 metres (3.3 ft.) below grade. Other lands do feature a water table less than 2.0 metres (6.5 ft.) below grade. The shallowest water table recording is at Borehole locations 43, 51 and 57. These are slough areas with near surface water tables of 1.2 metres.

As part of the overall development plan, particular attention will be paid to servicing



installation and basement construction within areas featuring a higher water table. Water tables 2.0 metres (3.3 ft.) or higher are shown on Map #4: Shallow Water Table.

2.8) Stormwater Assessment

River Engineering Consulting prepared a stormwater management plan for Alberta Beach Estates in July, 2010.

It is noted from the report that 10 to 15% of the land is treed and that the general slope of the land is from south to north. A man-made stock watering pond is the only water body located on the property. The overall relief of the land is approximately 7 to 8 metres (23-26 ft.)

There are five (5) drainage basins within Alberta Beach Estates. For effective stormwater management, these basins will each have an individual detention pond. None of the basins include significant off-site lands.

Some off-site drainage onto Alberta Beach Estates lands will occur, however, this will be exclusive to undeveloped lands and will not enter into the designated storm water basins.

Map No. 5: Preliminary Stormwater Drainage Map provides a graphical description of the pre-development drainage patterns within Alberta Beach Estates.

2.9) Geotechnical

Hagstrom Geotechnical Services Limited prepared a report under File No. HO810-210 on December 22, 2008. A total of 15 boreholes were dug to a maximum depth of 6.0 metres (19.7 ft.).

Topsoil thicknesses range from 6 to 25 centimetres while sub-surface clay would vary from 1.8 to 4.2 metres. Moisture

content within the clay soils range from 6 to 18% with the majority of the soils being between 11 and 14%. Underneath the clay soils is a clay till layer that would extend below the clay soil and had moisture contents of 12 to 19%.

None of the boreholes featured groundwater seepage during the monitoring period. Except in lower areas, the native soils and sub-soils are expected to be suitable for roads and foundations.

Map No. 6: Geotechnical Bore Holes, describes the location of the borehole locations.

2.10) Development Constraints

A number of constraints or limitations exist to development of the property. Some are natural such as higher water table areas and lower areas that are not ideal for intensive development including roads and foundations. Others are man-made and these include: the existing gas line operated by Atco Gas & Pipelines Ltd., access onto Highway No. 633, a desire to not encroach onto the road allowance separating Alberta Beach Estates from Golden Glen Estates and efforts to reduce the potential for land use conflicts between neighbouring landowners and the Alberta Beach area urban community.

2.11) Community Impacts

Alberta Beach Estates will undeniably have an impact on neighbouring communities, including Golden Glen and the Village of Alberta Beach. Community impacts are described below:

(Golden Glen) Golden Glen is the neighboring country residential community to Alberta Beach Estates, separated only by a partially

developed road allowance, TWP Rd 31. The TWP Rd. is developed south of the intersection with Highway No. 633 approximately 340 metres (1115 ft.) where the Twp Rd. intersects again with an east/west road within Golden Glen.

It is proposed as part of Alberta Beach Estates that the current developed portion of Twp. Rd. 31 be upgraded in accordance with a Traffic Impact Assessment as prepared by Darcy Paulichuk Engineering. This will include intersection improvements along the developed portion of the road.

As part of this Area Structure Plan, it is not intended to further develop Twp Rd. 31 southwards of its current extent. It is intended to not encourage any further development on this road allowance other than for recreational and vegetation buffer purposes in partnership with Lac Ste. Anne County and Golden Glen Estates. Any development plan that may be developed for the said road allowance will be separate to this Plan.

(Alberta Beach Area) Alberta Beach Estates will endeavour to not conflict with Alberta Beach in a physical sense. Potential impacts in terms of recreation, commercial enterprise and so forth are discussed later in this Plan.

Alberta Beach Estates will maintain the current practice of being careful to not use too many same or similar names for the streets and landmarks.

ALBERTA BEACH ESTATES
 PAGE 2 OF 2 (LOTS CONTOURS AND LOW AREAS)
 Part of N.E.1/4 Sec. 11 (in two parts)
 AND THE
 S.E.1/4 Sec. 11
 Twp.54 - Rge.3 - W.5 M.
 LAC STE. ANNE COUNTY

BOUNDARY OF SURVEYED LANDS
 AND OF PREVIOUS SURVEYS
 TITLE NO. 102 244 14-4
 OTHER ALBERTA BEACH ESTATES TO
 BE SHOWN ARE SHOWN AS DOTTED LINES.
 HIGH WATER MARKS ARE SHOWN AS DOTTED LINES.
 BELOW CRITICAL LEVELS.

TEST HOLE LOCATIONS DENOTES TUBES

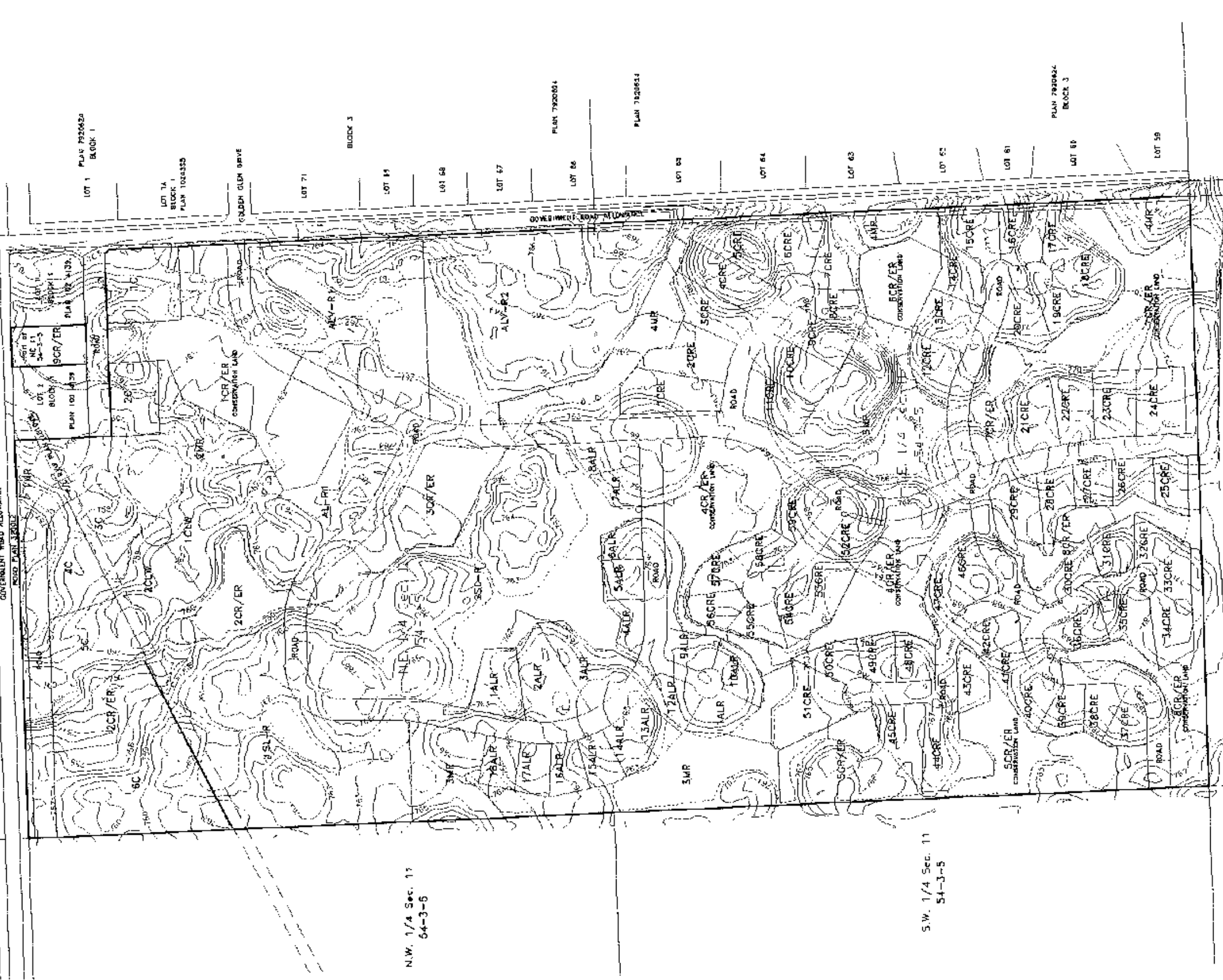
LAND USE	DESCRIPTION	AREA	PERCENT	REMARKS
WATER	WATER	10.00	10.00	
ROAD	ROAD	10.00	10.00	
CONSERVATION	CONSERVATION	10.00	10.00	
RESIDENTIAL	RESIDENTIAL	10.00	10.00	
AGRICULTURE	AGRICULTURE	10.00	10.00	
INDUSTRIAL	INDUSTRIAL	10.00	10.00	
COMMERCIAL	COMMERCIAL	10.00	10.00	
UNDEVELOPED	UNDEVELOPED	10.00	10.00	
TOTAL	TOTAL	100.00	100.00	

THE NORCAN GROUP
 10000 100th Street, Edmonton, Alberta T5A 1G6
 NORCAN CONSULTING GROUP INC.
 2809 - HWY 16, PARKLAND COUNTY
 Phone: 780-988-8885



S.E. 1/4 Sec. 14
 54-3-5

ROAD PLAN 320612
 GOVERNMENT ROAD ALLOWANCE
 ROAD PLAN 320613



N.W. 1/4 Sec. 11
 54-3-5

S.W. 1/4 Sec. 11
 54-3-5

N.W. 1/4 Sec. 2
 54-3-5

N.E. 1/4 Sec. 2
 54-3-5

LOT 1
 BLOCK 1
 PLAN 7920620

LOT 74
 BLOCK 1
 PLAN 1043355

LOT 71

LOT 65

LOT 68

LOT 67

LOT 66

PLAN 7920654

LOT 63

LOT 64

LOT 63

LOT 62

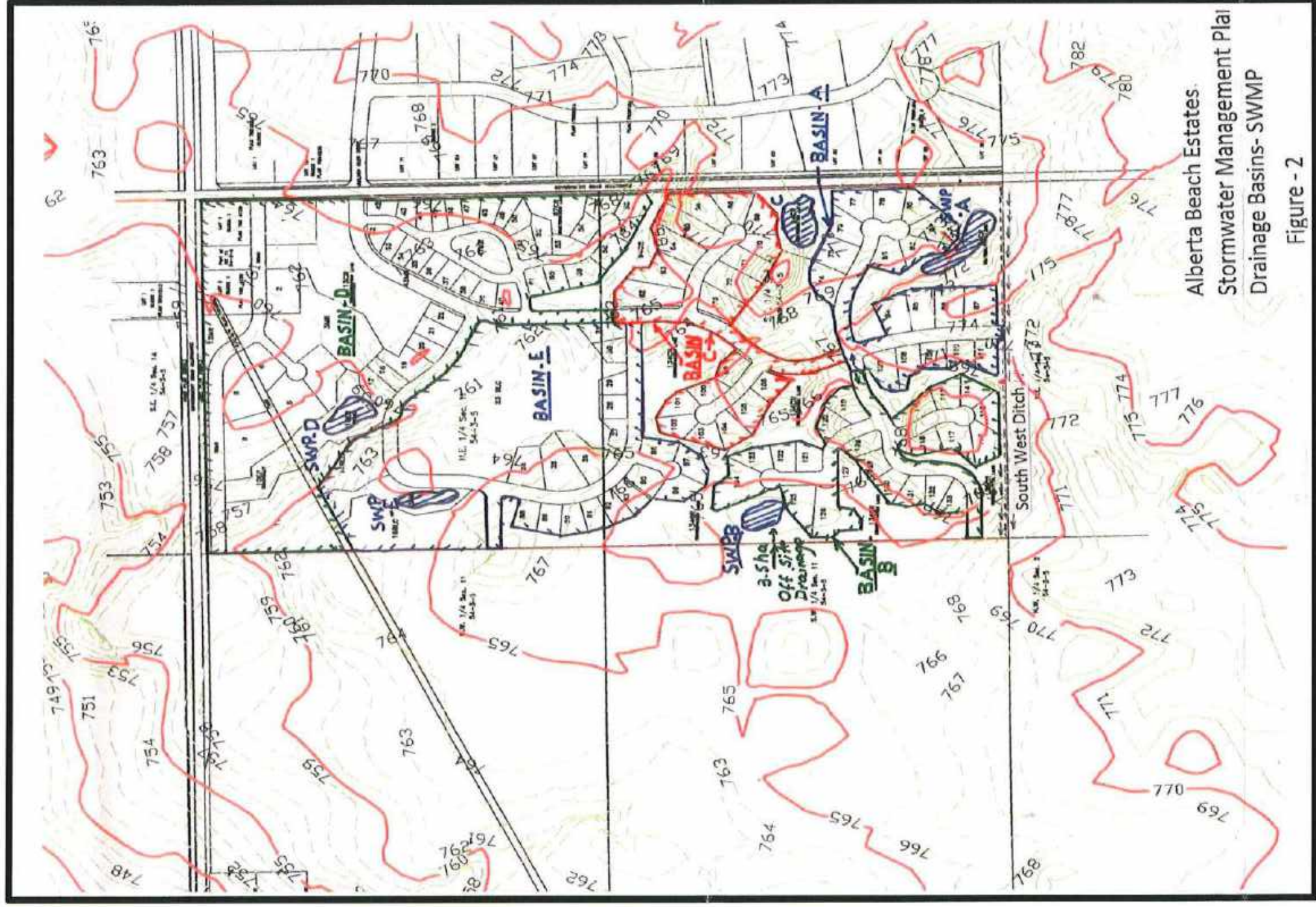
LOT 61

PLAN 7920624
 BLOCK 3

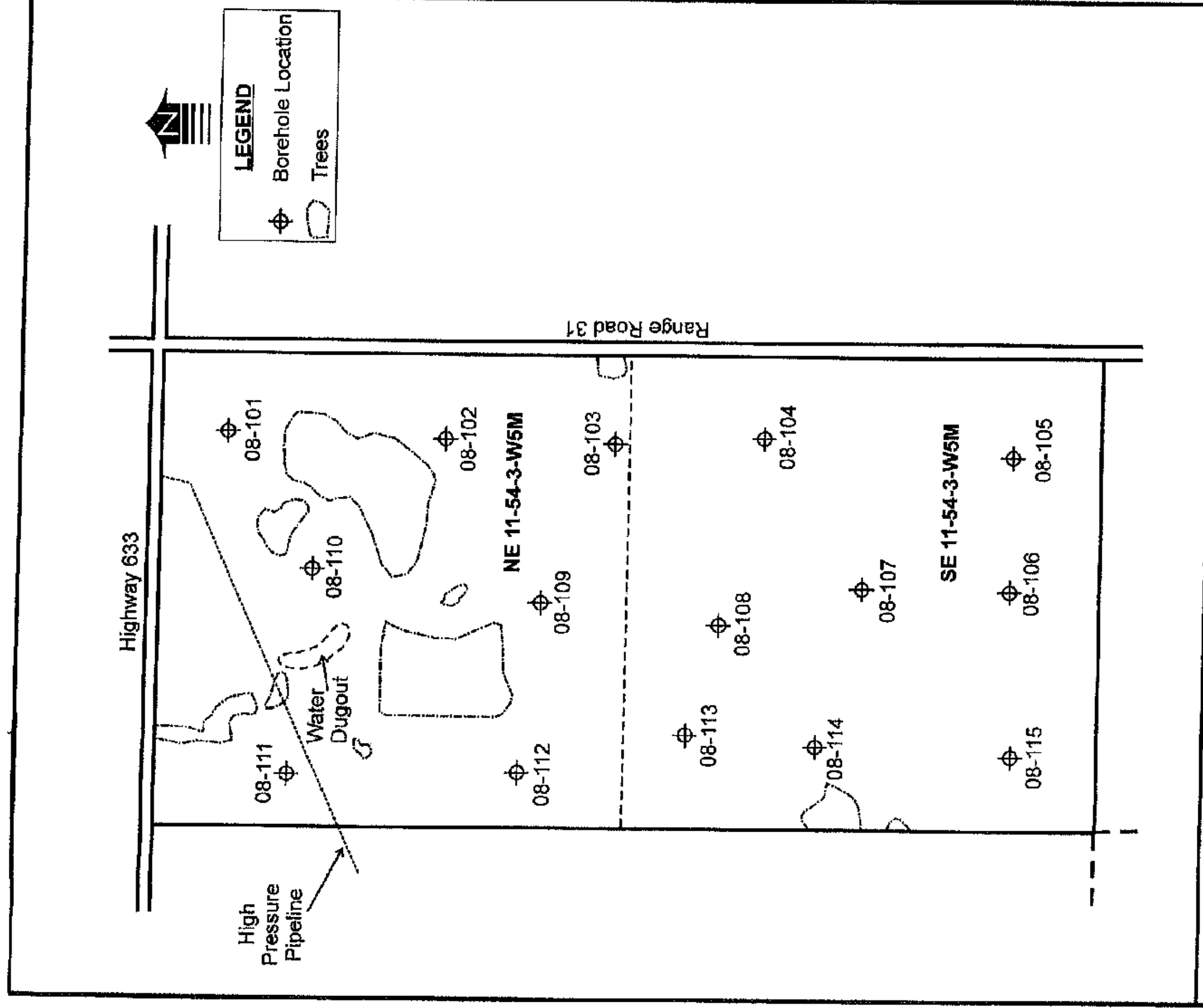
LOT 60

LOT 59









Hagstrom Geotechnical Services Ltd.
 6607 - 134 A. Avenue, Edmonton, Alberta T5A 0M0

NOR CAN CONSULTING GROUP
 Proposed Country Residential Subdivision
 E ½ 11-54-3-W5M
 Lac St. Anne County, Alberta
 Site Plan

Job No: H0810-210

Date: October 27, 2008

Plate: 18



PART THREE: DEVELOPMENT CONCEPT

3.1) Vision

Alberta Beach Estates will consist of a smaller commercial area with the majority of the land being developed for residential and recreational use. All lots will be developed with an emphasis on sustainability and conservation.

Alberta Beach Estates will connect to the provincial highway network through Twp. Rd 31 and in the future, will connect to other quarter-sections in the surrounding area other than Golden Glen.

The following passages provide a detailed description of the development plan, design, service requirements and long term sustainability goals for Alberta Beach Estates.

Section 5.6 of this Plan provides a detailed listing of the various requirements and enforcement responsibilities that will be in place for both external development and internal building construction.

3.2) Development Overview

The properties within Alberta Beach Estates will include a mixture of traditional fee simple, structural and bare-land condominium ownership.

Alberta Beach Estates will be developed in four (4) phases, with the commercial portion of the development being a self contained highway-commercial type design separate from the residential area. Though it is intended to complement Alberta Beach Estates with services that will benefit the community at large, other services will be provided within the Commercial area that will serve the travelling public.

Nevertheless, development within the commercial area will be intended to complement rather than detract from the overall health of the

existing commercial core of Alberta Beach.

All lots will be fully serviced with piped water and sewer with the ability to eventually hook up into a regional system should one be developed.

A major portion of the property will be preserved for park purposes and in many cases in its natural state. Developed areas will include advanced and ecological construction techniques will be applied throughout Alberta Beach Estates.

The overall Development Concept is provided on Map No. 7: Development Concept Plan and Map No. 8: Development Plan - Dimensions and Area. Map No. 9: District and Transportation Naming Plan provides a neighbourhood details.

Note: Lot designs included on the maps within this Plan are for illustration purposes only and can change in accordance with block structures which are more fixed.

3.3) Community Theme

Alberta Beach Estates will feature a rural maritime architectural theme for buildings within Alberta Beach Estates.

3.4) Residential Use

The residential area will consist of four (4) areas. The traditional country residential area has been designed in accordance with the County's ecological and conservation standards. The other residential areas will feature many of the components of the County standards even though the said standard was not specifically designed for that type of use. The following describes the intended housing density for Alberta Beach Estates:

- 59 single detached homes established for family dwellings in a traditional country residential setting,
- 58 adult only semi-detached duplex dwellings in a condominium setting,

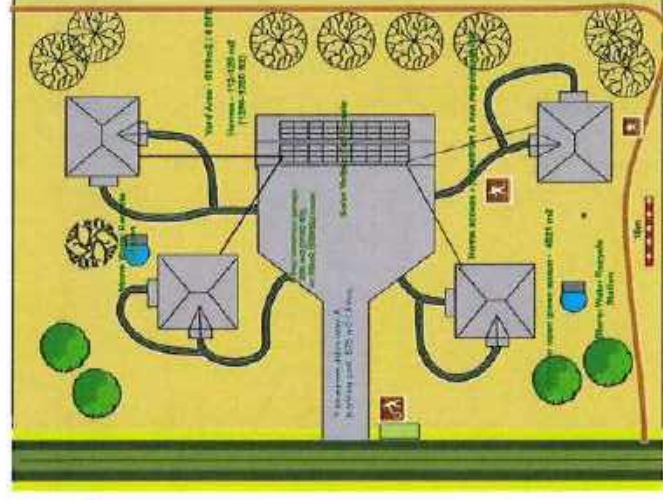


S Hwy 633

Land Use Stats

Land Use	Ha	acres	Parcels	LU	DF
Gross area	127.70	315.54	8	0	2,800Ha
Highway Commercial	9.49	23.45	3	6	2,339Ha
Commercial - Live / Work	2.14	5.29	3	59	2,339Ha
SF County Residential	62.37	155.51	59	42	6,290Ha
Adult 2 & 4plex BLC	6.69	16.63	18	1	6,000Ha
Adult 2 & 4plex Condo	2.00	4.94	1	3	4,750Ha
Afford. Living SF Condo (new)	10.44	25.81	3	50	4,750Ha
Seniors Support Liv. duplex Condo	5.89	14.67	4	56	6,350Ha
Public Roads	9.38	23.17			
Shared Common Lands	7.67	18.86			
MR	10.66	27.13			
Conservation Lands	22.76	56.24			
Storm Ponds & P.U.I.'s	3.43	8.48			
R of W & dedications	0.70	1.73			
Trails	1.10	2.72			
Totals	127.70	315.54	96	269	

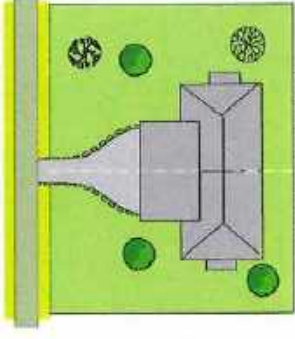
Affordable Housing Residential Node Site details



Quad Plex Site



Duplex Site



Legend

- Highway Commercial
- Commercial - Live/work
- Bare Land Condominium
- Condominium
- SFR (CR mod)
- MR (Municipal Reserve)
- Conservation Lands
- Private Roads/Utility
- Public Roads /Utility
- Pipeline
- Regional Potable Water & Waste Water Transfer Station



ALBERTA BEACH ESTATES
Development Concept Plan
 E1/2-11-54-3-W5
 Lac Ste County



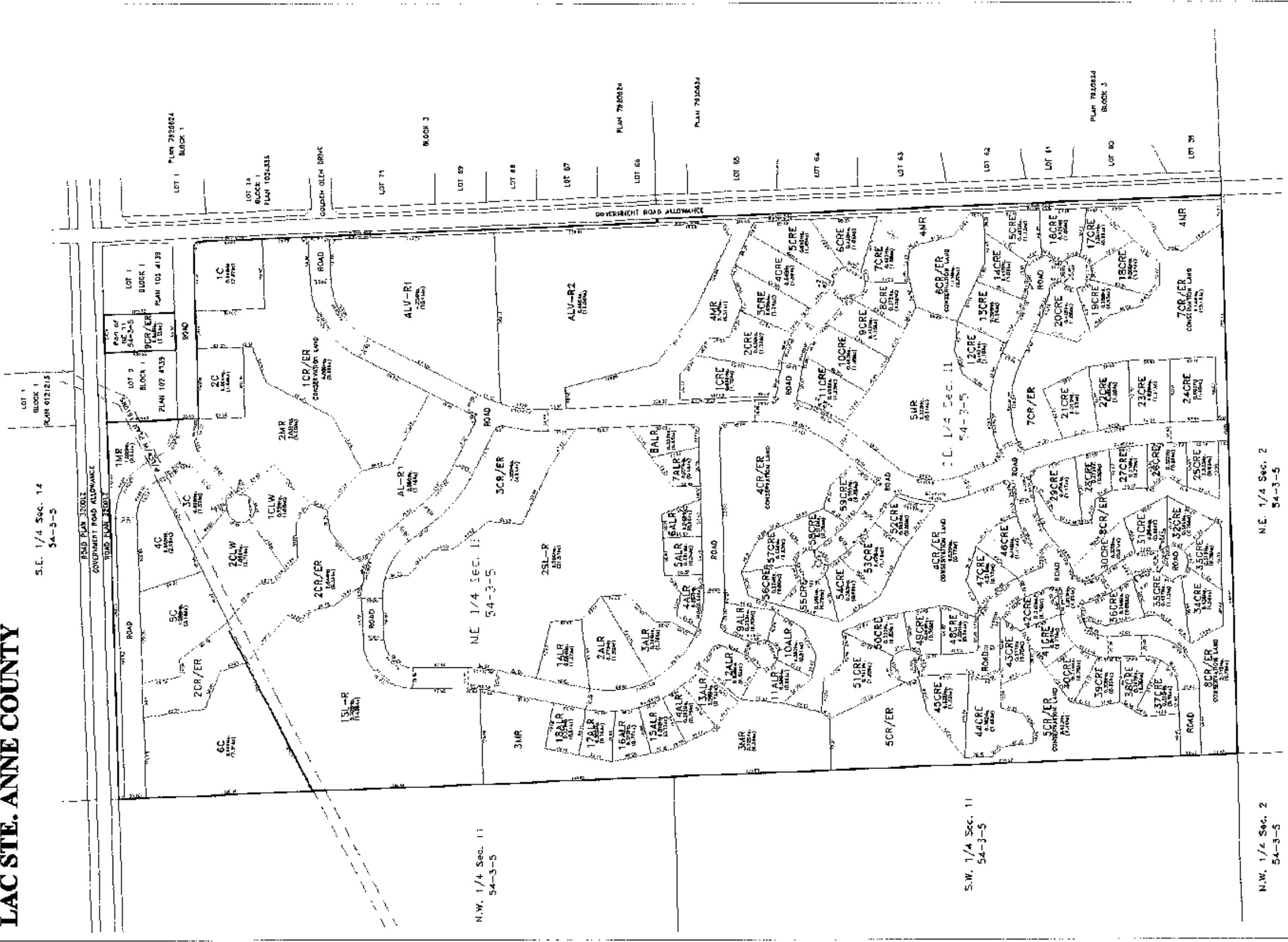
ALBERTA BEACH ESTATES
 PAGE 1 OF 2 (LOT AREAS AND DIMENSIONS)
Part of N.E.1/4 Sec. 11 (in two parts)
 AND THE
S.E.1/4 Sec. 11
Twp.54 - Rge.3 - W.5 M.
LAC STE. ANNE COUNTY

SUBJECT TO THE RIGHTS OF THE
OWNER OF THE SURVEYED LAND
 TITLE NO. 102204-014-0
 OWNER: ALBERTA BEACH BEACHES LTD
 DISTRICT: SHERBROOKE
 REGISTRATION NO. 102204-014-0
 REGISTRATION DATE: 1998-08-11
 REGISTRATION DISTRICT: 102204-014-0

THESE ARE THE DIMENSIONS AND AREAS OF THE

LAND USE	DESCRIPTION	NO. OF LOTS	AREA (ACRES)	PERCENT
RESIDENTIAL	RESIDENTIAL	100	100.00	100.00
CONSERVATION	CONSERVATION	0	0.00	0.00
TOTAL		100	100.00	100.00

THE NORCAN GROUP
 10000 100th Ave. S.E.
 Suite 100
 Richmond, BC V6V 2G9
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 Fax: (604) 273-1112
 Email: info@norcan.com
 Website: www.norcan.com



N.W. 1/4 Sec. 11
54-3-5

S.W. 1/4 Sec. 11
54-3-5

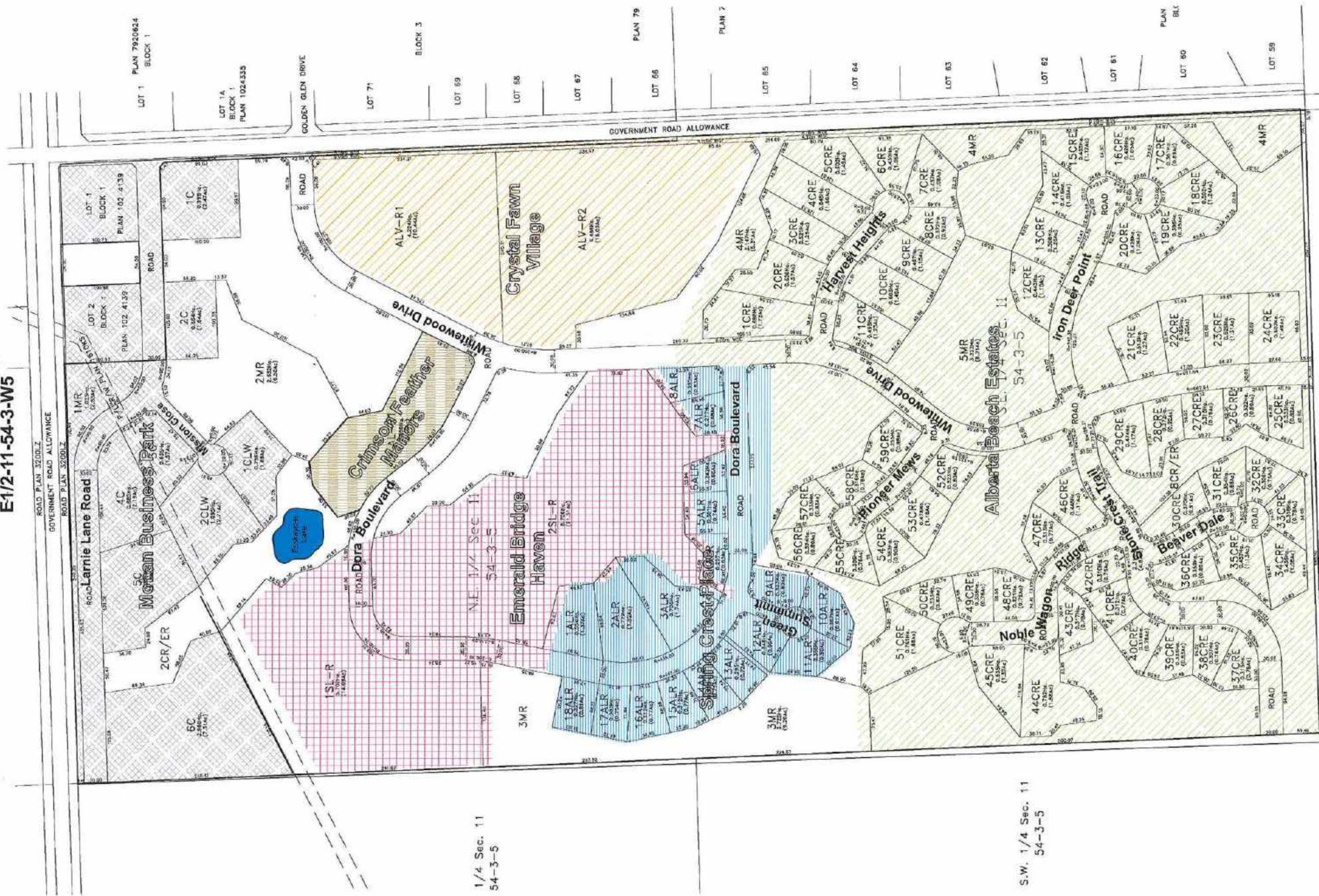
N.W. 1/4 Sec. 2
54-3-5

N.E. 1/4 Sec. 2
54-3-5

S.E. 1/4 Sec. 14
54-3-5



District and Transportation Identification Naming for Alberta Beach Estates Neighborhood Plan E1/2-11-54-3-W5



1/4 Sec. 11
54-3-5

S.W. 1/4 Sec. 11
54-3-5

N.W. 1/4 Sec. 2
54-3-5

N.E. 1/4 Sec. 2
54-3-5



- 60 more affordable housing condominium dwellings, and
- 96 Supportive Living dwellings consisting of semi-detached/duplex dwellings within a condominium setting.

A minor component not formally part of the residential area of Alberta Beach Estates is a live/work area within the Commercial portion that may house up to six (6) living units.

Lot/unit² areas and densities are as follows:

Housing Type	Density Units/hectare (acre)
Single Detached	2.3/ha. [0.94/acre]
Adult (BLC)*	6.3/ha. [2.54/acre]
Adult Condominium*	8/ha. [3.2/acre]
Affordable Housing	4.79/ha. [2.0/acre]
Supportive Living	6.38/ha. [2.6/acre]

Housing Type	Area Hectare (acre)/unit
Single Detached	0.43 ha. [1.07 acre]
Adult (BLC)	0.16 ha. [0.4 acre]
Adult Condominium	0.13 ha. [0.32 acre]
Affordable Housing	0.21 ha. [0.52 acre]
Supportive Living	0.16 ha. [0.39 acre]

All development within the residential portion of Alberta Beach Estates shall comply with the overall community theme.

*Adult BLC refers to a multi-unit structural condominium where each unit has an exclusive use right to development on a portion of the common lands which are part of a bare-land condominium lot. Adult condominium refers to land where a structure condominium is located

² Though "unit" is the legal term for a "lot" within a condominium, the term "lot" will be used often in this document with the understanding that "lot" within a condominium context refers to "unit" in its more legal form.

on a bare-land condominium lot with the non-build portion of the lot being common to all of the lot owners.

3.4.1) Family Residential - Traditional

(General) Fifty-nine (59) single detached homes for family use will be provided within Alberta Beach Estates. The homes will be located in the south portion of the site and will be designed in accordance with the ecological and conservation design standards adopted by Lac Ste. Anne County. Conformance with these standards is described in Part Four of this Plan.



The residential homes will be designed primarily within seven (7) pods, five (5) of which end in cul-de-sacs while the remaining pods are aligned to through roads on adjoining properties.

In total, housing lots within this part of Alberta Beach Estates will consist of 60 ha. (148.3 ac.) with a minimum lot size of 0.43 ha. (1.07 acres) per lot.

Homes within this area will be developed primarily with walk-out basements in mind as the topography of the area lends itself well to that type of dwelling. Homes may be a variety of types excepting manufactured homes and may be constructed on or off-site.

(Standards) All homes will be subject to building standards that will be a requirement under a restrictive covenant and as part of the condominium bylaw system, where applicable. Compliance with the Alberta Beach Theme will be required.

In addition, as described in Section 3.7: building pockets, rain-barrels and rain-gardens, permaculture gardens, where applicable, and erosion controls will be implemented on a lot by lot basis.

ALBERTA BEACH ESTATES

(District) This residential area will be districted under the Lac Ste. Anne County Land Use Bylaw No. CR1 District. District Details are as follows:

Alberta Beach Estates: Area: SF ¹	
Length to width ratio	<3:1
Single Detached Dwelling	P
Garage	P
Accessory Bldg. or Use	P ⁴
Home Based Business (Minor)	D
Park or Playground	P
Public Use	P
Front Yard ³	1/2
Side Yard	5
Side Yard 2	5
Rear Yard	4
Minimum Dwelling Floor Area	C ⁵
Community Association	YES
Restrictive Covenant	YES
Recreational Vehicle	RC ⁶
Water and Sewerage System	C ⁷

- ¹. SF = Single Family Area
- ². "P" = Permitted, "D" = Discretionary
- ³. 15m internal road, 35 m on main access roads
- ⁴. Max 10m². footprint
- ⁵. 111.5m² (1200ft²)
- ⁶. Not allowed on vacant lots
- ⁷. Restricted to Communal Servicing Systems.

All standards of the Lac Ste. Anne County Land Use Bylaw No. 16-2008, as amended shall be applicable within this District. Where a conflict exists, the more restrictive requirement shall apply.

Though a complete listing and explanation of building requirements are provided in Section 5.6, the following are requirements for external improvements within the family living area of Alberta Beach Estates:

- underground utility servicing,

- rain gardens,
- permaculture gardens,
- on-site storm water catchment and retention,
- rain barrels,
- recycled pavement driveways and condominium roadways,
- building pockets and orientation of homes to accommodate solar energy opportunities,
- connection to geo-thermal and photovoltaic system, and
- anti-light pollution outdoor lighting.

3.4.2) Affordable Housing

(General) To the northwest of the family residential area, a separate area will be established for family oriented affordable housing. The goal of this area is to provide lower cost homes (more affordable) using a turn-key system approach.

A total of 14 multi-unit pods of two and four housing units (50 total units) each will be created within a bare land condominium unit of approximately 10.44 ha. (25.80 ac.).

(Standards) All homes will be subject to building standards that will be a requirement under a restrictive covenant and as part of the condominium bylaw system, where applicable.



In addition, as described in Section 3.7: building pockets, rain-barrels and rain-gardens, permaculture gardens, where applicable, and erosion controls will be implemented on a lot by lot basis.

ALBERTA BEACH ESTATES

(District) This residential area will be districted under the Lac Ste. Anne County Land Use Bylaw No. CR1 District. District Details are as follows:

Alberta Beach Estates: Area: SF ¹	
Length to width ratio	<3:1
Single Detached Dwelling	P
Garage	P
Accessory Bldg. or Use	P ⁴
Home Based Business (Minor)	D
Park or Playground	P
Public Use	P
Front Yard ³	1/2
Side Yard	5
Side Yard 2	5
Rear Yard	4
Minimum Dwelling Floor Area	C ⁵
Community Association	YES
Restrictive Covenant	YES
Recreational Vehicle	RC ⁶
Water and Sewerage System	C ⁷

- ¹. SF = Single Family Area
- ². "P"= Permitted, "D" = Discretionary
- ³. 15m internal road, 35 m on main access roads
- ⁴. Max 10m². footprint
- ⁵. 111.5m² (1.200ft²)
- ⁶. Not allowed on vacant lots
- ⁷. Restricted to Communal Servicing Systems.

All standards of the Lac Ste. Anne County Land Use Bylaw No. 16-2008, as amended shall be applicable within this District. Where a conflict exists, the more restrictive requirement shall apply.

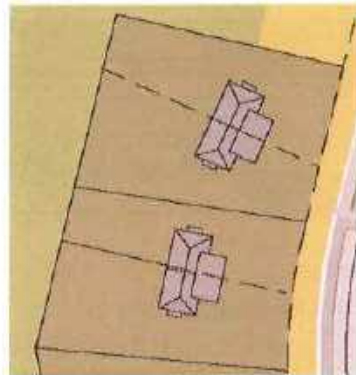
Though a complete listing and explanation of building requirements are provided in Section 5.6, the following are requirements for external improvements within the family living area of Alberta Beach Estates:

- underground utility servicing,

- rain gardens,
- permaculture gardens,
- on-site storm water catchment and retention,
- rain barrels,
- recycled pavement on driveways and condominium roadways,
- building pockets and orientation of homes to accommodate solar energy opportunities,
- connection to geothermal and photo voltaic service, and
- anti-lig
- ht pollution outdoor lighting

3.4.3) Independent Adult Living

(General) To the north of the family residential area, two separate areas will be established for Independent Adult Living. The south area will consist of forty-two (42) units on both sides of Dora Boulevard. The north portion will include sixteen (16) units north of the supportive living area.



The south area will consist of fifteen (15) duplex and three (3) four-plex units. Personal outdoor living space will be secured through an exclusive use agreement³. This will give each residence a private yard-space, smaller but similar to those of traditional country residential lots.

The north area will consist of four (4) duplex and two (2) four-plex units. Different from the south area, the common area of the units will be free to use by residents of each unit. Living in this area will encourage cooperation and interaction between all residents within the property. Condominium agreements will set many of the rules of use and maintenance within the common lands.



These areas shall conform to the Rural Seniors'

³ An exclusive use agreement is a legal agreement registered onto the certificate of title. The agreement grants exclusive use of a portion of the lands to the resident. As an example, the garage is shared, but owner (A) has exclusive use of the west side and owner (B) has exclusive use of the east side.

living policy and regulation as described in the proposed amendment to the Lac Ste. Anne County Municipal Development Plan and Land Use Bylaw. Each proposed amendment is attached as an appendix to this document.

(Standards) All homes will be subject to building standards that will be a requirement under a restrictive covenant and as part of the condominium bylaw system. A description of common building and lot standards to be enforced through condominium bylaw is described in an appendix to this Plan.

In addition, as described in Section 3.7: building pockets, rain-barrels and rain-gardens, permaculture gardens, where applicable, and erosion controls will be implemented on a lot by lot basis.

(Features) As part of an adult only living area, this part of Alberta Beach Estates will include the following features:

- basic landscaping performed on the lot as part of the overall construction process. This may include drainage control and installation of rain-garden facility,
- Option of owner to maintain their property or have condo corporation perform maintenance on a contract basis,
- Condo corporation security and maintenance assistance during extended vacancy periods (owner out of county for several months at a time),
- snow removal services,
- connection to photo voltaic and geothermal service,
- community transportation services,
- access to the supportive living medical services provided on-site, and
- predominant bungalow design.

(District) This residential area will be districted under the

ALBERTA BEACH ESTATES

Lac Ste. Anne County Land Use Bylaw No. CR1 District. District Details are as follows:

Alberta Beach Estates: Area: AD ¹	
Length to width ratio	<3:1
Semi-Detached/Duplex	P
Garage	P
Accessory Bldg. or Use	P ⁴
Home Based Business (Minor)	D
Park or Playground	P
Public Use	P
Front Yard ³	1/2
Side Yard	5
Side Yard 2	5
Rear Yard	4
Minimum Dwelling Floor Area	C ⁵
Community Association	YES
Restrictive Covenant	YES
Recreational Vehicle	RC ⁶
Water and Sewerage System	C ⁷

1. AD = Adult Area
2. "P" = Permitted, "D" = Discretionary
3. 15m internal road, 35 m on main access roads
4. Max 10m². footprint
5. 111.5m² (1,200ft²)
6. Not allowed on vacant lots
7. Restricted to Communal Systems.

All standards of the Lac Ste. Anne County Land Use Bylaw No. 16-2008, as amended shall be applicable within this District. Where a conflict exists, the more restrictive requirement shall apply.

3.4.4) Supportive Living Area

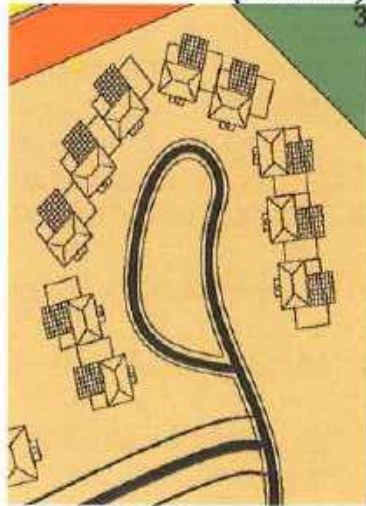
(General) A supportive living area separated by Dora Boulevard Crescent will be developed in four separate pods. A total of ninety-eight (98) living units will be created along with supportive structures including maintenance buildings and a common building for administration, dining and functions.

These properties shall conform to the Rural Supportive Living policy and regulation as described in the proposed amendment to the Lac Ste. Anne County Municipal Development Plan and Land Use Bylaw. Each proposed amendment is attached as an appendix to this Document.

(Standards) All homes will be subject to building standards that will be a requirement under a restrictive covenant and as part of the condominium bylaw system. A description of common building and lot standards to be enforced through condominium bylaw is provided in an appendix to this Plan.

In addition, as described in Section 3.7: building pockets, rain-barrels and rain-gardens, permaculture gardens, where applicable, and erosion controls will be implemented on a lot by lot basis.

(District) This residential area will be districted under the Lac Ste. Anne County Land Use Bylaw No. CR1 District. District Details are as follows:



Alberta Beach Estates: Area: SL ¹	
Length to width ratio	<3:1
Semi-Detached/Duplex	P
Garage	P
Accessory Bldg. or Use	P ⁴
Home Based Business (Minor)	D
Condominium Maintenance Building	D
Common Services Building	D
Park or Playground	P
Public Use	P
Front Yard ³	1/2
Side Yard	5
Side Yard 2	5
Rear Yard	4
Minimum Dwelling Floor Area	B ⁵
Community Association	YES
Restrictive Covenant	YES

Recreational Vehicle	RC ⁶
Water and Sewerage System	C ⁷

1. SL = Supportive Living Area
2. "P" = Permitted, "D" = Discretionary
3. 15m internal road, 35 m on main access roads
4. Max 10m². footprint
5. 92.9 m² (1,000 ft²)
6. Not allowed within the property.
7. Restricted to Communal Systems.

All standards of the Lac Ste. Anne County Land Use Bylaw No.16-2008, as amended shall be applicable within this District. Where a conflict exists, the more restrictive requirement shall apply.

In addition, as described in Section 3.7, building pockets, rain-barrels and rain-gardens, permaculture gardens, where applicable, and erosion controls will be implemented on a lot by lot basis.

(Features) As a supportive living complex, The Alberta Beach Estates Supportive Living component will include the following features:

- an on-site fire fighting service through a dry hydrant included as part of the north wet-pond,
- an indoor recreation, meeting and community restaurant facility,
- landscaped outdoor parks, trails and view points,
- a small lake that will be stocked with fish and aerated during the winter months,
- all homes wheelchair accessible,
- All common lands maintained by the condominium corporation,
- Photovoltaic and geothermal energy connection,
- limited home-care medical services, and
- on-site medical consultation and examination facility.

3.4.5) Accessory Development of Residential Properties

(accessory structures) All accessory structures shall be located in rear yards or side yards of the primary building on a lot.

All accessory structures shall be located within the identified building pocket and where applicable, in conformance with the subject landscaping plan.

(Storage) All outdoor storage within all residential communities shall be within the identified building pocket.

All outdoor storage shall be within sheds or not visible to adjoining properties or roadways.

(fencing) Fencing shall consist of stone or decorative fencing (i.e. rail) within the identified building pocket or driveway entrances. Fencing shall be limited to 1.0 metre (3.3 feet) in height.

(pet enclosures) Outdoor pet enclosures shall be limited to 50 m² (164 ft²) in area, be located in rear yard and out of view of public roadways. Pet enclosures may be attached to an accessory structure and may be fenced with chain link.

(standards enforcement) Development standards shall be described where applicable within restrictive covenants, condominium bylaws and provisions of the applicable municipal bylaw.

Enforcement jurisdiction is discussed in a non-binding manner in an appendix to this plan.

3.5) Commercial Use

(General) The commercial area will consist of 11.63 hectares (28.74 ac.) of land adjoining Highway No. 633. The commercial area at present will be

accessible solely through Twp Rd. 31 as a service road and will be a dead end cul-de-sac pending further development to the west. Commercial business may include a mixture of live-work, highway commercial and residential support services.

(Live-work) A cul-de-sac within Mohan Business Park provides access to a commercial area of 2.14 hectares (5.29 acres) that can be divided into one or more lots.

(Highway Commercial) The highway commercial area will consist of 9.49 hectares (23.45 acres) of land fronting Highway No. 633. Two existing lots have already been created on the property with a combined area of 3.5 hectares (8.6 acres). One of the lots is currently partially developed with a show home as a temporary building and use. The other property is vacant. Additional lands are available for commercial development fronting the service road that extends east to west across the property.

It is noted that the service road does have a "S" curve in it. This is due to an inability to obtain agreement for anything less than a perpendicular crossing from the pipeline holder, Atco Gas.

Also, it has been confirmed by Atco that the gas line is not used for the transport of sour gas materials and as such, the line poses no threat to development within Alberta Beach Estates.

(Alternative Energy) In addition to the features provided below for the live-work and highway commercial components, the following will be incorporated in both areas as applicable and appropriate:

- Wind turbines,
- Solar electric panels (PV - Photovoltaic),
- Combined heat and power (cogen systems),

- Solar thermal (hot water) collectors, and
- Geothermal heating.

Individual applications will be determined at the subdivision and/or development stage of a particular lot.

(Live-Work) The live work area will be fully serviced with water, gas, electrical and sanitary sewer utilities. Development will be two-storey with offices on the lower floor and residential development on the second floor.



The development may be developed as a single building as part of a structural condominium or lease area, or as individual buildings on smaller lots.

The street facing facade of all buildings within this area must be compatible with what would normally be associated with a mixed use residential/commercial area. Rear and side yards should be generally landscaped with a residential appearance.

A minimum of 15 sq. metres (161 sq. feet) of floor area must be provided within the residential portion of the building as either a balcony or deck.

The residential portion of the building may have an entrance into the commercial area, and shall have a separate external entrance to ground elevation.

A variety of roof lines should be employed within the building(s).

Individual shops within the live work area shall open directly to street level with outdoor storage limited to materials that can be contained in a shed with all accessory buildings not exceeding a combined 10 sq. metres (107.6 sq. feet of floor area).

A minimum of 25% of the lot area shall be landscaped and developed as an open space area.

Parking on-site shall be provided in a ratio of 1 parking stall per 50 sq. metres of floor area (538 sq. feet) plus 2 additional parking stalls per residence. Parking shall be in the rear of the building.

Each building shall be aesthetically pleasing and fit into the overall theme of Alberta Beach Estates.

The live-work area will be restricted to medical and health related businesses described within the Highway Development District (LUB Bylaw No. 16-2008, Section 80), as amended. Particular amendments are provided later in this section.

(Highway Commercial Preamble)



The Highway Commercial area consists of 9.49 hectares (23.45 acres) of land that will be fully serviced with water, gas, electrical and sanitary services. Subject to aesthetic restrictions, land uses will generally follow the land use described in the Highway Development Land Use District (LUB Bylaw No. 16-2008, Section 80). Particular amendments are described later in this section.

It is noted that highway commercial opportunities exist within the nearby urban growth area of the Village of Alberta Beach. The following section: Business Opportunities, describes means in which the developers of Alberta Beach Estates will be encouraging commercial business that complements rather than competes with Alberta Beach.

It should also be noted that the residential component of Alberta Beach estates will create a significant demand for additional services in the area.

On-street parking will not be permitted within this area of Alberta Beach Estates.

The frontage of the ATCO gas line right of way shall be fenced with gate openings available depending on the nature of the intended business. Please refer to the Parks and Recreation Sections of this Plan for information regarding future use of the Atco Line.

All businesses must be esthetically pleasing on all yards to ensure that there are no visually unattractive views from the internal roadway, trails, adjoining highway or the residential areas to the south.

(Business Opportunities) Business wishing to locate within Alberta Beach Estates shall comply with the standards of this Plan and the regulations of the applicable land use district.

Business shall be restricted to those that:

- provide a clear benefit to the commercial needs of residents of Alberta Beach Estates and area,
- be generally accepted as a use that would be typical of a highway commercial area,
- maintain a reasonably aesthetically pleasing visual on all yards,

Desired businesses to be located within Alberta Beach Estates include, but are not necessarily limited to:

- place of assembly (Community Hall),
- small restaurant,
- mini storage,
- service station & corner store,
- financial services, and
- lodging.

No commercial business shall create a residential living buffer that extends beyond the property line of the host property.

(District) As part of this Area Structure Plan, a revised Highway Commercial District is proposed for incorporation into the Lac Ste. Anne Land Use Bylaw, as amended. The new district is essentially the same, however, it does include additional details regarding land use and design. The revised district is included as an appendix to this Plan.

3.6) Public Use



The condominium lands within Alberta Beach Estates will not be open to general public access except through agreement with the Condominium Association.

Condominium Associations will establish right of access policies to allow non-condominium residents of Alberta Beach Estates access to the condominium trail network.

Non condominium lands including public parks, roads and the commercial lands will be open for full public access and use.

3.7) The Natural Environment

To minimize impacts on the natural environment, the following criteria shall be followed to ensure that the environmental impact of Alberta Beach Estates is minimized:

(Soils) Development and landscaping will be undertaken in a manner that meets or exceeds Alberta Environment requirements. All disturbed soils will be protected to minimize erosion with the use of silt fences, dust suppression and other methods as determined appropriate.

The condominium association shall discourage the use of chemical pesticides where non-toxic alternatives are available.

(Surface Water & Permaculture)

The sale of top soil from Alberta Beach Estates will be prohibited. Natural pre-development surface water drainage shall be left intact except where no reasonable alternative exists.



Permaculture¹ water harvesting methods will be applied within identified lands within Alberta Beach Estates. Applicable lands will be identified as part of the survey process when building pockets (below) are identified for each lot.

It is anticipated that site specific identification of lands that would be suitable for permaculture will be required as part of the subdivision conditions of approval stage and will be prepared prior to endorsement on a phase by phase basis.



Permaculture areas will be managed as part of the service requirements of the Condominium Association.

(Rain Gardens & Rain Barrels)

Rain gardens and rain barrels will be common structures within Alberta Beach Estates, being installed as part of each residential site as a way to conserve and reduce potable water use.

Snow and excess rainfall will be stored within constructed rain gardens when not directed to approved storm water discharge areas.

Rain gardens will be used to support the storage of surface water and to provide watering for plants, shrubs and lawns. Excess water will be dispersed from the rain garden to the near surface aquifer to recharge the water table. Rain barrels or other similar forms of storage will be part of the housing design within Alberta beach Estates. Water from this source will

generally be collected from roof eaves.

(Building Pockets) Building pockets will be determined as part of the survey stage and will be required upon endorsement of a subdivision approval. Building pockets will be designed to accommodate all structures that require a foundation for construction as well as accessory structures.



Structures designed for residential occupancy shall include an orientation plan to maximize the sunshine and view exposure attributes of the site.

(Groundwater) As a piped water service is planned for Alberta Beach Estates, a potable groundwater evaluation in accordance with Section 23 of the Alberta Water Act was not undertaken.

(Ecology) The following features and standards will be applied to benefit the ecology of Alberta Beach Estates:

- grasses to be planted on common, other park lands or in areas restricted to development within private lands will be native and/or common to the area,
- development within environmentally sensitive areas will be done in a manner that minimizes impacts on the natural environment, and
- fences that would be a barrier to wildlife movements will be prohibited within park areas except where required for protection of critical infrastructure.

(Trail Networks) An extensive trail network consisting of more than 7.7 km (4.75 mi.) of trails will be part of Alberta Beach Estates. This will include trails along roadways, on common lands, conservation lands, municipal reserves and the ATCO pipeline right of way. Trails will be generally uniform in design, though



not in surfacing. Trails will be a minimum width of 1.5 metres (4.9 ft.) and will be designed in accordance with County and developer standards.

Trail networks are described on Map No. 10: Trails & Amenities.



Within the traditional country residential and affordable housing area trails will be surfaced with permeable material such as wood chips, mulch or gravel. Steeper grades will be allowed within this area.

Within the adult only area trails will be hard surfaced and will feature rest areas such as benches. Slopes will be reduced to minor grades.



Within the supportive living area grades will be very gentle and rest areas will be closer together. All trails will be hard surfaced.

Trails connecting the supportive living area to the live-work and highway commercial lands will be developed to a standard equivalent to the supportive living area. This will facilitate travel between the supportive living and commercial lands within Alberta Beach Estates.

(Conservation Lands) Conservation Lands are to be left in their natural state except for where a storm water facility is required or for trail development. Habitat management and fire hazard control may be undertaken pursuant to agreement with Lac Ste. Anne County and/or Alberta Sustainable Resources.

(Agricultural Areas) None of the proposed land will be left in an agricultural state upon development. Grazing may take place on land within undeveloped phases.

3.8) Parks & Reserves

Parkland will be provided within Alberta Beach Estates through four different applications. These include a mixture of environmental reserves, municipal reserves, environmental conservation easements and common land identified for recreational use.

(Environmental Reserves)



Environmental reserves will normally be allocated on land that is subject to intermittent surface water and for buffer strips around ponds that are developed for storm water purposes.

In the case of Alberta Beach Estates, land that would normally qualify as Environmental Reserve will be instead included as part of several conservation areas. Areas that qualify as Environmental Reserve will be identified through agreement and be protected through a combination of environmental reserve easements and/or environmental conservation easements.

A total of 10.8 ha. (26.7 ac.) of land within Alberta Beach Estates has been identified through near surface water table and biophysical analysis as meeting the criteria for environmental reserve.

(Municipal Reserves)



Four large areas have been identified for municipal reserve as provided for within the Municipal Government Act and the Lac Ste. Anne County Municipal Development Plan.

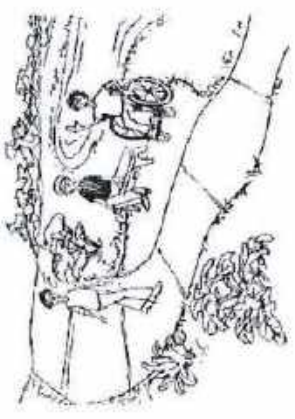
Municipal Reserve (MR-1) will be an approximately 2.65 ha. (6.5 ac.) lot adjoining the live/work area. Public access will be obtained via Larnie Lane Road.

Lot (MR-2) will have an approximate area of 2.9 ha. (7.2 ac.) and will be located east of the independent adult neighbourhood called Spring

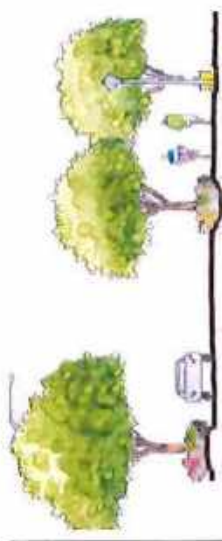


Trail System & Design Details

Typical Rest Station



Typical Trail along Road Alignment



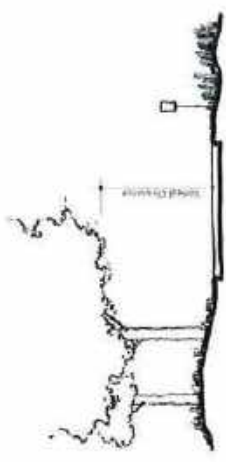
Typical Trail Amenities



Pet Station & Signage



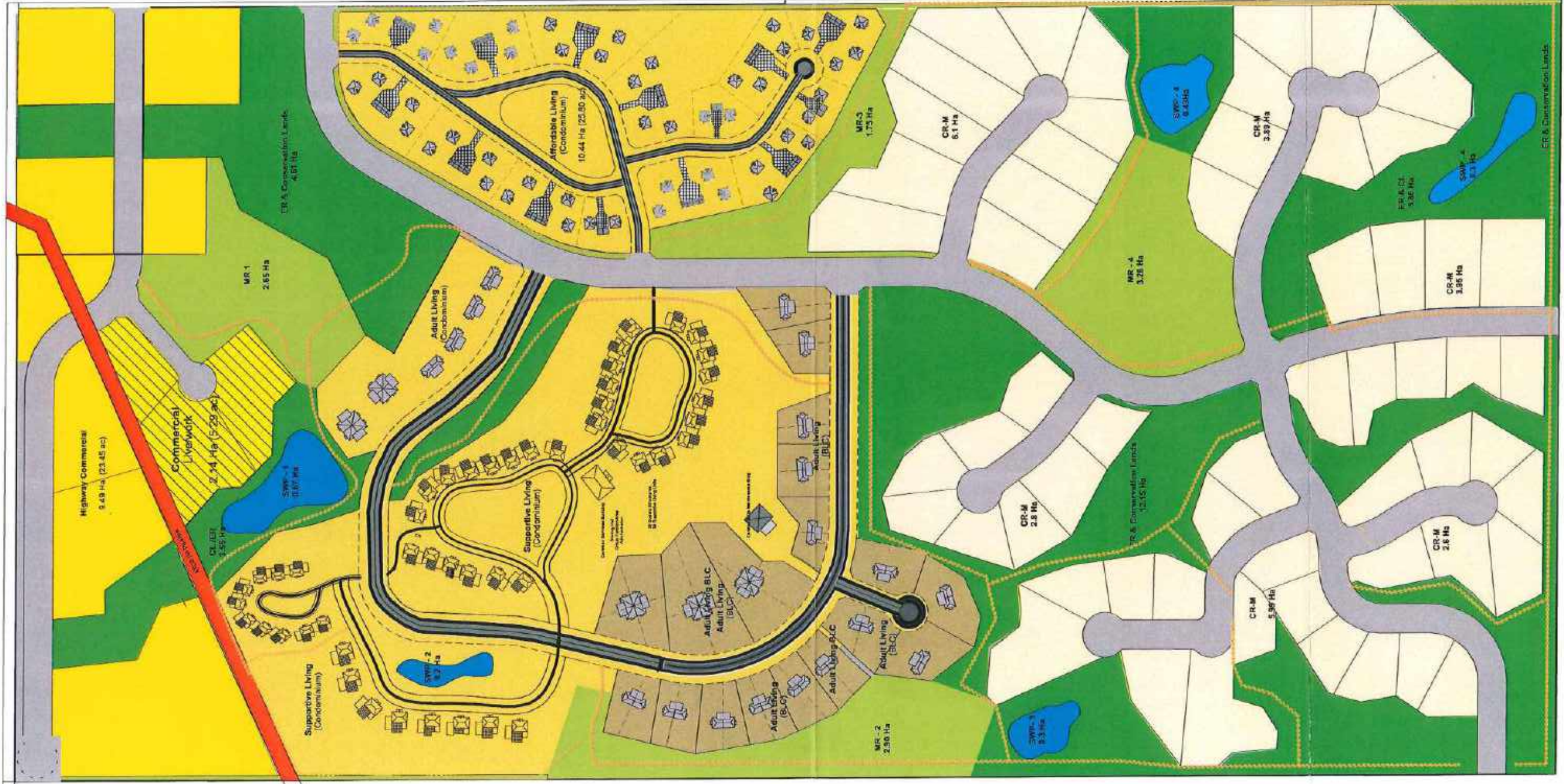
Typical Trail Design



Typical Trail Profile



Proposed Trail Alignment



ALBERTA BEACH ESTATES

Trails & Amenities Plan

E1/2-11-54-3-W5

Lac Ste County



undeveloped. It is possible that development on the adjoining west quarter-section may tie into this trail network in the future.

Lot (MR-3) is an approximately 1.75 ha. (4.3 ac.) lot located south of the affordable living area. Other than trails and accessory structures, no development is planned for this area.

Lot (MR-4) is an approximately 3.28 hectare (8.1 ac.) lot located in the heart of the traditional country residential area. This land may be developed for recreational use in the future.

(Conservation Areas) A total of 23.3 ha. (57.5 ac.) of land has been identified for environmental conservation, allocated in seven (7) parcels. Each property description is followed by a table that describes the portion of the property that is allocated for storm ponds and environmental conservation. Where no table is provided the entire property is identified for environmental conservation purposes.



North:
In the north portion of Alberta Beach Estates two properties will be created for conservation purposes.

Lot 2CL will be located between the Independent Adult lands north to Highway No. 633. The property will include the wet-pond storm water facility, dry hydrant and part of the trail network.

CL*	Area (ha./ac.)	
Pond	0.67	1.7
Dry Hydrant	0.04	0.1

Lot 1CL will be located in the northeast portion of Alberta Beach Estates with an area of 4.61

hectares (11.4 ac.), extending between the Independent Adult area and Range Road 31/Hwy. #633.

No ponds or development other than trails are planned for this area.

Supportive Living Area:

Within the supportive living area of Alberta Beach Estates a parcel will be created for conservation purposes.

3CL is a narrow strip of land bounded by Dora Boulevard on the north with a typical width of about 45 metres (148 ft.). Other than a trail, the entire area will be subject to protection of the nature of an environmental reserve property.

Traditional Country Residential Area:

Within the traditional country residential area five (5) areas are planned for environmental conservation.

Lot 5CL is located within the west portion of the area and features a dry storm water pond as the primary man-made feature. A network of trails is also planned for this area.

CL*	Area (ha./ac.)	
Conservation	3.5	8.6
Dry Pond	0.3	0.7

Lot 4CL has an area of 12.15 ha. (30 ac.) and is located within the north central portion of the area and features no development other than a trail network.

Lot 8CL has an area of 2.7 ha. (6.7 ac.) and is located within the southwest portion of the area

and features no development other than a trail network.

Lot 6CL is located within the northeast portion of the area and includes a dry pond and a portion of the trail network. The property is accessed through the undeveloped road allowance (Range Road 31) and Municipal Reserve Lot MR-4.

CL*	Area (ha./ac.)	
Conservation	0.76	1.9
Dry Pond	0.43	1.1

Lot 7CL is located within the southeast portion of the area and includes a dry pond and a portion of the trail network.

CL*	Area (ha./ac.)	
Conservation	5.8	14.4
Dry Pond	0.3	0.74

(Community Reserve) No land has been identified for community reserve purposes as defined within the Municipal Government Act, R.S.A. 2000, as amended.

3.9) Community Services

Public use services will be generally located within Alberta Beach as the nearest urban community. This includes: fire and EMS services, library and schools.

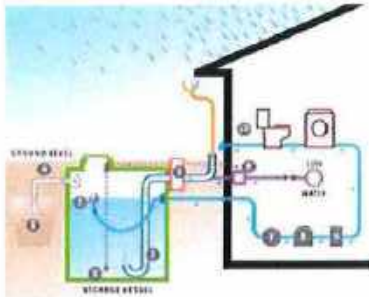
3.10) Servicing Concept

Altime Engineering Ltd. prepared a servicing report for Alberta Beach Estates in August 2010 which has been revised several times since then as changes dictated. The purpose of the brief was to determine general engineering standards for water supply, waste-water collection and transmission and the placement of franchise

utilities.

Solid waste is also discussed in this part of the Alberta Beach Estates Area Structure Plan, though not formally a part of the above-noted servicing brief.

(Water) Potable water supplies are to be provided through a future regional system. A year-round low-pressure piped system is to be installed to all properties within Alberta Beach Estates. The low-pressure "trickle-system" will be designed to provide 2.273 litres/minute (0.5 imperial gallons/minute) which is equivalent to 3,273 litres/day (720 imperial gallons/per day).



A 150mm (5.9 in.) and 75mm (3.0 in.) line has been determined to be an appropriate size for the internal water distribution system within Alberta Beach Estates.

Each home/user with Alberta Beach Estates will have to include a small cistern sized to conform to County and Alberta Environment Standards.

(Waste-water) Similar to the water system, a low-pressure waste-water collection system will be implemented for Alberta Beach Estates.



The system shall include a septic tank at each home or related building. The septic tank will retain solids and greases from the remaining effluent which is pumped (small submersible pump) into the main servicing lines. The community servicing lines will connect to large communal effluent collection tanks located in distribution nodes within Alberta Beach Estates (see below).

(Storm Water) In addition to the storm water report prepared by River Engineering, the Altime Engineering report determined that a series of wet and dry ponds will be used along with bio-swales (grassed road ditches).

Five drainage basins have been identified and are described graphically on Map No. 4: Preliminary Stormwater. Except for the pond located immediately south of the ACTO Gas line in Phase One, the ponds will be dry ponds.

(Wet Pond)



As a wet pond, the wet pond ("Pond D" or "SWP-1") will also feature a dry fire hydrant facility and be useable for seasonal fishing activities, remote controlled boating and other activities. The pond will have an area of approximately 0.67 ha. (1.7 ac.).

To dissuade unauthorized use of the wet-pond, an outer boundary of the wet-pond will have a minimum 6.0 metre width boundary that will be designed with shallow slopes and at a low enough elevation to encourage vegetative growth as a deterrent to swimming. Signage will be placed around the pond as required to warn about the dangers of thin ice and/or swimming.

Finally, an education program will be undertaken by the to be formed Alberta Beach Estates resident association to discourage inappropriate use of the wet-pond.

Direct access to the deeper portion of the wet-pond that includes the dry hydrant and filling facility will be fenced with chain link fencing.

(dry pond)

Four dry ponds are planned for Alberta Beach Estates and will be of varying sizes. The location of each pond is described with the applicable storm water report. Each pond will have County access secured through an agreement registered against the respective certificate of title.

(Franchise Utilities)

Franchise utilities including gas, power and phone will be installed in accordance with municipal and franchise requirements to the property lines of each individual property or

condominium area.

(Waste Management) Solid waste management will consist of normal day to day activities on the part of the landowner as well as the following:

- a minimum 2 bin recycling station will be located within the residential area, likely at the proposed water/waste-water service in the northeast portion of the Plan Area, and
- composting sites on applicable properties.

(Design) As the regional water and waste-water system are not yet in existence, a combination of communal cisterns and holding tanks will be placed at strategic locations (distribution nodes) within Alberta Beach Estates. This will allow for the connection to a regional system when it becomes available. These distribution nodes are described on Map No. 6: Development Concept.

Distribution Nodes:

- 45.5 m³ (10,000 gallon) waste water and potable water tank(s) will be located on public utility lots in various locations within Alberta Beach Estates. It is anticipated that a typical lot size will be 20 x 20_. Final location and lot sizes will be determined as part of the final design process.

At this time it is anticipated that four (4) nodal sites will be required.

All design work will be performed by the Developer at the Developer's cost and in accordance with the standards of Lac Ste. Anne County and Alberta Environment.

(Construction) As with other on-site infrastructure, construction of the water and waste-water systems will be at the cost of the developer. It is anticipated that the provincial license and ownership of the water/waste-water infrastructure not within

private properties will be assumed by Lac Ste. Anne County.

3.11) Traffic Circulation

A traffic Impact Assessment in "draft" form was prepared by Darcy Paulichuk, P. Eng., in 2010 as part of the background information gathering component of Alberta Beach Estates. The assessment includes traffic volumes (existing) from Golden Glen and the relatively undeveloped land to the north on Range. Road 31.

Alberta Beach Estates is a multi-phase development and as such, it is recommended that a multi-phase approach be taken to addressing intersection improvements:

- As part of the first phase, a Type II intersection improvement is recommended,
- Second phase development will require a Type III intersection improvement, likely 4 years into the development, and
- A final Type IV intersection will be required during or following the final phase.

Intersection illumination will be required as part of the Phase II development.

It is important to note that the TIA is assuming that 50% of the Golden Glen traffic is using the Range Road 31 access rather than the access on Range Road 30.

The draft TIA has been submitted for review and comment to Alberta Transportation and Lac Ste. Anne County. Informal comments from Alberta Transportation support the TIA recommendations.

3.12) Population Alberta Beach Estates will be developed with a maximum estimated population of 645 persons with a more typical population of 583 persons.

Due to the nature of the project, it is anticipated that only couples will be initially residing in the adult only and supportive living areas. This raises the population in those areas from a typical of 1.6⁴ persons/home to a full 2.0 persons per home.

The following table provides a maximum and anticipated typical population. The populations are based upon the above mentioned adult only projections as well as the common rural family projection of 2.9 persons/home as provided by Statistics Canada.

Housing Type	Pop/home	#homes	Max pop	Typical pop
Live/work	2.9	6	17	17
Family	2.9	59	171	171
Affordable	2.9	50	145	145
Independent Adult	1.6	58	116	93
Supportive Living	1.6	98	196	157
TOTAL		271	645	583

3.13) Education

As noted earlier in this Plan, a total of 115 residences are planned for family living. None of the remaining lands will have student generation.

On this basis, a total of 62 students are planned for Alberta Beach Estates. Of these 11% of 37 will be elementary and the remaining 7% 25 will be secondary students.

The nearest public schools are located within the Village of Alberta Beach (4 km/2.5 mi.) and the Town of Onoway (13 km/8.25 mi.).

In advance of the submission of this Plan, Northern Gateway Regional School Division was contacted to determine capacity. The Division decided not to respond, but may do so as part of

⁴ Senior's Alberta Factsheet

the formal municipal referral process.

School bus stops are provided on Map No. 6:
Development Concept

3.14) Phasing

Alberta Beach Estates will be developed in multiple phases. Each phase is described below and graphically on Map No. 11: Development Phasing Plan:

Phase I:

- Phase I will consist of the development of Whitewood Drive south to the point of intersection with Harvest Heights (cul-de-sac). The intersection with Harvest Heights will have a temporary turn-a-round constructed until the development of future phases.

Harvest Heights will be developed during this phase to provide access to eleven (11) traditional country residential properties.

Dora Boulevard will be developed from Whitewood Drive northwest to a point that provides access to the storm water pond, dry hydrant, the independent adult area known as Crimson Feather Manors and the northwest portion of the supportive living area. In total, this road extension will provide housing for ten (10) supportive living duplexes, four (4) independent adult living duplexes and two (2) four-plexes. In total, this phase will include sixteen (16) independent adult residences and twenty (20) supportive living residences.

Finally, the development of Whitewood Drive will provide access to the north portion of Crystal Fawn Village, allowing for three properties and a total of twelve (12) residences.

In total, phase I will result in the creation of 59 residences.

The live-work area is discussed separately as at the end of this section.

Phase II:

- Phase II will consist of additional residences to the affordable and supportive living areas.

The addition to the affordable living area will add four (4) four unit and one (1) two unit residential properties to Crystal Fawn Village. This expansion will include the park, development of the park and a second access to Whitewood Drive. This phase will add an additional eighteen (18) residences to the affordable living community.

The supportive living area will also be added to as part of Phase II with the addition of 8 duplex housing structures and on-going park development. In total, an additional sixteen (16) housing units will be developed as part of Phase II.

Phase III:

- Phase III will include expansion in all of the residential neighbourhoods in Alberta Beach Estates.

The traditional country residential area will be expanded with the creation of seventeen (17) residential lots, located along Pioneer Mews and Iron Deer Point.

The affordable housing area will also be



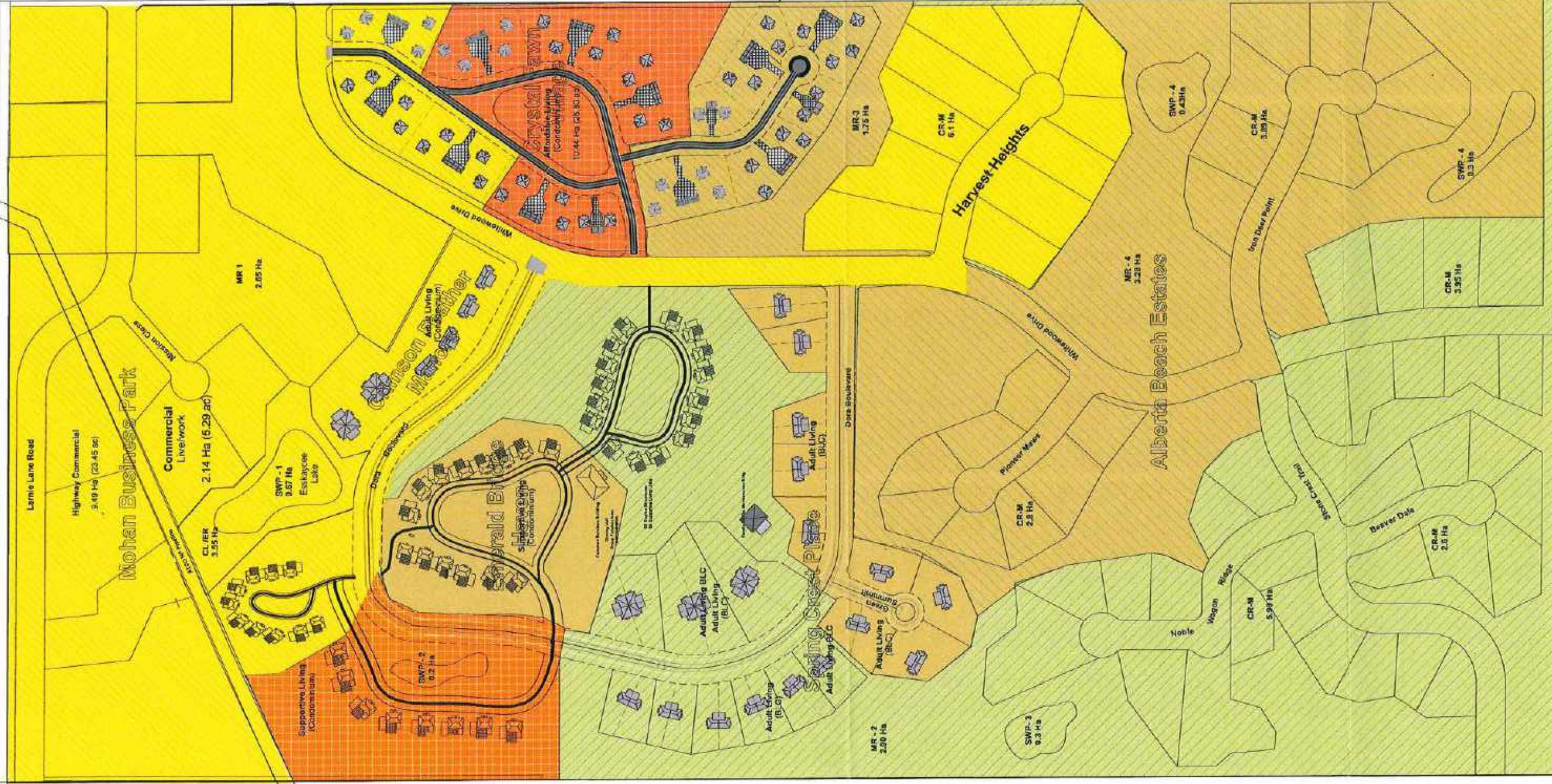
ALBERTA BEACH ESTATES

E1/2-11-54-3-W5
Lac Ste County

Development Phasing Plan

R R 31

S Hwy 633



- Phase 1
- Phase 2
- Phase 3
- Phase 4



Lot/Living Unit Summary

Phase 1 total lots 25
total LU 65
Phase 2 total lots 2
total LU 34
Phase 3 total lots 28
total LU 83
Phase 4 total lots 41
total LU 97
Total Lots = 96
Total Living Units = 289

Phase	Hwy Com. Live Work	Commercial Live Work	2, 3 & 4 plex BLC Adult Living	SF Condo Adult Living	SF Traditional Sd Sid - Service	2, 3 & 4 Plex Condo Adult Living	Duplex Condo Suspensive Living
Phase 1	8/0	3/6		1/12	11/11	1/16	1/20
Phase 2				1/18			1/16
Phase 3			9/18	1/20	17/17		1/28
Phase 4			9/24		31/31		1/32
Totals	8/0	3/6	18/42	3/50	59/59	1/16	4/96

Note: Units shown as No. Lots/Living Units



addition of parkland and 20 houses within six (6) residential lots along Dora Boulevard.

Additional independent adult living space will also be created with the addition of nine (9) additional residential lots including a total of eighteen (18) residences.

Finally, the supportive living area will undergo its third phase of expansion with the development of the central area, including the addition of twenty-eight (28) additional residences, additional park space and the development of permanent maintenance and service facilities.

Phase IV:

Phase IV will be the final development phase of Alberta Beach Estates. Remaining development will include the final portion of the supportive living, independent adult and traditional country residential living. The affordable living area was completed as part of Phase III.

Within Phase IV, the traditional country residential area will be expanded through the development of (31) additional homes. This will include the extension of Whitewood Drive to the south boundary of the Plan Area and the development of Stone Crest Trail to the southwest boundary of the Plan Area. Once these extensions are in place it will be possible to link to development on adjoining quarter-sections. Noble Wagon Ridge and Beaver Dale, both cul-de-sacs, will be developed as part of this Phase.

Independent adult living opportunities will also be expanded as part of Phase IV with the addition of twenty-four (24) houses along Dora Boulevard.

The supportive living area will undergo its final

expansion along with the remaining (32) residences and the final construction of associated secondary use buildings.

Commercial/Live Work:

The commercial/live work area will be treated as part of Phase I, though the on-going development of the roads and services will take place in accordance with market demand. It is noted that this area is independent from the remainder of Alberta Beach Estates.

A detailed description of Alberta Beach Estates on a Phase by Phase Basis is provided below:

Land Allocation	Phase (ha/ac.)				
	I	II	III	IV	Total
	<i>(Lots/Units Created)</i>				
Affordable Housing	12	18	20		50
Commercial	6	0	0	0	6
Conservation Reserves	2	0	3	2	7
Independent Adult Living	16	0	18	24	58
Municipal Reserve	1	0	2	1	4
Public Utility Lots	0	0	0	0	0
Supportive Living	20	16	28	32	96
Traditional Housing (CR)	11	0	17	31	59

Phase	% of Land Base	Population ⁵
I	33	124
II	8	78
III	28	202
IV	31	180
TOTAL	100	584 ⁶

Phase	Population	School Population
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⁵ Adult only residences are based upon 1.6 persons/residence as a long term population rather than the expected 2.0 persons/residence that is expected upon initial occupation.

⁶ Due to rounding area, the total population may differ slightly from population estimates provided in other sections of this Plan.

<i>(non-adult residences)</i>	Elementary	Secondary
I	67	7
II	52	6
III	107	12
IV	90	10
Commercial	17	2

3.15) Community Standards

(County Conditions) It is acknowledged that Lac Ste. Anne County may place conditional requirements within the governing bylaws for Alberta Beach Estates. Alberta Beach Estates accepts County requirements within the said Bylaws that are considered critical by the County to the approval and success of this project.

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PART FOUR: ECOLOGICAL & CONSERVATION STANDARD IMPLEMENTATION

4.1) Preamble Alberta Beach Estates will be developed with due regard to the *Lac Ste. Anne County: Ecological and Conservation: Residential Development Standards*. Features such as senior's housing, parkland and conservation areas, landscape and vegetation plans and finally, a suite of energy efficiency options built around the MagWall structural framing that will be used throughout Alberta Beach Estates.

4.2) Components The following summarizes the various ecological and conservation components that will be implemented as part of Alberta Beach Estates.

(Landscaping plan) Alberta Beach Estates will implement a landscaping plan for all residential homes and some of the park and recreation areas. This includes:



Landscape design plan requirements are provided for in this ASP. Final landscaping plans shall be provided following the survey stage and prior to the commencement of construction of buildings or other chattels on the respective property.

A typical yard layout and landscaping plan for a country residential lot will be provided as part of the subdivision application stage, with the assumption that due to topographical differences from lot to lot that the overall finished landscape plan will vary.

A detailed landscaping plan will be prepared as part of the development stage

for each property with sufficient security provided as part of the development agreement, payable to the applicable condo association or Lac Ste. Anne County.

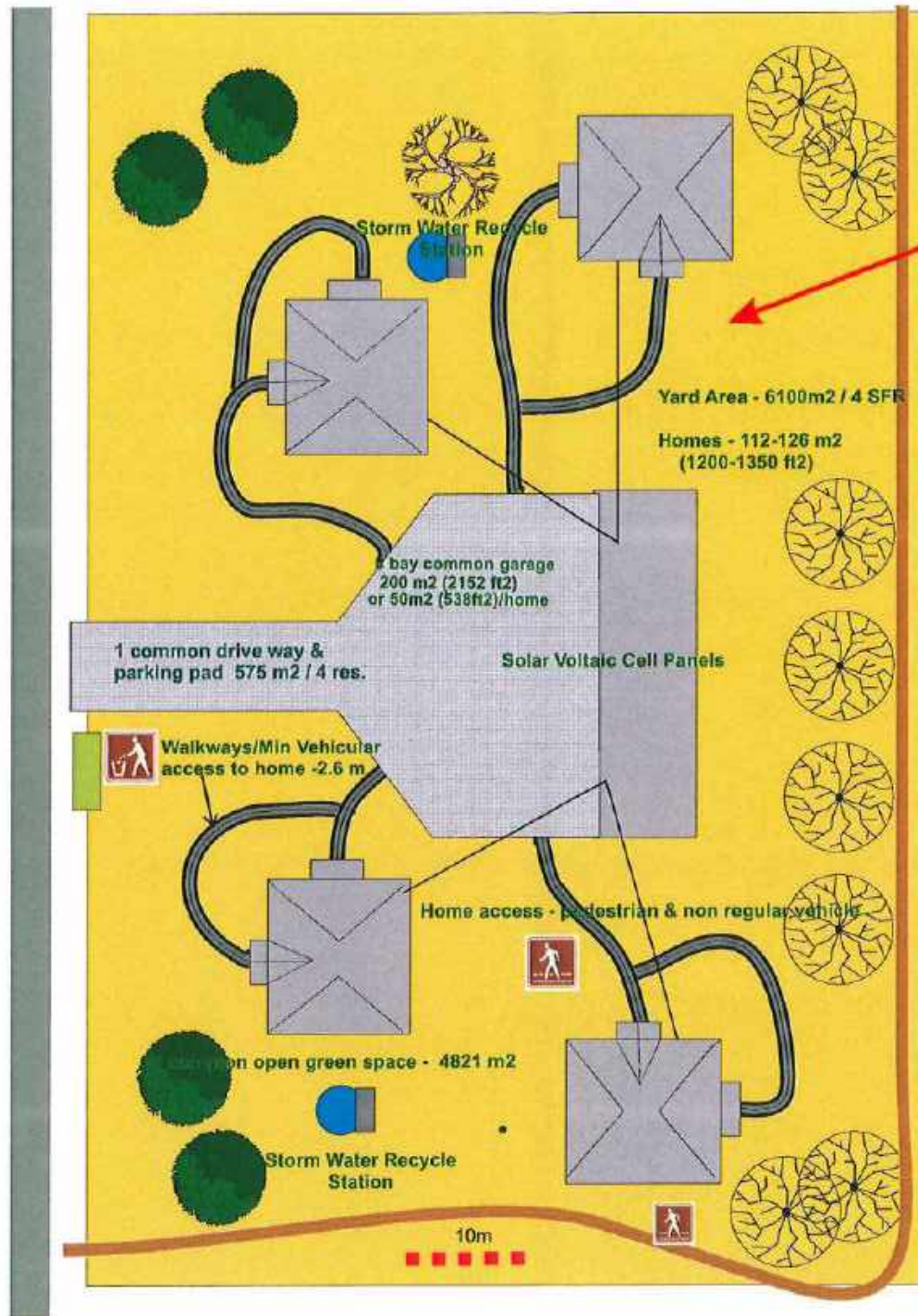
As part of the development permit process, an individual landscaping plan will be prepared for all single detached homes within the country residential neighbourhood. Security for completion of the landscaping plan shall be provided to Lac Ste. Anne County .

Final landscaping plans should include the following:

- survey accurate property boundary,
- accurate plot plan of all buildings, shops, sheds, retaining walls, etc.
- screening such as fences or hedges,
- private yard space,
- open lawns,
- future decks and patios,
- gardens/orchards,
- foundation plantings,
- designated park and forested area,
- water gardens,
- pools,
- designated wildlife spaces and attractions,
- selection of plant species, and
- irrigation systems.

Landscaping plans will be designed with due regard to building pockets. Areas marked as conservation due to steep slopes or other factors shall be maintained in a natural state. Any habitat or vegetative restoration in these areas will be limited to natural species.

Affordable Housing Residential Node Site details

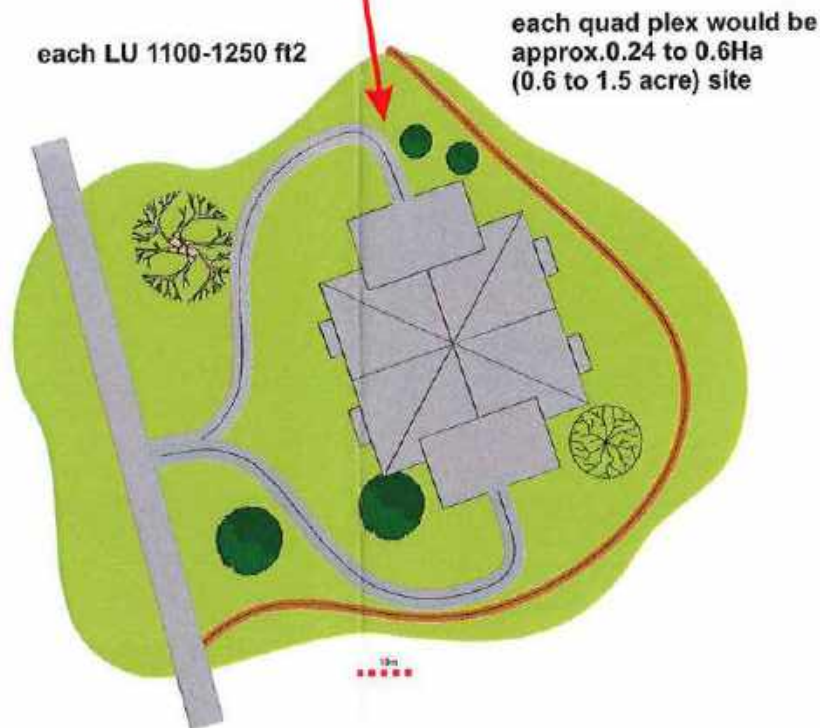


Residences and garage bays would be condominium title
 Common property would include;
 Access, internal roads and paths, amenities, garage structure exterior, landscaping, exterior lighting, solar voltaic system, and geothermal well field

ALBERTA BEACH ESTATES Site Development Details

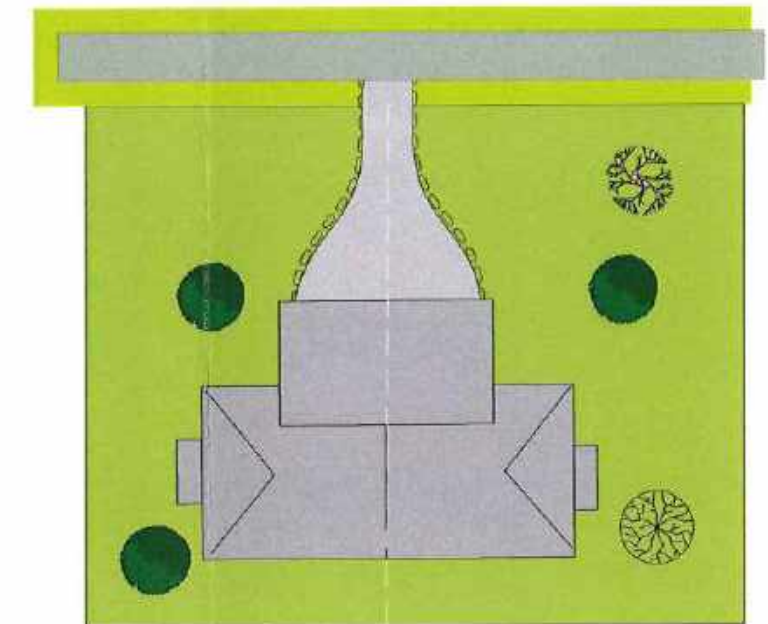
Quad Plex Site

Maintenance could be sub contracted to the Prime Condominium Corporation



Quad-plex - condominium Title
 Common Property - would include;
 defined site, access, internal roads, walks, paths, amenities, landscaping, outdoor lighting, solar voltaic system and Geothermal well field.

Duplex Site



Duplex - condominium Title
 with exclusive use agreement for building site, access and defined yard area



ALBERTA BEACH ESTATES

Infrastructure & Amenities



Typical Internal Road



Typical Internal Road



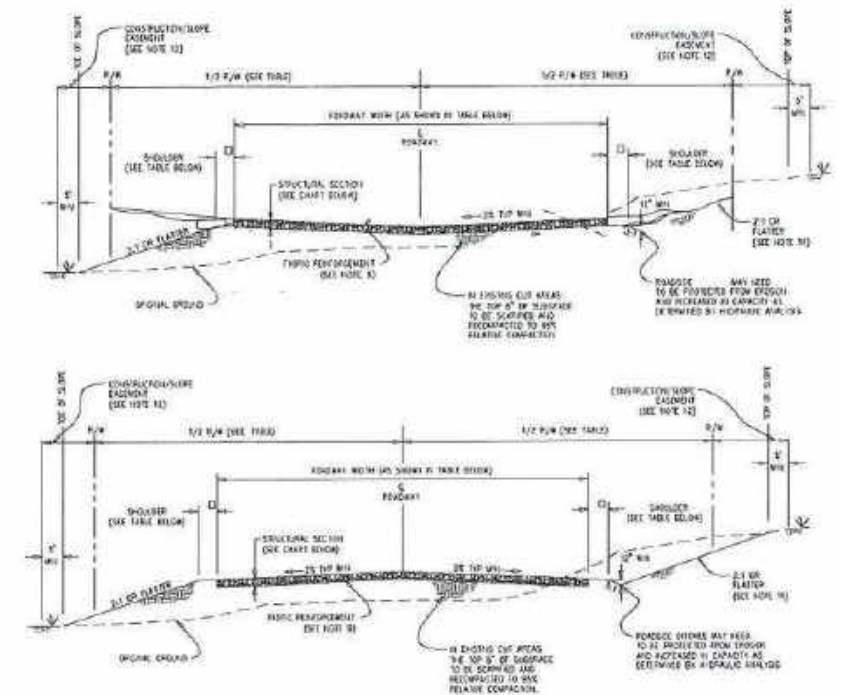
Solar Road & Trail Lighting



Typical Utility & Maintenance Building



Non Impacting Passive Use Trails



School Bus Shelter



Mail Depot Shelters



Solid Waste Stations and Receptacles



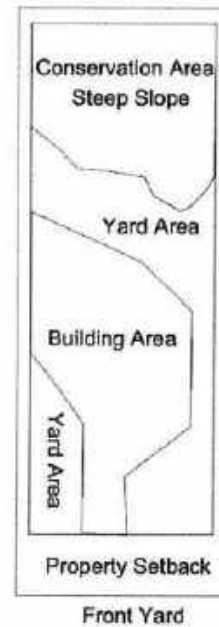
Service Pedestals

ADT	R/W	ROADWAY W/D	SHOULDER W/D	DESIGN SPEED	MAX GRADE	STRUCTURAL SECTION
1-150	32'	20'	1' (EACH SIDE)	20 MPH	15% MAX	4' CLASS 3 AS (SEE NOTE 19)
151-600	30'	20'	2' (EACH SIDE)	25 MPH	12% MAX	4' CLASS 3 AS (SEE NOTE 19)
601-1500	30'	30'	5' (EACH SIDE)	40 MPH	10% MAX	4' AC ON 7" AG
1501-2000	30'	32'	6' (EACH SIDE)	40 MPH	10% MAX	4' AC ON 8" AG

Typical Road Cross - Sections



(Building Pockets) All residential lots shall have an assigned building pocket. The building pocket shall include:



- Lac Ste. Anne County designated property line setbacks,
- Designated:
 - main and secondary building sites,
 - geo-exchange service areas,
 - driveways,
 - utility lines,
 - holding tank location,

A building pocket will be provided by the Developer as a component of the survey stage of development and shall be a condition of subdivision approval.

Other than what is expressly allowed within a landscaping plan, development within a conservation area will be limited to what is deemed necessary to protect personal property (i.e., slope stabilization).

(On-Site Energy) Alberta Beach Estates will include as part of the energy package:

Geo-exchange:

- geo-exchange heating for all major buildings within the residential areas of the project,
- use of geo-exchange heating in commercial areas where appropriate,

Photo-voltaic:

- Photo-voltaic energy will be applied in all residences and in most secondary residential buildings such as garages.
- Photo-voltaic will be applied where appropriate in commercial areas,

All photo-voltaic panels will be mounted onto roof structures.

The necessary permits/approvals will be obtained at the time of installation to allow for the sale of electrical-power onto the grid.

Solar-thermal:

- solar-thermal energy to produce hot water will be installed where appropriate within the commercial area of Alberta Beach Estates.

Wind Energy:

- Where appropriate and applicable to the business, wind-power will be installed within the commercial area.
- Windmills for pond-aerations are not included as part of the alternative energy infrastructure of Alberta Beach Estates.

(Built Green Standard) Main and secondary buildings such as garages will be built to a build-green rating standard with a minimum "Bronze" rating.

*Note: Though a single development credit is being claimed under Built Green for Bronze status, it is anticipated that a higher Built Green rating will be achieved.

(Communal Waste Water) Alberta Beach Estates will include a fully piped waste water system throughout the residential and commercial areas. It is anticipated that that the internal sewage system will connect to a regional system in the future.

(Communal Water) Like waste-water, a piped potable water system will be in place throughout Alberta Beach Estates. It is anticipated that the water system will connect to a regional system in the future.

(Outdoor Lighting) Street lights will be designed to minimize energy use and pollution.

(Vegetation Plan) Generalized vegetation plans will be prepared for all properties as a component of the subdivision process.

Detailed vegetative plans will be prepared as part of the development phase.

An overall vegetative plan for common/park lands will be prepared as part of the subdivision process. Areas that are in need of additional vegetation will be identified and addressed. Parkland that is to be developed will be vegetated as part of the development phase.

It is recommended that a vegetative plan be a condition of the applicable approval (subdivision/development) for the given development area.

(Biophysical) A bio-physical report has been prepared as part of this ASP (associated document). Further this Plan has been prepared with due consideration of sensitive wildlife and vegetation areas identified in the report and the design and development recommendations contained therein.

(Building Orientation) Due to the solar component of the project as well as a desire to maximize the amount of natural light and solar energy into buildings, orientation will be a key factor.

Building orientation will also address critical viewing opportunities of Lac Ste. Anne and other natural features.

General building orientation guidelines will be provided as part of the subdivision process and included with the building

pocket diagrams provided for each developable lot. General written guidelines include:

- solar panels facing true south, and
- natural areas or scenic views.

(Park Reserve Transfer) No park reserve is to be transferred as part of Alberta Beach Estates.

(Dedication of Parkland) Parkland dedication will include a dedication of 10.98 ha. (27.13 ac.) of parkland in the form of Municipal Reserve. No development credits are claimed for additional parkland dedication.

(Senior/Handicapped Housing) All supportive living homes and 10% of adult living homes will be developed in an access friendly manner.

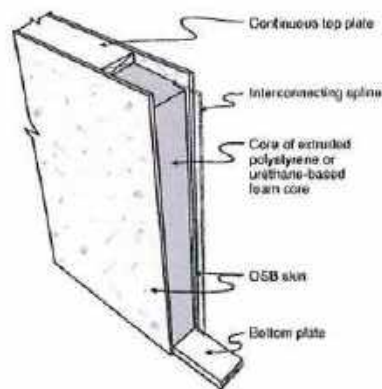
(Re-cycled Materials) Recycled materials will be used in driveways, some condominium roads and hard surfacing of trails within the supportive living area.

(Other) Alberta Beach Estates will feature in all construction of major buildings the *MagWall* Building System.

The MagWall system is a SIP (Structural Insulated Panel) that is manufactured in Alberta that is both durable and energy efficient:

- up to 60% utility expense reduction,
- allows for smaller furnaces and air conditioners,
- better sound proofing,
- high fire & heat resistance, and
- provides for a healthier living environment.

MagWall will be tested initially in a show home to be constructed within Alberta



Beach Estates.

It is anticipated that the single largest energy efficiency component applied within Alberta Beach Estates will be the MagWall construction panel.

Figure No. 3: Ecological Points Allocation

AREA FOOTPRINT UNDEVELOPED AREA #UNITS	Points	CR	Supportive Affordable Adult Live-Work				
			Supportive	Affordable	Adult	Live-Work	
LANDSCAPING PLAN	1		1	1	1	1	6
BUILDING POCKETS	1		1	1	1	1	
ON-SITE ENERGY	3		3	3	3	3	3
BUILT GREEN STANDARD	4		1	1	1	1	3
COMMUNAL WASTE WATER	3		3	3	3	3	3
COMMUNAL WATER	3		3	3	3	3	3
OUTDOOR LIGHTING	1		1	1	1	1	1
VEGETATION PLAN	2		1	1	1	1	1
BIOPHYSICAL	2		2	2	2	2	2
BUILDING ORIENTATION	2		2	2	2	2	2
PARK RESERVE TRANSFER	1/4 ha.						
DEDICATION OF PARKLAND	1/4 ha.						
SENIOR/HANDICAPPED	4		4	4	4	4	4
RE-CYCLED MATERIALS	1						
OTHER	*						
Total Points Earned:			18	22	18	22	15

PART FIVE: IMPLEMENTATION

5.1) Approval Process

This Area Structure Plan as well as supporting Bylaw amendments to both the Municipal Development Plan and Land Use Bylaw for Lac Ste. Anne County will be undertaken in accordance with the provisions of Part 17 of the Municipal Government Act, R.S.A. 2000, as amendment, and the requirements of Lac Ste. Anne County.

It is understood that as part of the approval process, a formal public hearing will be held for each respective Bylaw amendment and for the adoption of this Plan.

The approval process will begin with regular consultation with Lac Ste. Anne County Planning Staff, the Alberta Beach area municipalities, affected agencies and the general public.

5.2) Review Process

The Alberta Beach Estates Area Structure Plan will be subject to a full review as part of the original adoption process. This will include, but not necessarily be limited to:



School Bus Shelter



Mail Depot Shelters

- consultation with Lac Ste. Anne County Administration and Council,
- consultation with the nearby municipalities of the Village of Alberta Beach and the Summer Villages of Sunset Point and Val Quentin,
- consultation with affected agencies such as Canada Post, School Authorities and Emergency Medical Service providers, and
- consultation with interested members of the public through public open houses and the adoption process.

Upon adoption, the Alberta Beach Estates Area Structure Plan may be reviewed as required, but in particular upon one or more of the following conditions:

- the development of a new energy saving technology not contemplated under this plan, or
- the realization or abandonment of a regional water and waste-water system.

5.3) Alberta Beach Regional IDP Amendment

The Alberta Beach Regional Inter-municipal Development Plan (IDP) will have to be amended to accommodate Alberta Beach Estates. The nature of the amendment will be based upon the following:

- that the north 400 metres of E1/2-11-54-3-5 and Plan# 102-4139 be amended from "*Future Development Area*" to "*Commercial/Industrial and Residential*" with the areas in accordance with what is proposed within this Plan, and
- that Section 3.5.2(c) be amended to allow for fronting service roads where it is impractical to follow the off-set standard put forward in the IDP.

It is the position of Alberta Beach Estates that the proposed amendments will not adversely impact other areas within the IDP.

The full application to amend the Alberta Beach Regional Inter-municipal Development Plan is provided as an appendix to this Plan.

5.4) Municipal Development Plan Amendments

The Lac Ste. Anne County Municipal Development Plan will also have to be amended in order to accommodate Alberta Beach Estates. The amendment is attached as an appendix to this Plan and includes the following provisions:

- policy and definitions for senior's, supportive living, independent adult living and affordable housing,

5.5) Proposed Land Use District

A country residential direct control district is proposed for the residential portion of Alberta Beach Estates while the commercial area is intended to be districted to an amended to the proposed "*Rural Commercial District*".

Each proposed land use district is provided as an appendix to this Plan.

5.6) Compliance Process

A combination of restrictive covenants, condominium bylaws, security and conditions on municipal approvals will be applied to ensure compliance with this Plan.

Details on which requirements will be the responsibility of the developer, condominium association or landowner and which will be applied to Lac Ste. Anne County will be determined on an on-going basis.

APPENDICIES TO THE PLAN

APPENDICIES TO THIS PLAN OTHER THAN APPENDIX: "F"; ENDNOTES:
ARE NOT PART OF THE FORMAL BYLAW TO THIS PLAN AND ARE
INCLUDED FOR INFORMATION PURPOSES ONLY.

**APPENDIX "A": STATUTORY PLAN AND BYLAW
CONSIDERATIONS**

A1: General

Amendments to the following Statutory Plans and Bylaws are required as part of the implementation process to allow for the success of this Plan. This includes:

- Alberta Beach Regional Inter-municipal Plan,
- Lac Ste. Anne County Municipal Development Plan, and the
- Lac Ste. Anne County Land Use Bylaw.

A brief description of conflicts with the above-noted plans is provided in Part I of the Alberta Beach Estates Area Structure Plan. A detailed description of each identified conflict, proposed mitigation measures and reasoning in support of the proposal is provided below:

A2: Summary

Alberta Beach Regional Inter-Municipal Development Plan

A review of the *Alberta Beach Regional Inter-Municipal Development Plan (IDP)* has identified the following areas that will require amendment:

(Future Land Use) Figure No. 5: Future Land Use:

The north 400 metres of NE11-54-3-5 is designated as a "Future Development Area".

- It is proposed that the IDP be amended to accommodate Alberta Beach Estates rather than excepting the subject land out of the IDP. This can be accomplished by amending the land use designation of the lands as follows:
 - The commercial area of Alberta

ALBERTA BEACH ESTATES

- Beach Estates to be designated for commercial / industrial use, and
- o The remainder of Alberta Beach Estates to be designated to Residential.

This recommendation is based upon the following reasoning:

- The Alberta Beach Estates area will have a tie to the greater Alberta Beach community,
- Policy directions in this ASP will link with recreational and commercial strategies described in the Inter-municipal Development Plan, and
- Member municipalities within the IDP may delegate approval authority to Lac Ste. Anne County should they wish to do so while maintaining conformity to this Plan.

(Service Roads) Policy 3.4: (a) Service Roads

The policy requires land south of Highway No. 633 to be developed to a rural residential standard and to utilize an internal road network without a highway fronting service road.

The current wording of Policy 3.4(a) is as follows:

- a) *Land south of Highway No. 633 is to be developed to a rural residential standard. All lands shall be developed with an internal road network that does not require a service road adjoining the highway. Land required for intersection improvements shall be reserved as part of any subdivision adjoining Highway No. 633.*

It is proposed that the wording be amended to read as follows:

- a) Land south of Highway No. 633 is to be developed to a rural residential standard. All lands shall be developed with an internal road network that does not require a service road adjoining the highway *except where impractical due to environmental or physical constraints*. Land required for intersection improvements shall be reserved as part of any subdivision adjoining Highway No. 633.

This recommendation is based upon the following reasoning:

- The ATCO pipeline requires a perpendicular crossing. This requires an "s" curve. Designing the commercial area to have a non-fronting service road throughout the commercial area would have resulted in a much greater amount of land required for commercial purposes as the road would have had to go much further south. This would have had the added impact of encroaching into an environmentally sensitive area that is better reserved for park purposes.
- A second ravine extends along the west boundary at the northwest corner of the site. Having a crossing of this ravine adjoining the Highway No. 633 crossing will not create a separate disturbance area along this ravine.

Lac Ste. Anne Municipal Development Plan

A review of the *Lac Ste. Anne County Municipal Development Plan (MDP)* has identified the following areas that will require amendment or discussion:

(Policy 3.4.8.b&c) Servicing:

- (b) *Require a minimum lot area of 0.3 ha, (0.75 acres) for serviced lots within country residential areas.*
- (c) *Smaller lot areas may be considered within Bare-Land condominiums that utilize a natural feature such as a recreational lake or river valley as an integral part of the development.*

It is proposed that the adult and supportive living residential areas be permitted under policy 3.4.8.c) and the new policy that is proposed for adult and supportive living as described below:

(adult only) **Independent Adult Living:**

It is proposed that a new section be added to the MDP that addresses a growing demand for adult only living areas in rural Alberta.

Basis:

"Independent Adult Living" in this Area Structure Plan is a reference to a community where there are no children. Otherwise known as "empty nesters", independent adults often feature the children having moved away from home and some may reside in the area only on a seasonal basis.

Independent Adults, especially in rural areas, do not require as large a lot as families for day to day living. There is no need for playgrounds and other facilities that are normally associated with family life. Children may be present, but only as visitors to the community. School bussing will not be required.

Recreational development or adult only rural living will be more passive than family communities and will include features such as walking trails, wildlife viewing and social amenities.

Currently, Lac Ste. Anne County does not provide a land use classification for independent adults. The following describes a proposal for an independent adult living land use that could be incorporated into rural land use districts as required.

Proposal:

It is proposed that an adult living land use known as "Independent Adult" be added to the Lac Ste. Anne Municipal Development Plan and Land Use Bylaw. The land use will be developed on the following principles:

- Bungalow or duplex design with no basement to minimize stairs increase accessibility for mobility challenged people,
- Hard surfaced trails to allow for wheelchair access. Trails will be designed and be sloped with the independent adult in mind,
- Extensive recreational area for features such as rock gardens, gazebo and permaculture areas,
- An open space to development ratio of 2:1⁷ to provide a rural atmosphere,
- Smaller lots with a minimum of 0.2 hectares (0.5 acres),
- All homes to be wheelchair accessible,
- All homes to be fully serviced with both piped water and sewer, and
- Capability to have an association or

⁷ Open space in this context includes undeveloped portions of privately owned properties.

society look after homes when residents are absent for extended periods of time.

A more detailed description and sample implementation bylaws are provided as part of the appendices to this document.

(supportive living) **Supportive Living:**

Basis:

Supportive Living is a residential lifestyle that it is still in its development stages in Alberta, as evidenced by the recent licensing legislation, the *Supportive Living Accommodation and Licensing Act, S.A., 2009*, as amended.

Typically, supportive living developments take place in urban communities and are publicly funded and managed. The last few years has seen the entry of the private sector into the supportive living residential market.

To date, there has not been a widespread development of supportive living housing in rural Alberta. Alberta Beach Estates may be unique in this offering.

The following proposal provides a framework for supportive living development within Lac Ste. Anne County.

Proposal:

It is proposed that the Municipal Development Plan and Land Use Bylaw be amended as required to accommodate supportive living in the housing mix for both rural and urban areas. Supportive living in Lac Ste. Anne County would be based upon the following:

- supportive living may be developed as stand-alone , duplex or housing style single storey residences or as an

apartment style complex.

- Emergency services have to be provided to a high standard, including direct and reasonable ambulance and fire service access to the site.
- In rural areas, on-site fire fighting water supply must be available.
- The development must be fully serviced with both water and sewer.
- An extensive park system for viewing and recreation services must be available with a minimum 3:1 ratio of park land to development.
- On-site meeting rooms for medical related purposes if not readily available in close proximity.

A more detailed description and sample implementation bylaws are provided as part of the appendices to this document.

(affordable housing) **Affordable Housing:**

Basis:

Privately provided affordable housing is another feature of Alberta Beach Estates that will be unique in Lac Ste. Anne County. Generally, affordable housing is housing that does not require more than 30% of the family income for housing costs. Though it may remain debatable whether or not this would fit with the idea of "affordable", it is a step forward in providing living options to this demographic.

Implementation:

Affordable housing may take the form of rental or ownership. Typically, affordable housing

means a larger municipal government. Often, the affordable housing development is controlled by the municipal government with the owner of the home being required to provide tax documentation each year to the municipality in order to continue renting. In the case of ownership, the prospective owner is required to show tax information to the municipal government in order to qualify for ownership.

For the private sector, the municipality needs assurances that the affordable house will be rented or sold to the market for which it was intended. As an alternative to local government, it is recommended that a private sector solution be implemented with the municipal role being reduced to an auditing process. This is discussed in more detail below:

Proposal:

It is proposed that affordable housing be added to the range of residential land uses within both the Municipal Development Plan and Land Use Bylaw.

Some of the more common elements of an affordable house will include:

- Smaller lots with lots as small as 0.2 hectares (0.5 ac.) in rural areas and frontages as small as 10 metres (32.8 ft.) in urban areas,
- With a condominium or an operating organization such as a community association or foundation,
- A minimum floor area of 74.3 m² (800 ft²),
- Multi-unit buildings with shared garages and yard spaces.
- A management foundation/association to

maintain compliance with the affordable housing status on future rentals and/or sales with annual or as required auditing by Lac Ste. Anne County.

Compliance:

It is proposed that an approved association/foundation or condominium board be tasked with the responsibility of ensuring compliance with the

LAND USE BYLAW

A review of the *Lac Ste. Anne County Land Use Bylaw (LUB)* has identified the following areas that will require amendment or discussion:

(re-districting) As part of the implementation of Alberta Beach Estates, the land will have to be re-districted (re-zoned) from its current agricultural district to:

- Country Residential (CR1) District for those lands that are not-commercial, and
- Rural Commercial (R-Com) District for the commercial lands fronting Highway No. 633.

The rural commercial designation is to be under a new district that has been templated on the existing Highway Development District.

The country residential designation is based upon the template of many other country residential subdivisions created in Lac Ste. Anne County.

(housing) Other than traditional country residential housing, none of the housing types proposed in this Plan are defined within the current land use bylaw. To complement the policy directions proposed for the

municipal development plan, the following regulatory measures are proposed for the land use bylaw to implement the policy directions for affordable, independent living and supportive living residential use:

- rural and urban standards for density, amenity space and secondary uses,
- property line setback criteria and minimum floor area,
- servicing standards, and
- compliance standards.

(definitions) In addition to the above, it is proposed that formal bylaw definitions be added for condominium maintenance building and common services building as these are not defined within the current bylaw.

APPENDIX "B": Housing Types

Affordable Housing:

Generally, affordable housing is housing that is either for rental, ownership or both purposes and the cost of the housing including all related expenses such as taxes, utilities and mortgage costs is no more than 30% of the gross annual family income for the subject area.

To calculate the affordable housing value within Alberta, the following methodology and information sources was used:

- Statistics Canada Part A Census Data
 - Median income (2009): \$83,560
 - Median After Tax (2006): \$70,500

Consumer Price Index for Alberta:

YEAR	% CHANGE	MEDIAN INCOME ⁸
2010	1.0	83,560
2011 ⁹	2.22	85,415

* <http://www40.statcan.gc.ca/101/cst01/econ09j-eng.htm>

- Energy Usage
 - Average residential size in Alberta is 127.9 m² (1377 ft²)
 - Average residential energy usage is 109gj
 - 44% of energy usage is natural gas (48gj):
 - 8% of energy usage is electricity (41 gj)

Lac Ste. Anne County is generally serviced by gas co-ops which provide flat rate consumption for gas up to a cap, with per gj energy charges after that point. This does not lend itself well to affordable housing comparisons, so Direct Energy (www.DirectEnergy.com) rates are used, for the sole reason that their web-site tools were easy to use for this purpose.

Though there are a number of providers with access to Lac Ste. Anne County, Enmax (www.enmax.com) was used for affordable housing calculations for the sole reason that their web-site tools were easy to use for this purpose.

⁸ \$83,560

⁹ Estimate for 2011 based upon previous four year average.

- o Annual Natural Gas Costs: \$1,209/year
- o Annual Electrical Costs: \$1,086/year

Estimated 2010 Energy Costs: \$2,295. Note that this may not include all fees and tariffs that are typically added to utility bills.

- Mortgage Rates: (5% down at 5 year fixed rate)
- Lac Ste. Anne County Mill Rate (2010): 11.2845
- Built Green Standards: It is estimated (see attached) that the application of the Bronze standard under Canada Built Green the utility bill for a typical residential property within Alberta Beach Estates will be reduced to 50% of a conventional home.

Affordable Housing Calculation:

The area medium salary was adjusted upwards from 2009 figures by using the Alberta Consumer Price Index. Using the mill rate, typical energy costs and the adjusted medium salary, it was determined that on a standard 5 year fixed rate mortgage that an affordability price for the Alberta Beach area of Lac Ste. Anne County would be approximately: \$310,000.

Supportive Living:

Supportive Living Residential development is a reaction to an ever-increasing senior population in Alberta that is still generally able bodied, but unable to cope with all aspects of home ownership and maintenance. Historically, supportive living developments have been centered in larger urban areas when it is private sector sponsored, or restricted to urban communities when it is foundation or otherwise publicly sponsored.

Though this is not an issue with most Albertan's, it does pose a problem for rural residents who have no desire or comfort level in leaving the rural life for an urban apartment style supportive living environment.

Within Lac Ste. Anne County the main provider of supportive living type housing is the Lac Ste. Anne Foundation. Housing complexes in the

surrounding area include locations in Town of Onoway and the Hamlets of Gunn and Darwell.

Urban supportive living residences are often apartment style multi-floor complexes with very little outdoor amenities due to the constraints of urban living.

The goal of the application for Supportive Living in Alberta Beach Estates is to provide the rural part of Lac Ste. Anne County and area with an alternative to the apartment style urban living that is almost exclusively offered. This goal is realized through the following:

- A lake for wildlife viewing,
- Trails and view benches,
- A rural lifestyle with urban services.

Independent Adult Housing:

Independent adult residential living is also a type of housing that is common to urban areas and is generally without a rural application. As part of Alberta Beach Estates, a template has been prepared for independent adult living.

Features of this template in a rural setting include:

- incorporation of Lac Ste. Anne County Ecological and Conservation Residential Development Standards Policy no. [REDACTED],
- bungalow or single floor duplex design without a basement,
- hard surfaced trails within the site,
- an open space/structural development area ratio of 2:1¹⁰,
- open structural design, and
- wheelchair accessible.

Services within an independent adult living area include yard maintenance, transportation and home visits when the occupant is away for extended periods of time.

¹⁰ development area includes the building and roadway footprint of the site. Open space includes parks and undeveloped areas of privately owned properties.

APPENDIX "C": DRAFT BYLAWS

**LAC STE. ANNE COUNTY
PROVINCE OF ALBERTA
BYLAW # ____-2011**

A BYLAW TO CONTROL LAND USE.

WHEREAS, under the provisions of the Municipal Government Act, being Chapter M-26.1, Division 5 and Section 692(1)(d) of the Revised Statutes of Alberta 2000 R.S.A., a municipality may amend an Inter-municipal Development Plan to ensure it remains a current and effective document.

AND WHEREAS the Council of Lac Ste. Anne County determined it necessary to amend the Alberta Beach Regional Inter-municipal Development Plan Bylaw No. 17-2008 to accommodate a mixed-country residential/commercial use known as "Alberta Beach Estates" located on the land legally known as E 1/2 of Section 11 Township 54 Range 3 West of the Fifth Meridian.

NOW THEREFORE the Council duly assembled hereby enacts as follows:

1. That the north 400 metres of the E 1/2 Section 11 Township 54 Range 3 West of the Fifth Meridian and Plan 102-4139 as described graphically in accordance with attached Schedule "A" on Figure no. 5: Future Land Use, be amended from "Future Development Area" to Commercial/Industrial and Residential.
2. That Section 3.5.2(c) be amended to read: Service roads adjacent to arterial and public highway s shall be off-set one full lot from the said arterial and public highway except where impractical due to environmental or physical constraints.

3. That this Bylaw comes into full force and effect upon third reading of this Bylaw and registration of a plan of survey for Phase I of Alberta Beach Estates as described in the Alberta Beach Area Structure Plan Bylaw no. ____-2011.

First Reading carried the ___ day of _____, A.D. 200__.

Reeve
(SEAL)

Municipal Administrator

Read a second time this ___ day of _____, A.D. 200__.

Reeve
(SEAL)

Municipal Administrator

Read a third and final time this ___ day of _____, A.D. 200__.

Reeve
(SEAL)

Municipal Administrator

BYLAW NO. ____-2011: SCHEDULE "A"

**LAC STE. ANNE COUNTY
PROVINCE OF ALBERTA
BYLAW # █-2011**

A BYLAW TO CONTROL LAND USE.

WHEREAS, under the provisions of the Municipal Government Act, being Chapter M-26.1, Division 5 and Section 692(1)(d) of the Revised Statutes of Alberta 2000 R.S.A., a municipality may amend a Municipal Development Plan to ensure it remains a current and effective document.

AND WHEREAS the Council of Lac Ste. Anne County determined it necessary to amend the Lac Ste. Anne County Municipal Development Plan Bylaw No. 17-2008 to accommodate a mixed-country residential and commercial use known as "Alberta Beach Estates" located on the land legally known as E 1/2 of Section 11 Township 54 Range 3 West of the Fifth Meridian.

NOW THEREFORE the Council duly assembled hereby enacts as follows:

1. That policy directions for senior's and supportive living development be added to the Municipal Development Plan in accordance with attached Schedule "A".
2. That policy directions for alternative energy sources be added to the Municipal Development Plan as attached Schedule "B".
3. That this Bylaw comes into full force and effect upon third reading of this Bylaw and registration of a plan of survey for Phase I of Alberta Beach Estates as described in the Alberta Beach Area Structure Plan Bylaw no. █-2011.

First Reading carried the ___ day of _____, A.D.
200__.

Reeve
(SEAL)

Municipal Administrator

200__.
Read a second time this ___ day of _____, A.D.

Reeve
(SEAL)

Municipal Administrator

A.D. 200__.
Read a third and final time this ___ day of _____,

Reeve
(SEAL)

Municipal Administrator

BYLAW NO. ____-2011: SCHEDULE "A"

That the following be added to Section _____ of the Lac Ste. Anne County Municipal Development Plan Bylaw no. 17-2008, as amended:

That Section 1.10 Definitions be amended by adding the following:

"Supportive Living" means provincially licensed buildings or units in buildings that are intended for permanent residential living where an operator also provides or arranges for services in order to assist residents to live as independently as possible. A supportive living development shall include:

- a) accommodation for 4 or more adults who are not related to the operator,
 - b) the operator provides or arranges for services related to safety and security for the persons referred to in clause (a) in accordance with the standards set out or adopted in the regulations, and
 - c) the operator provides, offers or arranges for
 - i. at least one meal per day, or
 - ii. housekeeping services,for the persons referred to in clause (a)
- "Affordable Housing" means housing where a maximum of 30% of the average gross family income for the development area is required for mortgage, maintenance and operation of a residence. Generally, affordable housing is established using Statistics Canada data that is adjusted in accordance with the Alberta Consumer Price Index.
 - Independent Adult Living Residence is a single detached, or other single floor non-basement residence that is designed for self-sufficient adult living and constructed for mobility impaired persons.

That Section 3.20 be added as follows:

Section 3.20: Affordable Housing

Affordable Housing is a growing social and family land use that is typically associated with metropolitan urban living, but has been historically forgotten in rural areas and to an extent in smaller urban communities. The following policies are intended to provide a framework for affordable housing within Lac Ste. Anne County in both urban and rural centres.

3.20.1 Objective: Context

Affordable Housing within Lac Ste. Anne County will only be considered within the context of a not for profit corporation/foundation or a condominium. Where an affordable housing development is approved by the County, the operational bylaws shall include a mandatory requirement that changes in ownership or occupation of all affordable housing residences shall comply with current affordable housing pricing.

3.20.2 Objective: Compliance

Lac Ste. Anne County may require as a condition of subdivision approval that affordable housing development bylaws issue a statement annually to the County describing all housing sales and that proper verification was undertaken to ensure compliance with the affordable housing requirement.

3.20.3 Objective: Location

Affordable housing may be developed as stand-alone residences, as in-fill in existing communities or as secondary residences on top of commercial buildings.

Where an in-fill affordable housing development is considered, the subject residence shall be compatible with the surrounding neighbourhood.

3.20.4 Objective: Rural Design

Affordable housing may be established on lots/units no less than 0.20 hectares (0.5 acres) in area.

The overall affordable housing development in rural areas shall incorporate *Lac Ste. Anne County Ecological and Conservation Residential*

Development Standards Policy No. _____ to a minimum standard of _____ development credits/___ units.

3.20.5 Objective: Urban Design

Affordable Housing may be established on lots/units within residential areas as permitted within the respective residential Land Use District.

Within commercial areas, affordable housing may be established above the main floor of the commercial building.

That Section 3.21 be added as follows:

Section 3.21 Independent Adult Living Residence

Affordable Housing is a growing social and family land use that is typically associated with metropolitan urban living, but has had a historically minor role in rural areas and smaller urban communities. The following policies are intended to provide a framework for affordable housing within Lac Ste. Anne County in both urban and rural centres.

3.21.1 Objective: Context

Independent Adult Living Residential development may be developed throughout Lac Ste. Anne County. Independent Adult Living Residential development may be within a traditional subdivision, a condominium or as an in-fill development.

3.21.2 Objective: Design

Independent Adult Living Residential development may be constructed in both urban and rural areas. In rural areas, the development may be allowed on lots/units no less than 0.2 hectares (0.5 ac.) in area provided overall development in shall incorporates the *Lac Ste. Anne County Ecological and Conservation Residential Development Standards Policy No. _____* to a minimum standard of _____ development credits/___ units.

3.21.3 Objective: Design and Construction

Independent Adult Living Residential Development shall include the following design features:

- a) bungalow or single floor duplex design without a basement,
- b) hard surfaced trails within the site,
- c) an open space development area ratio of 2:1,
- d) open structural design, and
- e) wheelchair accessible.

3.21.4 Objective: Maintenance

Independent Adult Living Residential Development shall incorporate a maintenance and security service into the overall operation of the Independent Adult Living Residential. This may include one or more of the following:

- a) yard maintenance services, and
- b) home visit services when the occupant is away for extended periods of time.

These services shall be implemented as applicable through an association, condominium bylaw or other means satisfactory to Lac Ste. Anne County.

3.21.5 Objective: Compliance

A subdivision or condominium established for Independent Adult Living shall include within its operational structure a means to ensure and enforce the "adult only" requirement where the residential lot is less than 1 hectares (2.47 acres) in area.

That Section 3.22 be added as follows:

3.22 Supportive Living

Supportive Living residences are enabled through the provisions of the Supportive Living Accommodation Licensing Act, S.A 2009, as amended. Generally, Supportive Living residences are found in urban areas. The following policy directions are intended to provide a framework for supportive living in both smaller urban (Hamlet) settings and in rural areas of Lac Ste. Anne County.

3.22.1 Objective: Context

Supportive Living development may be located in both urban and rural areas within the context of a bare-land or structural condominium, a foundation or other not-for profit organization or another organization approved by Lac Ste. Anne County.

3.22.2 Objective: Compliance

Lac Ste. Anne County may require as a condition of development approval that a license be maintained with the Province of Alberta under the Supportive Living Accommodation Licensing Act, S.A. 2009.

A Supportive Living residential development may not convert to another residential use or other land use without first obtaining the relevant and applicable approvals from Lac Ste. Anne County.

Lac Ste. Anne County may require a statement to be prepared by the operator of the Supportive Living development to ensure that the Supportive Living Residence is on-going compliance with the requirements of Lac Ste. Anne County.

3.22.3 Objective: Location

Supportive Living housing may be developed as stand-alone, duplex or row housing style single storey residences or as a complex (apartment style)

A supportive living residential development may be established on more than one adjoining lot within an urban area.

Lac Ste. Anne County shall consider the response time for emergency medical and fire services to a proposed site as part of the review of any proposal for a rural based supportive living development.

3.22.4 Objective: Rural Design

In rural applications, a supportive living development shall include in addition to the licensing requirements under the Supportive Living Accommodation Licensing Act, S.A., 2009, as amended,

- a) an on-site fire fighting supply to the satisfaction of the fire authority,

- b) indoor ambulance/bus service access within a multi-floor supportive living building,
- c) outdoor and indoor recreation facilities,
- d) visitor accommodation either on site or in proximity to the development site that may include nearby accommodations such as a hotel/motel,
- e) community transport,
- f) a minimum 3:1 green or open space/development ratio, and
- g) on-site meeting facilities for medical related purposes if not readily available in close proximity to the site.

3.22.5 Objective: Construction

Where a phased approach is to be considered for development of a supportive living development, the phasing plan shall include a detailed description of what facilities, parks or other improvements are to occur in each phase.

All parkland within a supportive living development shall be developed in accordance with an approved landscaping plan, prepared by a landscape professional.

BYLAW NO. ____-2011: SCHEDULE "B"

____ Alternative Energy

Lac Ste. Anne County recognizes the desire to investigate and install alternative energy systems. The following policy provides guidance for landowners and developers as well as for a regulatory framework to effectively plan for these systems. Specially, the following alternative energy systems are provided for in this policy:

Solar:

- Photo-voltaic which utilizes free standing or roof-mounted solar panels for electricity production, and
- Solar-thermal which utilizes free standing or roof-mounted solar panels for hot water (heat) production.

Wind:

- Wind power has a range of applications with windmill units varying from residential roof-mounted units to large commercial types with 2MW turbines.

Geo-exchange:

- Often called geothermal, geo-exchange uses heat transfer technology between indoor and sub-surface temperatures.

As a geo-exchange system operates, it will either put heat into the ground or draw heat from the ground. The volume of ground that is warmed or cooled is known as the "*zone of influence*" for the purpose of this Plan.

Each of the above technologies is partially regulated at the local level by the provincial and the federal government and the municipality.

Other technologies such as biomass conversion are more industrial in nature and are not addressed as part of this Plan.

Within the *Land Use Bylaw*, the County will establish standards to address those issues which are of a land use nature and particular to a municipal governance mandate.

____ Objective: To provide for alternative energy systems within Lac Ste. Anne County.

The County shall:

- a) restrict regulation to that which is necessary to minimize land use conflicts,
- b) require notification at the initiation stage of a project that an alternative energy option is being considered and shall require consultation between the developer and impacted utility companies.
- c) encourage developers of alternative energy systems to work cooperatively with utility providers.

_____ Objective: To minimize risk to the County where developers intend to not install common utility systems such as natural gas or electricity.

- a) The County shall require a professionally prepared engineering report as part of any subdivision servicing proposal that would result in the elimination of the gas or electrical franchise being installed to the property line. The report shall include:
 - i. detailed physical site analysis proving that the subject land is suitable for the suggested alternative energy source,
 - ii. recommendations on the proper sizing of geo-exchange and/or solar installations, and
 - iii. recommendations on measures that can be taken to ensure that the installation guidelines will be enforced.
- b) Where a developer desires to not install either gas or electrical service within a proposed subdivision, the County may require security for the future installation of the service in accordance with an agreement entered into between the developer and the County.
- c) Notwithstanding the omission of a utility, the County shall require that a suitable right of way agreement is registered against the certificate of title for the property that would allow for the utility at a later date.
- d) Lac Ste. Anne County will not consider the sole use of wind power technology as an alternative to and in place of natural gas or electrical energy utility systems.

**LAC STE. ANNE COUNTY
PROVINCE OF ALBERTA
BYLAW # ____-2011**

A BYLAW TO CONTROL LAND USE.

WHEREAS, under the provisions of the Municipal Government Act, being Chapter M-26.1, Division 5 and Section 692(1)(d) of the Revised Statutes of Alberta 2000 R.S.A., a municipality may amend a Land Use Bylaw to ensure it remains a current and effective document.

AND WHEREAS the Council of Lac Ste. Anne County determined it necessary to amend the Lac Ste. Anne County Land Use Bylaw No. 16-2008 to accommodate a mixed-country residential use known as "Alberta Beach Estates" located on the land legally known as E 1/2 of Section 11 Township 54 Range 3 West of the Fifth Meridian.

NOW THEREFORE the Council duly assembled hereby enacts as follows:

1. That the land legally known as E 1/2 of Section 11 Township 54 Range 3 West of the Fifth Meridian be re-districted from Agricultural-A Inter-municipal Development Plan District "AG-A-IDP" District and Agricultural A "Ag-A" to Country Residential Direct Control District CR-1 and Rural Commercial District (R-COM) in accordance with attached Schedule "A".
2. That Sections 55(c), (d) and (e) be added to the text of the Land Use Bylaw to allow for the development of Affordable Housing, Independent Adult residential and Supportive Living accommodation in accordance with attached Schedule "B".

3. That definitions be added to Section ___ of the Land Use Bylaw in accordance with attached Schedule "C".
4. That Section 84: Highway Development District be deleted and replaced with a Rural Commercial District in accordance with attached Schedule "D".
5. That Section ___: Alternative Energy be added in accordance with attached Schedule "E".
6. That the subject lands be hereinafter known as Alberta Beach Estates.
7. That this Bylaw comes into full force and effect upon third reading of this Bylaw and registration of a plan of survey for Phase I of Alberta Beach Estates as described in the Alberta Beach Area Structure Plan Bylaw no. ___-2011.

First Reading carried the ___ day of _____, A.D. 200__.

Reeve
(SEAL)

Municipal Administrator

200_. Read a second time this ___ day of _____, A.D.

Reeve
(SEAL)

Municipal Administrator

Read a third and final time this ___ day of _____,
A.D. 200_.

Reeve

(SEAL)

Municipal Administrator

BYLAW NO. ____-2011: SCHEDULE "A"

BYLAW NO. ___-2011: SCHEDULE "B"

That the following be added:

Section 55C: Affordable housing

- 1) An affordable housing lot shall conform to the standards provided in Section ___ of the Lac Ste. Anne County Municipal Development Plan Bylaw no. ___, as amended,
- 2) An affordable housing lot may be no less than:
 - a. 0.2 hectares (0.5 ac.) serviced with both piped water and sewer services in rural areas,
 - b. 0.4 hectares (1.0 ac.) unserviced in rural areas, and
 - c. as described otherwise within the Hamlet General District.
- 3) Frontages and Setbacks:
 - a. Setbacks shall be as established for the applicable Land Use District, and
 - b. A minimum urban frontage of 10 metres (32.8 ft.) in fully serviced Hamlet areas,
- 4) Residential Floor Areas
 - a. All "affordable" dwellings shall have a minimum floor area of 74.3 m² (800 ft²).
- 5) Affordable dwellings may consist of a variety of dwelling types.
- 6) Multi-unit affordable dwellings may use shared garage and yard space.
- 7) Affordable dwellings may be constructed on the upper floor of a commercial building should the applicable land use district allow for this use.
- 8) Rural affordable housing shall include a park to development ratio of 2:1
- 9) Affordable housing shall provide parking spaces on the property in the following amounts:
 - a. family housing: 2 spaces per dwelling, or
 - b. adult/senior housing: 1.5 space per dwelling.

10) Lac Ste. Anne County may require compliance with affordable housing guidelines through the requirement of the management foundation/association to maintain affordable housing status on future rentals and/or sales.

Section 55D: Independent Adult Living Standards

- 1) An Independent Adult Living housing lot shall conform to the standards provided in Section ___ of the Lac Ste. Anne County Municipal Development Plan Bylaw no. ___, as amended,
- 2) An Independent Adult Living Residential lot may be no less than:
 - a. 0.2 hectares (0.5 ac.) serviced with both piped water and sewer services in rural areas,
 - b. 0.4 hectares (1.0 ac.) unserviced in rural areas, and
 - c. as described otherwise within the Hamlet General District.
- 3) Property Line Setbacks:
 - a. Setbacks shall be as established for the applicable Land Use District.
- 4) Frontage
 - a. 10 metres (32.8 ft) in fully serviced Hamlet areas.
- 5) Residential Floor Areas
 - a. All dwellings shall have a minimum floor area of 74.3 m² (800 ft²).
- 6) Independent Adult Living Dwellings may consist of a variety of dwelling types.
- 7) Independent Adult Living affordable housing shall include a park to development ratio of 2:1
- 8) Independent Adult Living housing shall provide a minimum of 2.0 parking stalls per detached home and 1.5 parking stalls per multi-unit dwelling.
- 9) Lac Ste. Anne County may require compliance with affordable housing guidelines through the requirement of the management foundation/association to maintain affordable housing status on future rentals and/or sales.
- 10) Independent Adult Living residences shall consist of single floor and basement less dwellings such as single detached dwellings and duplex dwellings.

Section 55E: Supportive Living Standards

- 1) A Supportive Living housing lot shall conform to the standards provided in Section ___ of the Lac Ste. Anne County Municipal Development Plan Bylaw no. ___, as amended,
- 2) A Supportive Living Residential lot may be no less than:
 - a. 2.0 hectares (4.9 ac.) serviced with both piped water and sewer services in rural areas,
 - b. as required within the Hamlet General District.
- 3) Property Line Setbacks:
 - a. Setbacks shall be as established for the applicable Land Use District.
- 4) Frontages
 - a. 10 metres (32.8 ft.) in fully serviced Hamlet areas,
 - b. 15 metres (49 ft.) in fully serviced rural areas.
- 5) Servicing
 - a. Supportive Living residential development shall be fully serviced with both water, sewer, emergency medical and fire service.
- 6) Residential Floor Areas
 - a. All Supportive Living Dwellings shall have a minimum floor area of 56 m² (602.7 ft²).
- 7) Supportive Living Dwellings may consist of apartment style structures or attached housing such as duplex and row housing. Where an apartment style structure is developed, the building shall include an indoor garage suitable for pickup and delivery of residents through a bus or ambulance.
- 8) Supportive Living housing shall include a park/ open space to development ratio of 3:1
- 9) Supportive Living housing shall provide a minimum of 1.0 parking stalls per residence.
- 10) Lac Ste. Anne County may require compliance County guidelines for Supportive Living Housing through the requirement of the management foundation/association to maintain provincial licensing status and maintain compliance with municipal conditions of approval.

- 11) A Supportive Living development shall provide a visitor accommodation at a ratio of ___ room per ___ dwellings should commercial housing options such as a hotel/motel suitable for family use not be available within 10 kilometres.

BYLAW NO. ___-2011: SCHEDULE "C"

That the following be added to the Section 6: Definitions of the Lac Ste. Anne Land Use Bylaw.

"Condominium Maintenance Building" means a building within a condominium that can be used for storage, maintenance and repair of condominium equipment necessary for the orderly operation and maintenance of the condominium

"Common Services Building" means a condominium building for use in community restaurant and the holding of events. Secondary uses include an administration office and board room for the holding of meetings related to the operation of the condominium.

BYLAW NO. ___-2011: SCHEDULE "D"

RURAL COMMERCIAL (R-COM)**1) General Purpose:**

The general purpose of this District is to provide for rural commercial development that provides services to both the motoring public and the surrounding community. Development within this district shall not include that would be more appropriate within a rural industrial district.

2) Uses:

The following uses may be allowed on a Permitted (P) or Discretionary (D) basis:

Use	Class	Notes:
Accessory Building	P	
Accessory Use	D	
Bulk Fuel Storage	D	
Caretaker's Residence	D	
Commercial Use	D	
Convenience Store	D	
Extensive Agriculture	P	Existing use only
Farmstead	P	Existing use only
Hotel	D	
Institutional Use	D	
Intensive Recreation	D	
Motel	D	
Public Use	D	
Recreational Use	D	
Restaurant	D	
Service Station	D	
Tourist Information Building	D	

3) Land Use Plan Compliance:

All development within this District shall comply with the regulations and policy directions provided within an applicable Statutory Plan. Where a standard within a Statutory Plan conflicts with this Bylaw, the more restrictive requirement shall be applied.

4) Parcel Size

- a) Parcel size requirements shall be in conformance with the applicable standards in (3) above or as follows:
 - i. Extensive Agricultural uses shall be in conformance with the Extensive Agricultural District.
 - ii. A lot shall have a minimum lot/unit area of 0.40 hectares (1.0 acres).

5) Site Criteria

- a) Site setback requirements shall be in conformance with the applicable standards in (3) above, or as described below:

YARD	SETBACK
Front Yard (Highway or rural road)*	40.0 m. (1312 ft.)
Front Yard (Subdivision Road)	7.5 m (24.6 ft.)
Side Yard	10% lot width, min 1.5 m (14.8 ft.)
Rear Yard	4.5 m (14.8 ft.)

*Where a lot is double fronted, the Development Authority may consider a reduction in the setback except where the frontage is a provincial highway. Side

and Rear yards that are adjoining roadways shall have the applicable roadway setback.

6) Other Site Criteria

- a) As determined by the Subdivision/Development Authority.

7) Additional Requirements

- a) The design, character and appearance of all buildings shall be appropriate and compatible with the surrounding area,
- b) All construction shall be in conformance with the overall theme of the subdivision, should one exist, and
- c) A bare-land or structural condominium may be allowed on a lot within this district.

BYLAW NO. __-2011: SCHEDULE "E"

Section 12: Where a permit is not required.

That the following be added:

- 16) Solar panels affixed to approved buildings.

Section __: Alternative Energy

Alternative Energy Systems include solar thermal, solar voltaic, wind and geo-exchange (geothermal) systems. Bio-mass energy converters are considered an industrial use and are not contemplated under this Section of the Land Use Bylaw.

(1) Wind Power:

- (a) Windmills shall be classified as small ($\leq 3\text{KW}$), medium (up to 50KW) and large (greater than 50KW),
- (b) Large windmill structures shall be separated from a residential dwelling with a minimum distance of 1.0 km . (0.8 mi.)
- (c) A horizontal windmill blade must be entirely within the property line setback or 1.5 metres , whichever is less,
- (d) A vertical windmill blade must have a minimum 10 metre clearance above grade except where the windmill turbine is mounted on a building,
- (e) Agreements with impacted landowners may be used in support of a request for a reduction in site setbacks,
- (f) Noise from windmills shall be subject to the Lac Ste. Anne County Noise Bylaw,
- (g) All windmill applications shall be subject to the obtaining of approval from the relevant provincial and federal wind power regulator, and
- (h) All windmills shall be removed from the site and the site shall be reclaimed once the site is not longer required for the proposed use.
- (i) Large windmill structures shall be of new construction or compliant with the latest design standards in force by the Government of Canada or Alberta.

(2) Solar Panels:

- (a) Solar panels affixed to a roof or wall of an existing building shall not require a development permit approval, and
- (b) Solar panels as stand alone structures are subject to restrictions for buildings in a front yard,

(3) Geothermal:

- (a) The zone of influence for a geothermal circulation well shall be contained entirely within the property boundary of the subject property unless a variance is agreed to by the landowner for the adjoining property,
- (b) All proposed geo-exchange systems shall be professionally engineered, and
- (c) Developers who wish to provide geothermal as part of a subdivision servicing proposal shall be required to provide all necessary engineering in advance of subdivision approval or as part of the preparation of the necessary land use plan (i.e., Outline or Area Structure Plan).

(4) Energy Onto Grid:

Applicants who wish to produce energy and sell it to the utility grid shall consult with the applicable utility regulator and provider prior to applying for development permit approval. Details of the consultation shall be provided to the County for use as part of the development permit decision making process.

(5) Application Requirements:

In addition to the requirements for an application for Development Permit as described in Section 3.5, the following may be required by the Development Officer:

- (a) A site plan at scaled elevation showing the proposed height, tower height, rotor diameter, colour and proximity to property lines and buildings,
- (b) An analysis for noise at the site and the property boundary of the site,
- (c) Specifications for anchor design, foundation and guy wires, and
- (d) Details on consultation with Alberta Environment, Alberta Sustainable Resources, Nav. Canada, Transport Canada and

the Alberta Energy and Utilities Board as applicable.

(6) Land Use District Requirements:

- (a) Solar panels and geothermal systems may be installed within any Land Use District as an accessory building or use, as applicable.
- (b) Windmills other than for home use may only be installed only within a non-Hamlet Land Use District.

APPENDIX "D": Features

The following are features that are to be included within Alberta Beach Estates. Each features is classified by authority to describe which features are to be enforceable under Municipal Bylaws, Developer Caveat or Condominium Bylaw.

FEATURE	LSAC	DEVELOPER	CONDOMINIUM

APPENDIX "E": Community Feedback

THIS SECTION WILL BE COMPLETED FOLLOWING THE HOLDING OF THE MEETINGS MENTIONED IN PART I OF THIS PLAN.

APPENDIX "F": ENDNOTES

ⁱ Permaculture: In this application, on-contour swales will be constructed with the removed material forming a berm (approx. 100 mm higher than bottom of the swale) on the downhill side of the swale. Mulch will be deposited in the swale for added soil cover.

The result will be the use of surface water to recharge the near surface aquifer and provide additional moisture for plants, shrubs and trees below the swale. An example process on the working of the water harvesting method planned for Alberta Beach Estates is found at the following site: <http://www.youtube.com/watch?v=kPrfNVzDNME>

Permaculture applications will be applied on common lands and privately owned condominium properties that have a slope greater than 5%.

04 REDST2011



Area Structure Plan for **ALBERTA BEACH ESTATES**

**E1/2-11-54-3-W5
Lac Ste Anne County**



**PART 2
Support Documents & Reports**

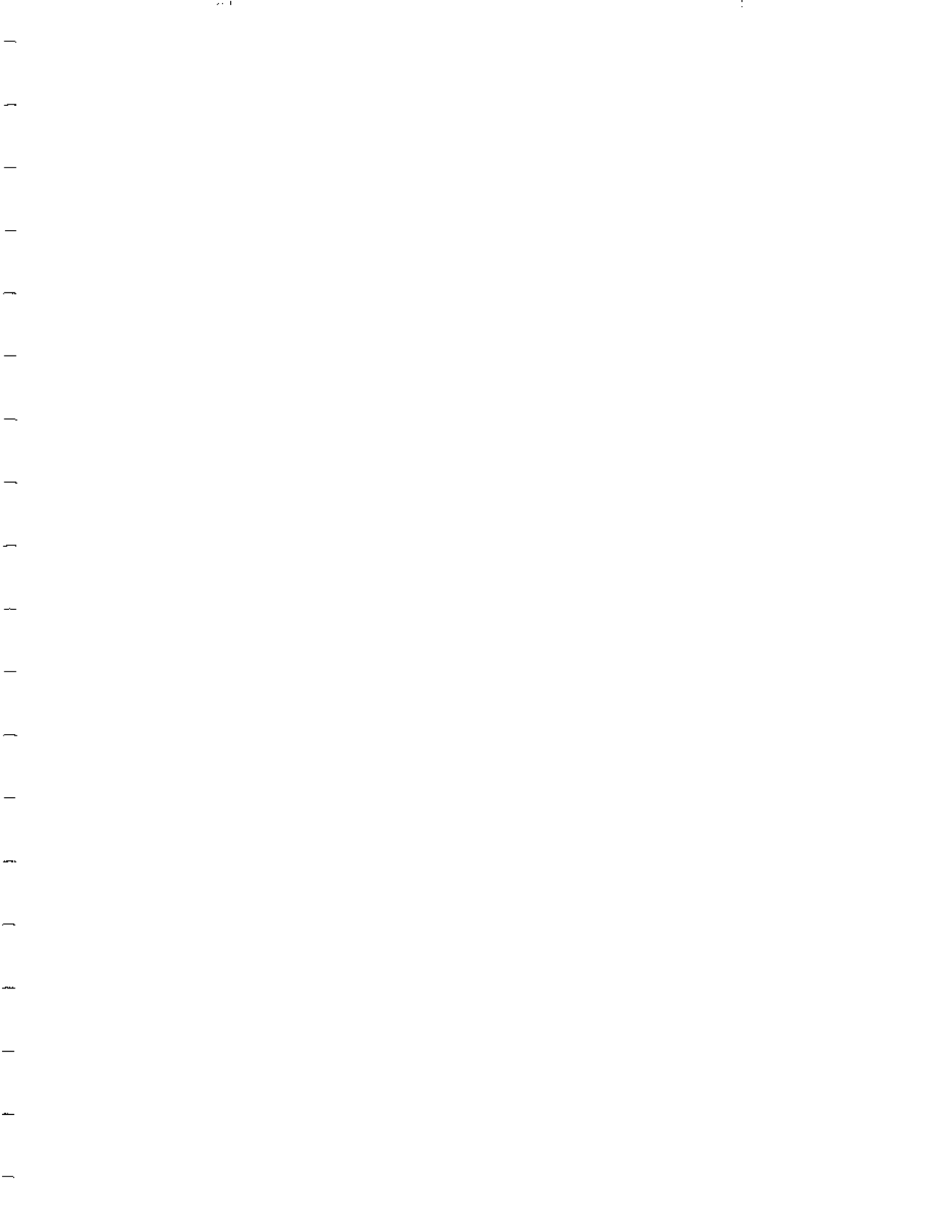


AFFILIATED PROFESSIONAL
PLANNERS, ENGINEERS, PROJECT MANAGERS, SURVEYORS
ENVIRONMENTAL SCIENTISTS & ARCHITECTS

REC'D - LSAC
JUL 25 2011

REPORTS

Environmental Site Assessment (Phase 1)	Hagstrom Geotechnical Services Ltd.
Shallow Water Table	Hagstrom Geotechnical Services Ltd.
Geotechnical Study	Hagstrom Geotechnical Services Ltd.
Condensed Servicing Brief	Altime Engineering Ltd.
Biophysical Assessment	Bruce Thompson and Associates
Traffic Impact Assessment	Darcy Paulichuk Engineering Services
MagWall Building Systems	Richards Consulting & Associates Ltd.
Renewable Energy Considerations	Threshold Energies Cororation
Storm Water Report	River Engineering Consulting Ltd.
Sustainable Design Strategies	MANASC ISAAC Architects Ltd.



PHASE I ENVIRONMENTAL SITE ASSESSMENT

PROPOSED COUNTRY RESIDENTIAL SUBDIVISION

E 11-54-03-W5M

LAC STE. ANNE COUNTY, ALBERTA

H0810-210

JANUARY, 2009

Prepared For:

**NorCan Consulting Group Inc.
Carvel, Alberta**

Prepared By:

**Hagstrom Geotechnical Services Ltd.
Edmonton, Alberta**

January 24, 2009
 Our File: H0810-210

NorCam Consulting Group Inc.
 Box 38, Site 219, RR 2
 Carvel, Alberta
 T0E 0H0

Attention: Mr. Frank Florkewich

Dear Sir:

Re: Phase I Environmental Site Assessment
 Proposed Country Residential Subdivision
 E 11-54-03-W5M
 Lac Ste. Anne County, Alberta

We are pleased to submit our Phase I Environmental Site Assessment (ESA) report on the above referenced property. Based on the findings of the foregoing Phase I ESA, a Phase II ESA is not required for this site.

Should you have any questions or concerns regarding our findings, do not hesitate to call our office at (780) 996-5621.

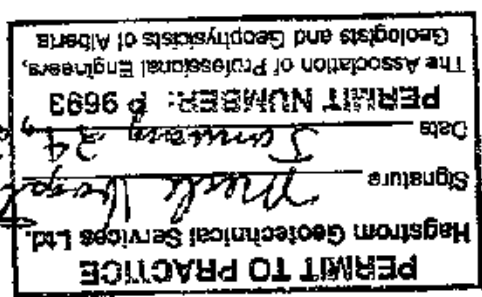
Respectfully submitted,

Hagstrom Geotechnical Services Ltd.



Merle Hagstrom, B.Sc., P.Eng.
 Senior Engineer

Distribution: (4) addressee
 Attachments: Appendix A, B, C, D, E



EXECUTIVE SUMMARY

PROJECT NAME: Proposed Country Residential Subdivision

ADDRESS: Lac Ste. Anne County, Alberta

LEGAL: E 11-54-03-W5M

OWNER(S): Alberta Beach Estates Ltd. of Edmonton, Alberta

SCOPE OF WORK: A Phase I Environmental Site Assessment (ESA) was conducted for vacant land located in Lac St. Anne County, Alberta. The Phase I ESA was conducted in general accordance with CSA CZ768-01. The assessment consisted of historical records review, regulatory agency searches, personnel interviews and a site reconnaissance.

SITE DESCRIPTION: The Site is located within the southeast limits of Lac Ste. Anne County. The Site is comprised of approximately 315.67 acres (127.657 hectares) of vacant undeveloped land that is bounded on the north by Secondary Highway 633 (Township Road 542); on the east by Range Road 31; and, on the south and west by quarter section boundary lines. Golden Glen Estates country residential subdivision is located immediately east of the Site. The south shore of Lac Ste. Anne (Summer Village of Alberta Beach) is located about 2.5 kilometers northwest of the Site. The Site is open, vacant, undeveloped, agricultural/pasture land. A dugout used for watering livestock is located within the northwest corner of the north quarter section. A creek traverses the site generally from the south east corner to the northwest corner. The topography on the Site can be classified as undulating with maximum elevation differences of up to 7 to 8 meters. The Site is generally at a higher elevation than surrounding properties.

BUILDING CONSTRUCTION: There were no buildings on the Site during the inspection.

FINDINGS: No potential sources of contamination were identified during the assessment. A Phase II ESA is therefore not required for the Site.

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1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

Hagstrom Geotechnical Services Ltd. (HGS/L) was retained by Mr. Frank Florkewich of NorCan Consulting Group Inc. to conduct a Phase I Environmental Site Assessment (ESA) on agricultural property located within the southeast limits of Lac Ste. Anne County, Alberta (hereinafter referred to as the "Site"). It is understood that the Site will be developed into a country residential subdivision with single-family residential homes and access roadways. A Site inspection was carried out on November 6, 2008.

1.2 OBJECTIVES

The primary objectives of a Phase I ESA are to document current Site conditions; to identify potential or actual environmental contamination(s) that could be associated with current or past occupants and/or activities on the Site; and to determine whether or not additional investigations are required.

1.3 SCOPE OF WORK

The foregoing Phase I ESA was conducted in accordance with the current Canadian Standard Association (CSA) guidelines. The scope of work for the Phase I ESA was limited to identifying potential environmental concerns regarding the Site and neighboring properties by visual examination of the ground surface for disturbance(s) and/or staining or discoloration; documentation of current operating practices; and review of available historical and regulatory records. There are no buildings on the Site and as such, the foregoing Phase I ESA did not include a detailed building component audit.

1.4 METHODOLOGY

The work performed as part of this investigation included three components:

1. Perform a review of historical information pertaining to the Site and adjacent properties;
2. Conduct detailed inspection of the Site and cursory review of adjacent properties in order to identify potential environmental concerns, during which, a standardized checklist (Appendix D) was used as a guide; and
3. Prepare a report summarizing the methodology and findings of the historical review and Site inspections. If necessary, the report will include recommendations for further investigation and assessment.

The following lists the historical records obtained; regulatory agencies contacted; and environmental database reviewed for the purposes of the Phase I ESA:

- Alberta Registries was contacted to provide historical land title information.
- Aerial photographs were obtained through Alberta Sustainable Resource Development-Air Photo Services in order to review land use and development at or near the Site.
- Alberta Environment's Freedom of Information and Protection of Privacy (FOIP) Office was contacted for information regarding any spills, releases and/or contamination pertaining to the Site, along with routinely available information, pursuant to the Environmental Protection and Enhancement Act.
- The Environmental Law Centre was contacted for information regarding enforcement actions against former and/or current owner(s) of the Site; and, information regarding reclamation certificates issued for former oil/gas well lease areas on the Site.
- The Petroleum Tank Management Association of Alberta (PTMAA) was contacted for information regarding the presence of underground and/or aboveground storage tanks (USTs/ASTs) in connection with current and/or previous Site occupancy.
- Abacus Datagraphics Ltd.'s database (AbaData)² was searched for any oil and gas related facilities, pipelines and reportable incidents pertinent to the Site and adjacent properties.
- Alberta Environment's Industrial Waste Landfill Program Help End Landfill Pollution (H.E.L.P.) database³ and other published data were reviewed for any registered landfills and/or dump sites that may have been present in the immediate area of the Site.
- Alberta Environment's Groundwater Information System⁴ was reviewed for records of groundwater wells drilled within the immediate area of the Site.
- Other personnel familiar with the Site were interviewed in order to obtain historical information pertaining to the Site and adjacent areas.

2.0 SITE DESCRIPTION

The Site is located within the east half of Section 11, Township 54, Range 03, west of the Fifth Meridian, in Lac Ste. Anne County, Alberta. The Site is comprised of approximately 315.67 acres

² <http://www.abacusdatagraphics.com/AbaData/mgMain.asp>

³ Alberta Environment, 1988. *Data Tracking and Management Control System H.E.L.P. (Help End Landfill Pollution) Program, Industrial Waste Landfill Program*. Edmonton, Alberta.

⁴ <http://www3.gov.ab.ca/env/water/groundwater/index.html>

(127.657 hectares) of vacant agricultural undeveloped land that is bounded on the north by Secondary Highway 633 (Township Road 542); on the east by Range Road 31; and on the south and west by quarter section boundary lines. Golden Glen Estates county residential subdivision is located immediately east of the Site. The south shore of Lac Ste. Anne (Summer Village of Alberta Beach) is located about 2.5 kilometers northwest of the Site. A county map highlighting the location of the Site can be referred to in Figure 1, following. According to a land title search for the property dated November 5, 2008, the property is owned by Alberta Beach Estates Ltd. of Edmonton, Alberta. A copy of the land title search is provided in Appendix A.

The Site is open, vacant, undeveloped, agricultural/pasture land. A dugout used for watering livestock is located within the northwest corner of the north quarter section. A creek traverses through the center and generally flows from the south east corner to the north west corner. The topography on the Site can be classified as undulating with maximum elevation differences of up to 7 to 8 meters. The Site is generally at a higher elevation than surrounding properties.

2.1 REGIONAL GEOLOGY

Lac Ste. Anne County (herein referred to as the County) is situated in central Alberta and is part of the Alberta Plains region. The County is within the North Saskatchewan and Athabasca River basins.

2.1.1 Surficial

According to published surficial geology reports⁵, the terrain in the area is broadly classified as stagnation moraine consisting of till of uneven thickness and local water-sorted materials. The deposits can be up to 30 meters thick. The local topography is classified as hummocky and strongly developed with generally round, well-defined knobs, dimpled knobs, doughnut-shaped hills and kettles. The local relief is generally between 5 to 20 meters.

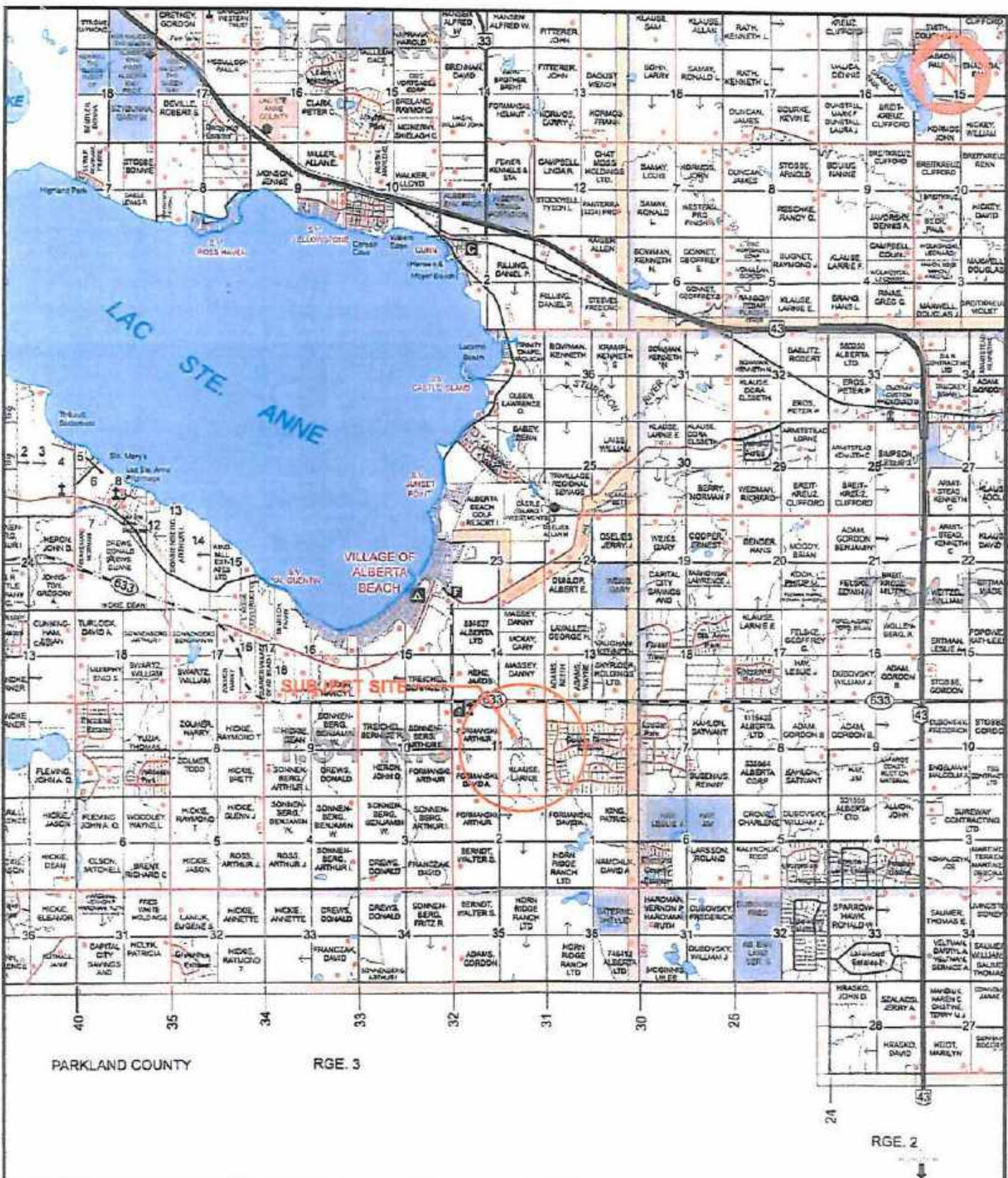
2.1.2 Bedrock

According to published reports⁶, the upper bedrock in Lac Ste. Anne County includes parts of the Paskapoo Formation and the Edmonton Group. The Paskapoo Formation consists of cycles of thick, tabular sandstones, siltstone and mudstone layers while the Edmonton Group consists of fresh and brackish-water deposits of fine grained sandstone and silty shale, thick coal seams, and numerous bentonite beds. The Edmonton Group in the County includes the Scollard, Barile, Whitened and Horseshoe Canyon formations.

The Horseshoe Canyon Formation is the lower part of the Edmonton Group and is the upper bedrock in the eastern part of the County. The Horseshoe Canyon Formation consists of deltaic and fluvial

⁵ Shotton, I. 1990. Quaternary Geology, Alberta Research Council Map Scale 1:500000.

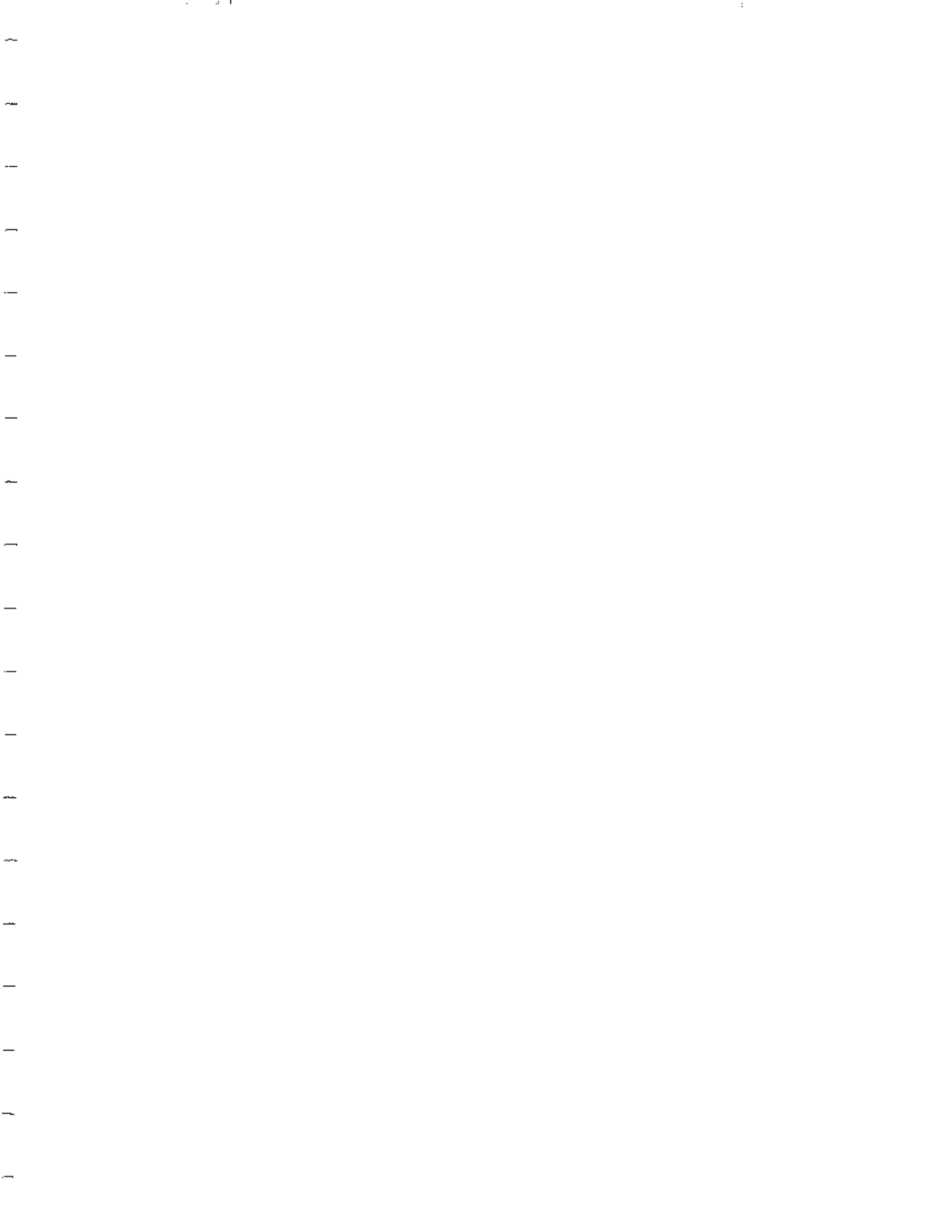
⁶ Hydrogeological Consultants Ltd., Lac Ste. Anne County, Parts of the North Saskatchewan and Athabasca River Basins, Parts of Tp 053 to 059, R 01 to 09, W5M, Regional Groundwater Assessment, July, 1998.



HAGSTROM GEOTECHNICAL SERVICES LTD.
 5607-134A Avenue NW, Edmonton AB T5A 0M3
 Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.
 Phase I Environmental Site Assessment
 Proposed County Residential Subdivision
 E 11-54-03-W5M
 Lac Ste. Anne County, Alberta
 County Map Showing Site Location

JOB NO.: H0810-210 | DATE: January 15, 2009 | FIGURE: 1



sandstone, siltstone and shale with interbedded coal seams, bentonite and thin nodular beds of ironstone. Because of the low-energy environment in which deposition occurred, the sandstones, when present, tend to be finer grained. The lower 60 to 70 meters and the upper 30 to 50 meters of the Horseshoe Canyon Formation can include coarser grained sandstone deposits.

The Horseshoe Canyon Formation has a maximum thickness of 350 meters within the County and includes the Upper, Middle and Lower Horseshoe Canyon formations. The Upper Horseshoe Canyon, which can be up to 100 meters thick, is the upper bedrock in the central third of the County where the Scollard Formation is absent and underlies the Site. The Middle Horseshoe Canyon, which is up to 70 meters thick, is the upper bedrock in the northeastern part of the County. The Lower Horseshoe Canyon, which is up to 180 meters thick, is the upper bedrock in a several areas of the northeastern part of the County.

2.2 HISTORICAL RECORDS REVIEW

2.2.1 Land Titles

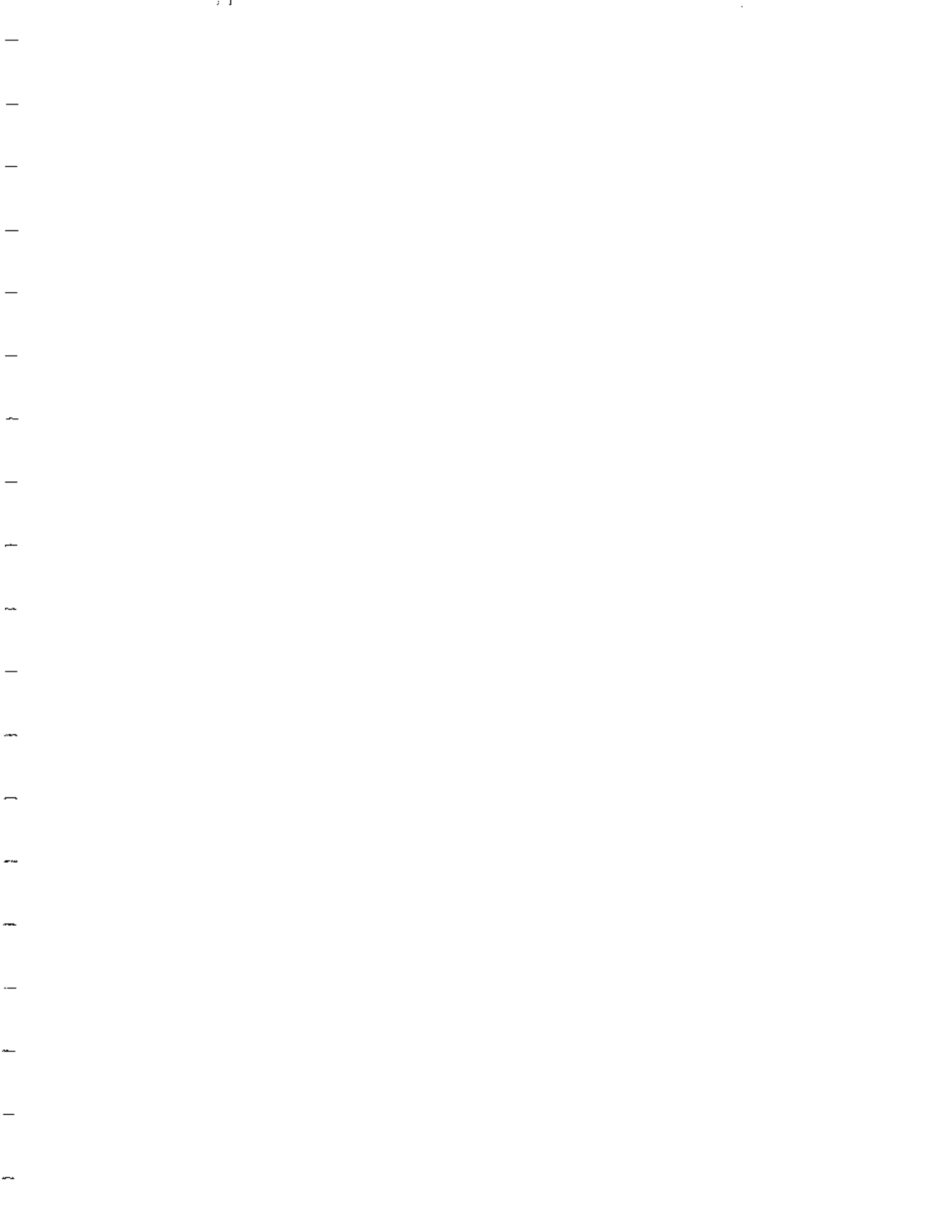
Historical land title for the Site was obtained from Alberta Registries. The results, dated November 5, 2008 are summarized in Table 1, below. Copies of the land title certificates are included in Appendix A. Records indicate that Alberta Beach Estates Ltd. of Edmonton, Alberta has been the registered owner of the Site since August 29, 2008. No notable lease or caveat information was registered against the Site.

**TABLE 1
SUMMARY OF HISTORICAL LAND OWNERSHIP**

Date of Transfer	Registered Owner	Remarks
August 29, 2008	Alberta Beach Estates Ltd. Edmonton, Alberta	
July 24, 2008	1195625 Alberta Inc. Edmonton, Alberta	
May 25, 2000	Larnie Klause Onoway, Alberta	
May 14, 1987	Kenneth E. Treichel Alberta Beach, Alberta	
April 13, 1972	Ervin W. Treichel Alberta Beach, Alberta	
July 19, 1960	Carl Treichel Alberta Beach, Alberta	

2.2.2 Aerial Photographs

Aerial photographs of the Site and surrounding areas were reviewed to determine their history. Reproductions of historical aerial photographs from 1950, 1962, 1970, 1977, 1981, 1987, 1992 and



2000 were reviewed and are presented in Appendix B. Significant information regarding the Site and adjacent properties are summarized in Table 2, below.

**TABLE 2
SUMMARY OF AERIAL PHOTOGRAPH INFORMATION**

Year	Site	Adjacent Properties			
		North	East	South	West
1950	The Site is heavily treed and appears vacant.	Township Road 542 borders the north limits of the Site. The north adjacent quarter section is heavily treed and contains a farmyard located along the north central limits of the property. Another farmyard is located near the northeast corner of the Site.	The east adjacent quarter sections are heavily treed. A farmyard is visible within the north central limits of the northeast adjacent quarter section.	The south adjacent quarter section is heavily treed in the north half and appears vacant.	The northwest adjacent quarter section has been cleared of trees and contains a farmyard located along the north central limits. The southwest adjacent quarter section is heavily treed and appears vacant.
1962	The majority of the north quarter section has been cleared of trees and appears vacant and undeveloped. Two small clusters of trees are all that remain on the north quarter section. The south quarter section appears the same as in the previous aerial photograph except that the north 100 meters has been cleared of trees.	As in 1950.	As in 1950.	As in 1950.	As in 1950 except two new lots are now visible in the northwest corner of the northwest adjacent quarter section. There is a building, likely the present church, located on the north lot.
1970	The south quarter section has now been cleared of trees. The Site remains vacant and undeveloped.	As in 1962, except for a farmyard, which is now visible along the south central limits of the property.	As in 1962.	The south adjacent quarter section has been cleared of trees and remains vacant and undeveloped.	As in 1962.
1977	As in 1970, except for two marshes containing water now appear on the north quarter section.	As in 1970.	As in 1970.	As in 1970.	As in 1970, except for the west half of the southwest adjacent quarter section which has now been cleared of trees.

Agency	Items Addressed	Responses
Alberta Environment, FOIP Office	Spills, releases and/or contaminations; routine disclosure documents pursuant to the Environmental Protection & Enhancement Act (EPEA)	Correspondence from the FOIP office indicated that there were no records relating to environmental incidents on the Site. A search under routine disclosure documents did not return any records.
Environmental Law Centre	Enforcement actions and well-site information	The Environmental Law Centre have no records of enforcement actions issued against Laminé Klaus and Kenneth E. Triche), former registered owners of the Site. There are also no records pertaining to Reclamation Certificates, Orders and/or Notices within NE 11-54-03-W5M and SE 11-54-03-W5M.
Petroleum Tank Management of Alberta Association (PTMAA)	Underground storage tanks and aboveground storage tanks	The PTMAA have no records of storage tanks at the Site and immediately adjacent properties.

**TABLE 3
SUMMARY OF REGULATORY AGENCY RESPONSES**

Several regulatory agencies were contacted in order to obtain environmental information associated with the Site and adjacent properties. Copies of the correspondence received are included in Appendix C. A summary of the information received is presented in Table 3.

2.2.3 Regulatory Agencies

Year	Site	Adjacent Properties		
		North	East	South
1981	As in 1977	As in 1977	Roadways and several acreages within a new county residential subdivision is now visible within the east adjacent quarter sections.	As in 1977
1987	As in 1981	---	Numerous homes are now visible within the subdivision on the east adjacent quarter sections.	As in 1981
1992	As in 1987	As in 1987	As in 1987	As in 1987
2000	As in 1992	As in 1992	As in 1992	As in 1992

**TABLE 2
SUMMARY OF AERIAL PHOTOGRAPH INFORMATION**

2.2.4 AbaData Search

A search through the AbaData database returned information for a well site located in 00/15-11-054-03-WSM and is located in the north west corner of the north quarter section. The well type is not available. This well was drilled on October 22, 1952 and abandoned on the following day. In addition, there is a high pressure pipeline (ATCO Gas and Pipelines Ltd. (South)) located in the north half of the north quarter section. This pipeline was constructed in November, 1996 and extends in a southwesterly direction into the west half of Section 11.

2.2.5 Alberta Environment Database

2.2.5.1 H.E.L.P. Database

Alberta Environment's H.E.L.P. (Help End Landfill Pollution) database did not identify any landfills at or near the Site.

2.2.5.2 Groundwater Information System

According to Alberta Environment's (AENV) Groundwater Information System, there is one water well drilled within 15-11-54-03-WSM (AENV Well I.D. No. 0445328). This groundwater well was observed on the Site during the site inspection. A review of the driller's report indicate that this well was drilled on May 13, 1952, approximately 135 feet from the north boundary and 10 feet from the west boundary. This well was drilled to a depth of 1170 feet as a structure test hole for Union Oil #STH. A copy of the water well drilling record is not included in this report but can be provided upon request.

2.2.6 Previous Investigations

There are no available records regarding previous environmental site assessments conducted for the Site. It is noted that two investigations for shallow water table tests and geotechnical investigation for new homes and roadways were conducted by HGSL on the site. A total of 72 shallow and deep boreholes were drilled throughout the site and there was no evidence of soil and groundwater petroleum hydrocarbon contamination.

2.2.7 Personnel Interviews

A telephone interview was conducted with Mr. Larnie Klause, former owner of the Site. Mr. Klause owned the property from the year 2000 to 2008. According to Mr. Klause, the Site has been used for pasture and has never contained any building/structures. Further details are provided on Page 10, Appendix D. Mr. Klause was not aware of any environmental incidents on the Site.

3.0 SITE INSPECTION RESULTS

A visual inspection of the Site was conducted by HGSL personnel on November 6, 2008 in order to

No evidence of lead-based products was observed on the Site.

3.2.5 Lead

No asbestos containing materials were identified on the Site.

3.2.4 Asbestos

No bulk chemical storage was observed during the inspection of the Site.

3.2.3 Bulk Chemical Storage

No evidence of underground and above-ground bulk storage tanks were observed during the Site inspection.

3.2.2 Bulk Storage Tanks

No petroleum hydrocarbon products or large ground stained areas were observed during the inspection of the Site.

3.2.1 Petroleum Hydrocarbons

3.2 Hazardous Wastes and Materials

The Site is generally at a higher elevation from the adjacent properties. The topography at the Site can be classified as undulating with maximum elevation differences of up to 7 to 8 meters. Surface drainage is generally towards a small creek that traverses both quarter sections.

3.1.1 Topography and Site Drainage

The on-Site inspection revealed that the Site was in a satisfactory state of housekeeping. At the time of the inspection, the Site was vacant, undeveloped, agricultural land that was being used for cattle pasture. The Site was accessed from the north along Highway 633. No evidence of distressed vegetation was observed during the inspection. Photographs taken of the Site are presented in Appendix E.

3.1 Site Appearance

document the current activities on the Site and to identify any anomalous conditions that could be related to the presence of any hazardous wastes/materials and/or contamination of the Site, as may be evidenced by ground surface staining and/or distressed vegetation. The results of the reconnaissance conducted at the Site and immediate surrounding areas are presented below and are also included in the checklist in Appendix D.

3.2.6 Polychlorinated Biphenyls (PCBs)

No PCB-containing electrical equipment was observed on the Site.

3.2.7 Urea Formaldehyde

No evidence of urea formaldehyde foam insulation (UFFI) was observed on the Site.

3.2.8 Chlorofluorocarbons

No sources of chlorofluorocarbons were identified on the Site.

3.2.9 Air and Water Emissions

Aside from storm water run-off, there are no liquid discharges from the Site.

3.2.10 Odors, Noise and Vibrations

No unusual odors were encountered and no major sources of noise and vibrations were identified during the inspection of the Site.

3.2.11 Radon

Radon is a colorless, odorless, invisible gas that occurs naturally in soils. Natural radon levels vary and are dependent on the geologic formations present. Radon gas cannot be detected without specialized equipment. Due to the area geology, radon gas is not considered a significant concern in north central Alberta.

3.2.12 Radioactive Sources

No radioactive sources were identified on the Site.

3.2.13 Hazardous Wastes

No hazardous wastes are generated from the activities on the Site.

3.2.14 Dump Sites and Landfills

No evidence of dump sites or landfills was observed on the Site.

3.3 Neighboring Properties

Photographs of the neighboring properties are shown in Appendix E. The Site is bounded on north by Secondary Highway 633 (Township Road 542); on the east by Range Road 31 (partially developed); and on the south and west by a quarter section boundary lines. The neighboring properties to the north, south and west are agricultural lands. Golden Glen Estates country

Specific contamination evaluation procedures, such as soil or ground water sampling and chemical analysis are not included in the scope of work for the foregoing Phase I ESA. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices for environmental site assessments in Alberta at the time this report was prepared.

This report was prepared for the exclusive use of NorCan Consulting Group Inc. and any authorized users for specific applications to the Site. The foregoing Phase I ESA was conducted in accordance with the proposed scope of work prepared for this Site and with CSA Standard Z768-01. No other warranty, expressed or implied, is made as to the professional services provided. Any use which a third party makes of this report, or any reliance on, or decisions to be made based upon it, are the responsibility of such third parties. HGSL accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. The evaluation and interpretation provided herein does not preclude the existence of site conditions in variance to those indicated by the environmental regulatory agencies and/or individuals contacted for this assessment. HGSL accepts no responsibility for any deficiency, misstatement and/or inaccuracies contained in this report as a result of omissions, misinterpretations or fraudulent acts of the individuals and agencies contacted.

No environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with a property. Performance of a standardized environmental site assessment protocol is intended to reduce but not eliminate uncertainty regarding the potential for recognized environmental conditions in connection with the property given reasonable limits of time and cost.

5.0 LIMITATIONS

Based on the information obtained from the foregoing Phase I ESA, a Phase II ESA is not required for the Site.

Based on information made available to HGSL through historical records, regulatory agency searches, site inspections and personnel interviews, no obvious potential sources of contamination were identified on the Site and adjacent properties during the Site inspection.

4.0 CONCLUSION AND RECOMMENDATIONS

No potential sources of contamination were visible on the adjacent properties; although a thorough inspection was not conducted for each adjacent property.

residential subdivision is located immediately to the east.

APPENDIX A

Historical Land Title Certificates

(CONTINUED)

REFERENCE NUMBER: 082 304 774

MUNICIPALITY: TAC STE. ANNE COUNTY

ESTATE: FEE SIMPLE

AREA: 64.3 HECTARES (159 ACRES) MORE OR LESS

AND THE RIGHT TO WORK THE SAME

EXCEPTING THEREOUT ALL MINES AND MINERALS

QUARTER SOUTH EAST

SECTION 11

MERIDIAN 5 RANGE 3 TOWNSHIP 54

SECOND

AND THE RIGHT TO WORK THE SAME

EXCEPTING THEREOUT ALL MINES AND MINERALS

ON ROAD PLAN 320012

0.943 HECTARES (2.33 ACRES) MORE OR LESS AS SHOWN

EXCEPTING THEREOUT:

CONTAINING 64.3 HECTARES (159 ACRES) MORE OR LESS

QUARTER NORTH EAST

SECTION 11

MERIDIAN 5 RANGE 3 TOWNSHIP 54

FIRST

LEGAL DESCRIPTION

0022 750 608 5:3,54,11,SE

0022 750 590 5:3,54,11,NE

SHORT LEGAL

LINE

S

TITLE NUMBER 082 377 801

CURRENT TITLE WITH HISTORICAL DATA

HISTORICAL LAND TITLE CERTIFICATE



ENCUMBRANCES, LIENS & INTERESTS

PAGE 3
082 377 801

REGISTRATION

NUMBER DATE (D/M/Y) PARTICULARS

ATTN: LAND MANAGER
PO BOX 2140, STN M
CALGARY
ALBERTA T2P2M4
AGENT - MARVEY WAYNE ZWARICH
(DATA UPDATED BY: CHANGE OF NAME 082427504)

012 015 705 15/01/2001 TRANSFER OF CAVEAT 952253132
TRANSFEREE - ATCO GAS AND PIPELINES LTD.,
10035-105 ST
EDMONTON
ALBERTA T5J2V6

082 304 775 24/07/2008 MORTGAGE
MORTGAGEE - LARNIE KLAUSE
BOX 129, ONOWAY
ALBERTA T0E1V0
ORIGINAL PRINCIPAL AMOUNT: \$970,000

082 427 504 29/09/2008 CHANGE OF NAME
RE: TALISMAN ENERGY INC.,
ATTN: LAND MANAGER
PO BOX 2140, STN M
CALGARY
ALBERTA T2P2M4
AFFECTS INSTRUMENT: 982161813
AFFECTED PARTY: RIGEL OIL & GAS LTD.

TOTAL INSTRUMENTS: 007

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE
REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED
HEREIN THIS 5 DAY OF NOVEMBER, 2008 AT 12:37 P.M.

ORDER NUMBER: 12688391

CUSTOMER FILE NUMBER: 6800472



END OF CERTIFICATE

THIS ELECTRONICALLY TRANSMITTED LAND TITLES PRODUCT IS INTENDED FOR THE

(CONTINUED)



HISTORICAL LAND TITLE CERTIFICATES
 TITLE CANCELLED ON AUGUST 29, 2008

LINE	SHORT LEGAL	LEGAL DESCRIPTION	FIRST	SECOND
0022 750 590	S:3-54:11;NE	0022 750 608	SECTION 11 MERIDIAN 5 RANGE 3 TOWNSHIP 54 QUARTER NORTH EAST CONTAINING 64.3 HECTARES (159 ACRES) MORE OR LESS EXCEPTING THEREOUT; ON ROAD PLAN 320012 EXCEPTING THEREOUT ALL MINES AND MINERALS AND THE RIGHT TO WORK THE SAME	SECTION 11 MERIDIAN 5 RANGE 3 TOWNSHIP 54 QUARTER SOUTH EAST EXCEPTING THEREOUT ALL MINES AND MINERALS AND THE RIGHT TO WORK THE SAME AREA: 64.3 HECTARES (159 ACRES) MORE OR LESS
0022 750 590	S:3-54:11;SE	0022 750 608	ESSTATE: FREE SIMPLE	MUNICIPALITY: TAC STR. ANNE COUNTY
			REFERENCE NUMBER: 002 140 257	

TITLE NUMBER
 082 304 774

(CONTINUED)

ENCUMBRANCES, LIENS & INTERESTS

PAGE 3
082 304 774

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
		1900, 255-5 AVE SW CALGARY ALBERTA T2P3G6 AGENT - MARVEY WAYNE ZWARICH
012 015 705	15/01/2001	TRANSFER OF CAVEAT 962253132 TRANSFEREE - ATCO GAS AND PIPELINES LTD.. 10035-105 ST EDMONTON ALBERTA T5J2V6
082 304 775	24/07/2008	MORTGAGE MORTGAGEE - LARNIE KLAUSE BOX 128, ONOWAY ALBERTA T0E1V0 ORIGINAL PRINCIPAL AMOUNT: \$970,000
082 377 801	29/08/2008	TRANSFER OF LAND OWNERS - ALBERTA BEACH ESTATES LTD.. 1084 CARTER CREST ROAD EDMONTON ALBERTA T6R2N3 NEW TITLE ISSUED

TOTAL INSTRUMENTS: 007

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE
REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED
HEREIN THIS 5 DAY OF NOVEMBER, 2008 AT 12:37 P.M.

ORDER NUMBER:12688391

CUSTOMER FILE NUMBER: 6800472



END OF CERTIFICATE

THIS ELECTRONICALLY TRANSMITTED LAND TITLES PRODUCT IS INTENDED FOR THE
SOLE USE OF THE ORIGINAL PURCHASER, AND NONE OTHER, SUBJECT TO WHAT IS
SET OUT IN THE PARAGRAPH BELOW.

THE ABOVE PROVISIONS DO NOT PROHIBIT THE ORIGINAL PURCHASER FROM

(CONTINUED)

(CONTINUED)

REFERENCE NUMBER: 872 104 971

MUNICIPALITY: PAC STB. ANNE COUNTY

ESTATE: FER SIMPLE

AREA: 64.3 HECTARES (159 ACRES) MORE OR LESS

AND THE RIGHT TO WORK THE SAME

EXCEPTING THEREOUT ALL MINES AND MINERALS

QUARTER SOUTH EAST

SECTION 11

MERIDIAN 5 RANGE 3 TOWNSHIP 54

SECOND

AND THE RIGHT TO WORK THE SAME

EXCEPTING THEREOUT ALL MINES AND MINERALS

ON ROAD PLAN 32001Z

0.943 HECTARES (2.33 ACRES) MORE OR LESS AS SHOWN

EXCEPTING THEREOUT:

CONTAINING 64.3 HECTARES (159 ACRES) MORE OR LESS

QUARTER NORTH EAST

SECTION 11

MERIDIAN 5 RANGE 3 TOWNSHIP 54

FIRST

LEGAL DESCRIPTION

0022 750 608

5/3/54/11;SE

0022 750 590

5/3/54/11;NE

SHORT LEGAL

LINC

S

TITLE NUMBER
002 140 257

TITLE CANCELLED ON JULY 24, 2008

HISTORICAL LAND TITLE CERTIFICATE



ENCUMBRANCES, LIENS & INTERESTS

PAGE 3
002 140 257

REGISTRATION

NUMBER	DATE (D/M/Y)	PARTICULARS
		AFFECTED LAND: 5;3;54;11;NE (DATA UPDATED BY: TRANSFER OF CAVEAT 012015706)
982 161 813	08/06/1998	CAVEAT RE : RIGHT OF WAY AGREEMENT CAVEATOR - RIGEL OIL & GAS LTD.. 1900, 255-5 AVE SW CALGARY ALBERTA T2P3G6 AGENT - MARVEY WAYNE ZWARICH
992 103 490	23/04/1999	MORTGAGE MORTGAGEE - CANADIAN WESTERN TRUST COMPANY, 2230-666 BURNARD STREET VANCOUVER BRITISH COLUMBIA V6C2X8 ORIGINAL PRINCIPAL AMOUNT: \$67,000
992 103 491	23/04/1999	CAVEAT RE : ASSIGNMENT OF RENTS CAVEATOR - EQUIPLAN MORTGAGE INVESTORS FUND LTD. 102, 4246-97 ST EDMONTON ALBERTA T6E5Z9 AGENT - LAWRENCE EWANCHUK
992 127 290	13/05/1999	POSTPONEMENT OF MORT 872104972 TO MORT 992103490 CAVE 992103491
992 136 423	21/05/1999	TRANSFER OF MORTGAGE 992103490 TRANSFEREE - CANADIAN WESTERN TRUST COMPANY, 2230-666 BURNARD STREET VANCOUVER BRITISH COLUMBIA V6C2X8
002 088 730	06/04/2000	WRIT CREDITOR - HER MAJESTY THE QUEEN IN RIGHT OF ALBERTA AS REPRESENTED BY DEPARTMENT OF HEALTH REVENUE COLLECTIONS 16TH FLOOR, 10025 JASPER AVE EDMONTON ALBERTA T5J2N3 DEBTOR - KENNETH ERVIN TREICHEL (UNKNOWN) GENERAL DELIVERY

(CONTINUED)

THE ABOVE PROVISIONS DO NOT PROHIBIT THE ORIGINAL PURCHASER FROM
 INCLUDING THIS UNMODIFIED PRODUCT IN ANY REPORT, OPINION, APPRAISAL OR
 OTHER ADVICE PREPARED BY THE ORIGINAL PURCHASER AS PART OF THE ORIGINAL
 PURCHASER APPLYING PROFESSIONAL, CONSULTING OR TECHNICAL EXPERTISE FOR
 THE BENEFIT OF CLIENT(S).

THIS ELECTRONICALLY TRANSMITTED LAND TILES PRODUCT IS INTENDED FOR THE
 SOLE USE OF THE ORIGINAL PURCHASER, AND NONE OTHER, SUBJECT TO WHAT IS
 SET OUT IN THE PARAGRAPH BELOW.



END OF CERTIFICATE

CUSTOMER FILE NUMBER: 6800472

ORDER NUMBER: 1268391

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE
 REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED
 HEREIN THIS 5 DAY OF NOVEMBER, 2008 AT 12:37 P.M.

TOTAL INSTRUMENTS: 022

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
002 175 736	23/06/2000	DISCHARGE OF GREAT 992103491
012 015 706	15/01/2001	TRANSFER OF GREAT 962253132 TRANSFEREE - WACO GAS AND PIPELINES LTD., 10035-105 ST EDMONTON ALBERTA T5C2V6
072 112 494	26/02/2007	DISCHARGE OF GREAT 002140258
082 304 774	24/07/2008	TRANSFER OF LAND OWNERS - 119625 ALBERTA INC., 9111-205 STREET EDMONTON ALBERTA T5T1X0 NEW TITLE ISSUED

REGISTRATION	DATE (DMY)	REGISTERED OWNER(S) DOCUMENT TYPE	VALUE	CONSIDERATION
872 104 971	14/05/1987			\$100,000

OWNERS

KENNETH E TREICHEL
OF ALBERTA BEACH
ALBERTA TOE ONO

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
2860LK	07/09/1960	PUBLIC UTILITY COMMISSIONERS BOARD ORDER AFFECTED LAND: 5;3;54;11;NE "ORDER NO 18982"
4430KN	27/03/1957	PUBLIC UTILITY COMMISSIONERS BOARD ORDER IN FAVOUR OF - MID-WESTERN INDUSTRIAL PIPELINES (WABAMUN) LTD. AFFECTED LAND: 5;3;54;11;NE "MEMO 02 09 1982"
872 104 972	14/05/1987	MORTGAGE MORTGAGEE - ERVIN W TREICHEL BOX 1, SITE 1, R.R. 2 DUFFIELD ALBERTA TORONO ORIGINAL PRINCIPAL AMOUNT: \$96,000
942 155 531	25/05/1994	CERTIFICATE OF LIS PENDENS MATRIMONIAL PROPERTY ACT
962 253 132	17/09/1996	CAVEAT RE ; SEE CAVEAT CAVEATOR - NORTHWESTERN UTILITIES LIMITED. 10035 - 105 STREET

(CONTINUED)

(CONTINUED)

982 054 173 25/02/1998 POSTPONEMENT
 OF MORT 872104972
 TO MORT 982051162 GAVE 982051163

982 070 957 13/03/1998 TRANSFER OF MORTGAGE 982051162
 TRANSFER - 47924 ALBERTA LTD.
 C/O 102/4246-97 ST
 EDMONTON
 ALBERTA T6E5Z9

982 083 243 26/03/1998 DISCHARGE OF WRIT 962257054

982 083 244 26/03/1998 DISCHARGE OF WRIT 972275961

982 161 813 08/06/1998 CREAT
 RE : RIGHT OF WAY AGREEMENT
 CAVEATOR - RIGHT OIL & GAS LTD.
 1900, 255-5 AVE SW
 CALGARY
 ALBERTA T2B3G6

982 349 360 10/11/1998 WRIT
 CREDITOR - HER MAJESTY THE QUEEN IN RIGHT OF
 ALBERTA
 AS REPRESENTED BY DEPARTMENT OF HEALTH
 REVENUE COLLECTIONS
 16TH FLOOR, 1025 JASPER AVE
 EDMONTON
 ALBERTA T5Z2N3
 DEBTOR - KENNETH ERVIN TRICHEL (UNKNOWN)
 GENERAL DELIVERY
 ALBERTA BEACH
 ALBERTA T0K0A0
 AMOUNT: \$1,167 AND COSTS IF ANY
 ACTION NUMBER: 9803 18876

982 103 490 23/04/1999 MORTGAGE
 MORTGAGE - CANADIAN WESTERN TRUST COMPANY.
 2230-666 BURNARD STREET
 VANCOUVER
 BRITISH COLUMBIA V6C2X8
 ORIGINAL PRINCIPAL AMOUNT: \$67,000

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER DATE (D/M/Y)

PARTICULARS

ENCUMBRANCES, LIENS & INTERESTS

PAGE 6
872 104 971

REGISTRATION

NUMBER	DATE (D/M/Y)	PARTICULARS
		5011-50 STREET STONY PLAIN ALBERTA T7Z1T3 AFFECTED LAND: 5;3;54;11;SE
002 120 922	08/05/2000	WRIT CREDITOR - HER MAJESTY THE QUEEN IN RIGHT OF CANADA AS REPRESENTED BY MINISTER OF NATIONAL REVENUE CANADA CUSTOMS & REVENUE AGENCY 9700 JASPER AVE EDMONTON ALBERTA T5J4C8 DEBTOR - KENNETH E TREICHEL (UNKNOWN) GENERAL DELIVERY ALBERTA BRACH ALBERTA T0E0A0 AMOUNT: \$91,194 AND COSTS IF ANY ACTION NUMBER: ITA 4390 00
002 140 257	25/05/2000	TRANSFER OF LAND OWNERS - LARNIE KLAUSE BOX 128 ONOWAY ALBERTA T0E1V0 NEW TITLE ISSUED

TOTAL INSTRUMENTS: 027

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE
REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED
HEREIN THIS 5 DAY OF NOVEMBER, 2008 AT 12:37 P.M.

ORDER NUMBER: 12688391

CUSTOMER FILE NUMBER: 6800472



END OF CERTIFICATE

THIS ELECTRONICALLY TRANSMITTED LAND TITLES PRODUCT IS INTENDED FOR THE
SOLE USE OF THE ORIGINAL PURCHASER, AND NONE OTHER, SUBJECT TO WHAT IS
SET OUT IN THE PARAGRAPH BELOW.

(CONTINUED)



North Alberta Land Registration District

A.D. Registrar

BR 19 day of MAY 1987

In witness whereof I have subscribed my name and affixed my official seal this

SUBJECT TO THE ENCUMBRANCES, EASES AND INTERESTS NOTICED BY MEMORANDUM UNDER WRITTEN OR ENDORSED HEREON, OR WHICH MAY HEREAFTER BE MADE IN THE REGISTER.

JUN 16 1987
OFFICE OF THE REGISTRAR
EDMONTON

TO WORK THE SAME.

EXCEPTING THEREOUT ALL MINES AND MINERALS AND THE RIGHT

CONTAINING 121 HECTARES (318 ACRES) MORE OR LESS.
EXCEPTING THEREOUT: 0.943 HECTARES (2.33 ACRES)
MORE OR LESS, OUT OF THE NORTH EAST QUARTER, AS SHOWN
ON ROAD PLAN 3200 L.2.

WEST OF THE FIFTH MERIDIAN,

RANGE THREE (3)

TOWNSHIP FIFTY FOUR (54)

SECTION ELEVEN (11)

THE EAST HALF OF

of and in

is/are now the owner(s) of an estate in fee simple

THIS IS TO CERTIFY THAT KENNETH E. FREICHEL OF ALBERTA BEACH, ALBERTA T0E 0N0

North Alberta Land Registration District

NUMBER 872104971
REFERENCE 41-C-255
CONSIDERATION 10000000

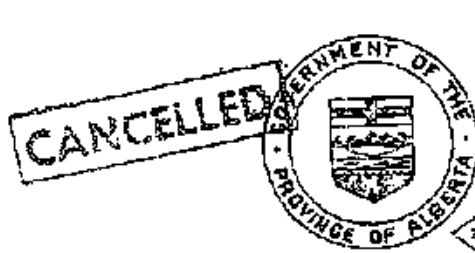
Certificate of Title

M



Canada
RENEWAL
6209 S.U.

Certificate of Title



NO.	4	1	-	G	-	2	5	5
REF.	1	6	2	-	2	-	1	8
VALUES			1	0	0	0	0	0

M	RG.	TWP.	SEC.	Q.	PT.
1	S	5	4	1	E 1/2

PLAN	B.L.K.	LOT	PT.
2			

North Alberta Land Registration District

THIS IS TO CERTIFY THAT ERVIN W. TREICHEL (FARMER) OF ALBERTA BEACH,
IN THE PROVINCE OF ALBERTA

IS now the owner of an estate in fee simple

of and in

THE EAST HALF OF SECTION ELEVEN (11)

TOWNSHIP FIFTY FOUR (54)

RANGE THREE (3)

WEST OF THE FIFTH MERIDIAN

CONTAINING 129 HECTARES (318 ACRES) MORE OR LESS.

EXCEPTING THEREOUT: 0.943 HECTARES (2.33 ACRES) MORE OR LESS,

OUT OF THE NORTH EAST QUARTER, AS SHOWN ON ROAD PLAN 3200 L.Z.

TITLE CANCELLED 802104971
In Fee
 on this 14 day of May 1980
 A. D. Registrar

EXCEPTING THEREOUT ALL MINES AND MINERALS, AND THE RIGHT TO
WORK THE SAME.

SUBJECT TO THE ENCUMBRANCES, LIENS, ESTATES OR INTERESTS NOTIFIED BY MEMORANDUM UNDERWRITTEN OR
ENDORSED HEREON, OR WHICH MAY HEREAFTER BE MADE IN THE REGISTER.

IN WITNESS WHEREOF I have hereunto subscribed my name and affixed my official seal

this THIRTEENTH day of APRIL A.D. 1972

Post Office Address ALBERTA BEACH, ALBERTA

A. D. Registrar AD Registrar

OVER

POSTAGE WILL BE PAID BY ADDRESSEE (PERMITS NO. 1000000000000000)

NO ADDRESS CORRECTED FOR POSTAGE (PERMITS NO. 1000000000000000)

North Alberta Land Registration District

Alberta Land Registration District

official seal this day of APRIL 1972

In Witness Whereof, I have hereunto subscribed my name and official seal or endorsed signature or initials may hereafter be made in the register subject to the requirements of the Act and certified by me in accordance with the provisions of the Act.

NOT RECORDED
APR 19 1972
A. D. Registrar

of and in
is now the owner of an estate in fee simple

ALBERTA, 1972, IN THE PROVINCE OF ALBERTA, CANADA. (CHAPTER)

This is to Certify that
North Alberta Land Registration District

Block Street Office 119,005.00
Super Book No. 152-2-151

Certificate of Title

Number 72
AD 9
APR 13 1972
E.P. GAVOUCI
Registrar, KALM.



CANCELLED
11-C-255

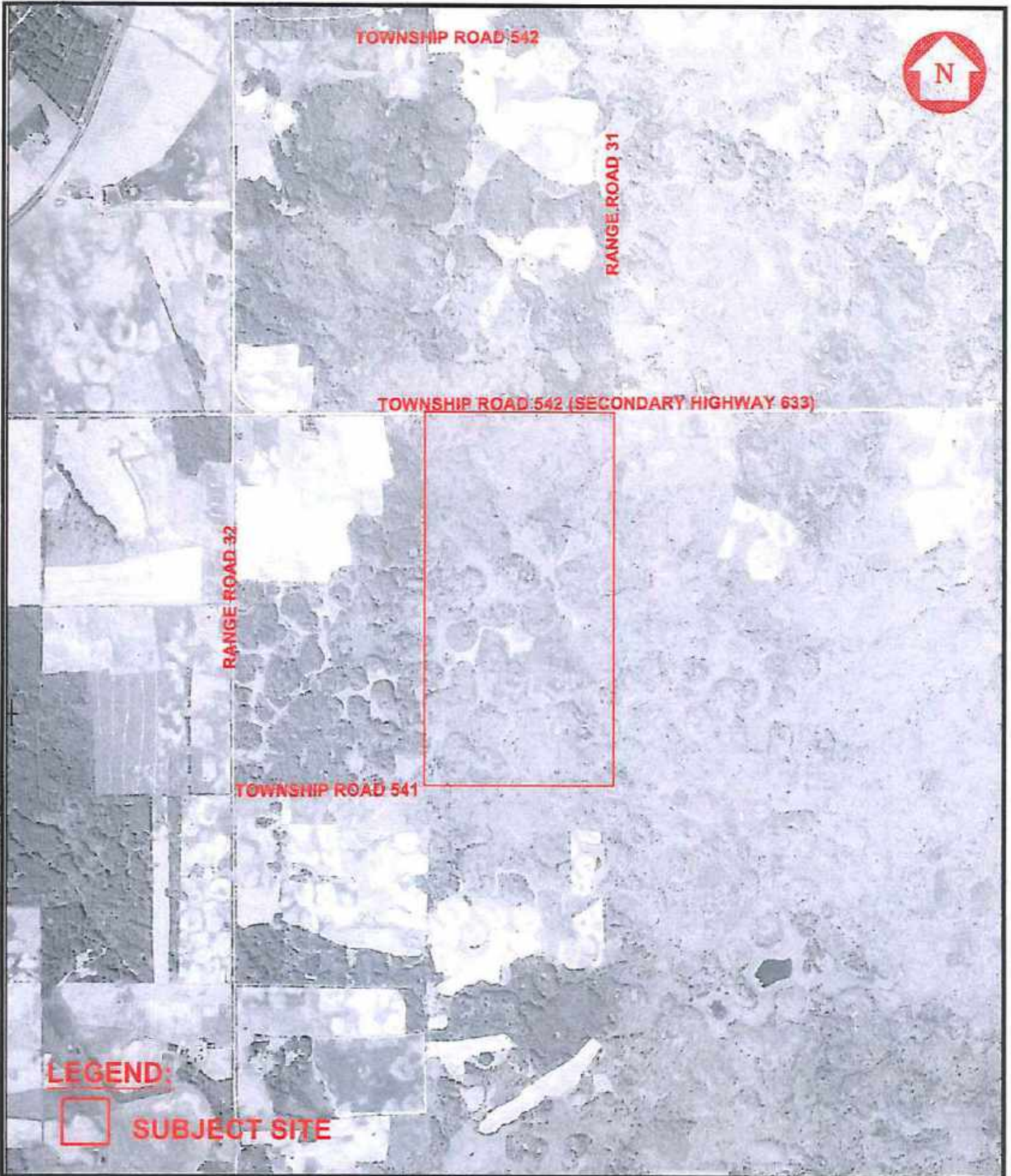
The title of: NK-11.
is subject to a Order by the
Board of Public Utility Commissioners
dated the 28 day of Nov, 1956.
Registered at H. & F. P. H., No. 7, of
Sept 1962 as D. B. No. 2860 LX
Alfred J. Spivey
Ad. Registrar

TITLE CERTIFICATE OF TITLE IS CANCELLED
and to 2.33 acres of land
for Road.
IN ACCORDANCE WITH THE TRANSFER SUB-
JECT TO ANY NOTATIONS AGENCIES RESER-
VATIONS THEREIN AND A NEW CERTIFICATE
OF TITLE NO. _____
ISSUED THIS 24 DAY OF May, 1963
TO H. Casper
BY Alfred J. Spivey
Ad. Registrar

The Title within & other lands
is subject to a CAVEAT filed by Spivey
et. Gruebel
Alberta Beach, Alberta
dated the 20 day of June, 1963
Registered at 2:49 P.M., the 26 day of
June, 1963 D. B. No. 2693 NH
Alfred J. Spivey
Ad. Registrar

Aerial Photographs

APPENDIX B



HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

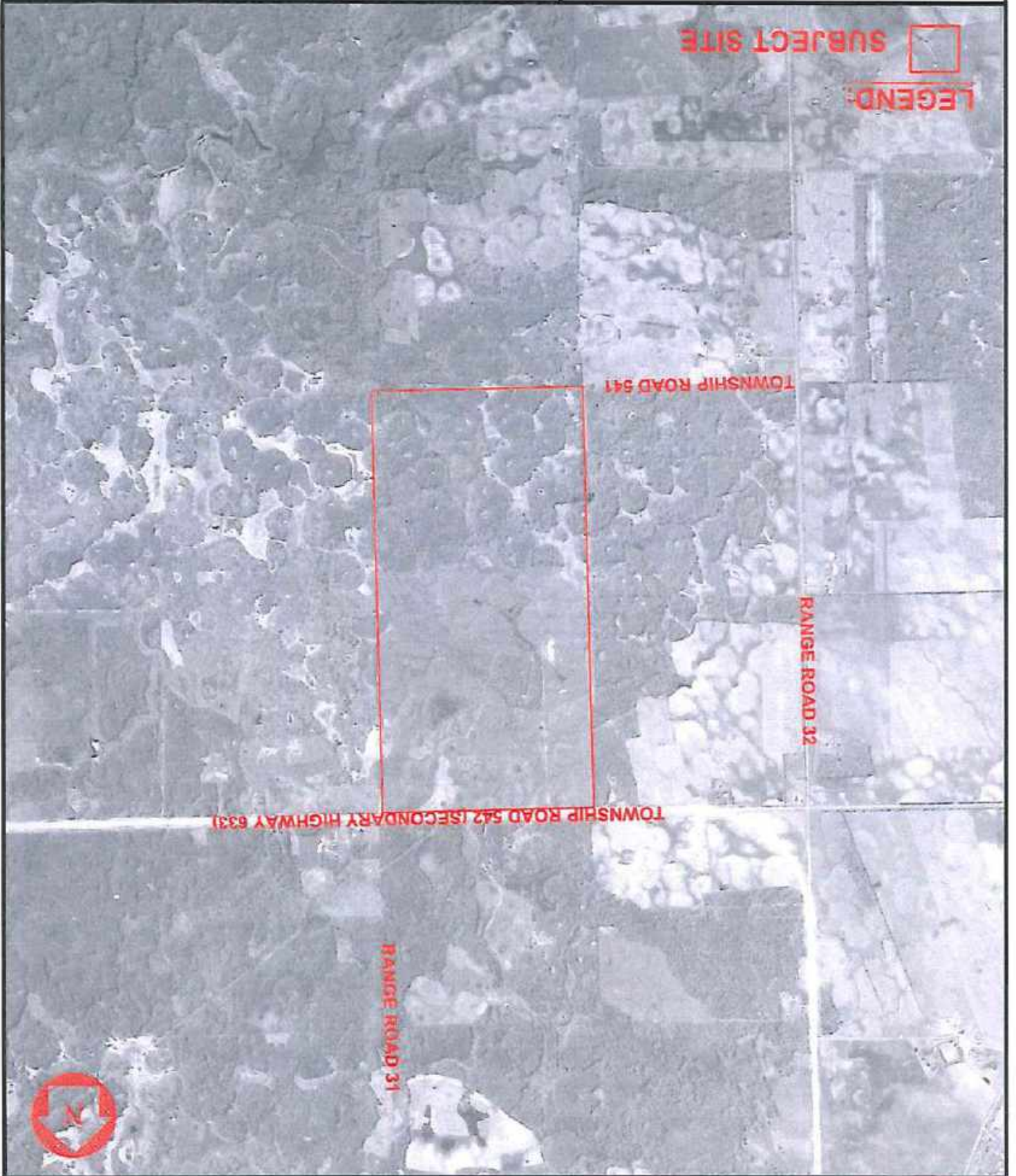
NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
E 11-54-03-W5M
Lac Ste. Anne County, Alberta
1950 Aerial Photograph

JOB NO.: H0810-210 | DATE: January 15, 2009 | PLATE: 1

HAGSTROM GEOTECHNICAL SERVICES LTD.
5607-134A Avenue NW, Edmonton AB T5A 0M3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.
Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
E 11-54-03-W5M
Lac Ste. Anne County, Alberta
1962 Aerial Photograph
JOB NO.: H0810-210 | DATE: January 15, 2009 | PLATE: 2





RANGE ROAD 31

TOWNSHIP ROAD 542 (SECONDARY HIGHWAY 633)

RANGE ROAD 32



TOWNSHIP ROAD 541

LEGEND:



SUBJECT SITE

HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A 0M3
Tel: (780) 996-5621 Fax: (780) 475-5671

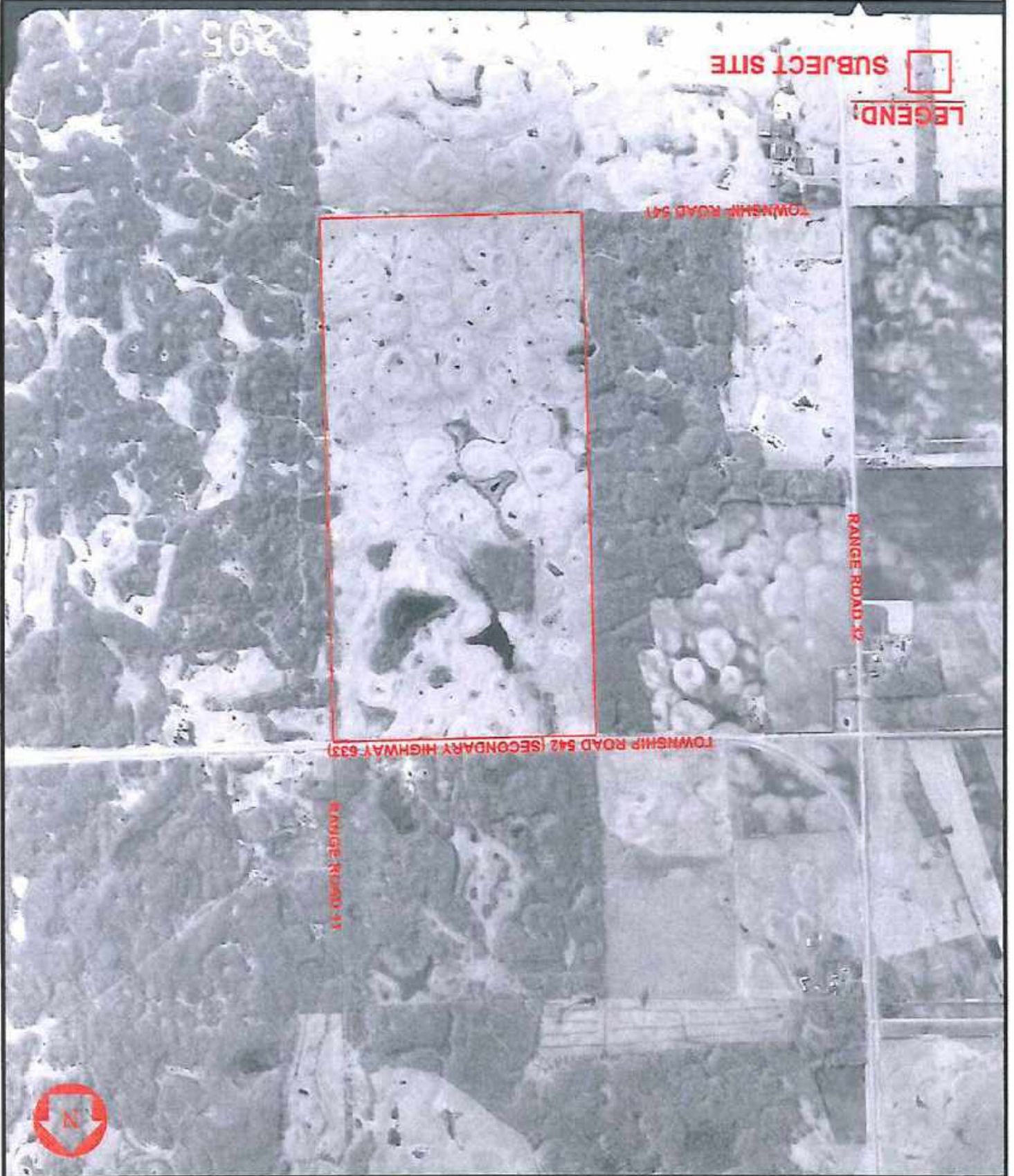
NORCAN CONSULTING GROUP INC.

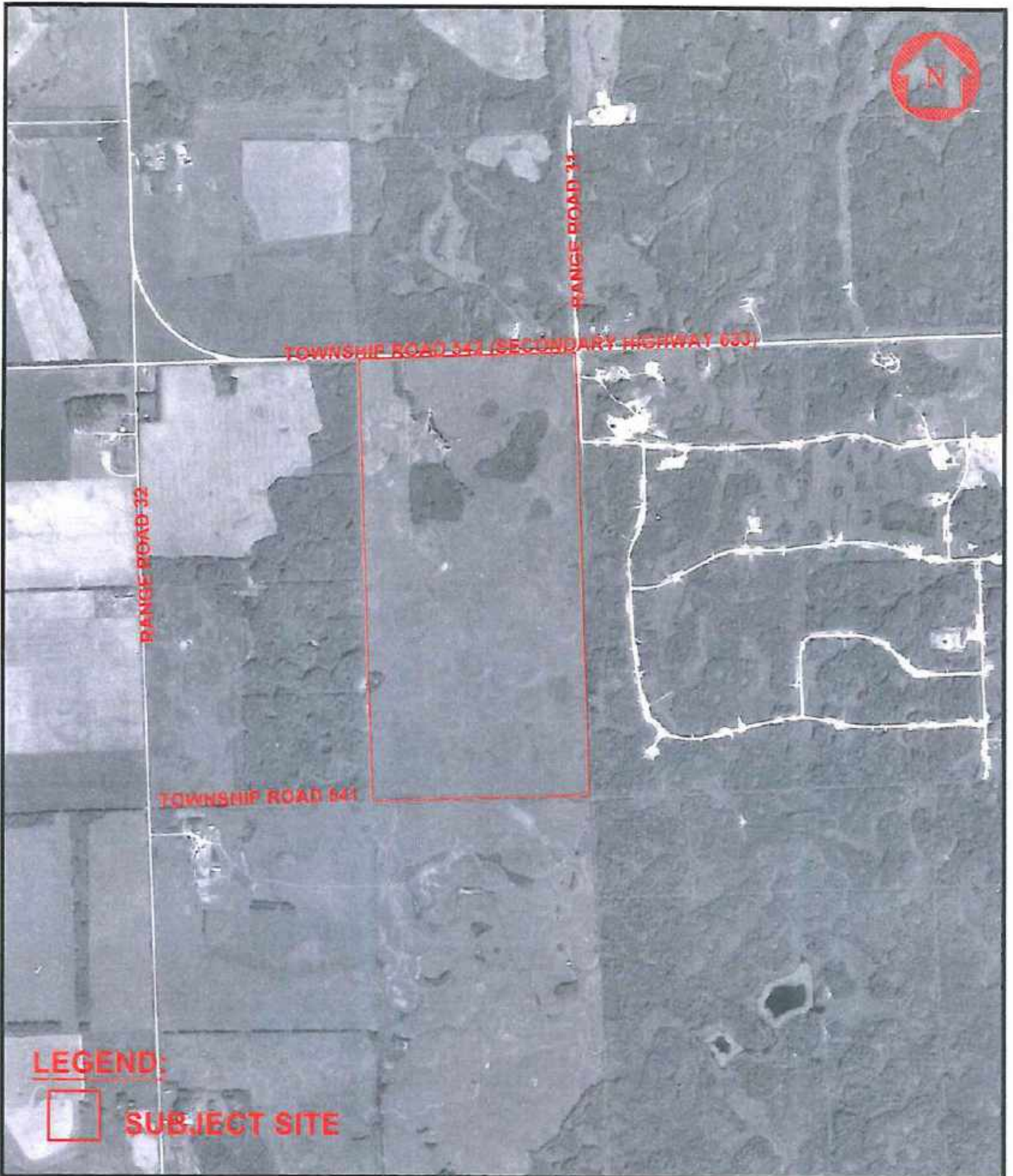
Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
E 11-54-03-W5M
Lac Ste. Anne County, Alberta
1970 Aerial Photograph

JOB NO.: H0810-210 | DATE: January 15, 2009 | PLATE: 3

HAGSTROM GEOTECHNICAL SERVICES LTD.
5607-134A Avenue NW, Edmonton AB T5A 0M3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.
Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
E 11-54-03-W5M
Lac Ste. Anne County, Alberta
1977 Aerial Photograph
JOB NO.: H0810-210 DATE: January 15, 2009 PLATE: 4





HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A 0M3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
E 11-54-03-W5M
Lac Ste. Anne County, Alberta
1981 Aerial Photograph

JOB NO.: H0810-210 | DATE: January 15, 2009 | PLATE: 5

JOB NO.: H0810-210 | DATE: January 15, 2009 | PLATE: 6
Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
E 11-54-03-W5M
Lac Ste. Anne County, Alberta
1987 Aerial Photograph
NORCAN CONSULTING GROUP INC.

HAGSTROM GEOTECHNICAL SERVICES LTD.
5607-134A Avenue NW, Edmonton AB T5A 0M3
Tel: (780) 996-5621 Fax: (780) 475-5671





TOWNSHIP ROAD 542 (SECONDARY HIGHWAY 533)

RANGE ROAD 32



TOWNSHIP ROAD 541

RANGE ROAD 31

LEGEND:



SUBJECT SITE

TOWNSHIP ROAD 540

HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A 0M3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
E 11-54-03-W5M
Lac Ste. Anne County, Alberta
1992 Aerial Photograph

JOB NO.: H0810-210 | DATE: January 15, 2009 | PLATE: 7

HAGSTROM GEOTECHNICAL SERVICES LTD.
5607-134A Avenue NW, Edmonton AB T5A 0M3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.
Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
E 11-54-03-W5M
Lac Ste. Anne County, Alberta
2000 Aerial Photograph
DATE: January 15, 2009 | PLATE: 8
JOB NO.: H0810-210



APPENDIX C
Regulatory Agency Responses



FOIP, Records and Information Management

6th fl., South Petroleum Plaza
9815 - 108 Street
Edmonton, Alberta
T5K 2G8

Telephone: (780) 427-4429
Fax: (780) 427-9838

Ms. Hazel Bataid
HB Geo-Enviro Services
43 Creekside Close
Spruce Grove, AB T7X 4N9

[Fax: (866) 833-0331]

December 2, 2008

Access Request: B08-G-1332

Dear Ms. Bataid:

Re: Freedom of Information and Protection of Privacy Act Request for records pertaining to the property located at E Sec 11-Twp 54-Rge 3 W5M, Village of Alberta Beach, AB.

The following is in response to your request of November 21, 2008 for access under the *Freedom of Information and Protection of Privacy Act* to the subject records.

A search of Alberta Environment record holdings has not identified any records relating to the subject of your request, based on the search parameters you provided to this office.

If you have any questions or concerns about the processing of your request, please write to the above address or call me at (780) 427-2253, so that we can look at ways to address these issues. If, however, we are unable to resolve your concerns, you have the right to ask the Information and Privacy Commissioner to conduct a review under section 65 of the Act. You have 60 days from the receipt of this notice to request a review by writing to:

Information and Privacy Commissioner
410, 9925 - 109 Street
Edmonton, Alberta, T5K 2T8
Telephone (780) 422-6860
Fax (780) 422-5682

If you request a review, please provide the Commissioner with a copy of your original request, any letters of clarification, a copy of this letter and the reason why you are requesting a review.

Sincerely,

Jerry Kular
Advisor



FOIP, Records and
Corporate Support Branch

6th Floor, Petroleum Plaza South
9915 - 108 Street
Edmonton, AB T5K 2G8

Telephone: (780) 427-4429
Fax: (780) 427-9838

Ms. Hazel Battad
HB Geo-Enviro Services
43 Creekside Close
Spruce Grove, AB T7X 4N9

[Fax:] (866) 833-0331

December 2, 2008

Dear Ms. Battad:

Re: Routine Disclosure Request 2215-RD-08 for information routinely available under the Environmental Protection and Enhancement (EPEA) Legislation.

Our office received your request dated November 21, 2008 for the following subject records.

Location: E Sec 11-Twp 54-Rge 3 WSM, Village of Alberta Beach, AB
Lac Ste. Anne County

Name(s): Alberta Beach Estates Ltd.; 1195625 Alberta Ltd.; Larnie Klaus; Kenneth E.
Treichel; Ervin W. Treichel; Carl Treichel

Time Frame: 1950 to present

Records: Scientific/technical information which may include reports documenting the nature and extent of soil, ground and surface water contamination; remedial measures taken to clean-up the site or status of the site; and external correspondence between the submitter and the Department of Environment pertaining to the reports.

Alberta Environment has conducted a search of department records; based on the search parameters you provided to this office and has not identified any routinely available records relating to the subject of your request. As a result of our findings, your Routine Disclosure request has been closed.

Enclosed is a receipt for the initial fee in the amount of \$25.00, submitted to Alberta Environment to undertake your request for a search for these records.

If you have any further questions or concerns, please write or call me at (780) 427-2253.

Yours truly,

A handwritten signature in black ink, appearing to read "J. Kolar".

Jerry Kolar,
FOIP Advisor
Enclosure (receipt MC 5689297)

ENVIRONMENTAL LAW CENTRE
Suite 800, 10025 - 106 Street, Edmonton, AB T5J 1G4
Phone: (780) 424-5099 Fax: (780) 424-5133
Internet: www.ele.ab.ca E-Mail: ele@ele.ab.ca

Our File: 043544

December 3, 2008

Ms. Hazel Bannat
HB Geo-Enviro Services
43 Creekside Close
Spruce Grove, AB T7X 4N9

Dear Ms. Bannat:

RE: Search Requested - Larnie Klaus

In response to your request of December 2, 2008, we have searched the Environmental Enforcement Historical Search Service database for an exact match with respect to the above request, and can advise that as of today's date, there have been NO enforcement actions issued pursuant to the Alberta "Environmental Protection and Enhancement Act" ("EPEA") and its predecessor legislation, the "Hazardous Chemicals Act", "Agricultural Chemicals Act", "Clean Water Act" and "Clean Air Act" to 1971, and/or pursuant to the "Water Act" from 1999 onwards.

This search is limited to the following enforcement actions under EPEA and its predecessor legislation: Tickets, Prosecutions, Administrative Penalties, Warnings, Enforcement Orders, Environmental Protection Orders Concerning Waste, Environmental Protection Orders, Emergency Environmental Protection Orders, Emission Control Orders, Chemical Control Orders, Water Quality Control Orders and Stop Orders. This search is limited to the following enforcement actions under the Water Act: Prosecutions, Administrative Penalties, Water Management Orders, Warnings and Enforcement Orders. It does not include Clean Up Orders issued under the Litter Act or Environmental Protection Orders respecting unsightly property issued under EPEA; this information may be available from the local municipality.

Enforcement actions are entered in the database following: (1) the decision date, for prosecutions; (2) the date an administrative penalty was paid or due (30 days after issuance), whichever is sooner; and (3) the date the document was issued for all other enforcement actions. These search results are based on information provided by Alberta Environment ("ABENV"). ABENV advises that they try to provide the best information possible. However, ABENV advises that it cannot guarantee that the information provided is complete or accurate and that any person relying on these search results does so at their own risk. More information may be gained by referring to original enforcement documents. Copies of orders are available from the Environmental Law Centre. Any other enforcement information may be available directly from Alberta Environment.

Yours sincerely,



Cindy Dewing
Enforcement Search Service
Encl.

ENVIRONMENTAL LAW CENTRE

Suite 800, 10025 - 108 Street, Edmonton, AB T5J 1G4

Phone: (780) 424-5099 Fax: (780) 424-5133

Internet: www.elc.ab.ca E-Mail: elc@elc.ab.ca

December 3, 2008

Our File: 043545

Ms. Hazel Battad
HB Geo-Enviro Services
43 Creekside Close
Spruce Grove, AB T7X 4N9

Dear Ms. Battad:

RE: Search Requested - Kenneth E. Treichel

In response to your request of December 2, 2008, we have searched the Environmental Enforcement Historical Search Service database for an exact match with respect to the above request, and can advise that as of today's date, there have been NO enforcement actions issued pursuant to the Alberta "Environmental Protection and Enhancement Act" ("EPEA") and its predecessor legislation, the "Hazardous Chemicals Act", "Agricultural Chemicals Act", "Clean Water Act" and "Clean Air Act" to 1971, and/or pursuant to the "Water Act" from 1999 onwards.

This search is limited to the following enforcement actions under EPEA and its predecessor legislation: Tickets, Prosecutions, Administrative Penalties, Warnings, Enforcement Orders, Enforcement Orders Concerning Waste, Environmental Protection Orders, Emergency Environmental Protection Orders, Emission Control Orders, Chemical Control Orders, Water Quality Control Orders and Stop Orders. This search is limited to the following enforcement actions under the Water Act: Prosecutions, Administrative Penalties, Water Management Orders, Warnings and Enforcement Orders. It does not include Clean Up Orders issued under the Litter Act or Environmental Protection Orders respecting unsightly property issued under EPEA; this information may be available from the local municipality.

Enforcement actions are entered in the database following: (1) the decision date, for prosecutions; (2) the date an administrative penalty was paid or due (30 days after issuance), whichever is sooner; and (3) the date the document was issued for all other enforcement actions.

These search results are based on information provided by Alberta Environment ("AENV"). AENV advises that they try to provide the best information possible. However, AENV advises that it cannot guarantee that the information provided is complete or accurate and that any person relying on these search results does so at their own risk. More information may be gained by referring to original enforcement documents.

Copies of orders are available from the Environmental Law Centre. Any other enforcement information may be available directly from Alberta Environment.

Yours sincerely,



Cindy Dewing

Enforcement Search Service
Encl.

ENVIRONMENTAL LAW CENTRE

Suite 800, 40025 - 106 Street, Edmonton, AB T6J 1G4
Phone: (780) 424-5039 Fax: (780) 424-5133

E-Mail: elc@elc.ab.ca Home Page: <http://www.elc.ab.ca>

December 3, 2008

Our File: 021915

Ms. Hazel Baird

HB Geo-Enviro Services

43 Creekside Close

Spruce Grove, AB T7X 4N9

Dear Ms. Baird:

RE: Search Requested - ND-11-54-3-WSM

In response to your request of December 2, 2008, we have searched the Wellsite Reclamation Historical Search Service database for the following quarter section of land:

WS-03-054-11 NE1/4

and can advise that as of today's date, there have been NO Reclamation Certificates (applied for, issued or cancelled), Reclamation Orders and Conservation Notices issued pursuant to the "Alberta Environmental Protection and Enhancement Act" and its predecessor legislation, the "Land Surface Conservation and Reclamation Act" since 1963.

Information offered by the Wellsite Reclamation Historical Search Service is limited to wellsites, oil production sites, pipelines, compressor sites and some sand and gravel operations on Alberta private land, Special Areas Board land constituted under the "Special Areas Act" and Wellsite Settlements established under the "Wellsite Settlements Act". Not included are coal or oil sands mines or exploration sites.

These search results are based on information provided by Alberta Environment ("ABENV"). ABENV advises that they try to provide the best information possible. However, ABENV advises that it cannot guarantee that the information provided is complete or accurate and that any person relying on these search results does so at their own risk.

Information about Environmental Protection Orders, Emergency Environment Protection Orders and Enforcement Orders issued under the "Alberta Environmental Protection and Enhancement Act" can be obtained by searching the Environmental Enforcement Historical Search Service database through the Environmental Law Centre.

Yours sincerely,



Candy Dewing
Wellsite Reclamation Search Service Coordinator

Ad
Bnd.

ENVIRONMENTAL LAW CENTRE

Suite 800, 10025 - 106 Street, Edmonton, AB T5J 1G4

Phone: (780) 424-5099 Fax: (780) 424-5133

E-Mail: elc@elc.ab.ca Home Page: <http://www.elc.ab.ca>

December 3, 2008

Our File: 021916

Ms. Hazel Battad
HB Geo-Enviro Services
43 Creekside Close
Spruce Grove, AB T7X 4N9

Dear Ms. Battad:

RE: Search Requested - SE-11-S4-3-W5M

In response to your request of December 2, 2008, we have searched the Wellsite Reclamation Historical Search Service database for the following quarter section of land:

W5-03-054-11 SE1/4

and can advise that as of today's date, there have been NO Reclamation Certificates (applied for, issued or cancelled), Reclamation Orders and Conservation and Reclamation Notices issued pursuant to the "Alberta Environmental Protection and Enhancement Act" and its predecessor legislation, the "Land Surface Conservation and Reclamation Act" and the "Surface Reclamation Act" since 1963.

Information offered by the Wellsite Reclamation Historical Search Service is limited to wellsites, oil production sites, pipelines, compressor sites and some sand and gravel operations on Alberta private land, Special Areas Board land constituted under the "Special Areas Act" and Metis Settlements established under the "Metis Settlements Act". Not included are coal or oil sands mines or exploration sites.

These search results are based on information provided by Alberta Environment ("AENV"). AENV advises that they try to provide the best information possible. However, AENV advises that it cannot guarantee that the information provided is complete or accurate and that any person relying on these search results does so at their own risk.

Information about Environmental Protection Orders, Emergency Environment Protection Orders and Enforcement Orders issued under the "Alberta Environmental Protection and Enhancement Act" can be obtained by searching the Environmental Enforcement Historical Search Service database through the Environmental Law Centre.

Yours sincerely,


Cindy Dewing
Wellsite Reclamation Search Service Coordinator
/id
Encl.



Petroleum Tank Management
Association of Alberta
 Suite 980, 10303 Jasper Avenue
 Edmonton, Alberta T6J 3N6
 PH: (780)425-8265 or 1-866-222-8265
 FAX: (780)425-4722

November 10, 2008

Hazel Battad
 HB Geo-Enviro Services
 43 Creekside Close
 Spruce Grove, AB
 T7X 4N9

Dear Hazel Battad:

As per your request, the PTMAA has checked the registration of active tank sites and inventory of abandoned tank sites and there are no records for the property with the legal land description.

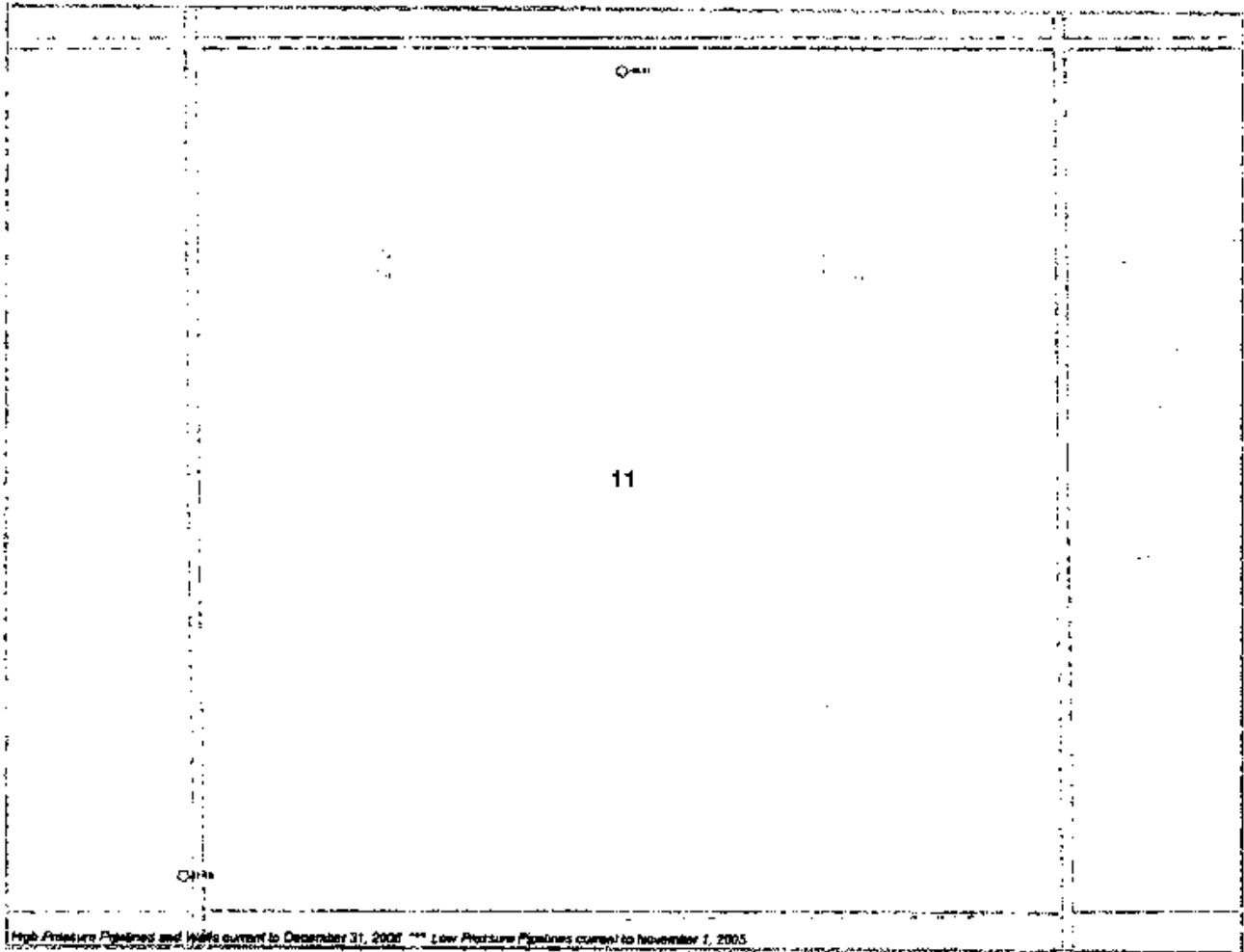
11-54-3-W5, Lac Ste. Anne County

Please note that both databases are not complete. The main limitation of these databases is that they only include information reported through registration or a survey of abandoned sites completed in 1992 and should not be considered as a comprehensive inventory of all past or present storage tank sites. The PTMAA cannot guarantee that tanks do not or have not existed at this location. Information in the databases is based on information supplied by the owner and the PTMAA cannot guarantee its accuracy. Information on storage tanks or on past or present contaminant investigations may be filed with the local Fire Department or Alberta Environment.

Yours truly,

Connie Jacobsen
 PTMAA

NorCan Consulting Group - E 11-54-3-W5M



High Pressure Pipelines and Wells current to December 31, 2007 *** Low Pressure Pipelines current to November 1, 2005



- Legend**
- Abandoned Wellhead
 - Suspended Wellhead
 - Flowline Wellhead
 - Production Wellhead
 - Flowline Wellhead
 - Production Wellhead
 - Water Wellhead
 - Well Completion Location
 - Test, Unworked Well
 - Newly Spudded Well
- High Pressure Pipelines**
- High Pressure Pipeline
 - 48" Pipeline
 - 36" Pipeline
 - LVP HVP Pipeline
 - Potential Spillable
 - (Only when a company is drilled)
- Low Pressure Pipelines**
- Gas Cond. Pipeline

ERCB DATA | ATTACHED FILES

WELL INFORMATION	
CURRENT TO DECEMBER 31, 2008	
EVENT: 0	
WELL ID:	00 / 15-11-054-03 WS / 0
LICENCE #:	0003320
LICENCE DATE:	OCTOBER 22, 1952
WELL NAME:	UNION 17 CARDIFF TH 15-11-54-3
WITHIN:	15-11-054-03 WS H2S (workmo):
LICENCEE:	UNION OIL COMPANY OF CALIFORNIA
SPUD DATE:	OCTOBER 22, 1952
STATUS:	ABD
ABANDONED DATE:	OCTOBER 23, 1952
SURFACE:	DOWNHOLE:
OFFSETS:	S 41.1 W 802.5
LATITUDE:	53.557062
LONGITUDE:	114.333393
GROUND ELEVATION:	758 m 2487'
TOTAL DEPTH:	357 m 1171'
SUBSTANCE:	NOT AVAILABLE
WELL TYPE:	NOT AVAILABLE

OPTIONS	
Open Well Plat	Select Info to View
Request Diverston Log	
Create O&M Report	
Add To Custom Well List	
Print Screen	
MORE INFO	

ERCB Pipeline Information

ERCB DATA ATTACHED FILES

<p>ERCB PIPELINE INFORMATION CURRENT TO DECEMBER 31, 2008</p>					<p>OPTIONS</p> <p>View Company Info</p> <p>View Installation Info</p> <p>View Entire Licence</p> <p>View Licence Ticket</p> <p>View Spill Incidents</p> <p>Highlight Line</p> <p>Highlight Entire Licence</p> <p>Print Screen</p>
LICENCE/LINE #:	28593 - 3		PERMIT DATE:	NOVEMBER 20, 1996	
ABACUS #:			LICENCE DATE:		
COMPANY:	ATCO GAS AND PIPELINES LTD. (SOUTH)				
FROM LOCATION:	05-36-054-02 W5M PL		TO LOCATION:	04-13-053-04 W5M PL	
LENGTH:	12.0 kms	7.43 mi	STATUS:	O	
SUBSTANCE:	NG		H2S:	0 mol/mol 0 ppm	
OD:	273.1 mm	10.75 "	WT:	5.6 mm 0.22 "	
MATERIAL:	S		TYPE:	5L	
GRADE:	A		MOP:	4830 kPa 701 psi	
JOINTS:	W		INTL COATING:	U	
STRESS LEVEL:	57 %		ENVIRONMENT:		
ORIGINAL PERMIT DATE:	NOVEMBER 20, 1996		CONST. DATE:		
ORIGINAL LICENCE/LINE #:	28593 - 3				

Environmental Site Inspection Checklist

APPENDIX D

FACILITY ENVIRONMENTAL CHECKLIST

Phase 1 Site Assessment Project: Albion Beach Estates Date: Nov 6 2008 Job# H0810-210

3.0 General site information

site address E 1/2 - 11-54-3-W5M site name Albion Beach Estates

Sec St. Anne site contact Frank Florhenrich

County telephone # 780-968-4665

land use classification Agriculture site area - ha 320[±] acres

predominant site use: use from until

current livestock Pasture 1970 2008

historical Forest pre-1970

number and type of buildings / structures on site	number	describe below
#1	<u>NIL</u>	
#2	↓	
#3		
#4		

Site services

potable water supply <u>No</u>	electrical service <u>No</u>
sewage disposal <u>No</u>	transformer <u>No</u>
solid waste disposal <u>No</u>	natural gas <u>No</u>
hazardous waste disposal <u>No</u>	storm sewer <u>No</u>

Indicated hazardous substances

Are any contaminants known to be associated with the current or with a prior occupancy? yes - no -

Does the record review indicate any areas of concern for further investigation? yes - no -

#1 N/A

#2

#3

#4

↓

5.1 lands

5.1.1 Topographic features of site, indicate which conditions best describe site features.

The steep direction of slope good poor same

describe drainage conditions of site high low

elevation relative to surrounding sites

Excepting buildings and similar structures is this site undeveloped developed

what are the predominant surface features and their relative area compared to the total site area.

material gravel asphalt concrete rock topsoil sand silt clay

vegetation describe below grass trees other

percent coverage	native	imported material
gravel		
asphalt		
concrete		
rock		
topsoil		
sand		
silt		
clay		
vegetation describe below		
grass		
trees		
other		

5.1.2 Groundwater conditions

depth of groundwater on site ft. or m. estimated not known

direction of groundwater flow good poor not known

groundwater quality good poor not known

5.1.3 Surface water conditions

well drained poorly drained naturally drained piped

storm water is received by confined drainage open

storm water is received by municipal storm sewer surface water body

Indicate locations and nature of any catchments: *river to the north west common*

Is there standing water on this site? yes no

If yes describe subsidence surface contours impermeous surface abnormal water table other *river to the southwest*

5.1.4 Artificial watercourses, ditches, ponds.

Indicate the presence of drainage ditch irrigation canal pond

other N/A

5.1.5 lakes, rivers and streams

Indicate the nature and location of any natural water features that may be connected with this site.

Small creek is located in both quarter sections

Describe any conditions on this site that may negatively impact relative natural water features.

N/A

5.1.6 Wells

Are there any wells on this site?	yes	NO	number
gas / oil	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
water	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
other	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

state of wells on site	in use	unused	abandoned	adequately decommissioned
well #1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
well #2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
well #3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
well #4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Indicate the nature of any concern you may have.

N/A

5.1.7 slumps or depressions

Do any unusual slumps or depressions occur on this site? yes no area

depth _____ number of occurrences _____

What is the most likely reason for these features

_____ bedrock of foundations
 _____ bedrock of trenches
 _____ bedrock
 _____ erosion by surface water
 _____ describe

_____ bedrock of underground storage
 _____ underground disposal
 _____ ruptured underground piping
 _____ groundwater conditions
 _____ N/A

other _____

5.1.8 Pits or lagoons

Are there any pits or lagoons on this site yes no containers

are they used for runoff water disposal of industrial waste yes no treatment of any of the above

_____ N/A

5.1.9. Status of odours

Are there any unusual or suspect odours on this site? yes no describe

_____ N/A

Phase 1 Site Assessment | Project: *Allyson Smith* | Date: *2008* | Job # *H0810-210*

Phase 1 Site Assessment

Project: *Allysta*
Beach Estates

Date: *Nov 6, 2008*

Job # *H0810-210*

5.1.10. Bulk storage, aboveground or underground storage tanks

Are bulk materials stored on this site yes no unknown

container type	yes	no	substance	amount / capacity
drums	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
boxed containers	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
bagged goods	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
loose pile	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
other	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>old farm equipment</i>	
aboveground storage tanks	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
belowground storage tanks	<input type="checkbox"/>	<input checked="" type="checkbox"/>		

are containment facilities provided for these materials *(N/A)* yes no

if occurring indicate:
size number covered enclosed fenced restricted access
describe below including location, materials of construction, purpose, contents, lining, fireboard, leaks if any, and general condition and age.

N/A

are these notes continued elsewhere yes no

Where underground tanks installed on this site in the past? yes no unknown if yes indicate

contents *N/A*
location
date of installation
construction specifications
known contamination problems

are unused underground tanks still in place yes no unknown
have unused underground tanks been removed yes no unknown if yes indicate

date of removal *N/A*
persons / company who removed them
condition when removed
method of removal

attach copy of any available reports

5.1.13. Wastewater / Effluent

Is there any indication of wastewater, effluent, vapour or solid waste production, other than domestic refuse associated with the occupancy of this site? Yes No *If yes indicate.*

Waste material: #1 #2 #3 #4 #5

Location: #1 #2 #3 #4 #5

Origin: #1 #2 #3 #4 #5

Received by: #1 #2 #3 #4 #5

Stored: #1 #2 #3 #4 #5

N/A

5.1.12. Dump sites Landfills

Is there any indication of waste disposal, landfilling or similar events on this site? Yes No *If yes indicate*

Location	Visible indications	Nature of material	Extent of fill / dump
#1		N/A	
#2			
#3			
#4			

5.1.11 stressed vegetation

Is there any indication of environmental stress on vegetation? Yes No *If yes indicate*

Plant type: #1 #2 #3 #4 #5

Location: #1 #2 #3 #4 #5

Indications: #1 #2 #3 #4 #5

Identify cause if possible: #1 #2 #3 #4 #5

N/A

5.1.14 Transportation, transmission, easements
 Describe any road, railways, pipelines, transmission lines or easements providing for future development of same that may have an environmental impact on this site.
N/A

5.1.15 Are electrical transformers or other equipment located on or near this site yes ___ no
 if yes describe _____

5.1.16 Indicate the state of housekeeping on this site good fair ___ poor ___

5.1.17 Are there any locations or portions of this site that were not inspected indicate yes ___ no

5.1.18 Indicate any obvious physical indications of contamination on this site.

<input checked="" type="checkbox"/> none	<input checked="" type="checkbox"/> stained concrete or asphalt
<input checked="" type="checkbox"/> stressed vegetation	<input checked="" type="checkbox"/> unnatural soil condition
<input checked="" type="checkbox"/> evidence of dumping	<input checked="" type="checkbox"/> foul or unusual odours
<input checked="" type="checkbox"/> refuse, waste or debris	<input checked="" type="checkbox"/> pits or ponds containing effluent of waste
<input checked="" type="checkbox"/> ash or residue	<input checked="" type="checkbox"/> oil slicks or discoloration of water
<input checked="" type="checkbox"/> corrosion or other damage	<input checked="" type="checkbox"/> other

describe all of the above. N/A

3.2 Adjacent sites

3.2.1 North from where did you make these observations? North through

3.2.1.1 land use commercial industrial residential hayland public assembly

3.2.1.2 site features
 is site natural forest prairie other vacant name Small farm pond

3.2.1.2 site features located in SE corner

roadway railway transmission line pipeline
 topography flat sloped direction of slope SE
 drainage good poor from subject site
 soil condition disturbed discoloured containing good
 storage tanks yes no suspected inspected containing
 electric transformers yes no unknown
 utilities aboveground underground fuel storage yes no
 vegetation condition good poor unknown
 springs seeps standing water odour yes no
 explain _____

3.2.1.3 Indicate proximity of any of the following

petroleum service or bulk station
 dry-cleaning
 landfill or dump
 electrical substation
 chemical plant or storage
 heavy manufacturing
 railway
 lagoon or treatment pond

3.2.2 South

From where did you make these observations? North through

3.2.2.1 land use commercial industrial residential hayland public assembly

3.2.2.1 land use natural forest prairie other vacant name Regimental farm pond

3.2.2.2 site features

roadway railway transmission line pipeline
 topography flat sloped direction of slope unknown
 drainage good poor from subject site
 soil condition disturbed discoloured containing good
 storage tanks yes no suspected inspected containing
 electric transformers yes no unknown
 utilities aboveground underground fuel storage yes no
 vegetation condition good poor unknown
 springs seeps standing water odour yes no
 explain _____

3.2.2.3 Indicate proximity of any of the following

petroleum service or bulk station
 dry-cleaning
 landfill or dump
 electrical substation
 chemical plant or storage
 heavy manufacturing
 railway
 lagoon or treatment pond

3.2.3 East From where did you make these observations? Drive Through

3.2.3.1 land use commercial _____ industrial _____ residential public assembly _____
 agricultural _____ cropland _____ pasture _____ hayland _____
 natural forest _____ prairie _____ other _____
 is site occupied vacant _____ name Baldon Eden

Recently Residential Estates

3.2.3.2 site features
 roadway railway _____ transmission line _____ pipeline _____
 topography flat _____ sloped direction of slope unknown
 drainage good poor _____ drainage to _____ from _____ subject site
 soil condition disturbed _____ discoloured _____ good
 storage tanks yes _____ no suspected _____ containing _____
 electric transformers yes _____ no unknown _____
 utilities aboveground underground fuel storage yes _____ no
 vegetation condition good poor _____ unknown _____
 springs _____ seeps _____ standing water _____ odour yes _____ no _____
 explain _____

3.2.3.3 Indicate proximity of any of the following

petroleum service or bulk station	<input checked="" type="checkbox"/>	chemical plant or storage	<input checked="" type="checkbox"/>
dry-cleaning	<input checked="" type="checkbox"/>	heavy manufacturing	<input checked="" type="checkbox"/>
landfill or dump	<input checked="" type="checkbox"/>	railway	<input checked="" type="checkbox"/>
electrical substation	<input checked="" type="checkbox"/>	lagoon or treatment pond	<input checked="" type="checkbox"/>

3.2.4 West From where did you make these observations? Walk Through

3.2.4.1 land use commercial _____ industrial _____ residential _____ public assembly _____
 agricultural cropland _____ pasture _____ hayland _____
 natural forest _____ prairie _____ other _____
 is site occupied _____ vacant name _____

3.2.4.2 site features
 roadway _____ railway _____ transmission line _____ pipeline _____
 topography flat _____ sloped direction of slope unknown
 drainage good _____ poor drainage to _____ from _____ subject site
 soil condition disturbed _____ discoloured _____ good
 storage tanks yes _____ no suspected _____ containing _____
 electric transformers yes _____ no unknown _____
 utilities aboveground underground fuel storage yes _____ no
 vegetation condition good poor _____ unknown _____
 springs _____ seeps _____ standing water _____ odour yes _____ no _____
 explain _____

3.2.4.3 Indicate proximity of any of the following

petroleum service or bulk station	<input checked="" type="checkbox"/>	chemical plant or storage	<input checked="" type="checkbox"/>
dry-cleaning	<input checked="" type="checkbox"/>	heavy manufacturing	<input checked="" type="checkbox"/>
landfill or dump	<input checked="" type="checkbox"/>	railway	<input checked="" type="checkbox"/>
electrical substation	<input checked="" type="checkbox"/>	lagoon or treatment pond	<input checked="" type="checkbox"/>

60 Interviews Person # 1 of 1
 Name of person interviewed M. Klaus relationship to site Owner
 was interview conducted on site yes no no By telephone Yes No

how long has this person been connected to the site from 1999 to 2008
 A. For commercial and industrial properties questions should pertain to the availability of

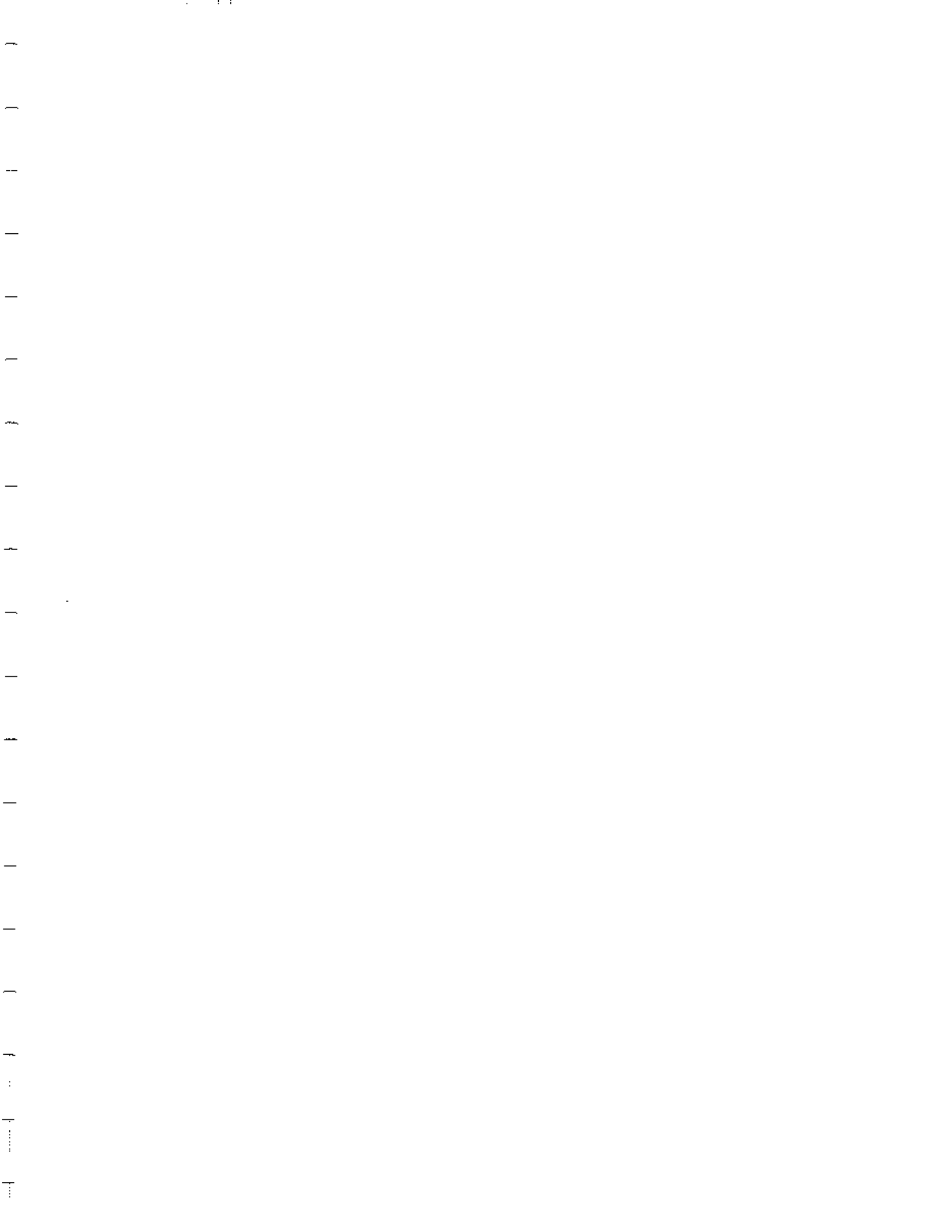
- site plans
- building plans
- permit records
- process control diagrams
- state utility plans
- asbestos surveys
- emergency response plans
- spill reporting plans and records
- investigations of chemicals and usage
- material entry data sheets
- environmental monitoring data
- waste management records
- Inventory of UST's and AST's
- environmental audit reports
- geotechnical reports

B. Ask help in identifying any substances that you have not been able to identify.

M. Klaus was the owner of the property since 1999 at which time he purchased it from the Trust formerly the He indicated that the town never being removed in 1950's and he has used it for livestock pasture since 1999. He indicated that there were no buildings located on the two quarter sections and there has been no environmental incidents on the site.

APPENDIX E

Photographs of Site





East view of north limits of north quarter section



Southeast view taken from center of north quarter section

HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A 0M3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

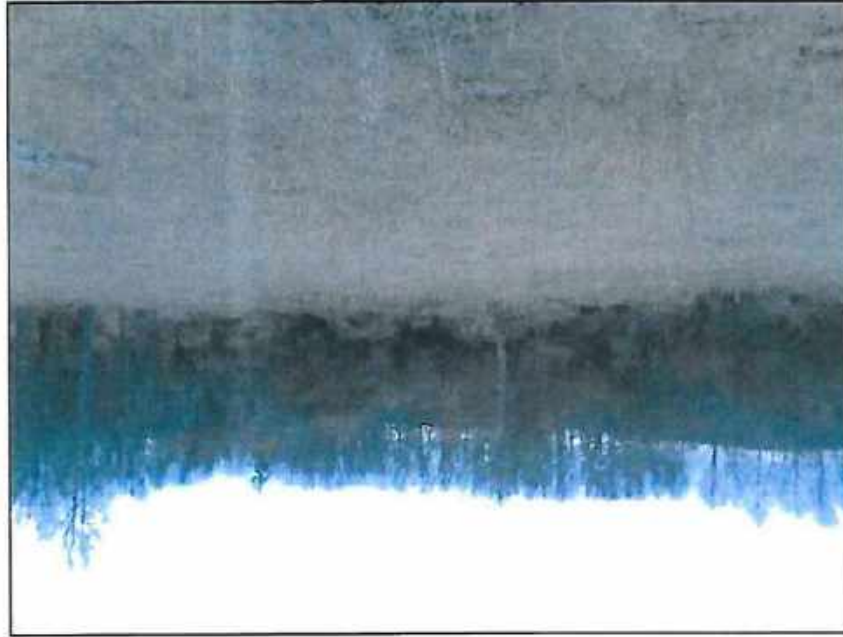
Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
E 11-54-03-W5M
Lac Ste. Anne County, Alberta
Site Photographs

JOB NO.: H0810-210 | DATE: November 6, 2008 | PLATE: 1

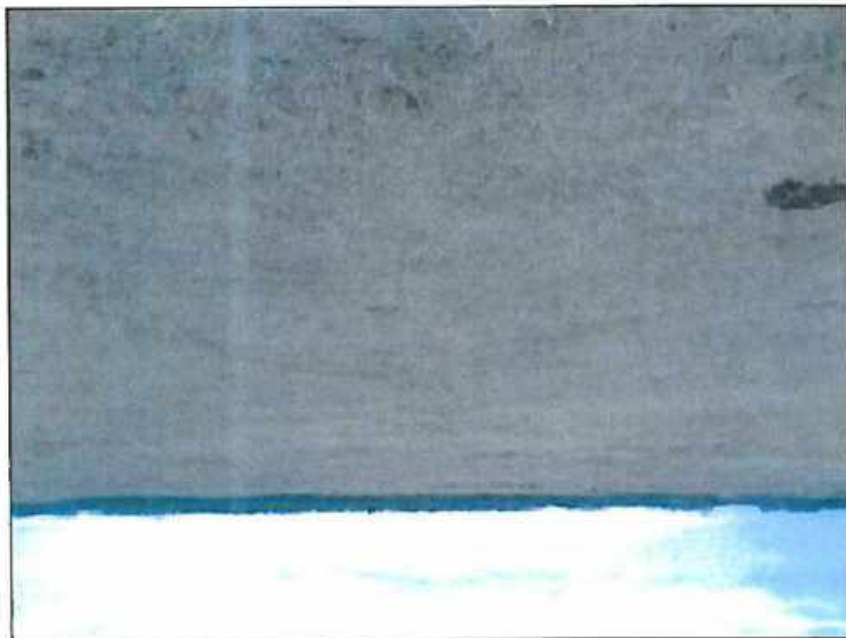
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Proposed Country Residential Subdivision
E 11-54-03-W5M
Lac Ste. Anne County, Alberta
Site Photographs
JOB NO.: H0810-210 | DATE: November 6, 2008 | PLATE: 2

East view of east boundary taken from center of north quarter section



South view taken from center of north quarter section





Southeast view taken from center of north quarter section



Southwest view taken from center of north quarter section

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Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
E 11-54-03-W5M
Lac Ste. Anne County, Alberta
Site Photographs
JOB NO.: H0810-210 | DATE: November 6, 2008 | PLATE: 4

Southeast view taken from center of south quarter section



North view taken from south end of north quarter section





West view taken from east limits of south quarter section



North view taken from south end of north quarter section

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Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
E 11-54-03-W5M
Lac Ste. Anne County, Alberta
Site Photographs

JOB NO.: H0810-210 | DATE: November 6, 2008 | PLATE: 5

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JOB NO.: H0810-210 | DATE: November 8, 2008 | PLATE: 6
Phase I Environmental Site Assessment
Proposed County Residential Subdivision
E 11-54-03-W5M
Lac Ste. Anne County, Alberta
Site Photographs
NORCAN CONSULTING GROUP INC.

West view taken from center of south quarter section



Southeast view taken from northwest corner of north quarter section





Northwest view taken from center of north quarter section



North view of water dugout, taken from northwest limits of north quarter section

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NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
E 11-54-03-W5M
Lac Ste. Anne County, Alberta
Site Photographs

JOB NO.: H0810-210 | DATE: November 6, 2008 | PLATE: 7

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JOB NO.: H0810-210 | DATE: November 6, 2008 | PLATE: 8
Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
E 11-54-03-W5M
Lac Ste. Anne County, Alberta
Site Photographs
NORCAN CONSULTING GROUP INC.

Northwest view taken from south end of south quarter section



West view of old machinery located in northwest corner of south quarter section





Northwest view taken from center of north quarter section



East view taken from northwest corner of north quarter section

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NORCAN CONSULTING GROUP INC.

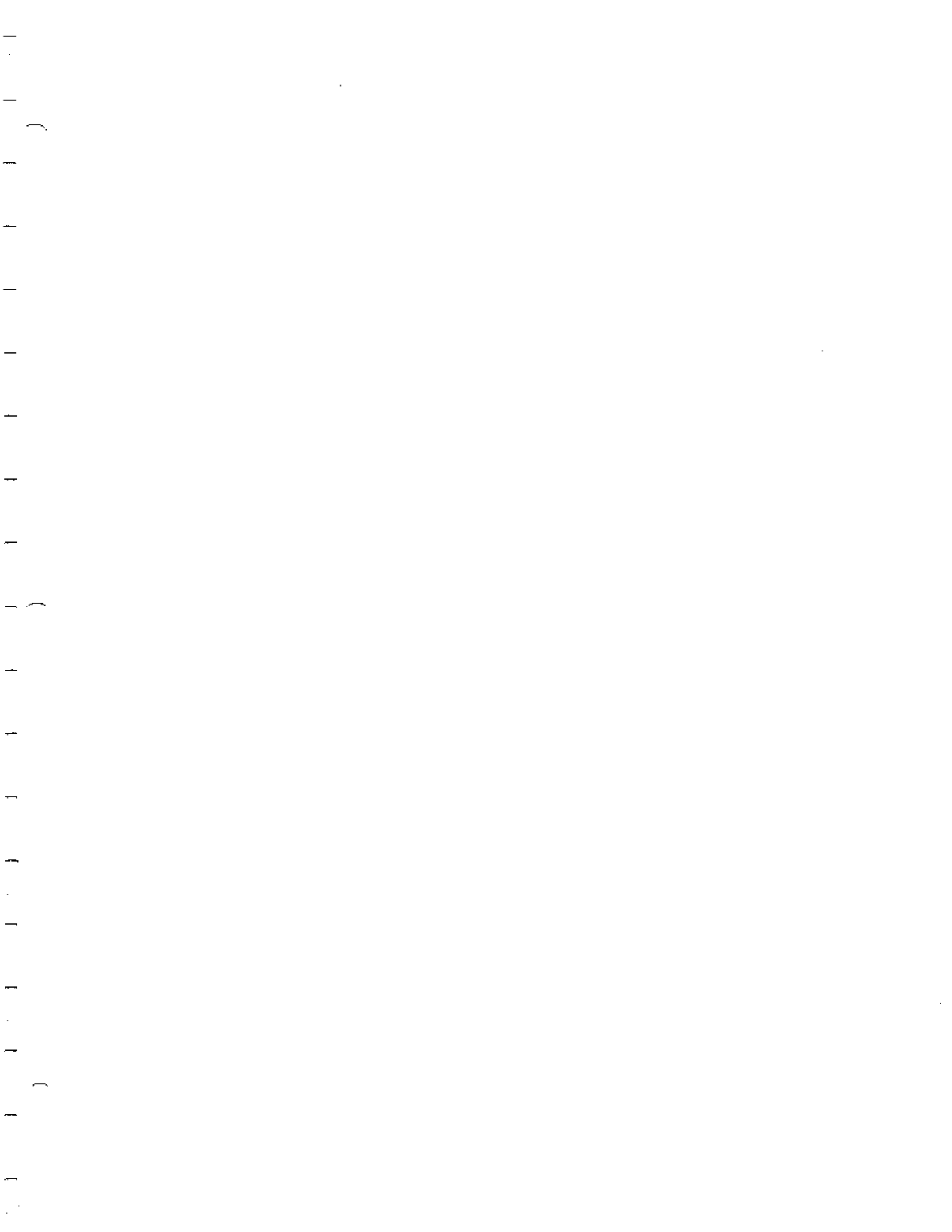
Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
E 11-54-03-W5M
Lac Ste. Anne County, Alberta
Site Photographs

JOB NO.: H0810-210 | DATE: November 6, 2008 | PLATE: 9



SHALLOW WATER

TABLE





Hagstrom Geotechnical Services Ltd.

5807 - 134 A. Avenue, Edmonton, Alberta T5A 0M3
Tel: (780) 996-5821 • Fax: (780) 475-5671
e-mail: h_gsl@telus.net

Nor Can Consulting Group Inc.
Box 38, Site 219
RR2 Carvel, Alberta
T0E 0H0

December 5, 2008
Our File: H0718-210
Your File: NC-142

Attention: **Mr. Frank Florkewich**

Dear Sirs:

Re: Shallow Water Table Testing
Proposed Country Residential Subdivision
East ½ -11-54-3-W5M
Lac St. Anne County, Alberta

1.0 INTRODUCTION

Hagstrom Geotechnical Services Ltd. (HGSL) was retained by Nor Can Consulting Group Inc. to carry out an evaluation of the soil and shallow water table conditions for the above referenced project. Alberta Environmental Protection (AEP) requires that each proposed lot have adequate natural area for the development of a residence and suitable soils for treatment of sewage effluent. Interim guidelines for soil and water table testing are provided by Alberta Environmental Protection (1998)¹. This letter report presents our test procedures, test results and evaluation of results.

2.0 SITE DESCRIPTION

The proposed country residential subdivision is comprised of two quarter sections and is located within the east one half of Section 11, Township 54, Range 3, west of the Fifth Meridian in Lac St. Anne County, Alberta. The site is comprised of 127.66 hectares (315.44 acres) of vacant agricultural land that is bounded on the east by Range Road 31 and on the north by Secondary Highway 633. The site contains no buildings and at the time of field drilling, the site was used for livestock pasture. About 15 percent of the site is covered with dense trees. The topography at the site can be classified as undulating with maximum elevation differences of 7 to 8 meters. A seasonal dry creek flows through the site that trends from the south east limits to the north west limits.

¹ "Environmental Guidelines for the Review of Subdivisions in Alberta." Standards and Guidelines Branch, Environmental Assessment Division, Environmental Regulatory Service, September 1998. Alberta Environment. 10 Jan 2007
<<http://environment.gov.ab.ca/info/library/6710.pdf>>.

A high water table is defined by AEP as any area where the water table is within 6 feet (1.8 meters) of the ground surface during the frost-free period until the end of August, and within 8 feet (2.4 meters) of the ground surface during the remainder of the year. Generally, groundwater levels can be expected

each of the boreholes is provided in Table 1, below. The groundwater levels in each borehole were monitored during borehole drilling, at drilling completion, and 15 and 16 days following drilling completion. The individual water table measurements are presented in Table 1, Appendix A. A tabular summary of the final water levels in

bottom of the fens and marshes and creek. The soil stratigraphy encountered at the borehole locations during drilling generally consists of a thin cover of topsoil over clay followed by an extensive deposit of clay till. Isolated layers of sand were encountered in five boreholes and soft coal was encountered in one borehole. Organic peat was encountered at the ground surface in two boreholes. The topsoil thickness ranged from 10 to 50 centimeters with an average thickness of 31 centimeters. Groundwater seepage was observed in fourteen boreholes during drilling. Lithologic descriptions of the subsols encountered are presented in Table 1, Appendix A. It is noted that peat and very compressible soils may be encountered within the

groundwater conditions were logged by Mr. Merle Hagstrom, P. Eng. approximate borehole locations is shown on Plate 1, Appendix A. During drilling, the soil and were drilled on the top of hills or in bottom of fens, marshes or creeks. A site plan showing the table was anticipated to be at depths of 1 to 3 metres below existing ground surface. No boreholes with 150 mm diameter continuous flight augers. All boreholes were drilled in areas where the water metres below the ground surface. The boreholes were drilled with a track mounted drill rig supplied Fifty seven (57) boreholes were drilled at the subject site on October 17 and 18, 2008, to depths of 4.5

4.0 SOIL CONDITIONS AND WATER TABLE LEVELS

According to published surficial geology reports², the terrain in the area is broadly classified as stagnation moraine consisting of till of uneven thickness and local water-sorted materials. The deposits can be up to 30 metres thick. The local topography is classified as hummocky and strongly developed with generally round, well-defined knobs, dimpled knobs, doughnut-shaped hills and kettles. The local relief is generally between 5 to 20 metres.

3.0 SURFICIAL GEOLOGY

It is understood it is proposed to subdivide the site into about 140 to 150 lots of about 0.5 to 1.0 hectare each in size. According to information provided by Nor Can Consulting Group Inc., it is proposed to development the subdivision into a cluster concept with about 15 to 20 clusters and about 4 to 10 lots per cluster. It is further understood that the new homes will be serviced with an advanced waste water and collection system comparable to that provided by Orconco.

to be at the highest level during the spring snowmelt or after periods of prolonged rainfall. The water levels will typically decrease until late fall when the lowest levels are maintained throughout the winter months. For this site, it is appropriate to use a groundwater level criterion of 2.0 meters below ground surface of which water levels below this depth are considered developable land that is high and dry.

TABLE 1: SUMMARY OF BOREHOLE WATER LEVELS

Borehole Number	15 and 16 Days After Drilling	Borehole Number	15 and 16 Days After Drilling
08-1	1.7	08-30	1.8
08-2	1.5	08-31	1.8
08-3	1.7	08-32	1.7
08-4	1.5	08-33	1.8
08-5	1.8	08-34	1.6
08-6	1.6	08-35	2.1
08-7	4.1(dry)	08-36	1.5
08-8	1.8	08-37	1.9
08-9	1.7	08-38	1.6
08-10	1.9	08-39	1.7
08-11	1.5	08-40	2.6
08-12	1.9	08-41	1.5
08-13	1.5	08-42	1.7
08-14	2.5	08-43	1.2
08-15	1.5	08-44	1.6
08-16	1.6	08-45	1.8
08-17	1.5	08-46	2.0
08-18	1.6	08-47	1.6
08-19	1.7	08-48	1.5
08-20	1.6	08-49	1.5
08-21	2.0	08-50	1.6
08-22	1.6	08-51	1.4
08-23	2.0	08-52	1.7
08-24	2.0	08-53	1.9
08-25	1.4	08-54	2.1
08-26	1.8	08-55	1.6
08-27	1.5	08-56	1.8
08-28	1.6	08-57	1.4
08-29	2.2		

The low and wet areas where the water table is less than 2.0 metres below ground level are shown on Plate 1, Appendix A. As shown, about 35 to 40 percent of the land is low and wet and thus undevelopable in its present state for homes with conventional full depth basements. Consideration

may be given to construction of half depth basements and/or importing engineered fill such that the basement floor slab in each home is at least 0.5 metres above the water table.

6.0 CONCLUSIONS

The purpose of the investigation was to determine the subsurface soils as well as to determine the depth of the water table in the proposed country residential cluster type subdivision. It is understood that it is proposed to subdivide the site into about 140 to 150 lots with 15 to 20 different clusters. Based on the shallow water table tests, about 35 to 40 percent of the site is considered low and wet and undevelopable in its present state for conventional full depth basements. Alternatively, homes with half basements may be considered or engineered fill can be imported such that new homes have the main floor slab for the basements that are 0.5 metres above the groundwater table.

Yours truly,

Hagstrom Geotechnical Services Ltd.



Marie Hagstrom, B. Eng. P. Eng.
Senior Engineer

Distribution: (+) addressee

Attachments: Appendix A

PERMIT TO PRACTICE
Hagstrom Geotechnical Services Ltd.
Signature <i>Marie Hagstrom</i>
Date <i>December 5, 2008</i>
PERMIT NUMBER: P 9693
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

APPENDIX A

**Water Table Boreholes - Table 1
Site Plan - Plate 1**

TABLE 1
SHALLOW WATER TABLE BOREHOLES
Proposed Country Residential Subdivision
E ½-11-54-3-W5M
Lac St. Anne County, Alberta

BOREHOLE 08-1	
From 0.0 - 0.12 m	TOPSOIL; silty, damp, compressible, black, 12 cm thick
From 0.12 - 1.7 m	CLAY; silty, very stiff, moist, medium plasticity, occasional coal lenses, light olive brown
From 1.7 - 4.5 m	CLAY TILL; silty, very stiff, moist, medium plasticity, occasional gravel chips, dark olive brown
At 4.0 m	Dark grey, very stiff
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 1.7 m, 16 days later	
BOREHOLE 08-2	
From 0.0 - 0.20 m	TOPSOIL; clayey, damp, compressible, black, 20 cm thick
From 0.20 - 1.6 m	CLAY; silty, damp, very stiff, occasional carbonate pockets, dark olive brown
From 1.6 - 4.5 m	CLAY TILL; silty, very stiff, medium plasticity, occasional gravel chips and coal chips, dark olive brown
At 3.0 m	Dark grey, medium plasticity
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.3 m, 0 hours Water level = 4.3 m (dry), 0 hours Water level = 1.5 m, 16 days later	
BOREHOLE 08-3	
From 0.0 - 0.25 m	TOPSOIL; silty, damp, compressible, black, 25 cm thick
From 0.25 - 3.2 m	CLAY; silty, high plasticity, very stiff, moist, occasional rust stained fissures, dark olive brown
At 3.0 m	Very stiff, medium plasticity
From 3.2 - 4.5 m	CLAY TILL; silty, damp, very stiff, occasional gravel chips and coal chips, dark grey
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 1.7 m, 16 days later	

TABLE 1
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Lac St. Anne County, Alberta

BOREHOLE 08-4	
From 0.0 – 0.30 m	TOPSOIL; silty, damp, compressible, black, 30 cm thick
From 0.30 – 1.7 m	SAND; fine grained, silty, loose, moist, light brown
From 1.7 – 4.5 m	CLAY; silty, moist, soft to firm, medium plasticity, light olive brown
At 3.0 m	Stiffer with depth, clay till like
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.5 m, 0 hours Water level = 4.5 m (dry), 0 hours Water level = 1.5 m, 16 days later	
BOREHOLE 08-5	
From 0.0 – 0.20 m	TOPSOIL; silty, damp, compressible, black, 20 cm thick
From 0.20 – 2.5 m	CLAY; silty, damp, very stiff, medium plasticity, occasional silt and thin sand lenses, dark olive brown
From 2.5 – 4.5 m	CLAY TILL; silty, very stiff, medium plasticity, occasional thin sand lenses, dark olive brown
At 3.5 m	Dark grey, very stiff
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 1.8 m, 16 days later	
BOREHOLE 08-6	
From 0.0 – 0.25 m	TOPSOIL; silty, damp, some small roots, black, 25 cm thick
From 0.25 – 2.6 m	CLAY; silty, moist, stiff, medium plasticity, occasional silt lenses, light olive brown
From 2.6 – 2.9 m	SAND; fine grained, silty, free water, loose, dark olive brown
From 2.9 – 3.2 m	CLAY; silty, medium plasticity, moist, stiff, occasional silt lenses, dark olive brown
From 3.2 – 4.5 m	CLAY TILL; silty, very stiff, damp, medium plasticity, occasional gravel chips and coal chips, dark grey
End of Borehole = 4.5 m Slough = 4.3 m, 0 hours Water level = 4.1 m, 0 hours Water level = 1.6 m, 16 days later	

BOREHOLE 08-7	
From 0.0 - 0.20 m	TOPSOIL; silty, damp, compressible, black, 20 cm thick
From 0.20 - 0.60 m	CLAY; silty, damp, very stiff, medium plasticity, dark olive brown
From 0.60 - 2.0 m	SAND; fine grained, dry, loose, dark brown
From 2.0 - 3.4 m	CLAY; silty, damp, medium plasticity, occasional sand lenses, dark olive brown
From 3.4 - 4.5 m	CLAY TILL; silty, very stiff, moist, medium plasticity, frequent gravel chips and coal chips, dark grey
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m	
Slough = 4.4 m, 0 hours	
Water level = 4.4 m (dry), 0 hours	
Water level = 4.1 m (dry), 16 days later	
BOREHOLE 08-8	
From 0.0 - 0.22 m	TOPSOIL; silty, some small roots, compressible, black, 22 cm thick
From 0.22 - 2.7 m	CLAY; silty, damp, medium plasticity, very stiff, occasional silt lenses, dark olive brown
At 1.6 m	Clay till like
From 2.7 - 4.5 m	CLAY TILL; silty, very stiff, medium plasticity, occasional silt lenses, dark grey
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m	
Slough = 4.3 m, 0 hours	
Water level = 4.3 m (dry), 0 hours	
Water level = 1.8 m, 16 days later	
BOREHOLE 08-9	
From 0.0 - 0.31 m	TOPSOIL; silty, damp, compressible, black, 31 cm thick
From 0.31 - 2.1 m	CLAY; silty, high plasticity, very stiff, moist, occasional silt lenses, mottled grey brown
From 2.1 - 4.5 m	CLAY TILL; silty, moist, medium plasticity, occasional silt lenses, dark grey
At 3.2 m	Very stiff, medium plasticity, dark grey
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m	
Slough = 4.4 m, 0 hours	
Water level = 4.4 m (dry), 0 hours	
Water level = 1.7 m, 16 days later	

TABLE 1
SHALLOW WATER TABLE BOREHOLES
Proposed Country Residential Subdivision
E ½-11-54-3-W5M
Lac St. Anne County, Alberta

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BOREHOLE 08-10	
From 0.0 – 0.10 m	TOPSOIL ; silty, damp, compressible, black, 10 cm thick
From 0.10 – 1.2 m	CLAY ; silty, high plasticity, very stiff, moist, dark olive brown
From 1.2 – 4.5 m	CLAY TILL ; silty, damp, very stiff, medium plasticity, occasional gravel chips and coal chips, dark grey
At 4.1 m	Very stiff, medium plasticity, occasional thin sand lenses
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 1.9 m, 16 days later	
BOREHOLE 08-11	
From 0.0 – 0.20 m	TOPSOIL ; silty, damp, loose, compressible, black, 20 cm thick
From 0.20 – 1.9 m	CLAY ; silty, high plasticity, very stiff, moist, occasional rust staining, dark olive brown
From 1.9 – 4.5 m	CLAY TILL ; silty, damp, very stiff, medium plasticity, occasional thin sand lenses and coal chips, dark olive brown
At 3.2 m	Very stiff, dark grey
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 1.5 m, 16 days later	
BOREHOLE 08-12	
From 0.0 – 0.40 m	TOPSOIL ; silty, dry, some small roots, black, 40 cm thick
From 0.40 – 1.2 m	CLAY ; silty, very stiff, damp, high plasticity, occasional silt lenses, dark olive brown
At 1.0 m	Very stiff, medium to high plasticity
From 1.2 – 4.5 m	CLAY TILL ; silty, damp, very stiff, medium plasticity, occasional gravel chips and coal chips, dark grey
At 3.2 m	Very stiff to hard, medium plasticity
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.5 m, 0 hours Water level = 4.5 m (dry), 0 hours Water level = 1.9 m, 16 days later	

TABLE 1
SHALLOW WATER TABLE BOREHOLES
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 E 1/2-11-54-3-W5M
 Lac St. Anne County, Alberta

BOREHOLE 08-13	
From 0.0 - 0.21 m	PEAT; fine fibrous, moist, very compressible, dark brown
At 1.6 m	Amorphous granular, very moist, black
From 0.21 - 4.1 m	CLAY; silty, very soft, very moist, dark grey
At 4.0 m	Groundwater seepage
From 4.1 - 4.5 m	CLAY TILL; silty, medium plasticity, stiff to very stiff, occasional gravel chips and coal chips, dark grey
At 4.3 m	Dark grey
End of Borehole = 4.5 m Slough = 4.0 m, 0 hours Water level = 3.8 m, 0 hours Water level = 1.5 m, 16 days later	
BOREHOLE 08-14	
From 0.0 - 0.12 m	TOPSOIL; silty, damp, compressible, black, 12 cm thick
From 0.12 - 1.6 m	CLAY; silty, damp, stiff, medium plasticity, occasional carbonate pockets, dark olive brown
From 1.6 - 4.5 m	CLAY TILL; silty, damp, very stiff, medium plasticity, occasional gravel size rocks, dark grey
At 4.1 m	Dark grey, frequent gravel size rocks
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 2.5 m, 16 days later	
BOREHOLE 08-15	
From 0.0 - 0.20 m	TOPSOIL; silty, damp, compressible, black, 20 cm thick
From 0.20 - 1.8 m	CLAY; silty, damp, very stiff, medium plasticity, occasional carbonate pockets, dark olive brown
From 1.8 - 2.1 m	SAND; fine grained, silty, free water, light brown
From 2.1 - 4.5 m	CLAY TILL; silty, damp, very stiff, medium plasticity, dark grey
At 3.0 m	Frequent gravel size rocks
At 4.0 m	Stiff to very stiff
End of Borehole = 4.5 m Slough = 4.1 m, 0 hours Water level = 3.6 m, 0 hours Water level = 1.5 m, 16 days later	

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BOREHOLE 08-16	
From 0.0 – 0.25 m	TOPSOIL ; silty, damp, compressible, black, 25 cm thick
From 0.25 – 2.5 m	CLAY ; silty, very stiff, medium plasticity, moist, occasional rust staining and gravel chips, dark olive brown
At 1.2 – 1.6 m	Sand lense, damp
From 2.5 – 4.5 m	CLAY TILL ; silty, damp, very stiff, medium plasticity, occasional gravel chips and coal chips, dark grey
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 1.6 m, 16 days later	
BOREHOLE 08-17	
From 0.0 – 0.20 m	TOPSOIL ; silty, damp, some small roots, black, 20 cm thick
From 0.20 – 1.8 m	CLAY ; silty, high plasticity, very stiff, damp, occasional silt lenses, dark olive brown
From 1.8 – 4.5 m	CLAY TILL ; silty, very stiff, medium plasticity, moist, occasional gravel chips and coal chips, dark grey
At 4.1 m	Very stiff, medium plasticity
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 1.5 m, 16 days later	
BOREHOLE 08-18	
From 0.0 – 0.13 m	TOPSOIL ; silty, moist, compressible, black, 13 cm thick
From 0.13 – 2.5 m	CLAY ; silty, very stiff, moist, medium plasticity, dark olive brown
From 2.9 – 2.9 m	CLAY TILL ; silty, very stiff, damp, medium plasticity, occasional gravel chips, dark olive brown
From 2.9 – 3.3 m	SAND ; fine grained, silty, free water, severe borehole sloughing, dark brown
From 3.3 – 4.5 m	CLAY TILL ; silty, very stiff, medium plasticity, frequent gravel chips, dark grey
End of Borehole = 4.5 m Slough = 4.1 m, 0 hours Water level = 3.8 m, 0 hours Water level = 1.6 m, 16 days later	

BOREHOLE 08-19	
From 0.0 - 0.42 m	TOPSOIL; silty, damp, compressible, black, 42 cm thick
From 0.42 - 1.1 m	CLAY; silty, damp, very stiff, medium plasticity, dark olive brown
From 1.1 - 2.4 m	BEDROCK (Coal); free water, highly weathered bedrock, black
At 2.0 m	Severe borehole sloughing
From 2.4 - 4.5 m	CLAY TLL; silty, damp, very stiff, medium plasticity, occasional gravel chips and coal chips, dark grey
At 3.0 m	No evidence of groundwater seepage
End of Borehole = 4.5 m	
Slough = 4.1 m, 0 hours	
Water level = 3.6 m, 0 hours	
Water level = 1.7 m, 16 days later	
BOREHOLE 08-20	
From 0.0 - 0.23 m	TOPSOIL; silty, damp, compressible, black, 23 cm thick
From 0.23 - 1.6 m	CLAY; silty, very stiff, high plasticity, frequent carbonate pockets, dark olive brown
From 1.6 - 4.5 m	CLAY TLL; silty, very stiff, medium plasticity, moist, occasional gravel chips and coal chips, dark brown
At 4.0 m	Dark grey, medium plasticity
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m	
Slough = 4.3 m, 0 hours	
Water level = 4.3 m (dry), 0 hours	
Water level = 1.6 m, 16 days later	
BOREHOLE 08-21	
From 0.0 - 0.20 m	TOPSOIL; silty, damp, compressible, black, 20 cm thick
From 0.20 - 1.9 m	CLAY; silty, damp, very stiff, medium plasticity, occasional carbonate pockets, dark olive brown
From 1.9 - 4.5 m	CLAY TLL; silty, medium plasticity, very stiff, occasional gravel chips and coal chips, dark grey, dark olive brown
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m	
Slough = 4.3 m, 0 hours	
Water level = 4.3 m (dry), 0 hours	
Water level = 2.0 m, 16 days later	

TABLE 1
SHALLOW WATER TABLE BOREHOLES
Proposed Country Residential Subdivision
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TABLE 1
SHALLOW WATER TABLE BOREHOLES
Proposed Country Residential Subdivision
E 1/2-11-54-3-W5M
Lac St. Anne County, Alberta

BOREHOLE 08-22	
From 0.0 – 0.30 m	TOPSOIL ; silty, loose, compressible, black, 30 cm thick
From 0.30 – 2.6 m	CLAY ; silty, medium plasticity, moist, very stiff, frequent rust staining, dark olive brown
At 2.3 m	Free water
From 2.6 – 4.5 m	CLAY TILL ; silty, very stiff, medium plasticity, damp, occasional gravel chips and coal chips, dark olive brown
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 1.6 m, 16 days later	
BOREHOLE 08-23	
From 0.0 – 0.30 m	TOPSOIL ; silty, compressible, loose, black, 30 cm thick
From 0.30 – 2.6 m	CLAY ; silty, damp, stiff, medium plasticity, occasional silt lenses and rust stained fissures, dark brown
From 2.6 – 4.5 m	CLAY TILL ; silty, very stiff, medium plasticity, occasional gravel chips and coal chips, dark olive brown
At 4.0 m	Dark grey, stiff to very stiff
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.5 m, 0 hours Water level = 4.5 m (dry), 0 hours Water level = 2.0 m, 16 days later	
BOREHOLE 08-24	
From 0.0 – 0.21 m	TOPSOIL ; silty, damp, some small roots, black, 21 cm thick
From 0.21 – 3.4 m	CLAY ; silty, damp, very stiff, medium plasticity, occasional carbonate pockets, light olive brown
At 3.0 m	Very stiff, medium plasticity
From 3.4 – 4.5 m	CLAY TILL ; silty, very stiff, medium plasticity, occasional gravel chips and coal chips, dark olive brown
At 4.0 m	Dark grey
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 2.0 m, 16 days later	

TABLE 1
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 Proposed Country Residential Subdivision
 E ½-11-54-3-W5M
 Lac St. Anne County, Alberta

BOREHOLE 08-25	
From 0.0 - 0.32 m	TOPSOIL ; silty, damp, compressible, some small roots, black, 32 cm thick
From 0.32 - 2.1 m	CLAY ; silty, damp, very stiff, medium plasticity, light olive brown
From 2.1 - 4.5 m	CLAY TILL ; silty, very stiff, medium plasticity, frequent gravel chips and rust stained fissures, dark grey
At 2.6 - 2.8 m	Sand lens, free water
At 4.1 m	Dark grey, very stiff
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 3.6 m, 0 hours Water level = 1.4 m, 16 days later	
BOREHOLE 08-26	
From 0.0 - 0.41 m	TOPSOIL ; silty, damp, compressible, black, 41 cm thick
From 0.41 - 3.1 m	CLAY ; silty, damp, stiff, occasional carbonate pockets, dark olive brown
From 3.1 - 4.5 m	CLAY TILL ; silty, trace of sand, very stiff, medium plasticity, occasional clay shale inclusions, dark olive brown
At 4.1 m	Dark grey, very stiff
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 1.8 m, 16 days later	
BOREHOLE 08-27	
From 0.0 - 0.31 m	TOPSOIL ; silty, damp, compressible, black, 31 cm thick
From 0.31 - 3.1 m	CLAY ; silty, damp, very stiff, medium plasticity, occasional silt lenses, dark olive brown
From 3.1 - 4.5 m	CLAY TILL ; silty, very stiff, medium plasticity, occasional silt and sand lenses, frequent gravel chips, dark grey
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.3 m, 0 hours Water level = 4.3 m (dry), 0 hours Water level = 1.5 m, 15 days later	

TABLE 1
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E ½-11-54-3-WSM
Lac St. Anne County, Alberta

BOREHOLE 08-28	
From 0.0 – 0.40 m	TOPSOIL ; silty, damp, compressible, black, 40 cm thick
From 0.40 – 1.2 m	CLAY ; silty, high plasticity, very stiff, moist, occasional carbonate pockets, dark brown
From 1.2 – 4.5 m	CLAY TILL ; silty, trace of sand, medium plasticity, very stiff, occasional clay shale lenses and coal chips, dark grey
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 1.6 m, 15 days later	
BOREHOLE 08-29	
From 0.0 – 0.32 m	TOPSOIL ; silty, compressible, some small roots, loose, black, 32 cm thick
From 0.32 – 1.6 m	CLAY ; silty, very stiff, damp, medium plasticity, occasional silt lenses and rust stained fissures, dark brown
From 1.6 – 4.5 m	CLAY TILL ; silty, damp, very stiff, medium plasticity, occasional thin sand lenses, dark olive brown
At 3.2 m	Dark grey
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 2.2 m, 15 days later	
BOREHOLE 08-30	
From 0.0 – 0.50 m	TOPSOIL ; silty, damp, compressible, dark brown, 50 cm thick
From 0.50 – 1.2 m	CLAY ; silty, damp, very stiff, medium plasticity, occasional silt lenses, dark olive brown
From 1.2 – 4.5 m	CLAY TILL ; silty, very stiff, medium plasticity, occasional gravel chips and clay shale lenses, dark olive brown
At 4.1 m	Dark grey, frequent gravel chips
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.1 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 1.8 m, 15 days later	

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 Proposed Country Residential Subdivision
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 Lac St. Anne County, Alberta

BOREHOLE 08-31	
From 0.0 - 0.30 m	TOPSOIL: silty, damp, compressible, black, 30 cm thick
From 0.30 - 2.6 m	CLAY: silty, damp, medium plasticity, very stiff, frequent rust staining, dark olive brown
At 1.2 - 1.7 m	Very sandy, moist, light olive brown
At 2.5 m	Clay till like, very stiff
From 2.6 - 4.5 m	CLAY TILL: silty, very stiff, medium plasticity, frequent gravel chips, occasional clay shale inclusions, dark grey
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.5 m, 0 hours Water level = 4.5 m (dry), 0 hours Water level = 1.8 m, 15 days later	
BOREHOLE 08-32	
From 0.0 - 0.40 m	TOPSOIL: silty, damp, compressible, loose, black, 40 cm thick
From 0.40 - 1.7 m	CLAY: silty, medium plasticity, very stiff, moist, occasional carbonate pockets, dark olive brown
From 1.7 - 4.5 m	CLAY TILL: silty, very stiff, medium plasticity, damp, occasional sand lenses, dark olive brown
At 3.5 m	Dark grey, frequent gravel chips
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 1.7 m, 15 days later	
BOREHOLE 08-33	
From 0.0 - 0.62 m	TOPSOIL: silty, damp, some peat, compressible, black, 60 cm thick
From 0.62 - 1.8 m	CLAY: silty, very stiff, medium plasticity, damp, occasional carbonate pockets, dark olive brown
From 1.8 - 4.5 m	CLAY TILL: silty, very stiff, medium plasticity, frequent gravel chips and coal chips, dark grey
At 4.0 m	Dark grey, very stiff
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 1.8 m, 15 days later	

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SHALLOW WATER TABLE BOREHOLES
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E 1/2-11-54-3-W5M
Lac St. Anne County, Alberta

BOREHOLE 08-34	
From 0.0 – 0.70 m	TOPSOIL ; silty, moist, compressible, black, 70 cm thick
From 0.70 – 3.5 m	CLAY ; silty, medium plasticity, very stiff, moist, soft to firm, dark olive brown
At 1.6 m	Soft, very moist
From 3.5 – 4.0 m	CLAY TILL ; silty, very stiff, medium plasticity, occasional gravel chips and coal chips, dark grey
At 3.4 m	Groundwater seepage
End of Borehole = 4.5 m Slough = 4.3 m, 0 hours Water level = 4.2 m, 0 hours Water level = 1.6 m, 15 days later	
BOREHOLE 08-35	
From 0.0 – 0.32 m	TOPSOIL ; silty, damp, some small roots, black, 32 cm thick
From 0.32 – 1.2 m	CLAY ; silty, damp, very stiff, medium plasticity, occasional silt lenses and rust stained fissures, dark olive brown
From 1.2 – 4.5 m	CLAY TILL ; silty, very stiff, medium plasticity, occasional sand lenses and gravel chips, dark olive brown
At 3.1 – 3.2 m	Sand lense
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 2.1 m, 15 days later	
BOREHOLE 08-36	
From 0.0 – 0.50 m	TOPSOIL ; silty, damp, compressible, black, 50 cm thick
From 0.50 – 1.6 m	CLAY ; silty, very stiff, moist, medium plasticity, occasional silt lenses, dark olive brown
From 1.6 – 4.5 m	CLAY TILL ; silty, damp, medium plasticity, very stiff, occasional gravel chips and coal chips, dark olive brown
At 4.1 m	Dark grey, very stiff
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 1.5 m, 15 days later	

TABLE 1
SHALLOW WATER TABLE BOREHOLES
 Proposed Country Residential Subdivision
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 Lac St. Anne County, Alberta

BOREHOLE 08-37	
From 0.0 - 0.30 m	TOPSOIL; silty, some peat, dry, compressible, black, 30 cm thick
From 0.30 - 2.6 m	CLAY; silty, very moist, medium plasticity, occasional silt lenses, dark olive brown
At 2.0 m	Very moist, medium plasticity, firm consistency, dark olive brown
From 2.6 - 4.5 m	CLAY TILL; silty, trace of sand, very stiff, medium plasticity, occasional gravel chips an clay shale lenses, dark grey
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m	
Slough = 4.4 m, 0 hours	
Water level = 4.4 m (dry), 0 hours	
Water level = 1.9 m, 15 days later	
BOREHOLE 08-38	
From 0.0 - 0.42 m	PEAT; fine fibrous, very compressible, some small roots, dark brown, 42 cm thick
From 0.42 - 4.5 m	CLAY; silty, moist, stiff, medium plasticity, dark olive brown
At 1.6 m	Softer with depth, very moist
At 2.1 - 2.7 m	Sand layer, free water
At 4.1 m	Stiffer with depth, medium plasticity, dark olive brown
End of Borehole = 4.5 m	
Slough = 4.2 m, 0 hours	
Water level = 3.8 m, 0 hours	
Water level = 1.6 m, 15 days later	
BOREHOLE 08-39	
From 0.0 - 0.32 m	TOPSOIL; silty, moist, compressible, black, 32 cm thick
From 0.32 - 2.1 m	CLAY; silty, medium plasticity, damp, stiff, occasional silt lenses, dark olive brown
From 2.1 - 4.5 m	CLAY TILL; silty, very stiff, medium plasticity, occasional clay shale lenses and gravel chips, dark grey
At 3.5 m	Dark grey
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m	
Slough = 4.4 m, 0 hours	
Water level = 4.4 m (dry), 0 hours	
Water level = 1.7 m, 15 days later	

TABLE 1
SHALLOW WATER TABLE BOREHOLES
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E ½-11-54-3-W5M
Lac St. Anne County, Alberta

BOREHOLE 08-40	
From 0.0 – 0.22 m	TOPSOIL ; silty, silty, damp, loose, some clay lenses, black, 22 cm thick
From 0.22 – 2.2 m	CLAY ; silty, high plasticity, very stiff, moist, occasional carbonate pockets, dark olive brown
At 1.6 m	Very stiff, medium plasticity, dark grey
From 2.2 – 4.5 m	CLAY TILL ; silty, very stiff, medium plasticity, damp, occasional gravel chips and coal chips, dark grey
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 2.6 m, 15 days later	
BOREHOLE 08-41	
From 0.0 – 0.36 m	TOPSOIL ; silty, compressible, damp, black, 36 cm thick
From 0.36 – 2.6 m	CLAY ; silty, very stiff, medium plasticity, occasional carbonate pockets, dark brown
At 1.6 m	Dark olive brown
From 2.6 – 4.5 m	CLAY TILL ; silty, very stiff, medium plasticity, moist, occasional coal chips and gravel chips, dark olive brown
At 3.0 m	Dark grey, very stiff
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 1.6 m, 15 days later	
BOREHOLE 08-42	
From 0.0 – 0.42 m	TOPSOIL ; silty, damp, compressible, loose, black, 42 cm thick
From 0.42 – 1.6 m	CLAY ; silty, medium plasticity, moist, occasional silt lenses and rust stained fissures, dark olive brown
From 1.6 – 4.5 m	CLAY TILL ; silty, damp, very stiff, medium plasticity, occasional clay shale lenses and coal chips, dark olive brown
At 3.5 m	Dark olive brown, very stiff
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 1.7 m, 15 days later	

TABLE 1
SHALLOW WATER TABLE BOREHOLES
Proposed Country Residential Subdivision
E %-11-54-3-W5M
Lac St. Anne County, Alberta

BOREHOLE 08-43	
From 0.0 - 0.32 m	TOPSOIL; silty, damp, compressible, black, 32 cm thick
From 0.32 - 1.9 m	CLAY; silty, medium plasticity, damp, very stiff, occasional thin sand lenses, dark olive grey
From 1.0 - 4.5 m	CLAY TILL; silty, very stiff, medium plasticity, occasional gravel chips and coal chips, dark olive brown
At 3.5 m	Very stiff, medium plasticity
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m	
Slough = 4.4 m, 0 hours	
Water level = 4.4 m (dry), 0 hours	
Water level = 1.2 m, 15 days later	
BOREHOLE 08-44	
From 0.0 - 0.35 m	TOPSOIL; silty, damp, some clay, compressible, black, 35 cm thick
From 0.35 - 2.9 m	CLAY; silty, moist, medium plasticity, soft to firm, occasional rust stained fissures and carbonate pockets
At 2.8 m	Groundwater seepage
From 2.9 - 4.5 m	CLAY TILL; silty, very stiff, medium plasticity, frequent gravel chips, dark olive brown
At 3.0 m	Very stiff, medium plasticity
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m	
Slough = 4.1 m, 0 hours	
Water level = 3.8 m, 0 hours	
Water level = 1.6 m, 15 days later	
BOREHOLE 08-45	
From 0.0 - 0.35 m	TOPSOIL; silty, damp, compressible, black, 35 cm thick
From 0.35 - 3.2 m	CLAY; silty, very stiff, medium plasticity, damp, occasional carbonate pockets, dark olive brown
At 2.5 m	Clay till like, moist, dark olive brown
From 3.2 - 4.5 m	CLAY TILL; silty, very stiff, moist, medium plasticity, occasional gravel chips and coal chips, dark grey
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m	
Slough = 4.3 m, 0 hours	
Water level = 4.3 m (dry), 0 hours	
Water level = 1.8 m, 15 days later	

TABLE 1
SHALLOW WATER TABLE BOREHOLES
Proposed Country Residential Subdivision
E ½-11-54-3-W5M
Lac St. Anne County, Alberta

BOREHOLE 08-46	
From 0.0 – 0.31 m	TOPSOIL ; silty, damp, compressible, occasional small roots, black, 31 cm thick
From 0.31 – 4.1 m	CLAY ; silty, medium plasticity, very stiff, moist, occasional rust staining and coal chips, dark olive brown
At 2.9 m	Very sandy, medium plasticity, dark brown
From 4.1 – 4.5 m	CLAY TILL ; silty, very stiff, medium plasticity, frequent gravel chips, dark grey
At 4.2 m	Groundwater seepage
End of Borehole = 4.5 m Slough = 4.3 m, 0 hours Water level = 4.2 m, 0 hours Water level = 2.0 m, 15 days later	
BOREHOLE 08-47	
From 0.0 – 0.40 m	TOPSOIL ; silty, damp, some peat, compressible, black, 40 cm thick
From 0.40 – 2.1 m	CLAY ; silty, damp, very stiff, medium plasticity, occasional carbonate pockets and silt lenses, dark brown
From 2.1 – 4.5 m	CLAY TILL ; silty, very stiff, medium plasticity, occasional silt lenses and sand lenses, dark grey
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m, 0 hours Water level = 1.6 m, 15 days later	
BOREHOLE 08-48	
From 0.0 – 0.29 m	TOPSOIL ; silty, compressible, some small roots, black, 29 cm thick
From 0.29 – 2.6 m	CLAY ; silty, moist, firm, medium plasticity, occasional carbonate pockets, dark olive brown
At 2.6 – 2.8 m	Sand lense
From 2.6 – 4.5 m	CLAY TILL ; silty, very stiff, medium plasticity, occasional thin sand lenses and clay shale inclusions, dark grey
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.3 m, 0 hours Water level = 4.3 m (dry), 0 hours Water level = 1.5 m, 15 days later	

TABLE 1
SHALLOW WATER TABLE BOREHOLES
 Proposed Country Residential Subdivision
 E ½-11-54-3-W5M
 Lac St. Anne County, Alberta

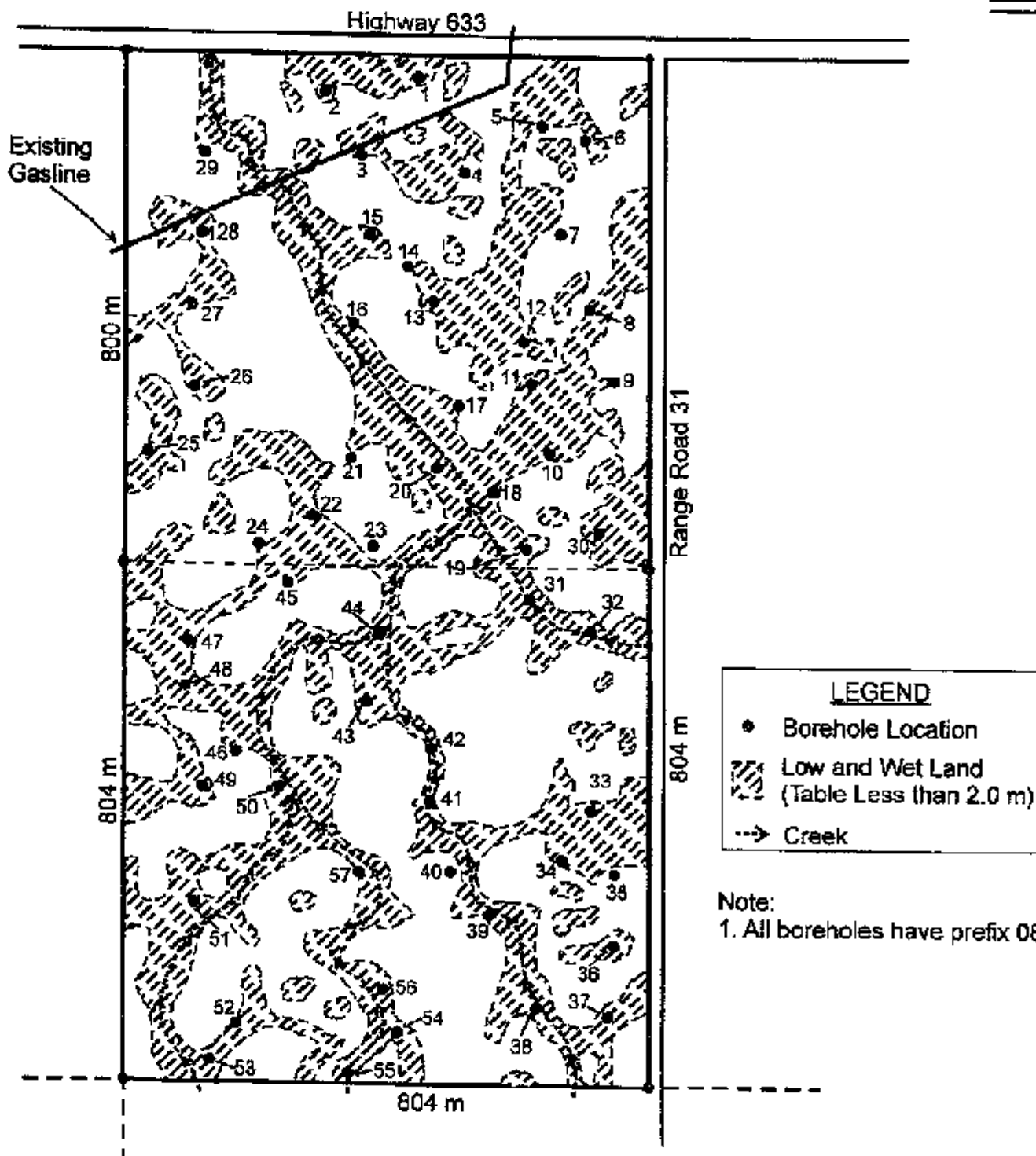
BOREHOLE 08-49	
From 0.0 - 0.30 m	TOPSOIL ; silty, damp, compressible, black, 30 cm thick
From 0.30 - 3.2 m	CLAY ; silty, high plasticity, stiff, occasional silt lenses, dark olive brown
At 2.9 m	Stiff, medium plasticity, damp
From 3.2 - 4.5 m	CLAY TILL ; silty, damp, very stiff, medium plasticity, occasional gravel chips and coal chips, dark olive brown
At 4.1 m	Groundwater seepage
End of Borehole = 4.5 m	
Slough = 4.4 m, 0 hours	
Water level = 4.1 m, 0 hours	
Water level = 1.5 m, 15 days later	
BOREHOLE 08-50	
From 0.0 - 0.35 m	TOPSOIL ; silty, damp, compressible, dark brown, 35 cm thick
From 0.35 - 2.1 m	CLAY ; silty, damp, medium plasticity, very stiff, occasional silt lenses, dark olive brown
From 2.1 - 4.5 m	CLAY TILL ; silty, very stiff, medium plasticity, moist, occasional gravel chips and coal chips, dark grey
At 4.1 m	Groundwater seepage
End of Borehole = 4.5 m	
Slough = 4.4 m, 0 hours	
Water level = 4.2 m, 0 hours	
Water level = 1.6 m, 15 days later	
BOREHOLE 08-51	
From 0.0 - 0.41m	TOPSOIL ; silty, damp, compressible, loose, black, 41 cm thick
From 0.41- 2.2 m	CLAY ; silty, stiff, medium plasticity, damp, dark olive brown
From 2.2 - 4.5 m	CLAY TILL ; silty, medium plasticity, very stiff, occasional gravel chips and coal chips, dark olive brown
At 2.7 - 2.9 m	Sand lens, free water
End of Borehole = 4.5 m	
Slough = 4.4 m, 0 hours	
Water level = 4.0 m, 0 hours	
Water level = 1.4 m, 15 days later	

TABLE 1
SHALLOW WATER TABLE BOREHOLES
Proposed Country Residential Subdivision
E 1/2-11-54-3-W5M
Lac St. Anne County, Alberta

BOREHOLE 08-52	
From 0.0 – 0.35 m	TOPSOIL; silty, some small roots, black, 35 cm thick
From 0.35 – 2.6 m	CLAY; silty, very stiff, medium plasticity, occasional carbonate pockets, dark olive brown
From 2.6 – 4.5 m	CLAY TILL; silty, very stiff, medium plasticity, moist, occasional gravel chips and coal chips, dark brown
At 4.1 m	Dark grey, very stiff
At 4.2 m	Groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.1 m, 0 hours Water level = 1.7 m, 15 days later	
BOREHOLE 08-53	
From 0.0 – 0.36 m	TOPSOIL; silty, some silt lenses, compressible, black, 36 cm thick
From 0.36 – 2.6 m	CLAY; silty, damp, very stiff, occasional silt lenses and rust stained fissures, dark olive brown
From 2.6 – 4.5 m	CLAY TILL; silty, damp, very stiff, medium plasticity, occasional gravel chips and coal chips, dark olive brown
At 4.1 m	Groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.2 m, 0 hours Water level = 1.9 m, 15 days later	
BOREHOLE 08-54	
From 0.0 – 0.31 m	TOPSOIL; silty, loose, compressible, black, 31 cm thick
From 0.31 – 1.6 m	CLAY; silty, high plasticity, very stiff, moist, occasional carbonate pockets, dark olive brown
From 1.6 – 4.5 m	CLAY TILL; silty, damp, very stiff, medium plasticity, occasional coal chips and gravel chips, dark olive brown
At 3.1 m	Dark grey, very stiff
At 4.5 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 2.1 m, 15 days later	

TABLE 1
SHALLOW WATER TABLE BOREHOLES
 Proposed Country Residential Subdivision
 E ½-11-54-3-W5M
 Lac St. Anne County, Alberta

BOREHOLE 08-55	
From 0.0 - 0.19 m	TOPSOIL ; silty, damp, compressible, black, 19 cm thick
From 0.19 - 1.6 m	CLAY ; silty, very stiff, medium plasticity, occasional silt lenses and carbonate pockets, dark olive brown
From 1.6 - 4.5 m	CLAY TILL ; silty, very stiff, medium plasticity, occasional silt lenses and gravel chips, dark olive brown
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.4 m (dry), 0 hours Water level = 1.6 m, 15 days later	
BOREHOLE 08-56	
From 0.0 - 0.24 m	TOPSOIL ; silty, damp, compressible, loose, black, 24 cm thick
From 0.24 - 1.6 m	CLAY ; silty, medium plasticity, damp, very stiff, occasional gravel chips, dark olive brown
From 1.6 - 4.5 m	CLAY TILL ; silty, medium plasticity, damp, very stiff, frequent gravel chips and coal chips, dark olive brown
At 4.4 m	No evidence of groundwater seepage
End of Borehole = 4.5 m Slough = 4.3 m, 0 hours Water level = 4.3 m (dry), 0 hours Water level = 1.8 m, 15 days later	
BOREHOLE 08-57	
From 0.0 - 0.31 m	TOPSOIL ; silty, damp, compressible, black, 31 cm thick
From 0.31 - 1.4 m	CLAY ; silty, damp, very stiff, medium plasticity, occasional gravel chips, dark olive brown
From 1.4 - 4.5 m	CLAY TILL ; silty, very stiff, damp, occasional gravel chips and coal chips, dark brown
At 4.1 m	Groundwater seepage, dark grey
End of Borehole = 4.5 m Slough = 4.4 m, 0 hours Water level = 4.1 m, 0 hours Water level = 1.4 m, 15 days later	



Hagstrom Geotechnical Services Ltd.

5507 - 134A Avenue, Edmonton, Alberta T5A 0M3

NOR CAN CONSULTING GROUP
Proposed Country Residential Subdivision
E1/2-11-54-3-W6M
Lac St. Anne County, Alberta
Site Plan

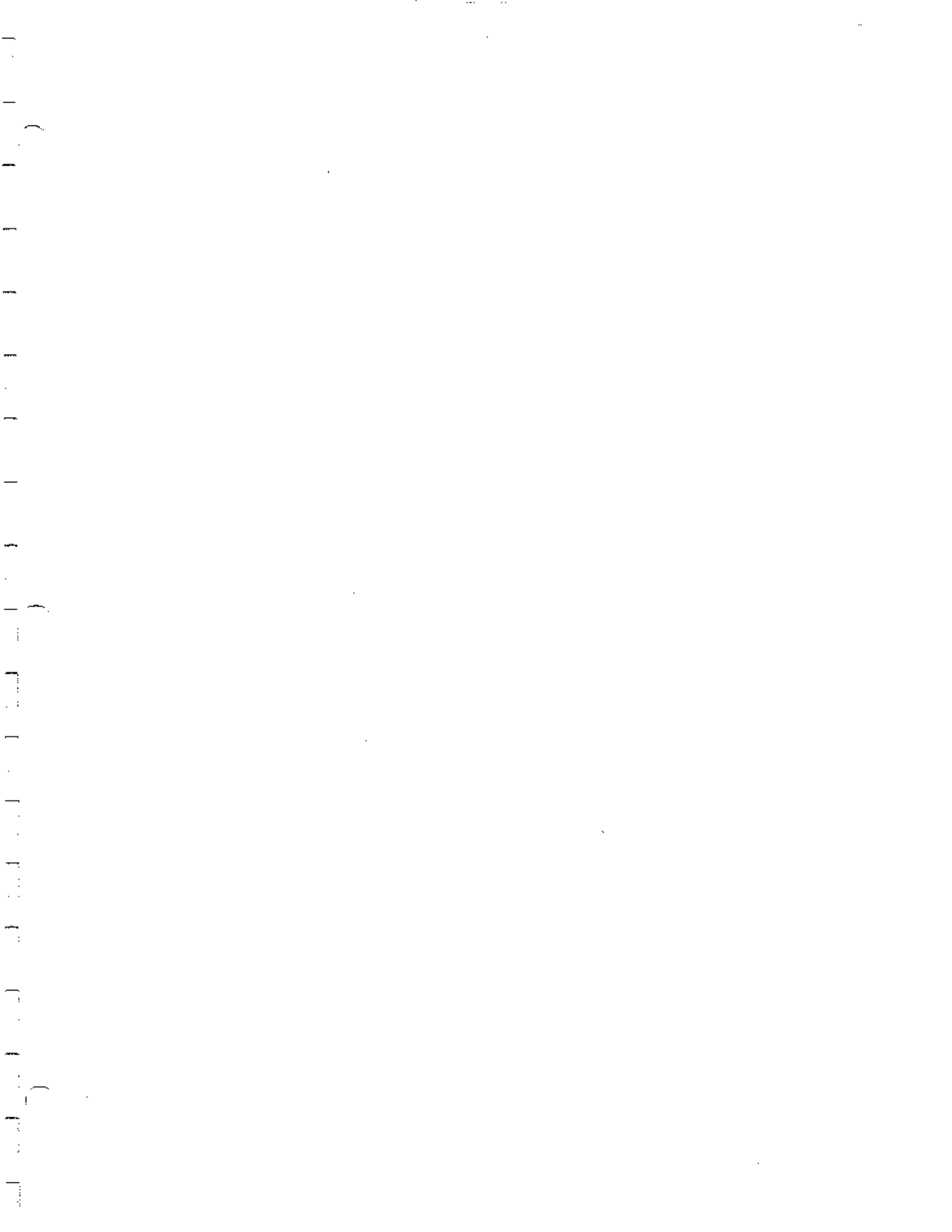
Job No: H0810-210

Date: December 4, 2008

Plate: 1



GEO TECHNICAL STUDY





Hagstrom Geotechnical Services Ltd.

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Tel: (780) 996-5621 • Fax: (780) 475-5671
e-mail: h_gsl@telus.net

Nor Can Consulting Group Inc.
Box 38, Site 219, RR2
Carvel, Alberta
T0E 0H0

December 22, 2008
Our File: H0810-210

Attention: **Mr. Frank Florkewich**

Dear Sirs:

Re: **Geotechnical Site Investigation for Building Foundations and Roadways
Proposed Country Residential Subdivision
East ½-11-54-3-W5M
Lac St. Anne County, Alberta**

1.0 INTRODUCTION

As requested, a geotechnical site investigation was carried out by Hagstrom Geotechnical Services Ltd. (HGSL) for the design and construction of residential building foundations and roadways at the above referenced site. The investigation consisted of drilling a total of fifteen boreholes drilled to a maximum depth of 6.0 meters below ground surface, soil sampling, laboratory testing, and evaluation of the results. Our recommendations are provided herein.

2.0 PROJECT DESCRIPTION

The proposed country residential subdivision is located within the east one half of Section 11, Township 54, Range 3, west of the Fifth Meridian in Lac St. Anne County, Alberta. The site is comprised of approximately 315 acres (127.6 hectares) of agricultural land that is bounded on the north by Highway 633, on the east by range Road 31, and on the south and west by quarter section boundaries. The land is presently agricultural pasture land and is covered with trees over about 10 percent of the two quarter sections. The topography is classified as undulating with a maximum elevation difference between 7 and 8 metres. A small creek flows through the site in a north westerly direction and flows across Highway 633 in the north west corner of the site. There is also a livestock water dugout located in the north west limits. The site is also covered with numerous piles of cobble and boulder size rocks. A high pressure pipeline is located in the north quarter (refer to Plate 18, Appendix A).

It is understood it is proposed to subdivide the site into different clusters with about 5 to 8 homes in each cluster. A Phase I Environmental Site Assessment was carried out by HGSL and is contained in

The results from soluble sulphates analyses conducted on ten selected soil samples revealed a "negligible" to "moderate" potential for sulphate attack on concrete in contact with native soils at this site. Therefore, all concrete in contact with the native soils relating to building foundations and underground services at this site should be made with CSA Type 50 sulphate resistant Portland cement possessing a minimum 56-day compressive strength of 30 MPa. The maximum water cement

4.1 CONCRETE

The groundwater levels in each borehole location were monitored during drilling, at drilling completion, and 26 days later. No groundwater seepage and no borehole sloughing was encountered during drilling in all boreholes. A tabular summary of the water table results in each of the boreholes is provided in Table 1, below and as shown, the stabilized groundwater table ranges from 2.7 to 5.9 metres. Lithologic descriptions of the subsols encountered along with water table levels are presented in the boreholes logs, Appendix A.

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The soil stratigraphy encountered at the borehole locations during drilling were generally consistent and consists of topsoil over clay followed by an extensive deposit of clay till. Thin silt layers were encountered below the topsoil in seven boreholes and a thick sand layer was encountered below the clay in one borehole. The topsoil thickness ranged from 6 to 25 centimeters. The clay extended to depths of 1.8 to 4.2 metres and was described as very stiff to hard, medium plasticity, dry to damp, medium plasticity and dark olive brown in colour. Moisture contents in the clay ranged from 6 to 18 percent with most of the values between 11 and 14 percent. The clay till extended below depths of 1.8 to 4.2 metres and was described as silty, very stiff to hard, medium plasticity, and dark olive brown in colour. Moisture contents in the clay till ranged from 12 to 19 percent with most of the values between 13 and 17 percent. Moisture contents within the clay within the top 2.0 to 3.0 metres are expected to be near or slightly below optimum moisture content for recompaction.

4.0 SUBSOIL AND GROUNDWATER CONDITIONS

The groundwater levels in each borehole location were monitored during drilling, at drilling completion, and 26 days after drilling completion. The individual groundwater results are presented on the boreholes logs in Appendix A.

Fifteen boreholes were drilled at the subject site on to a depth of 6.0 metres on October 18, 2008. Supervision of drilling, soil sampling, and logging of the various soil strata was performed by Mr. Merle Hagsrom, P. Eng. of HGSL. The soils encountered during drilling were classified in accordance with the Modified Unified Soil Classification System which is explained on Plates 1 and 2, Appendix A. The soil and groundwater conditions encountered during field drilling were recorded and are presented on the borehole logs in Appendix A. The borehole locations are presented on Plate 18, Appendix A.

3.0 INVESTIGATION PROCEDURE

A separate report dated January 27, 2009. In addition, a report dated December 20, 2008, for shallow water table conditions was prepared by HGSL.

ratio should be 0.50. An air entrainment agent of 5 to 7 percent is recommended for improved workability and freeze-thaw durability.

TABLE 1: SUMMARY OF BOREHOLE WATER LEVELS

Borehole Number	t = 26 Days Later	Borehole Number	t = 26 Days Later
08-101	5.4	08-109	5.1
08-102	5.5	08-110	5.6
08-103	5.7 (dry)	08-111	5.4
08-104	2.7	08-112	5.6 (dry)
08-105	3.9	08-113	5.5
08-106	5.7 (dry)	08-114	5.3
08-107	5.9 (dry)	180-115	5.4
08-108	5.5		

5.0 RECCOMENDATIONS FOR SITE PREPARATION

The site has numerous low areas that may contain a significant amount of topsoil and peat. All topsoil and peat should be removed from building and roadway areas. For the buildings that will have a basement, the excavation should be carefully inspected to ensure that all compressible organic soils and soft material has been removed from the building site.

Estimates of topsoil thickness at the borehole locations may be obtained from the borehole logs. However, it should be expected that the topsoil and organic material thicknesses might vary between the borehole locations. In particular, no boreholes were drilled in the bottom of the marshes and thus significant amounts of compressible topsoil and organic soils may have to be wasted prior to placement of new fill.

Except for lower areas, the native silt, clay and clay till is expected to be suitable for general site grading. Uniformity and compactive effort of the engineered fill are important in minimizing the potential for differential settlement. The engineered fill should be compacted to the following standards.

- (1) All site-raising fill under building areas should be placed in 150 mm maximum lifts compacted to at least 98% of standard Proctor maximum dry density within $\pm 2\%$ of its optimum moisture content.
- (2) Site raising fill under the parking and roadway areas should be placed in 150 mm maximum lifts compacted thickness and compacted to at least 95% of standard Proctor maximum dry density within $\pm 2\%$ of its optimum moisture content.
- (3) General site grading fills outside the building footprint should also be placed in 150 mm lifts compacted thickness and compacted to at least 95% of standard Proctor

Foundation loads for new homes may be constructed on cast-in-place concrete friction piles. This may be an economical foundation type for any at-grade building development including attached garages to avoid construction of footing excavations. An advantage in concrete friction piles is that the bases need not be thoroughly cleaned or inspected, as they do not rely on end bearing resistance.

6.2 Cast-in-Place Concrete Friction Piles

- (4) Footings should be inspected by qualified geotechnical personnel to ensure that the footings are located in suitable native mineral soils.
 - (3) Strip and spread footings may be designed using an allowable bearing capacity of 90 kPa for perimeter strip footings be less than 60 centimeters wide and 30 centimeters thick and footings founded in clay, silt or clay fill at the above noted depths. In no case, should the strip and spread footings be reinforced with two 10 millimeter longitudinal steel bars.
 - (2) All footings should be founded on the undisturbed, inorganic, native mineral soils. Footings should not be supported on fill. Where local wet and soft zones are encountered in the footing excavations, it may be necessary to increase the size of the footings or to remove the wet and soft material and replace with lean concrete. Disturbed soil should not be allowed to remain in the footing excavations.
 - (1) Footings supporting heated structures should have a minimum soil cover of 1.5 m below finished ground level to provide adequate protection against frost. For unheated structures, exterior and interior footings should be founded at a minimum depth of 2.4 m below finished ground level.
- In the case of basements, footings may be founded immediately below basement level provided the minimum depth of 1.5 m below finished exterior grade is maintained.
- Spread footings should be designed and constructed according to the following recommendations:

6.1 Spread Footings

Spread footings and cast-in-place concrete friction piles are considered feasible foundation types for new homes in view of the observed soil and groundwater conditions. Design recommendations for spread footings and cast-in-place concrete friction piles are provided in the following sections.

6.0 RECOMMENDATIONS FOR BUILDING FOUNDATIONS

- (4) All fill used for landscaping purposes needs only moderate compaction (i.e. 92 % of standard Proctor maximum dry density) to ensure future settlements do not adversely affect design drainage provisions.
- maximum dry density within $\pm 2\%$ of its optimum moisture content.

The piles should be designed and installed according to the recommendations given below.

- (1) An allowable shaft adhesion of 18 kPa may be used for the design of concrete friction piles in native mineral soils. Shaft adhesion should not be included in the upper 1.5 m of the pile to allow for the possibility of the soil drying and shrinking away from the concrete pile shaft for potential future settlement. A minimum pile length of 5.5 m below finished site grade for exterior piles is recommended to resist potential frost heave forces. Interior piles should also be 5.0 m deep if installation will be carried out during winter months.
- (2) End bearing resistance should not be included in calculating the allowable design load of a straight shaft friction pile.
- (3) A minimum pile shaft diameter of 300 mm is recommended to prevent voids from forming during pouring of concrete.
- (4) As a minimum and not including structural requirements, a nominal percentage of longitudinal reinforcement (0.5% of the sectional area of the pile shaft) should be provided and is required throughout the top 5.0 metres of the pile shaft to resist potential uplift forces on the pile due to frost action and seasonal moisture variations. If piles are designed as tension elements, the pile reinforcing should be designed to resist the anticipated uplift stresses.
- (5) Concrete should be poured immediately after drilling of the pile hole to reduce the risk of groundwater seepage and sloughing soil. It is expected that protective steel casing will be required where the pile drill holes penetrate below the groundwater table in wet sand.

6.3 Concrete Grade Beams

If piles are used to support garage structures, etc., a concrete grade beam is required along the top of the piles. Precautions should be taken to prevent heaving of the grade beams due to frost penetration, where the grade beams will lie less than 1.5 m below the ground surface.

The recommended construction procedure for preventing heave under the grade beam is to use crushable, non-degradable void filler that is incorporated at the base of the grade beam. In this method, the grade beam must be designed in accordance with the crushing strength of the void filler used and the piles must be available to take the resulting uplift.

6.4 Concrete Floor Slabs

Concrete slabs on grade may be supported on the native mineral soils or engineered fill. Given the moderate swelling potential of the native clay soils, the concrete floor slab should be designed to tolerate some movement and should be separated from the building structure.

A minimum of 100 mm of clean, well-graded sand or gravel is recommended directly beneath the

The native mineral soils may be used for backfilling around the basement walls provided it is free of organic soils. The soils should be carefully placed and hand tamped in lifts of 300 mm or less to obtain uniform compaction. If compacted backfill is used, the foundation walls should be designed using an equivalent fluid pressure of 10 kN/m².

Perimeter drains should be provided on the outside of the footings below the basement floor slab to prevent building up of hydrostatic pressure against the basement walls and promote a dry basement. The drains should be surrounded with at least 200 millimetres of free draining gravel. If the water table is located within 1.0 meter of the bottom of concrete foundations, interior perimeter drains along the strip footing and lateral drains should be provided below the floor slab at a spacing of no more than 4.0 meters apart. It is recommended that at least two test holes be drilled at each home location prior to construction to confirm the soil and groundwater conditions.

Temporary excavation slopes for basement construction should be cut at 1 horizontal to 1 vertical through the native mineral soils. Occupational Health and Safety regulations for excavations must be followed at all times.

6.5 Excavations and Backfilling of Basements

Other appropriate materials, which fall outside the above recommended gradation limits may be suitable. Alternate materials should, however, be evaluated by a geotechnical engineer prior to use.

SIEVE		% PASSING
1 1/2	38 000 µm	100
3/8	10 000 µm	65-100
No. 4	5 000 µm	50-90
No. 10	2 000 µm	35-75
No. 40	400 µm	10-45
No. 100	150 µm	0-20
No. 200	75 µm	0-5

**TABLE 2
TYPICAL GRADATION FOR SLAB-ON-GRADE FLOORS**

Floor slab for a new home. This should be increased to a thickness of 150 mm for a garage floor slab. Coarse material greater than 50 mm in diameter should be avoided directly beneath the floor slab to prevent stress concentrations within the slab. The granular leveling course should be compacted to a uniform dry density of about 98 percent of standard Proctor maximum dry density. A recommended typical gradation is provided in Table 2, below.

6.6 Subgrade Preparation for Paved Areas

The final subgrade for roadways should be drained towards drainage swales and ditches to prevent subgrade softening due to water accumulations. Subsequent to subgrade preparation to obtain design grade elevation, all loose or organic material should be removed from beneath paved areas. Proof-rolling of the entire surface area under pavement sections should be carried out to detect any local soft and weak spots. Soft spots detected as a result of proof-rolling should be excavated and backfilled with general engineered fill. If large subgrade excavation is required, a suggested depth of 300 to 450 mm is recommended followed by placement of a woven geotextile (AMOCO 2002 or equivalent). Granular backfill consisting of 80 mm diameter pit-run should be placed over the geotextile in one lift and compacted using lightweight equipment.

Subsequent to proof-rolling and subgrade repair, the subgrade should be scarified to a depth of not less than 150 mm and recompacted to at least 100 percent of SPMDD at a moisture content of 0 to 2 percent over optimum moisture content. The near surface soils within the top 2.0 to 3.0 metres were found to be near optimum moisture content. In some areas, some moisture conditioning to optimum moisture content will likely be required to achieve this level of compaction.

Options for subgrade preparation for new roadways should be finalized at the time of construction in order to confirm the subgrade condition. Depending on weather conditions, it may become necessary to consider Portland cement stabilization. Cement dosage in the order of 10 to 15 kilograms per square metre should be expected.

Preparation of the subgrade for roadways should be carried out in segmented areas. This is to avoid loosening of the prepared areas by site traffic before compaction of the subgrade and placement of the granular material have been completed. Protection of the prepared subgrade against precipitation and frost should be undertaken.

6.7 Asphalt Pavement Structure

It is expected that vehicle traffic will consist of low volumes of passenger cars, trucks and garbage trucks corresponding to a road classification of local residential. A 20-year design life, an assumed traffic volume of 3.5×10^4 ESALs and a soaked California Bearing Ratio (CBR) of 3 was used in the design of the pavement structure.

The recommended hot mix pavement structure is as follows:

- 40 mm asphaltic concrete at final acceptance certificate
- 75 mm asphaltic concrete over
- 200 mm crushed granular base course (100% SPMDD)
- 150 mm subgrade preparation (100% of SPMDD)

The properties of the material used in the above roadway structure, should conform to Lac St. Anne County specifications or AT & U specifications. All hot mix pavement structures should be compacted to a minimum of 98 percent of the 50 blow Marshall density.

It is recommended that the finished subgrade road surface be sloped at a minimum of 2 percent toward perimeter ditches. The purpose of this is to drain any subsurface water from the subgrade and thereby prevent ponding of water, which could result in softening and/or possible frost heaving of the subgrade. Some deterioration of the road structure may occur prior to placing the final lift of hot mix asphalt from construction traffic loading (i.e. delivery vehicles and concrete trucks). Prior to placing the final lift of asphalt, the existing road surface should be inspected and any deficiencies (i.e. potholes, cracks) should be repaired prior to construction of an asphalt overlay.

7.0 CLOSURE

The letter report was based on the findings at fifteen borehole locations. Should different subsol and groundwater conditions be encountered during construction, Hagstrom Geotechnical Services Inc. should be notified immediately and the recommendations submitted herein will be reviewed, and revised if necessary.

Should you have any questions or require additional information, do not hesitate to contact our office at (780) 996-5621.

Yours truly,

Hagstrom Geotechnical Services Ltd.



Merte Hagstrom, P. Eng.
Senior Engineer

Distribution: (3) addressee
Attachments: Appendix A

PERMIT TO PRACTICE
Hagstrom Geotechnical Services Ltd.
Signature: *Merte Hagstrom*
Date: *December 22, 2008*
PERMIT NUMBER: P 9593
The Association of Professional Engineers,
Geologists and Geophysicists of Alberta

Merte Hagstrom
22.2008

APPENDIX A

**Explanation of Field and Laboratory Test Data
Borehole Logs
Site Plan**

Explanation of Field and Laboratory Test Data

The following pages are an explanation of the terms and symbols used in the Test Hole Log

Soil Profile and Description

Soil types are described by the Modified Unified Soil Classification System. (See Plate 2 for terms and symbols)

Soils classified by particle size fall in the following ranges:


BOULDERS - greater than 200 mm
 COBBLES - 75 mm to 200 mm
 GRAVEL - 5 mm to 75 mm
 SILT - 0.002 mm to 0.08 mm
 CLAY - finer than 0.002 mm


Additional graphic symbols include:

← z
 seepage
 water level surface

Soil Sample Type

Standard Penetration Sample (D) 

Undisturbed Sample (Shelby) (U) 

Bag Sample 

Penetration Resistance

Field test indication number of blows (N) of a 140 pound hammer dropping 30 inches (76cm) required to drive a 2 inch (5 cm) O.D. open end sampler a distance of 1 foot (30 cm) from 0.5 to 1.5 feet (15 to 45 cm) into the undisturbed soil. This test is outlined in A.S.T.M., D1568.

Miscellaneous Tests

In this column are summarized results of all the laboratory test as indicated by the following symbols:

HVR Hydrocarbon Vapour Readings, ppm or % LEL
 MA Mechanical grain size analysis
 G Specific gravity
 k Coefficient of permeability
 pp Pocket penetrometer strength kg/cm²
 q Triaxial compression test
 C Consolidation test
 Qu Unconfined compressive strength kg/cm²
 SO_s Soluble sulphate concentration
 γ Bulk unit weight
 γ_d Dry unit weight

* Tests normally summarized on separate data sheets

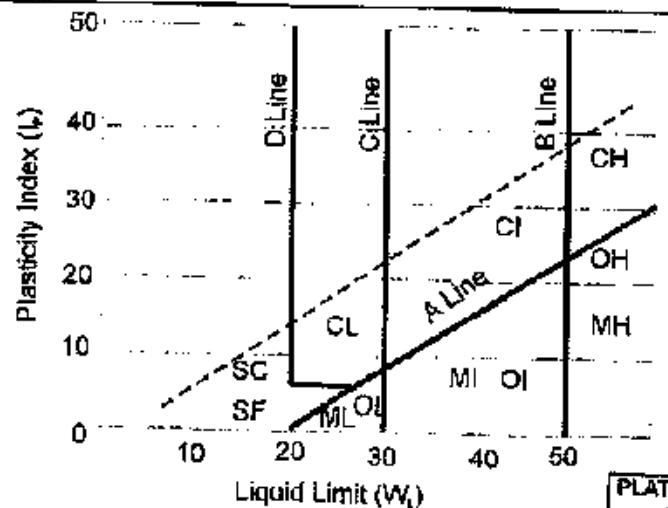


Modified Unified Classification System For Soils

Major Division	Group Symbol	Graph Symbol	Color Code	Typical Description	Laboratory Classification Criteria				
Coarse-Grained Soils (more than half by weight larger than 200 sieve)	Gravels more than half coarse grains larger than No. 4 sieve	Clean Gravels (little or no fines)	GW		Red	Well graded gravels, little or no fines	$C_u = (D_{60}/D_{10}) > 6$ $C_c = D_{30}^2 / (D_{10} \cdot D_{60}) = 1$ to 3		
		Poorly graded gravels, and gravel sand mixtures, little or no fines	GP		Red	Not meeting above requirements			
		Dirty Gravel (with some fines)	GM		Yellow	Silty gravels, gravel-sand-silt mixtures	Content of fines exceeds 12%	Below "A" line P.I. less than 4	
			GC		Yellow	Clayey gravels, gravel-sand-(silt) clay mixtures	exceeds 12%	Above "A" line P.I. more than 7	
	Sands more than half fine grains smaller than No. 4 sieve	Clean Sands (little or no fines)	SW		Red	Well graded sands, gravelly sands, little or no fines	$C_u = (D_{60}/D_{10}) > 4$ $C_c = D_{30}^2 / (D_{10} \cdot D_{60}) = 1$ to 3		
		Poorly graded sands, little or no fines	SP		Red	Not meeting above requirements			
		Dirty Sands (with some fines)	SM		Yellow	Silty sands, sand-silt mixtures	Content of fines exceeds 12%	Below "A" line P.I. less than 4	
			SC		Yellow	Clayey sands, sand-(silt) clay mixtures	exceeds 12%	Above "A" line P.I. more than 7	
		Fine-Grained Soils (more than half by weight passes 200 sieve)	Silt below "A" line negligible organic content	$W_L < 50\%$	ML		Green	Inorganic silts and very fine sands, rock flour, silty sands of slight plasticity	Classification is based upon plasticity chart
				$W_L > 50\%$	MH		Blue	Inorganic silts, micaceous or diatomaceous, fine sandy or silty soils	
Clays above "A" line negligible organic content	$W_L < 30\%$		CL		Green	Inorganic clays of low plasticity, gravelly, sandy, or silty clays, lean clays			
	$30\% < W_L < 50\%$		CI		Green-Blue	Inorganic clays of medium plasticity, silty clays			
	$W_L > 50\%$		CH		Blue	Inorganic clays of high plasticity			
Organic Silts & Clays below "A" line on chart	$W_L < 50\%$		OL		Green	Organic silts and organic silty clays of low plasticity	Whenever the nature of the fine content has not been determined it is designated by the letter "F". E.G. SF is a mixture of sand with silt or clay		
	$W_L > 50\%$	OH		Blue	Organic clays of high plasticity				
Highly Organic Soils	PI		Orange	Peat and other highly organic soils	Strong color or odor, and often fibrous texture				

Bedrock Symbols

Bedrock (Undifferentiated)	
Shale	
Sandstone	
Siltstone	
Fill	
Coal	



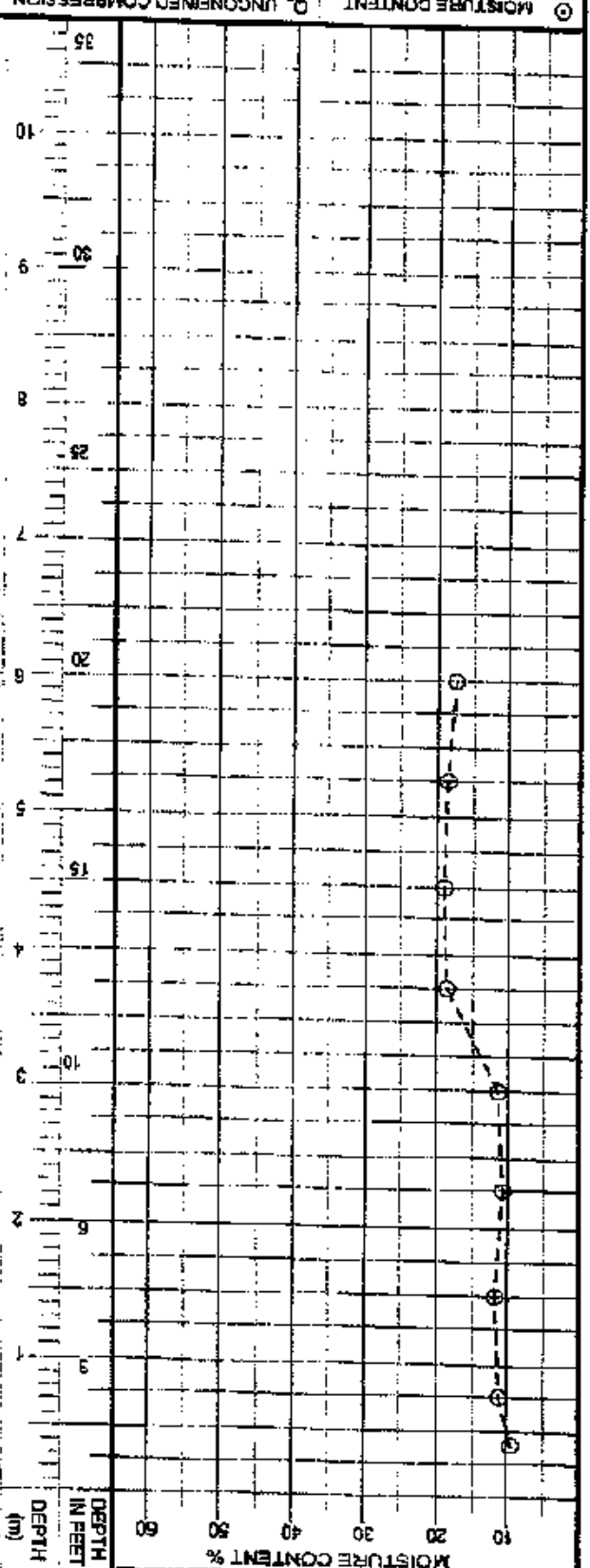
Hagstrom Geotechnical Services Ltd.

5007 - 134 A. Avenue, Edmonton, Alberta T5A 0M3



CLIENT: NorCan Consulting Group
 PROJECT: Proposed Country Residential Subdivision
 LOCATION: E 1/2 11-54-3-WSM, Lac St. Anne County, Alberta
 JOB NO.: H0810-210
 DATE: October 18, 2008
 TECH. NH: 08-101
 TEST BORING

MOISTURE CONDITIONS
 ATTERBERG LIMITS



SOIL PROFILE & DESCRIPTION

DRILL TYPE: B-40 Solid Stem Auger

DATE: October 18, 2008
 TECH. NH: 08-101

TEST RESULTS

DEPTH (m)	DEPTH (ft)	SOIL SYMBOL	SOIL DESCRIPTION	PP (kPa)	SO ₂ (%)
0.0 - 0.5	0 - 1.5	CLAY	CLAY; silty, very stiff, medium plasticity; occasional carbonate pockets, dark olive brown	615	0.14
0.5 - 1.0	1.5 - 3.0	TOPSOIL	TOPSOIL; silty, clayey, damp, dark brown, 10 cm thick	615	
1.0 - 3.2	3.0 - 10.5	CLAY TILL	CLAY TILL; silty, very stiff, medium plasticity, occasional gravel chips and coal chips, dark olive brown	480	
3.2 - 3.5	10.5 - 11.5			410	
3.5 - 4.0	11.5 - 13.0			410	
4.0 - 4.5	13.0 - 14.5			360	
4.5 - 5.0	14.5 - 16.0			410	
5.0 - 5.5	16.0 - 17.5			325	
5.5 - 6.0	17.5 - 19.5			410	

SOIL SURFACE ELEVATION:
 DATUM:
 DEPTH IN FEET
 DEPTH (m)

MOISTURE CONTENT
 LIQUID LIMIT
 PLASTIC LIMIT
 UNCONFINED COMPRESSION
 % DRY UNIT WEIGHT
 SO₂ SULPHATE CONTENT
 WATER TABLE
 PENETRATION RESISTANCE
 STANDARD PENETRATION SAMPLE
 UNDISTURBED SAMPLE (SHLEBY)
 BAG SAMPLE
 PLATE
 NO. 3



Hagstrom Geotechnical Services Ltd.

5807 - 134 A Avenue, Edmonton, Alberta T5A 0H3

CLIENT: Nor Can Consulting Group

PROJECT: Proposed Country Residential Subdivision

LOCATION: E 1/2 11-54-3-W5M, Lac St. Anne County, Alberta

JOB No.: H0810-210

DATE: October 18, 2008

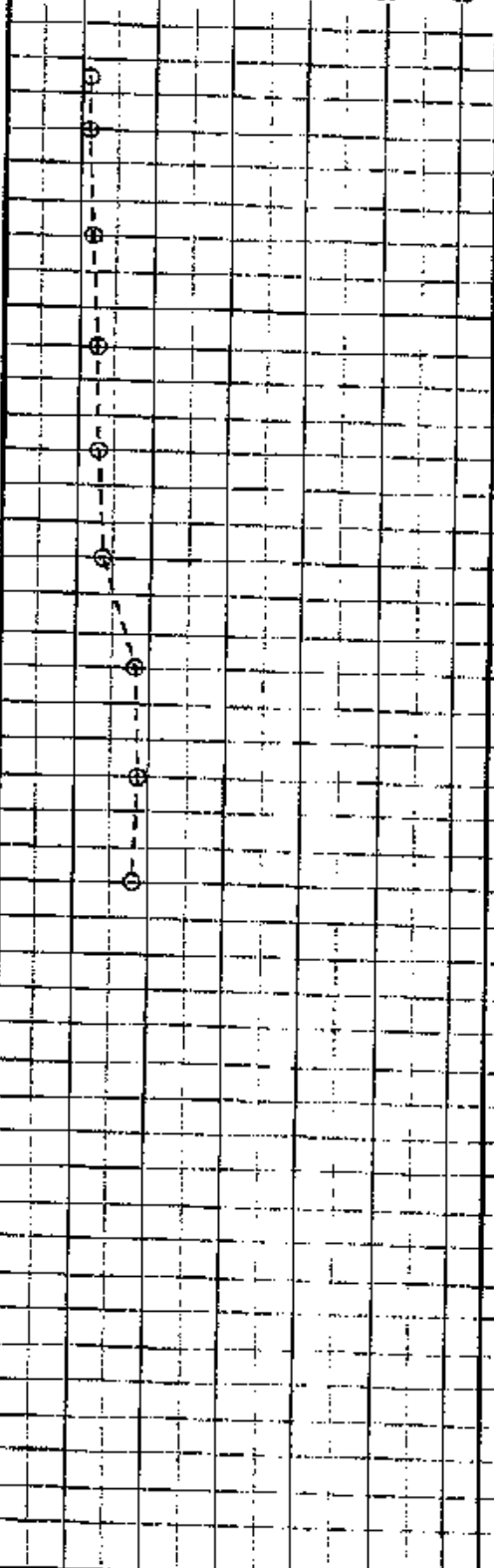
TECH: MH

TEST BORING 08-102

MOISTURE CONDITIONS ATTERBERG LIMITS

MOISTURE CONTENT %

10 20 30 40 50 60



DRILL TYPE: B-40 Solid Stem Auger

SOIL PROFILE & DESCRIPTION

DATUM:

SURFACE ELEVATION:

TOPSOIL; silty, damp, loose, dark brown, 8 cm thick

8 cm

CLAY; silty, very stiff to hard, dry to damp, medium plasticity, dark olive brown

- hard consistency

2.7 m

CLAY TILL; silty, medium plasticity, damp, occasional gravel chips and coal chips, dark olive brown

- hard consistency at 3.0 m

- dark grey, very stiff, medium plasticity

- occasional silt lenses

- no evidence of groundwater seepage

6.0 m

End of Borehole = 6.0 m

Slough = 5.9 m, 0 hours

Water level = 5.9 m (dry), 0 hours

Water level = 5.5 m, 26 days later

TEST RESULTS

SAMPLE TYPE BLOW COUNT (N)

MISCELLANEOUS TESTS

PP = 615 kPa

PP = 615 kPa

PP = 615 kPa

PP = 410 kPa
SO₄ = 0.02%

PP = 515 kPa

PP = 375 kPa

PP = 410 kPa

PP = 325 kPa

PP = 360 kPa

MOISTURE CONTENT
LIQUID LIMIT
PLASTIC LIMIT

UNCONFINED COMPRESSION
DRY UNIT WEIGHT

SO₄ SULPHATE CONTENT
WATER TABLE
PENETRATION RESISTANCE

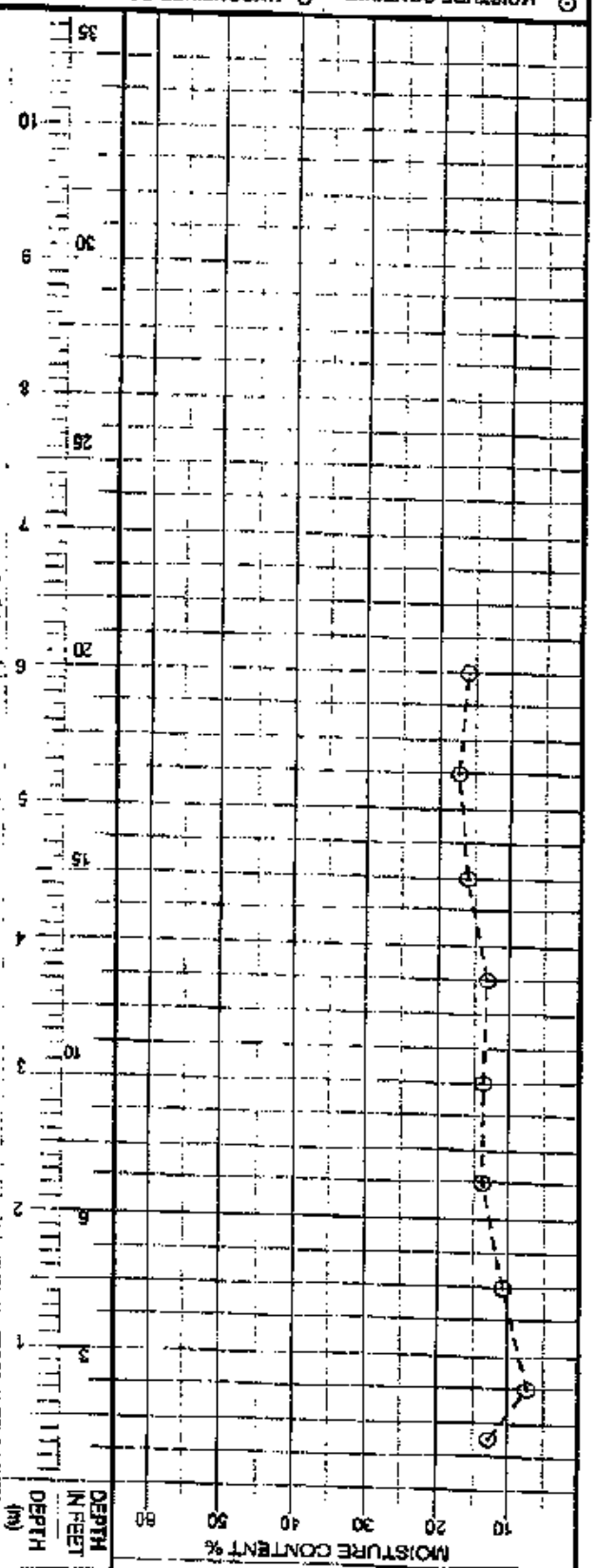
STANDARD PENETRATION SAMPLE
UNDISTURBED SAMPLE (SHELBY)
BAG SAMPLE

PLATE
No. 4

CLIENT: Nor Can Consulting Group
 PROJECT: Proposed Country Residential Subdivision
 LOCATION: E % 11-54-31-ASM, Lac St Anne County, Alberta
 JOB No: H0810-210
 DATE: October 18, 2008
 TECH: MH

TEST BORING
 08-103

MOISTURE CONDITIONS
 ATTERBERG LIMITS



SOIL PROFILE & DESCRIPTION

DRILL TYPE: B-40 Solid Stem Auger
 SURFACE ELEVATION:
 DATUM:
 DEPTH IN FEET
 DEPTH (m)

TOPSOIL: silty, loose, dry, compressible, black, 10 cm thick
 CLAY, silty, damp, very stiff, medium plasticity, occasional gravel chips and carbonate pockets, dark olive brown
 hard consistency

CLAY TILL: silty, very stiff, medium plasticity, occasional gravel chips and coal chips, dark olive brown
 dark grey, very stiff, medium plasticity

hard consistency
 occasional silt lenses

no evidence of groundwater seepage
 End of Borehole = 6.0 m
 Slough = 5.9 m, 0 hours
 Water level = 5.9 m (dry), 0 hours
 Water level = 5.7 m (dry), 26 days later

PP = 615 kPa
 PP = 580 kPa
 PP = 580 kPa
 SO₂ = 0.18%
 PP = 515 kPa
 PP = 375 kPa
 PP = 615 kPa
 PP = 425 kPa
 PP = 360 kPa
 PP = 410 kPa

MOISTURE CONTENT
 LIQUID LIMIT
 PLASTIC LIMIT
 UNCONFINED COMPRESSION
 % DRY UNIT WEIGHT
 SO₂ SULPHATE CONTENT
 WATER TABLE
 PENETRATION RESISTANCE
 STANDARD PENETRATION SAMPLE
 UNDISTURBED SAMPLE (SHELVY)
 BAG SAMPLE
 PLATE
 No. 5



Hagstrom Geotechnical Services Ltd.

5867 - 134 A. Avenue, Edmonton, Alberta T5A 0M3

CLIENT: Nor Can Consulting Group

PROJECT: Proposed Country Residential Subdivision

LOCATION: E 1/2 16-54-3-W5M, Lac St. Anne County, Alberta

JOB No.: H0810-210

DATE: October 18, 2008

TECH: MH

TEST BORING
08-104

DRILL TYPE: B-40 Solid Stem Auger

SOIL PROFILE & DESCRIPTION

TEST RESULTS

MOISTURE CONDITIONS ATTERBERG LIMITS

MOISTURE CONTENT %

10 20 30 40 50 60

DEPTH IN FEET
DEPTH (m)

DATUM:

SURFACE ELEVATION:

TOPSOIL; silty, damp, loose, black, 18 cm thick
18 cm

CLAY; silty, damp, very stiff, medium plasticity,
occasional carbonate pockets, dark olive brown

- very stiff

- very stiff, moist, medium plasticity, dark olive
brown
2.8 m

CLAY TILL; silty, moist, medium plasticity,
occasional gravel chips and coal chips, dark
brown

- stiffer with depth

- very stiff, medium plasticity

- no evidence of groundwater seepage
6.0 m

End of Borehole = 6.0 m

Slough = 5.8 m, 0 hours

Water level = 5.8 m (dry), 0 hours

Water level = 2.7 m, 26 days later

SOIL SYMBOL

SAMPLE TYPE

BLOW COUNT (N)

MISCELLANEOUS TESTS

PP = 615 kPa

PP = 515 kPa

PP = 360 kPa
SO₄ = 0.08%

PP = 340 kPa

PP = 395 kPa

PP = 305 kPa

PP = 325 kPa

PP = 240 kPa

PP = 205 kPa

⊙ MOISTURE CONTENT
□ LIQUID LIMIT
△ PLASTIC LIMIT

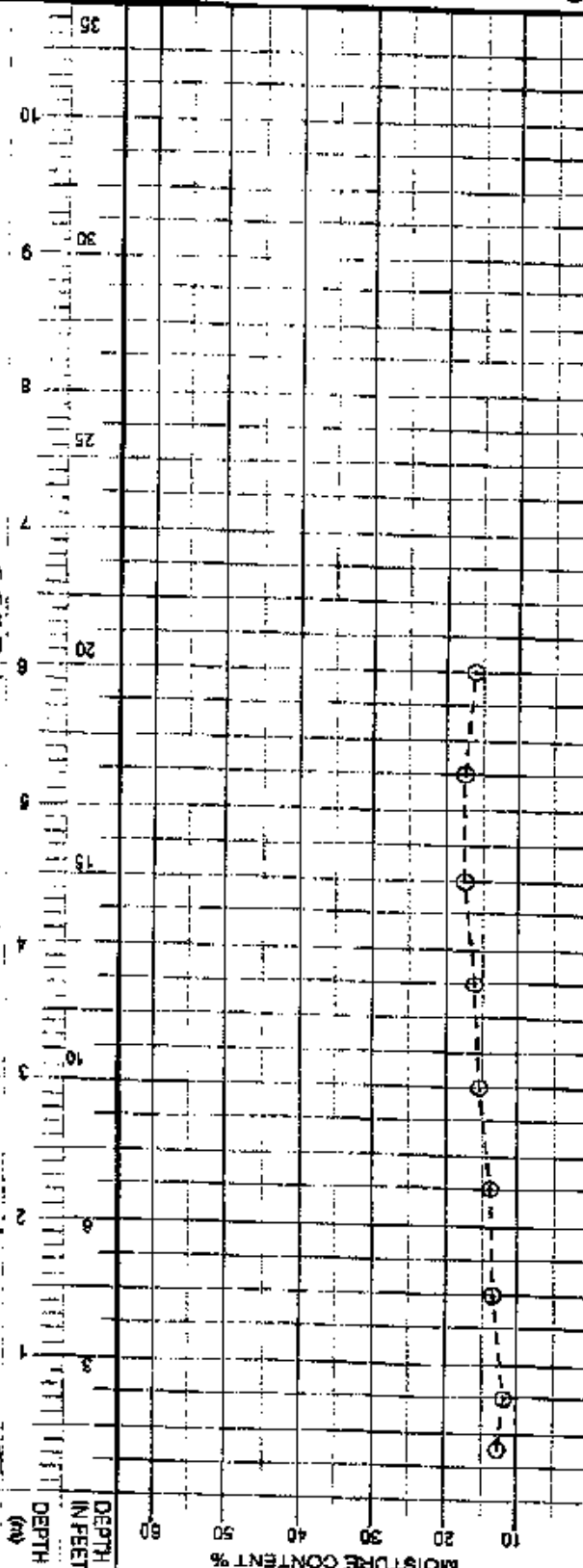
Q_u UNCONFINED COMPRESSION
γ_d DRY UNIT WEIGHT

SO₄ SULPHATE CONTENT
Σ WATER TABLE
N PENETRATION RESISTANCE

○ STANDARD PENETRATION SAMPLE
□ UNDISTURBED SAMPLE (SHELBY)
△ BAG SAMPLE

CLIENT: Nor Can Consulting Group
 PROJECT: Proposed Country Residential Subdivision
 LOCATION: E 1/2 11-54-2-W5M, Lac St Anne County, Alberta
 JOB No.: H0810-210
 DATE: October 18, 2008
 TECH: MH
 BORING TEST
 08-105

MOISTURE CONDITIONS
 ATTERBERG LIMITS



SOIL PROFILE & DESCRIPTION

DRILL TYPE: Bag Soil Stem Auger
 SURFACE ELEVATION: 6.0 m
 DATUM: 6.0 m
 TOPSOIL: silty, damp, loose, compressed, black, 13 cm thick
 CLAY: silty, damp, very stiff, medium plasticity, occasional carbonate pockets, dark olive brown
 CLAY TILL: silty, very stiff to hard, medium plasticity, occasional gravel chips and coal chips, dark olive brown
 hard consistency
 dark gray, very stiff
 -no evidence of groundwater seepage 6.0 m
 End of Borehole = 6.0 m
 Slough = 6.0 m, 0 hours
 Water level = 6.0 m (dry), 0 hours
 Water level = 3.9 m, 28 days later

TEST RESULTS
 SAMPLE TYPE: SOIL
 BLOW COUNT: N
 MISCILLANEOUS TESTS

DEPTH (m)	PP (kPa)
0.0	205 kPa
0.3	375 kPa
0.6	340 kPa
0.9	410 kPa
1.2	445 kPa
1.5	480 kPa
1.8	545 kPa
2.1	375 kPa
2.4	340 kPa



Hagstrom Geotechnical Services Ltd.

5607 - 134 A. Avenue, Edmonton, Alberta T6A 0M3

CLIENT: Nor Can Consulting Group

PROJECT: Proposed Country Residential Subdivision

LOCATION: E 1/2 11-54-3-W5M, Loc. St. Anne County, Alberta

JOB No.: H0310-210

DATE: October 18, 2008

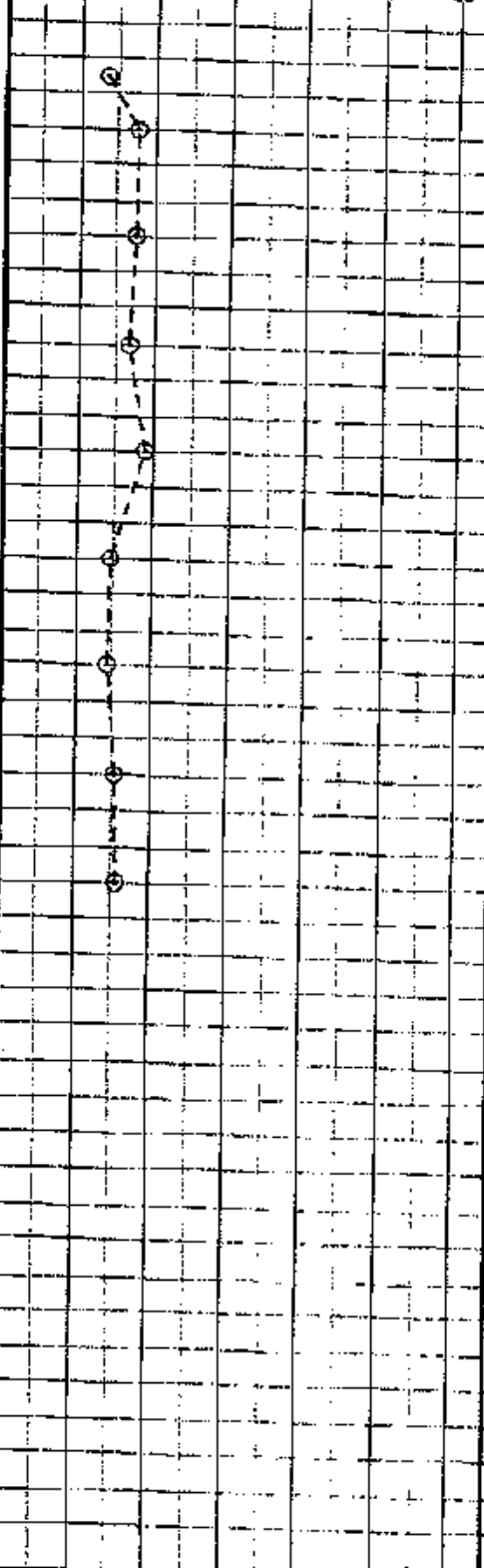
TECH: MH

TEST BORING
08-108

**MOISTURE CONDITIONS
ATTERBERG LIMITS**

MOISTURE CONTENT %

10 20 30 40 50 60



DRILL TYPE: B-40 Solid Stem Auger

SOIL PROFILE & DESCRIPTION

TEST RESULTS

DATUM:
SURFACE ELEVATION:

TOPSOIL; silty, damp, compressed, occasional small roots, black, 25 cm thick 25 cm

SILT; some sand, dry, friable, dark brown 45 cm

CLAY; silty, medium plasticity, very stiff to hard, dark olive brown

2.1 m

SAND; very silty, moist, loose, dark olive brown

- groundwater seepage

2.9 m

CLAY TILL; silty, very stiff, medium plasticity, occasional gravel chips and coal chips, dark olive brown

4 - very stiff

15 - dark grey, medium plasticity, stiffer with depth

6.0 m

- no evidence of groundwater seepage

End of Borehole = 8.0 m
Slough = 5.9 m, 0 hours
Water level = 5.8 m, 0 hours
Water level = 5.7 m (dry), 28 days later

SOIL SYMBOL	SAMPLE TYPE	BLDG COUNT - N	MISCELLANEOUS TESTS
(Symbol)			PP = 570 kPa
(Symbol)			PP = 255 kPa
(Symbol)			PP = 200 kPa S ₀ = 0.10%
(Symbol)			PP = 325 kPa
(Symbol)			PP = 410 kPa
(Symbol)			PP = 545 kPa
(Symbol)			PP = 410 kPa

(Symbol) MOISTURE CONTENT
 (Symbol) LIQUID LIMIT
 (Symbol) PLASTIC LIMIT
 (Symbol) UNCONFINED COMPRESSION
 (Symbol) DRY UNIT WEIGHT
 (Symbol) SULPHATE CONTENT
 (Symbol) WATER TABLE
 (Symbol) PENETRATION RESISTANCE
 (Symbol) STANDARD PENETRATION SAMPLE
 (Symbol) UNDISTURBED SAMPLE (SHELBY)
 (Symbol) BAG SAMPLE
 PLATE
 No. 8



CLIENT: NorCam Consulting Group
 PROJECT: Proposed Country Residential Subdivision
 LOCATION: E 1/2 11-54-34-55M, L20 St. Anne County, Alberta
 JOB No.: HD810-210
 DATE: October 18, 2008
 TECH. NH: 08-107
 TEST BORING

DRILL TYPE: B-40 Solid Stem Auger
 SOIL PROFILE & DESCRIPTION

SURFACE ELEVATION:
 DATUM:
 DEPTH IN FEET
 DEPTH (m)

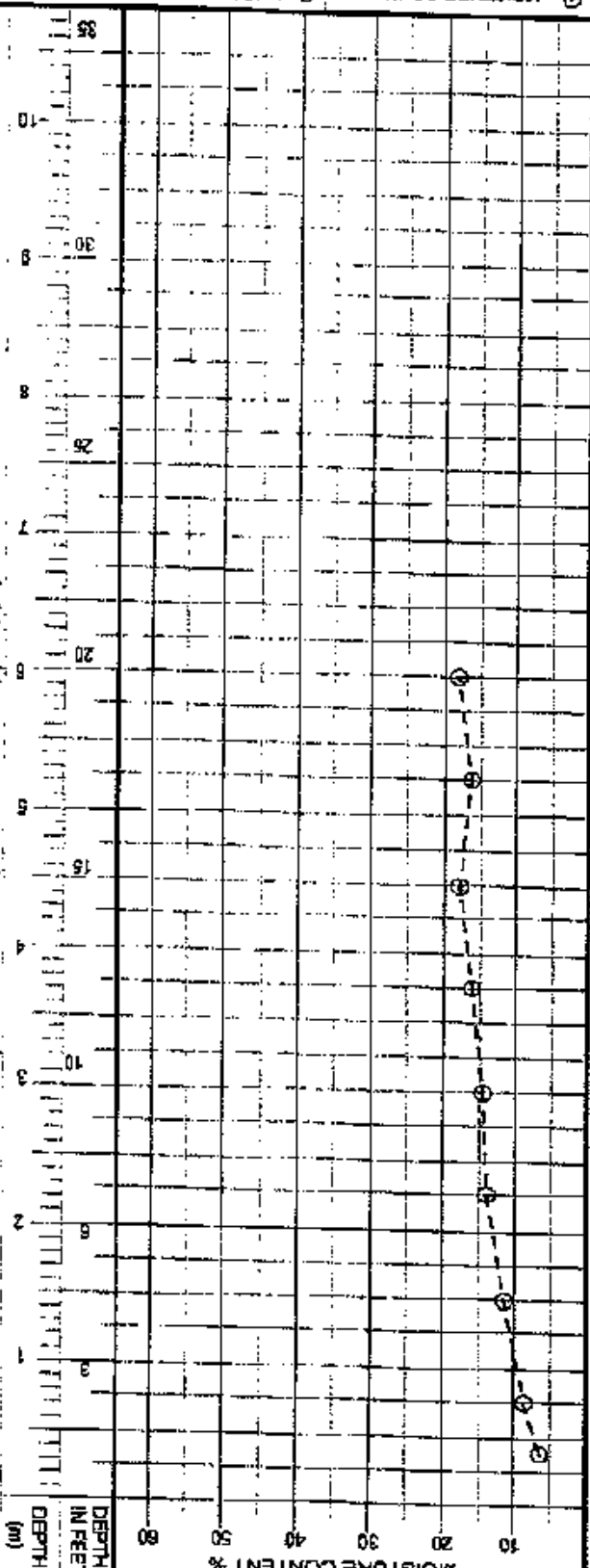
SOIL SYMBOL
 SAMPLE TYPE
 BLOW COUNT (4)

MISCELLANEOUS TESTS

MOISTURE CONDITIONS

ATTERBERG LIMITS

MOISTURE CONTENT %



TOPSOIL: silty, dry, compressible, black, 6 cm thick
 CLAY: very silty, dry, medium plasticity, light brown
 silty, damp, very stiff, medium plasticity, dark
 olive brown at 0.6 m
 PP = 580 kPa
 SO₂ = 0.18%
 PP = 515 kPa
 PP = 410 kPa
 CLAY TILL: silty, damp, very stiff, medium
 plasticity, occasional gravel size rocks and coal
 chips, dark olive brown
 PP = 410 kPa
 PP = 545 kPa
 PP = 380 kPa
 PP = 340 kPa
 - no evidence of groundwater seepage
 6.0 m
 End of Borehole = 6.0 m
 Slough = 6.0 m, 0 hours
 Water level = 6.0 m, 0 hours
 Water level = 5.8 m (dry), 28 days later

very stiff to hard
 -15
 -4
 -3
 -2
 -1

MOISTURE CONTENT
 LIQUID LIMIT
 PLASTIC LIMIT
 UNCONFINED COMPRESSION
 DRY UNIT WEIGHT
 SO₂ SULPHATE CONTENT
 WATER TABLE
 PENETRATION RESISTANCE
 STANDARD PENETRATION SAMPLE
 UNDISTURBED SAMPLE (SHELVY)
 BAG SAMPLE
 PLATE
 No. 9



Hagstrom Geotechnical Services Ltd.

5627 - 134 A. Avenue, Edmonton, Alberta T6A 0M3

CLIENT: Nor Can Consulting Group

PROJECT: Proposed Country Residential Subdivision

LOCATION: E 1/2 11-543-W5M, Lac St. Anne County, Alberta

JOB No.: H0810-210

DATE: October 18, 2008

TECH: MH

TEST BORING 08-108

MOISTURE CONDITIONS ATTERBERG LIMITS

MOISTURE CONTENT %

10 20 30 40 50 60

DRILL TYPE: B-40 Solid Stem Auger

SOIL PROFILE & DESCRIPTION

TEST RESULTS

DATUM:

SURFACE ELEVATION:

SOIL SYMBOL

SAMPLE TYPE

BLOW COUNT-N

MISCELLANEOUS TESTS

TOPSOIL; silty, dry, occasional clay lenses, dark brown, 6 cm thick

CLAY; silty, medium plasticity, very stiff to hard, occasional gravel chips, dark olive brown

- hard consistency

- very stiff

- very stiff, medium plasticity, damp to moist

CLAY TILL; silty, very stiff, damp, medium plasticity, occasional gravel chips and coal chips, dark olive brown

- very stiff, damp

- stiffer with depth, medium plasticity

- no evidence of groundwater seepage

End of Borehole = 6.0 m

Slough = 5.9 m, 0 hours

Water level = 5.9 m, 0 hours

Water level = 5.5 m, 26 days later

PP = 580 kPa

PP = 580 kPa

PP = 580 kPa
SO₄ = 0.16%

PP = 410 kPa

PP = 410 kPa

PP = 375 kPa

PP = 360 kPa

PP = 340 kPa

PP = 305 kPa

MOISTURE CONTENT
LIQUID LIMIT
PLASTIC LIMIT

UNCONFINED COMPRESSION
DRY UNIT WEIGHT

SULPHATE CONTENT
WATER TABLE
PENETRATION RESISTANCE

STANDARD PENETRATION SAMPLE
UNDISTURBED SAMPLE (SHELBY)
BAG SAMPLE

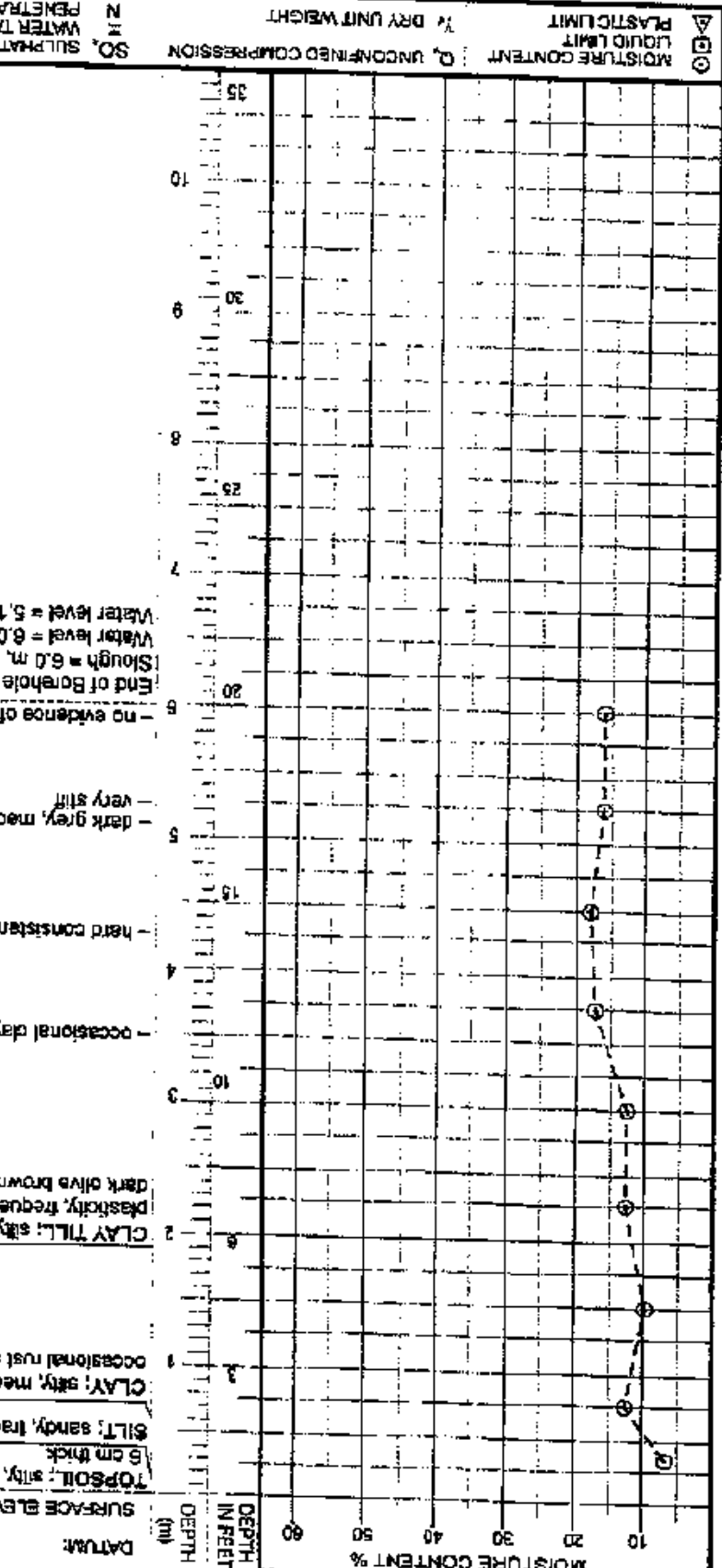
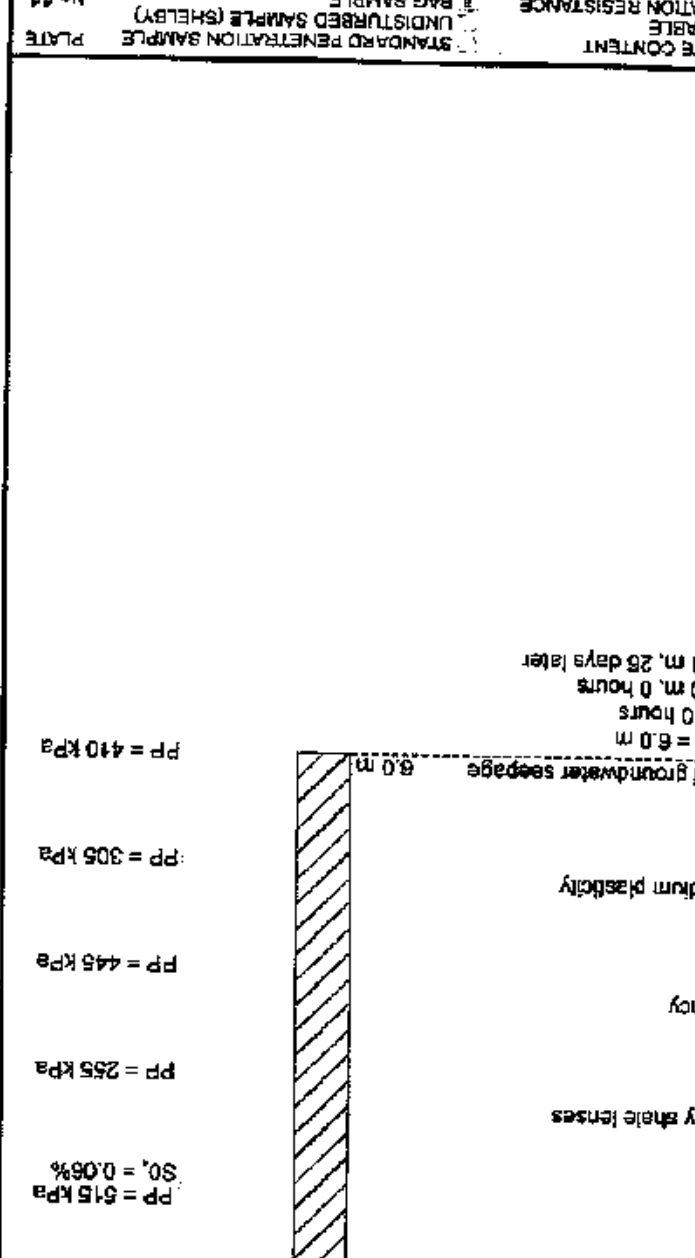
PLATE
No. 10



CLIENT: Nor Can Consulting Group
 PROJECT: Proposed County Residential Subdivision
 LOCATION: E 1/2 11-64-3-VM14, L26 St Anne County, Alberta
 JOB NO.: H0810-210
 DATE: October 18, 2008
 DRILL TYPE: B-40 Solid Stem Auger
 SOIL PROFILE & DESCRIPTION

TEST RESULTS
 TEST BORING 08-109
 TECH: MH
 SURFACE ELEVATION:
 DATUM:
 SOIL SYMBOL:
 SAMPLE TYPE:
 BLOW COUNT (ft):
 MISCELLANEOUS TESTS:

TOPSOIL: silty, damp, compressible, black
 5 cm thick
 SILT: sandy, trace of clay, light brown
 60 cm
 CLAY: silty, medium plasticity, very stiff, occasional rust stained fissures, dark olive brown
 60 cm
 CLAY TILL: silty, very stiff to hard, medium plasticity, frequent gravel chips and coal chips, dark olive brown
 1.9 m
 PP = 615 kPa
 PP = 546 kPa
 PP = 615 kPa
 PP = 615 kPa
 SO_c = 0.06%
 PP = 255 kPa
 PP = 446 kPa
 PP = 305 kPa
 PP = 410 kPa
 -no evidence of groundwater seepage
 6.0 m
 End of Borehole = 6.0 m
 Slough = 6.0 m, 0 hours
 Water level = 6.0 m, 0 hours
 Water level = 5.1 m, 26 days later



MOISTURE CONDITIONS
 ATTERBERG LIMITS
 MOISTURE CONTENT %
 DEPTH IN FEET
 DEPTH (m)



Hagstrom Geotechnical Services Ltd.

5607 - 124 A. Avenue, Edmonton, Alberta T5A 0M9

CLIENT: Nor Can Consulting Group

PROJECT: Proposed Country Residential Subdivision

LOCATION: E 1/2 11-54-3-W5M, Lac St. Anne County, Alberta

JOB No.: H0810-210

DATE: October 18, 2008

TECH: MH

TEST BORING 08-110

DRILL TYPE: B-40 Solid Stem Auger

SOIL PROFILE & DESCRIPTION

TEST RESULTS

**MOISTURE CONDITIONS
ATTERBERG LIMITS**

MOISTURE CONTENT %

10 20 30 40 50 60

DEPTH
IN FEET

DEPTH
(m)

DATUM:

SURFACE ELEVATION:

TOPSOIL; silty, damp, compressible, loose, light brown, 8 cm thick 6 cm

SILT; sandy, dry, friable, light brown 60 cm

CLAY; silty, medium plasticity, very stiff to hard, occasional silt lenses, dark olive brown 1.8 m

CLAY TILL; silty, very stiff, medium plasticity, damp, frequent gravel chips and occasional coal chips, dark olive brown

- hard consistency

- dark grey, very stiff, medium plasticity

- very stiff

- no evidence of groundwater seepage 6.0 m

End of Borehole = 6.0 m

Slough = 6.0 m, 0 hours

Water level = 6.0 m, 0 hours

Water level = 5.6 m, 26 days later

SOIL SYMBOL

SAMPLE TYPE

BLOW COUNT (N)

MISCELLANEOUS TESTS

PP = 580 kPa

PP = 580 kPa

PP = 580 kPa

PP = 425 kPa
S₀ = 0.16%

PP = 545 kPa

PP = 305 kPa

PP = 515 kPa

PP = 426 kPa

PP = 375 kPa

MOISTURE CONTENT
LIQUID LIMIT
PLASTIC LIMIT

UNCONFINED COMPRESSION
DRY UNIT WEIGHT

S₀ SULPHATE CONTENT
= WATER TABLE
N PENETRATION RESISTANCE

STANDARD PENETRATION SAMPLE
UNDISTURBED SAMPLE (SHELBY)
BAG SAMPLE

PLATE

No. 12

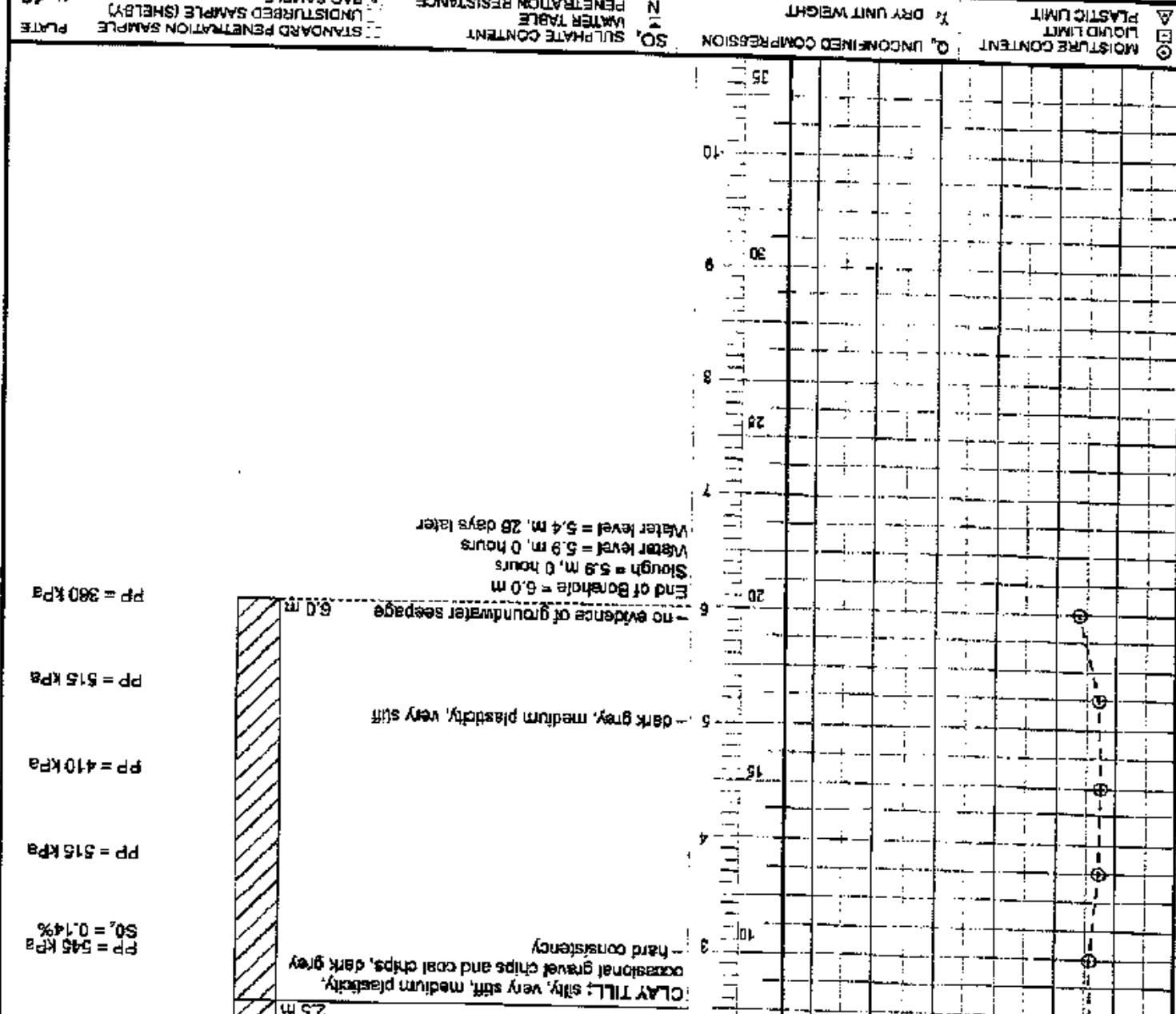


CLIENT: Nor Can Consulting Group
 PROJECT: Proposed Country Residential Subdivision
 LOCATION: E % 11-54-3 WSM, Lacs St. Anne County, Alberta
 JOB No.: H0810-210
 DATE: October 18, 2008
 TECH: MRH
 BORING: 08-111

MOISTURE CONDITIONS
 ATTERBERG LIMITS
 MOISTURE CONTENT %

DEPTH IN FEET
 SURFACE ELEVATION:
 DATUM:
 SOIL PROFILE & DESCRIPTION
 TEST RESULTS

SOIL SYMBOL
 SAMPLE TYPE
 BLOW COUNT - N
 MISCELLANEOUS TESTS





Hagstrom Geotechnical Services Ltd.

5607 - 134 A Avenue, Edmonton, Alberta T6A 0Y6

CLIENT: Nor Can Consulting Group

PROJECT: Proposed Country Residential Subdivision

LOCATION: E 1/2 11-54-3-W5M, Lac St. Anne County, Alberta

JOB No.: H0810-210

DATE: October 18, 2008

TECH: MH

TEST BORING

08-112

**MOISTURE CONDITIONS
ATTERBERG LIMITS**

MOISTURE CONTENT %

10 20 30 40 50 60

DRILL TYPE: B-40 Solid Stem Auger

SOIL PROFILE & DESCRIPTION

TEST RESULTS

DEPTH
IN FEET

DEPTH
(m)

DATUM:

SURFACE ELEVATION:

SOIL
SYMBOL

SAMPLE
TYPE

BLOW
COUNT-N

MISCELLANEOUS
TESTS

TOPSOIL; silty, dry, loose, dark brown,
8 cm thick 8 cm

SILT; sandy, dry, friable, light brown 45 cm

CLAY; silty, medium plasticity, damp, very stiff,
occasional gravel chips, dark olive brown

2 - very stiff

- cobble size rock at 3.2 m 3.3 m

CLAY TILL; silty, very stiff, medium plasticity,
occasional clay shale inclusions, and coal chips,
dark grey

- dark grey, very stiff

- no evidence of groundwater seepage 8.0 m

End of Borehole = 6.0 m

Slough = 6.0 m, 0 hours

Water level = 6.0 m, 0 hours

Water level = 5.6 m (dry), 26 days later

PP = 580 kPa

PP = 515 kPa

PP = 410 kPa
SO₄ = 0.08%

PP = 360 kPa

PP = 325 kPa

PP = 375 kPa

PP = 445 kPa

PP = 305 kPa

PP = 360 kPa

⊙ MOISTURE CONTENT
□ LIQUID LIMIT
△ PLASTIC LIMIT

○ UNCONFINED COMPRESSION
γ_s DRY UNIT WEIGHT

SO₄ SULPHATE CONTENT
= WATER TABLE
N PENETRATION RESISTANCE

□ STANDARD PENETRATION SAMPLE
□ UNDISTURBED SAMPLE (SHELBY)
⊙ BAG SAMPLE

PLATE

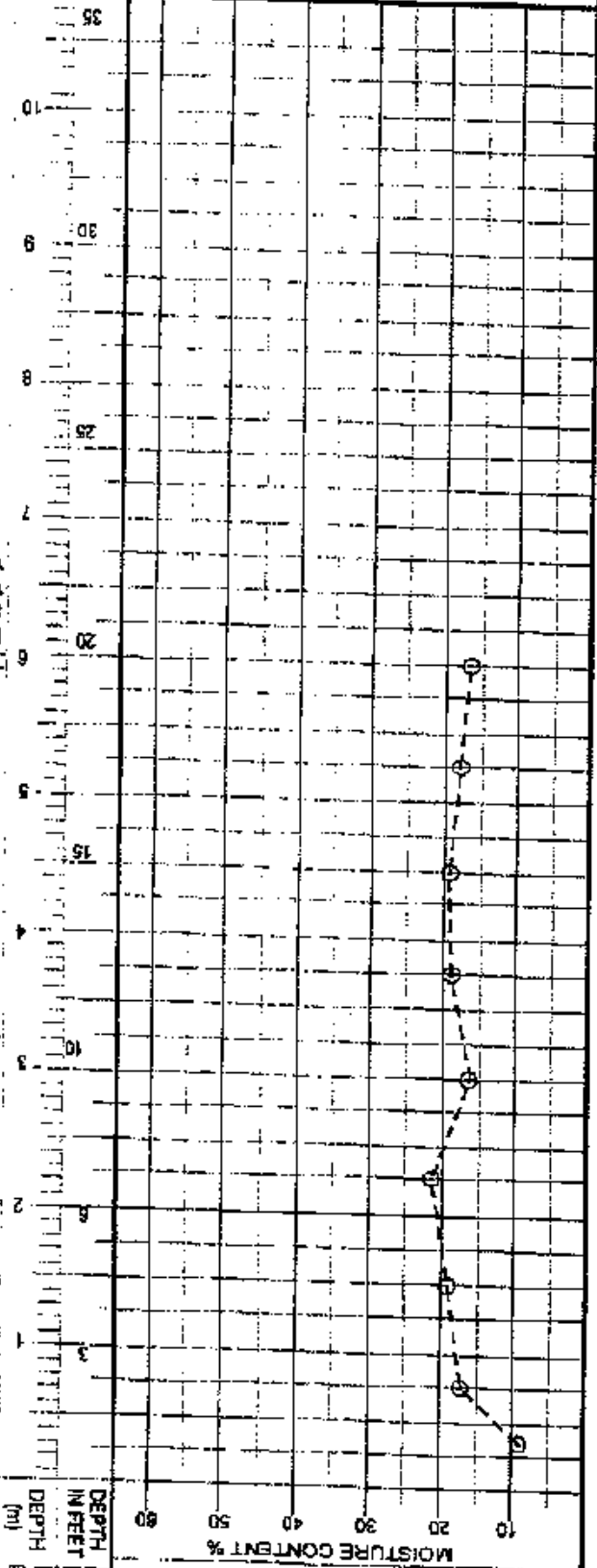
No. 14



CLIENT: NorCan Consulting Group
 PROJECT: Proposed County Residential Subdivision
 LOCATION: E X 11-64-2-W5M, Lac St. Anne County, Alberta
 JOB NO.: H0810-210
 DATE: October 18, 2008
 TECH: MH
 BORING TEST: 08-413

**MOISTURE CONDITIONS
 ATTERBERG LIMITS**

DEPTH
 IN FEET
 (m)



SOIL PROFILE & DESCRIPTION

DATE: October 18, 2008
 TECH: MH

DRILL TYPE: B-40 Solid Stem Auger

SURFACE ELEVATION:

FOIL SYMBOL

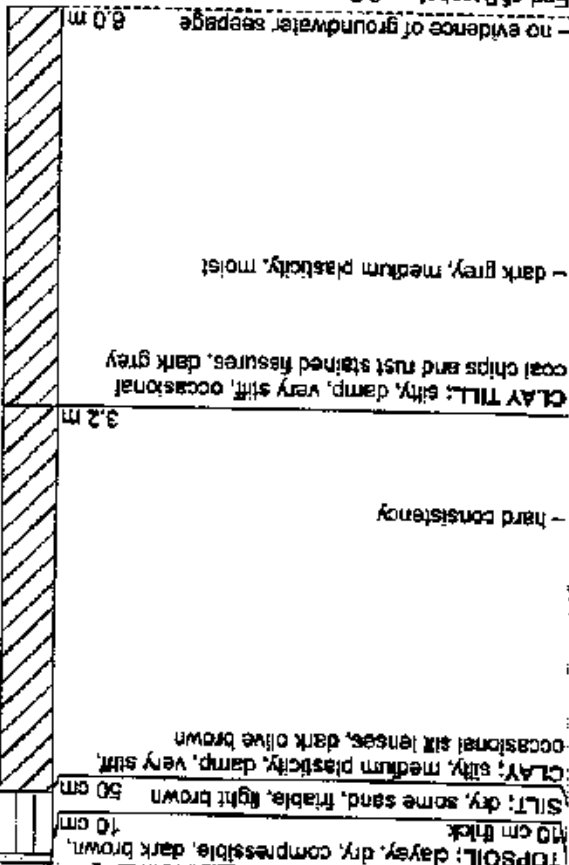
SAMPLE TYPE

BLOW COUNT - N

TEST RESULTS

MISCELLANEOUS TESTS

PP = 580 kPa
 PP = 545 kPa
 PP = 580 kPa
 PP = 515 kPa, $SO_2 = 0.18\%$
 PP = 480 kPa
 PP = 340 kPa
 PP = 155 kPa
 PP = 205 kPa
 PP = 375 kPa



End of Borehole = 6.0 m
 Slough = 6.0 m, 0 hours
 Water level = 6.0 m, 0 hours
 Water level = 5.5 m, 26 days later

MOISTURE CONTENT
 LIQUID LIMIT
 PLASTIC LIMIT

UNCONFINED COMPRESSION
 DRY UNIT WEIGHT

SULPHATE CONTENT
 WATER TABLE
 PENETRATION RESISTANCE

STANDARD PENETRATION SAMPLE PLATE
 UNDISTURBED SAMPLE (SHELBY)
 BAG SAMPLE
 No. 15



Hagstrom Geotechnical Services Ltd.

2507 - 124 A Avenue, Edmonton, Alberta T6A 0W3

CLIENT: Nor Can Consulting Group

PROJECT: Proposed Country Residential Subdivision

LOCATION: E 1/2 11-54-3-W5M, Lac St. Anne County, Alberta

JOB No.: H0810-210

DATE: October 18, 2008

TECH: MH

TEST BORING
08-114

**MOISTURE CONDITIONS
ATTERBERG LIMITS**

MOISTURE CONTENT %

10 20 30 40 50 60

DEPTH
IN FEET

DEPTH
(m)

DATUM:

SURFACE ELEVATION:

DRILL TYPE: B-40 Solid Stem Auger
SOIL PROFILE & DESCRIPTION

TEST RESULTS

SOIL SYMBOL

SAMPLE TYPE

BLOW COUNT - N

MISCELLANEOUS TESTS

TOPSOIL; silty, damp, compressible, black, 10 cm thick

SILT; sandy, dry, friable, light brown - numerous gravel size rocks at 0.4 m 50 cm

CLAY; silty, medium plasticity, damp, very stiff to hard, dark olive brown

hard consistency, damp

hard consistency

CLAY TILL; silty, very stiff, medium plasticity, damp, frequent rust stained fissures, dark olive brown - dark grey, medium plasticity, very stiff at 4.6 m

no evidence of groundwater seepage 6.0 m

End of Borehole = 6.0 m
Slough = 5.8 m, 0 hours
Water level = 5.8 m, 0 hours
Water level = 5.3 m, 26 days later

PP = 580 kPa

PP = 515 kPa

PP = 410 kPa
SO_s = 0.08%

PP = 410 kPa

PP = 445 kPa

PP = 480 kPa

PP = 455 kPa

PP = 515 kPa

PP = 305 kPa

○ MOISTURE CONTENT
□ LIQUID LIMIT
△ PLASTIC LIMIT

○ UNCONFINED COMPRESSION
% DRY UNIT WEIGHT

SO₄ SULPHATE CONTENT
Z WATER TABLE
N PENETRATION RESISTANCE

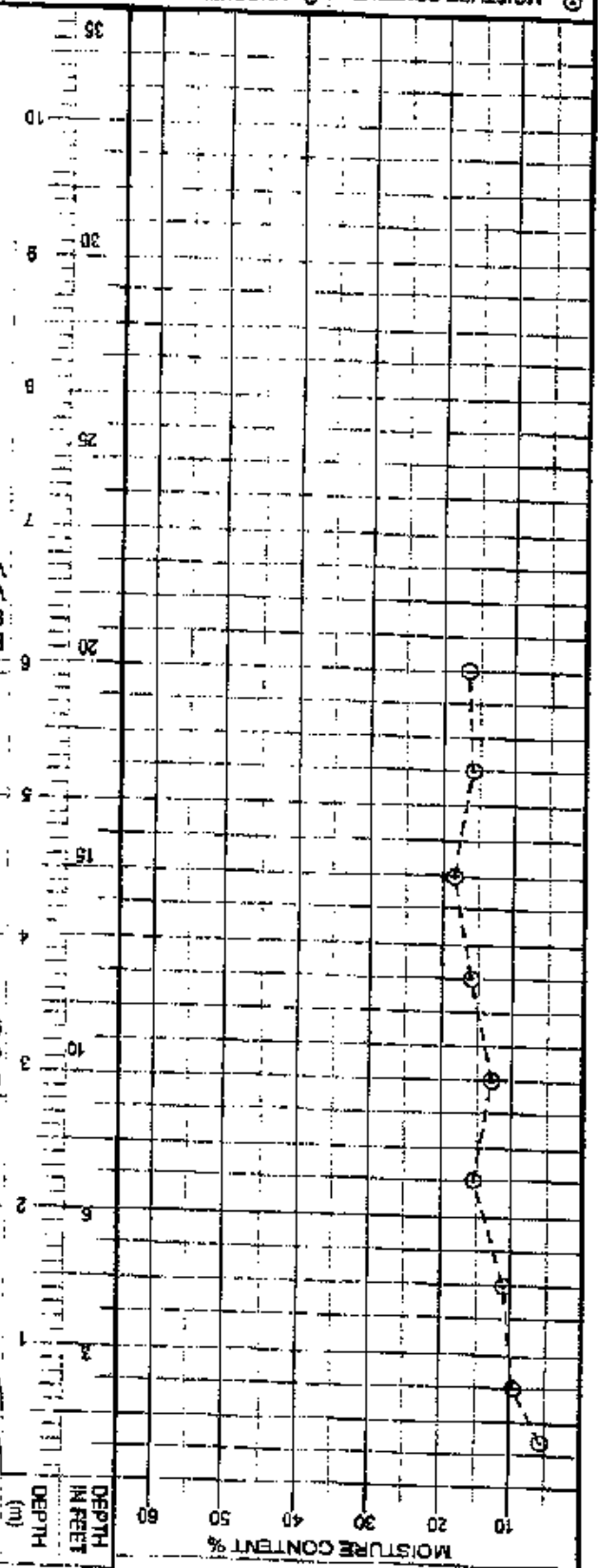
□ STANDARD PENETRATION SAMPLE
□ UNDISTURBED SAMPLE (SHELBY)
● BAG SAMPLE

PLATE
No. 16



CLIENT: Nor Can Consulting Group
PROJECT: Proposed Country Residential Subdivision
LOCATION: E 1/2 11-64-3-WSM, Linc St Anne County, Alberta
JOB No: H0810-210
DATE: October 18, 2008
TECH: MH
TEST BORING: 08-115

MOISTURE CONDITIONS
ATTERBERG LIMITS



SOIL PROFILE & DESCRIPTION

DRILL TYPE: B-40 Solid Stem Auger

DATE: October 18, 2008

TECH: MH

TEST BORING: 08-115

TEST RESULTS

MISCELLANEOUS TESTS

SAMPLE TYPE

BLOW COUNT (N)

SOIL SYMBOL

DATE

TECH



TEST BORING

MOISTURE CONTENT
 ○ LIQUID LIMIT
 □ PLASTIC LIMIT
 △ DRY UNIT WEIGHT
 ○ UNCONFINED COMPRESSION
 ○ SULPHATE CONTENT
 N WATER TABLE
 N PENETRATION RESISTANCE
 STANDARD PENETRATION SAMPLE PLATE
 UNDISTURBED SAMPLE (SHELVY)
 BAG SAMPLE
 No. 17

Highway 633



LEGEND

-  Borehole Location
-  Trees

High Pressure Pipeline

08-111

08-101

Water Dugout

08-110

08-102

NE 11-54-3-W5M

08-112

08-109

08-103

08-113

08-108

08-104

08-114

08-107

SE 11-54-3-W5M

08-115

08-106

08-105

Range Road 31



Hagstrom Geotechnical Services Ltd.

5607 - 154 A Avenue, Edmonton, Alberta T5A 0M3

NOR CAN CONSULTING GROUP

Proposed Country Residential Subdivision

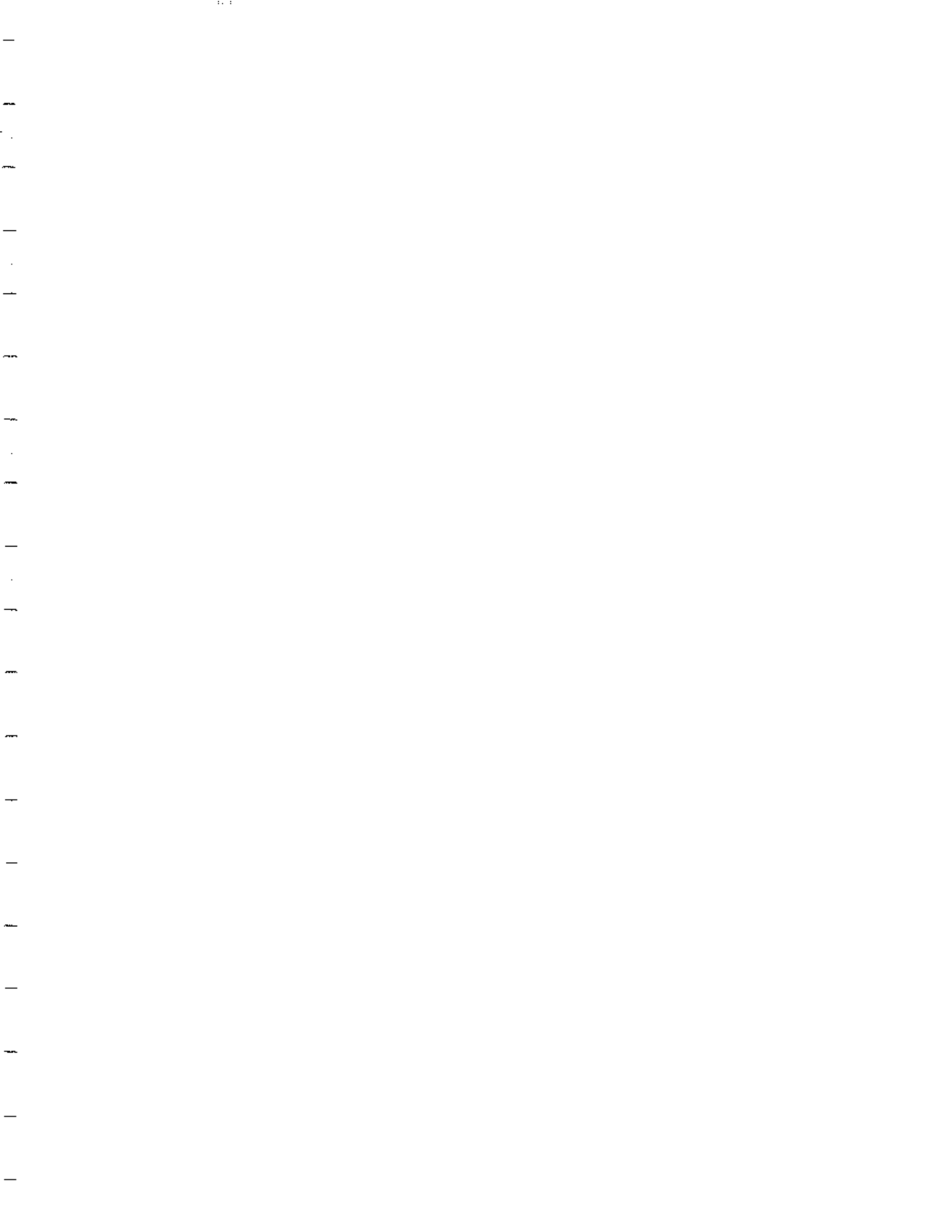
E 1/2 11-54-3-W5M

Lac St. Anne County, Alberta
Site Plan

Job No: H0810-210

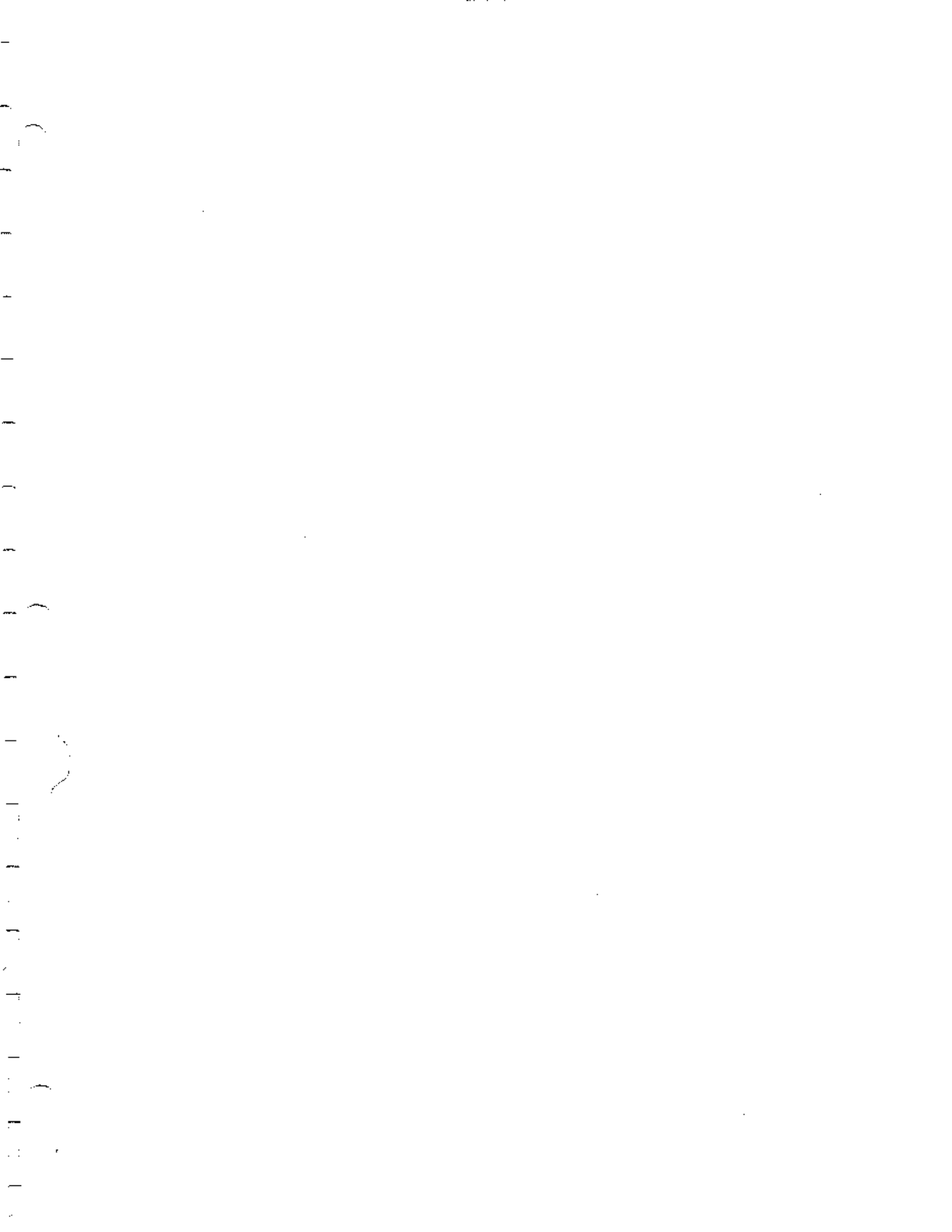
Date: October 27, 2008

Plate: 18



COND. SERV.

BRIEF



ALBERTA BEACH ESTATES E1/2-11-54-3-W5

CONDENSED SERVICING DESIGN BRIEF

FILE: NC-142-05

Prepared by:

Altime Engineering Ltd.
Suite 223, 86 McKenney Avenue
St. Albert, AB T8N 2T7
Phone 780.458-0013
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Submitted to:

Tanya Vanderwell, Manager
Planning & Development
Lac Ste Anne County

29 June 2011

ALTIME ENGINEERING LTD.

www.altime.ab.ca

CORPORATE AUTHORIZATION

This report "Alberta Beach Estates" E1/2-11-54-3-W5: Condensed Servicing Design Brief was prepared by Altime Engineering Ltd. for Alberta Beach Estates Ltd. The material in it reflects the judgment of Altime Engineering, in light of the information available at the time of preparation. Any use of the Information by a third party, or any reliance on or decisions made on it, are the responsibility of such third parties. Altime Engineering accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made, or actions taken, based upon information contained in the report.



PROFESSIONAL SEAL
L.J. Ren, P. Eng.



PERMIT TO PRACTICE

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FIGURES

1.0 INTRODUCTION

1.1 PURPOSE

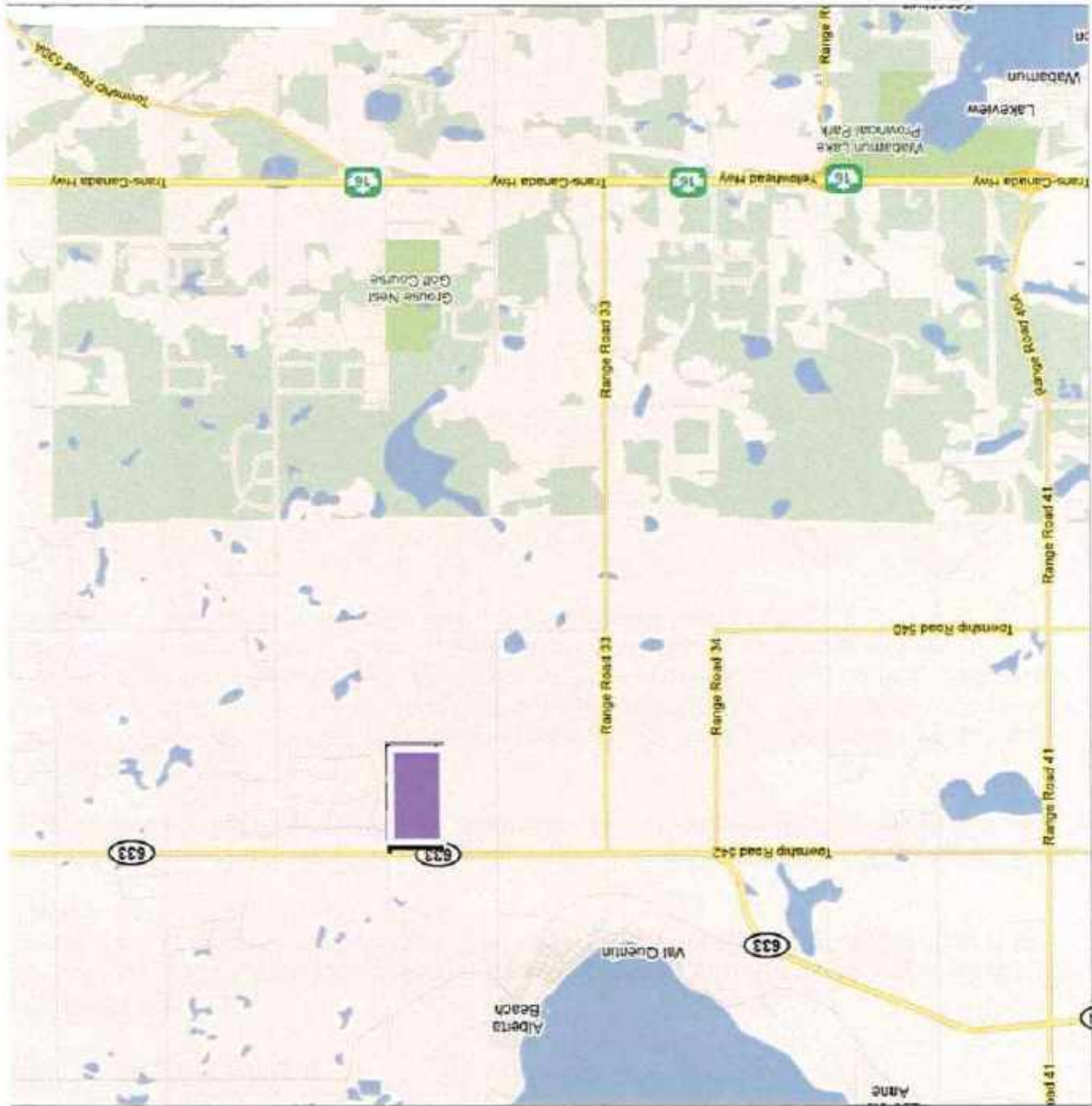
The purpose of this Condensed Servicing Design Brief is to articulate the servicing intent for the development of Alberta Beach Estates. This Brief has been prepared in support of an area structure plan to amend by-law policies.

Final engineering design will be in accordance with Lac Ste Anne County standards and subject to approvals from the County, Alberta Environment and other applicable approving agencies.

1.2 SUBJECT AREA

The subject property is located in the south east sector of Lac Ste Anne County and is legally described as East ½ -11-54-3-W5 (see **Figure 1 - Location Plan**). The property is comprised of approximately 127.7 hectares of agriculture land that is bounded to the north by Secondary Highway 633, east by Range Road 31. Agriculture land makes up the west and south boundaries. The current property owner is Alberta Beach Estates Ltd.

ALTIME ENGINEERING LTD.
LOCATION PLAN
FIGURE 1
E1/2-11-54-3-W5
ALBERTA BEACH ESTATES



2.0 BACKGROUND

2.1 PROPOSED DEVELOPMENT

Alberta Beach Estates will be an environmentally friendly residential/commercial community and will feature as the principal land uses 59 single family residential dwelling units, 16 adult living condominium units, 42 adult only living units, 100 supportive living units and 50 affordable living units.

The projected population when the site is fully built is listed as follows:

Housing Type	Pop/home	#homes	Max pop	Typical pop
LIVE WORK	2.9	6	17	17
FAMILY	2.9	59	171	171
AFFORDABLE	2.9	50	145	145
ADULT ONLY	1.6	42	84	67
Adult Living-Condo	1.6	16	32	26
Supportive Living	1.6	96	192	154
TOTAL		269	641	580

2.2 TOPOGRAPHY

The topography of the property is undulating with some significant slopes throughout. A Geotechnical Investigation was completed by Hagstrom Geotechnical Services. The geotechnical investigation consisted of a field investigation, laboratory testing, summary of conditions and recommendations relating to soil condition, groundwater elevations. Further details regarding the geotechnical investigation can be found in the briefs provided by Hagstrom Geotechnical Services.

2.3 EXISTING INFRASTRUCTURE

In the past Alberta Beach Estates was pasture land and hay land and therefore had no previous existing infrastructure.

3.0 WATER DISTRIBUTION SYSTEM

3.1 GENERAL

The objective for the proposed water distribution system will be to provide treated potable water to the development area in accordance with Alberta Environment guidelines and County Subdivision Development Standards. Potable water will be supplied from regional water system. Before the regional system is installed, water will be trucked in and stored in the underground holding tanks. A chlorination system and a water distribution pumping system will also be installed to provide safe drinking water.

Water service shall be provided to all dwellings via a community distribution system that is operational on a year round basis. Water system will be a "Trickle System" which provides each dwelling with potable water at a rate of 0.5 gallons per minute (720 Imperial gallons per day). Each dwelling will have a cistern and pressure system.

3.2 DESIGN CRITERIA

The water distribution system shall be designed to the standards set by Alberta Environment and the County, and constructed at the sole expenses of the developer.

3.4 FIRE PROTECTION
A dry hydrant will be installed to provide fire protection on wet pond D. The design of the dry hydrant will follow County standards. The location and configuration of the dry hydrant will be provided in the detailed design.

3.3 WATER DISTRIBUTION SYSTEM LAYOUT
Water distribution system will consist of 150mm, 100mm and 75mm PE DR11 watermain with valves and fittings. The system will be connected to the regional watermain in the future. In the interim, a water storage, disinfection and distribution system will be built to accommodate the current situation. (Figure 3 - Water Servicing Plan)



ALBERTA BEACH ESTATES
E10-11-96-3-W5M
FIGURE 2
WATER SERVICING PLAN
ALTIME ENGINEERING LTD

4.0 WASTEWATER SYSTEM

4.1 GENERAL

The wastewater collection system will be "STEP" system that is Septic Tank Effluent Pumping. This system comprises of a septic tank which separates the solids and greases from the effluent, a small submersible pump moves the liquid effluent via small diameter plastic pipes to the regional wastewater system. The wastewater collection system will be designed and approved in accordance with Provincial and Municipal requirements.

Prior to regional wastewater system is in place, the wastewater will be collected and stored temporarily in the holding tanks and hauled to a sewage lagoon for treatment.

4.2 DESIGN CRITERIA

The wastewater collection system shall be designed to the standards set by Alberta Environment and the County, and constructed at the sole expenses of the developer.

4.3 WASTEWATER COLLECTION SYSTEM LAYOUT

Wastewater collection system will be a low pressure sewage system which consists of 100mm, 75mm and 50mm PE DR 11 wastewater main with fittings and appurtenances (air relief valves, cleanouts, etc.). The system will be connected to the regional wastewater main in the future when it is installed. In the interim, two 10,000 gallon temporary wastewater holding tanks are to be installed in the first stage and will be added as needed. Wastewater will be hauled to a sewage lagoon for further treatment. (See Figure 3- Wastewater Servicing Plan)



5.0 STORMWATER MANAGEMENT SYSTEM

5.1 GENERAL

River Engineering Consulting has prepared a stormwater management report for the proposed development. The purpose of the report is to present the stormwater drainage concepts that will form the basis of the drainage plan that will service the community. Storm water management will be based upon the principle of minimizing the amount of disturbance to the natural surface drainage patterns and to maximize opportunities for infiltration of storm water into the sub-soil and near surface aquifer.

Runoff will be directed to dry ponds/wet ponds by roadside ditches and swales that will be constructed in the existing low areas of each catchment area. The development as a whole will be designed such that all runoff up to and including the 1:100 year storm event will be contained on site and discharged at predevelopment rates.

5.2 DESIGN CRITERIA

The stormwater management system for Alberta Beach Estates will be designed in accordance with Alberta Environment Stormwater management Guidelines and Lac Ste Anne County Subdivision Development Servicing Standards and will generally be comprised of a major (overland) system designed to convey 1 in 100 year storm runoff.

5.3 PROPOSED STORMWATER MANAGEMENT SYSTEM

The major stormwater management systems will comprise of surface runoff collection (road ditches and drainage swales) and treatment (storm pond). There are 5 drainage basins delineated and each with a dry pond/wet pond to receive and treat the surface runoff. (See Figure 4 – Stormwater Management System)



6.0 ROADWAYS

6.1 GENERAL

Alberta Beach Estates will be serviced by a gravel surface road network. The road geometrics and structure will follow County road design standards and geotechnical report. (See Figure 5- Road Network Plan and Typical Road Cross Section) Typical road cross sections RLU – 208G (a), RLU – 208G (b) and RLU – 209G will be applied based on the average annual daily traffic (AADT) generated for the internal subdivision roads.

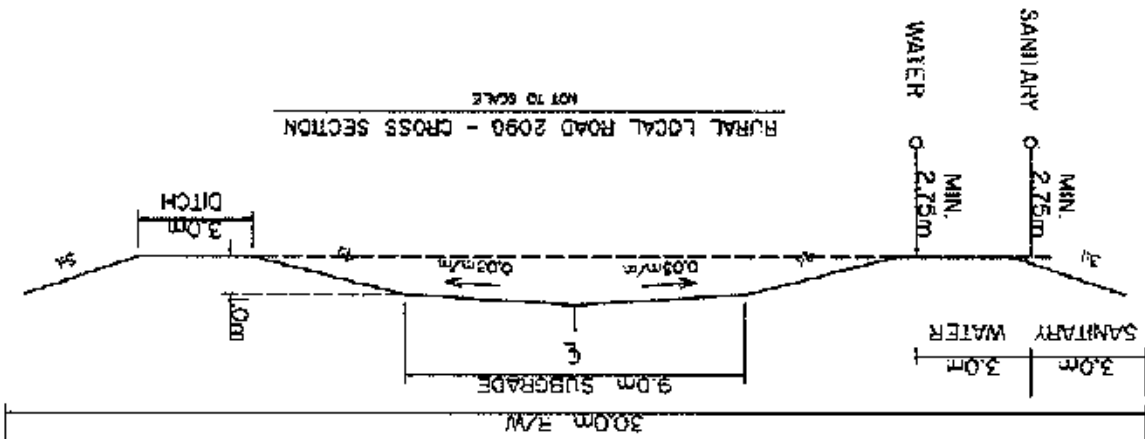


Power will be provided by Forts Alberta.

8.0 POWER

Gas will be provided by Ste Anne Gas Co-op Ltd.

7.0 GAS



Excerpts from

Alberta Beach Estates Development Project Project Scope Confirmation Report - Feb. 2011 by MANASC ISAAC Architects Ltd.

3.2 FUNCTIONAL PARAMETERS

Each unit should have the functionality for:

- Living Space
- Gardening
- Quarters
- Utility / Mechanical
- Garage for 2 cars
- Accessibility and wheelchair access

Living Space

With open concept and height ceiling, the kitchen, dining and living room are integrated in one large space, with daylight and operable windows.

The fireplace can be located either in the living room, veranda or master bedroom, the location allow for multiple fireplace as well if desired.

Gardening

Understanding the requirement of Alberta seniors' community, each unit offers along the living room a winter garden that allows garden activities continue over fall/winter seasons. The winter garden separates the living room from entrance, and creates a pathway connecting both areas.

A generous backyard can also be used for spring gardening of vegetables and herbs, with no fence integrating with neighbour's backyard, which opens for a better communication and friendship in the neighbourhood.

Bedrooms

Each unit provides a master suite with walk-in closet, master bathroom with barrier-free shower, and a guest bedroom and bathroom.

Utility / Mechanical

The utility room for boilers and electrical panels can be accessed either by the garage or mudroom. Geothermal and in-slab radiant heat, hot water solar panels, are being considered.

The laundry can be located in the mudroom, if requested, or near bedrooms to facilitate day-to-day activities.

Garage

A generous garage for two cars allows for one accessible stall and provides room for extra storage.

3.3 PHYSICAL PARAMETERS

Site Planning and Security

It is important to provide site access for various ages and abilities, throughout trails, sidewalks and parks. The property's perimeter should be secured so as to protect residents.

Parking

Ensure barrier-free access from the garage to the house.



Biophysical Asses.



0

BIOPHYSICAL ASSESSMENT
ALBERTA BEACH ESTATES
COUNTRY RESIDENTIAL SUBDIVISION
ALBERTA BEACH, ALBERTA

Submitted to:

Mr. Romish Mohan and
NorCan Consulting Group Inc.

Submitted by:

Bruce Thompson & Associates Inc.
Edmonton, Alberta



December 2010



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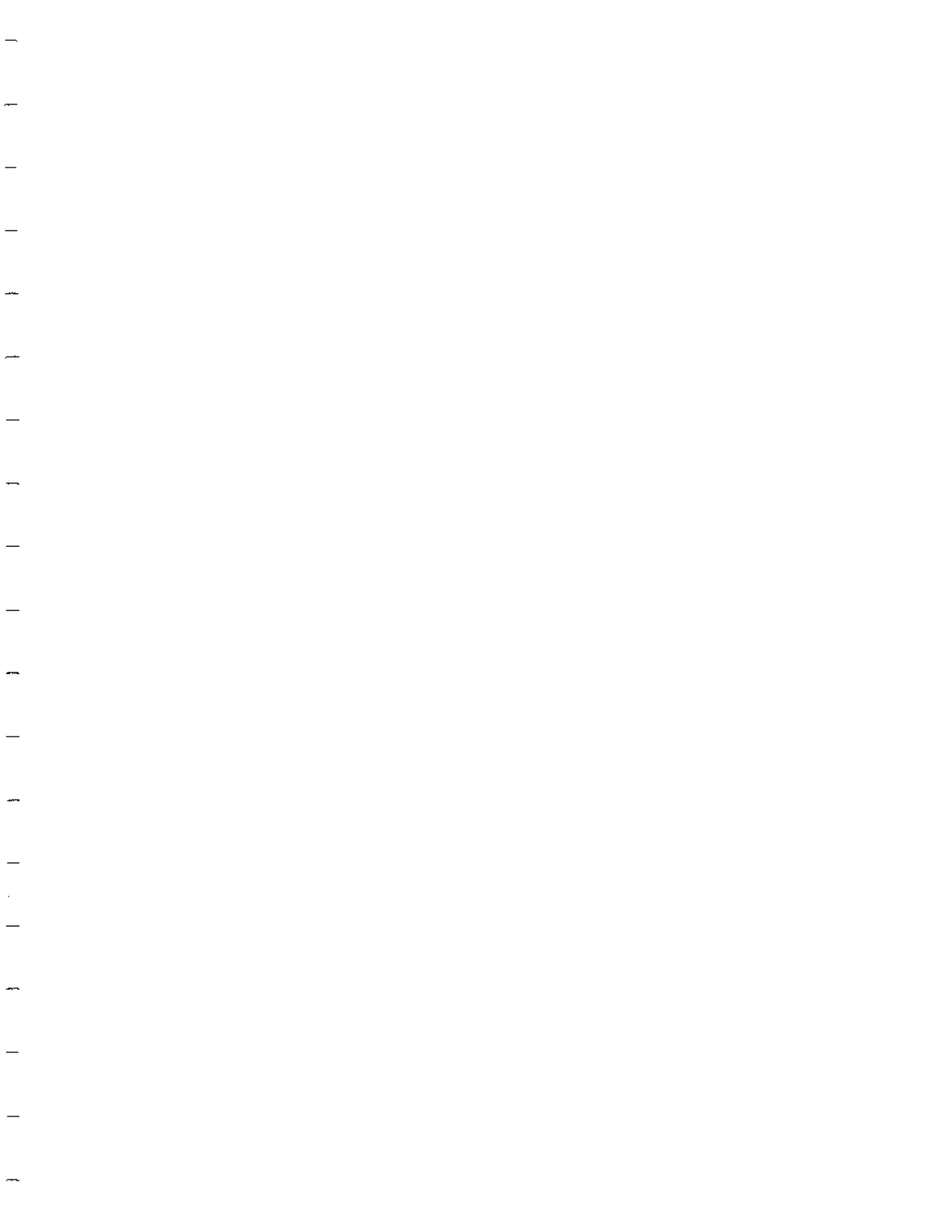
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Table 2: Summary of wetland areas on the property.

Table 3: Summary of observations of aerial photographs of property dating from 1950 to present.

Table 4: Endangered and Threatened plant species for Alberta.

Table 5: The list of species of concern listed under the federal Species at Risk Act.

Table A1 (Appendix A): Waypoint UTM coordinates.

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Fig. 1: Location of the proposed development.

Fig. 2: Location of the proposed development.

Fig. 3: Outline of the study area and the proposed development.

Fig. 4: The two quarter-sections comprising the study area and proposed development.

Fig. 5: Aerial photograph of the project site taken in August 2000.

Fig. 6: Aerial photograph of the project site taken in June 1990.

Fig. 7: Aerial photograph of the project site taken in September 1976.

Fig. 8: Aerial photograph of the project site taken in 1950.

Fig. 9: The GPS waypoints recorded at the site in September/October 2010: north quarter-section.

Fig. 10: The GPS waypoints recorded at the site in September/October 2010: south quarter-section.

Fig. 11: High water table areas on property.

Fig. 12: FWMIS Map of the general project vicinity.

Fig. 13: Overall flows of surface water onto, across and out of the property.

Fig. 14: Vegetation map of the study area.

Fig. 15A: Vegetation map of the study area: north quarter-section.

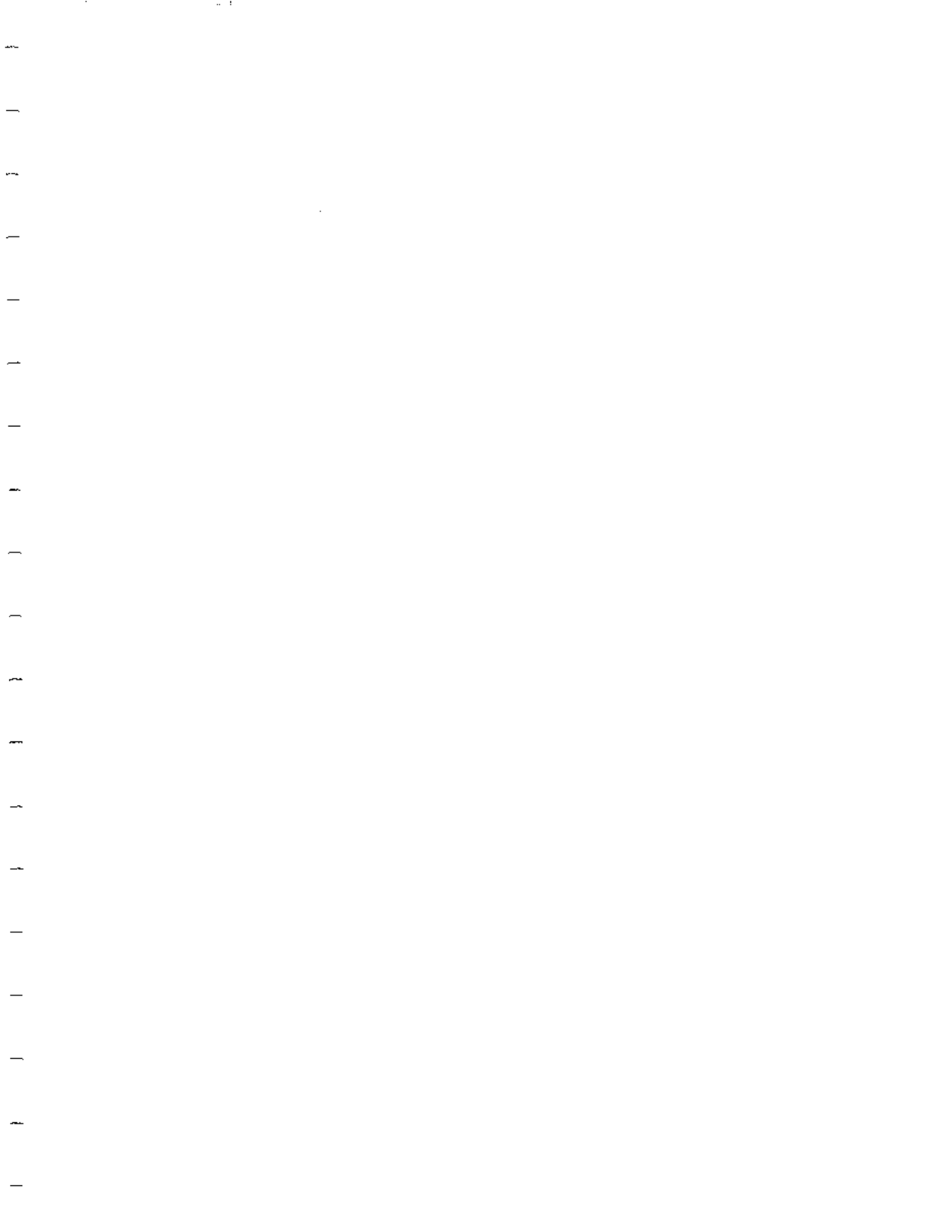
Fig. 15B: Vegetation map of the study area: south quarter-section.

Fig. 16: Extract from the map of classed waterbodies for the Watercourse Code of Practice.

Fig. 17: Ecological linkages, based on wooded areas in the vicinity of the project site.

APPENDICES

APPENDIX A:	LIST AND LOCATION OF WAYPOINTS
APPENDIX B:	WETLAND CLASS INDICATOR PLANTS
APPENDIX C:	HISTORICAL AERIAL PHOTOGRAPHS
APPENDIX D:	SITE PHOTOGRAPHS



1.0 INTRODUCTION

1.1 Background and Purpose

This Biophysical Assessment has been developed for NorCan Consulting Group Inc. and Mr. Romish Mohan (current land owner), as part of an application to develop two quarter-sections of land, being the NE and SE quarter-sections of Section 11, Township 54, Range 03, west of the 5th Meridian as a country residential subdivision located 2.5 km southeast of Alberta Beach, in Lac Ste. Anne County, Alberta. The biophysical assessment is a necessary requirement for the approval of an Area Structure Plan for the proposed project site, as well as approval of the stormwater management plan for the subdivision, under the *Alberta Water Act* and the *Environmental Protection and Enhancement Act*.

A Biophysical Assessment is conducted to identify significant and sensitive environmental components on the project site prior to the development of an Area Structure Plan (ASP), and to make recommendations on the sustainability of the site, whether parts of it can or should be preserved in the natural state, and if so, what mitigation and monitoring measures are necessary to achieve sustainability. The Biophysical Assessment provides recommendations for dedication of Environmental Reserve, Municipal Reserve and Conservation Easement lands based on municipal, community and environmental needs.

Accordingly, the purpose of this Biophysical Assessment is:

- to identify and evaluate existing ecological features on the site as they appear at the present time;
- to provide practical recommendations for preserving or enhancing ecologically significant features within the context of the ASP;
- to provide general recommendations for mitigation of potential adverse environmental effects resulting from the development, on the site and on surrounding lands.

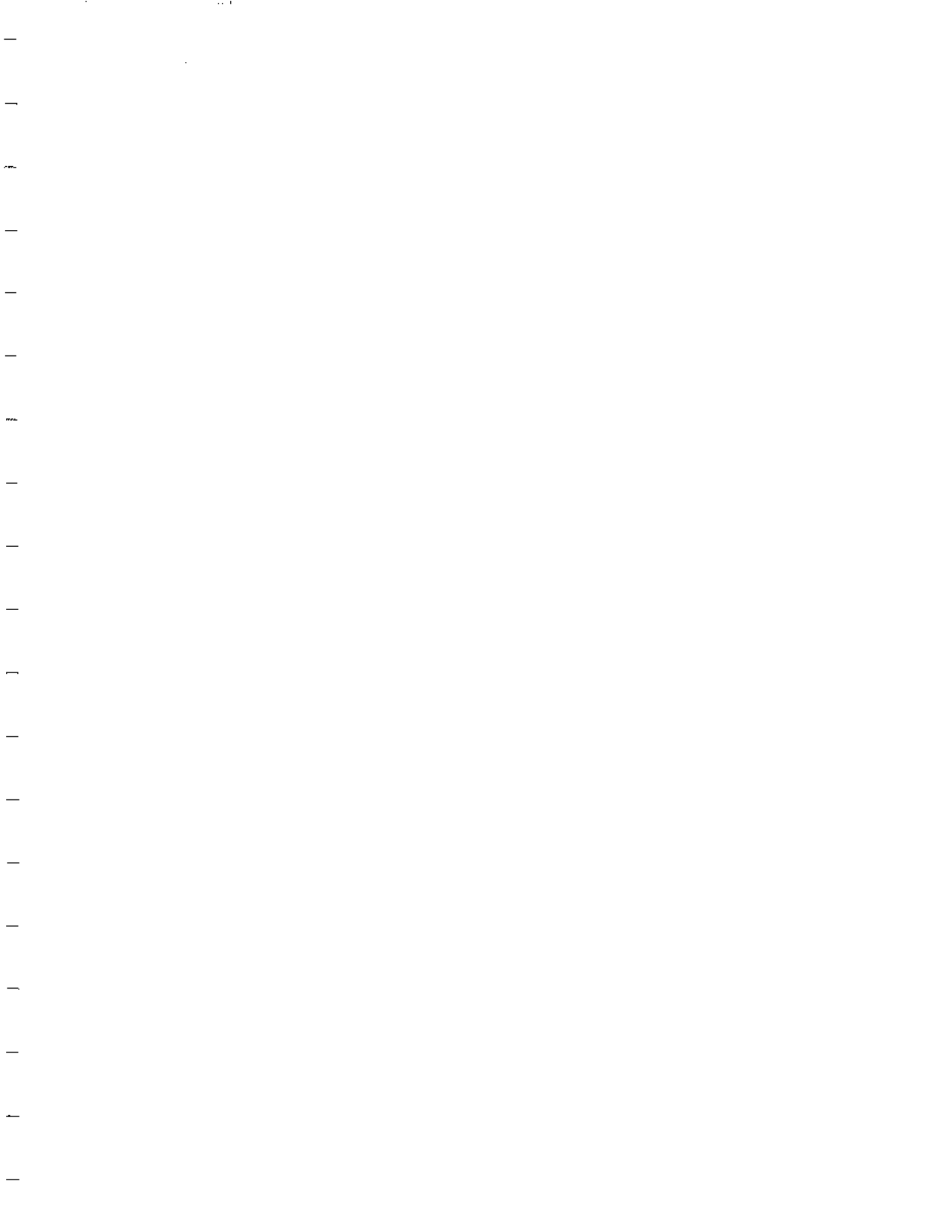
1.2 Development Project Overview and Site Location

The property intended for the proposed country residential subdivision development comprises two quarter-sections (127.66 ha or 315.44 acres) of vacant agricultural land, this being the east half of Section 11 of Township 54 of Range 03 west of the 5th Meridian.

Located directly south of Highway 633 and 6.5 km west of Highway 43, the property is approximately 2.5 km southeast of Alberta Beach in Lac Ste. Anne County. It is bounded on the north by Highway 633, and the west, south and east by quarter-section lines. It is partially bounded on the east by Range Road 31. The Golden Glen country residential subdivision occupies the land directly to the east.

The lands on the quarter-sections directly to the southeast, south, southwest, west, northwest, north and northeast are primarily agricultural lands for cultivation and grazing purposes. The lands in the area, however, are progressively being developed to residential and related uses.

Figs. 1-4 show the location of the project site in regional, local and site contexts. Fig. 5 is an August 2000 aerial photograph of the proposed development site, showing the boundaries of the property to be developed, and hence the study area for this Assessment. Figs. 6-8 show aerial photographs of the property taken in 1990, 1976 and 1950, respectively.



Figs. 9 and 10 show the GPS waypoints recorded at the site during the field reconnaissance in September, 2010, for the north and south portions, respectively.

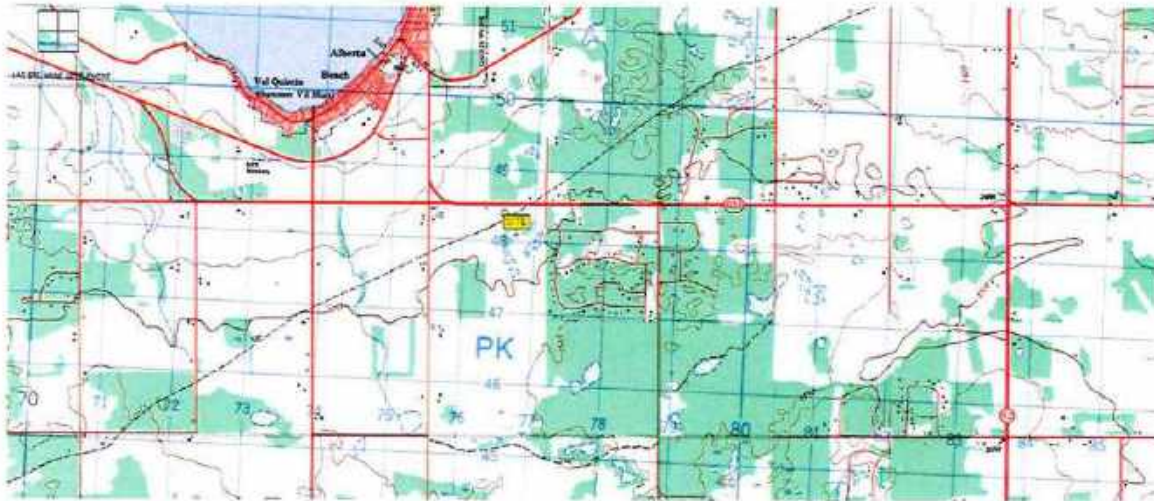


Fig. 1: Location of the proposed development (yellow flag).

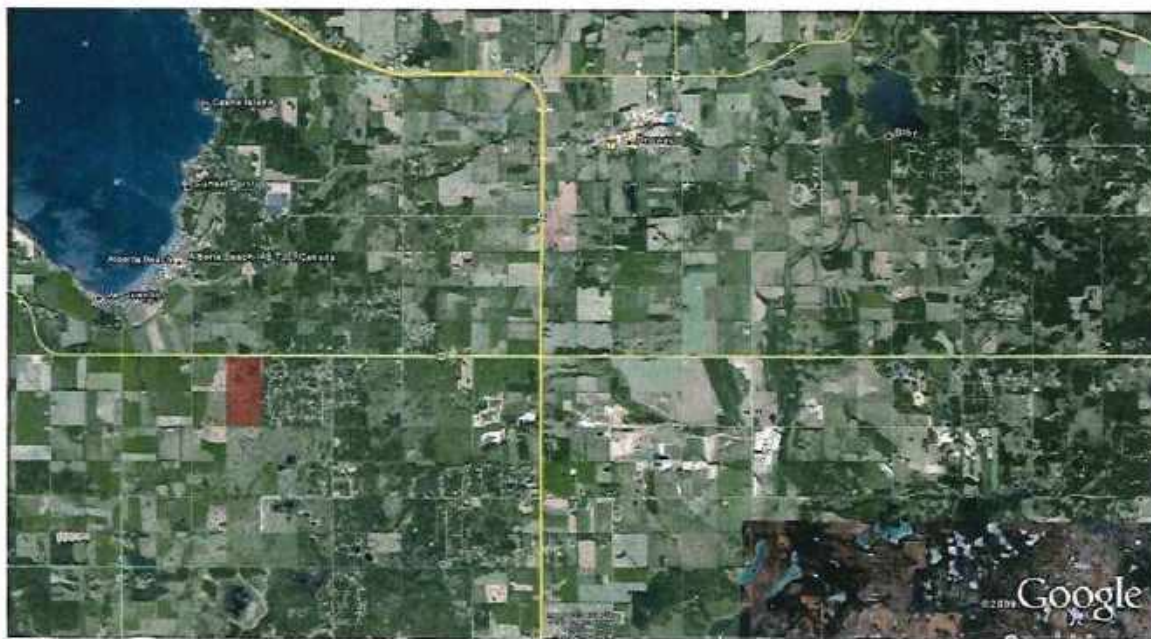


Fig. 2: Location of the proposed development (red shaded area).

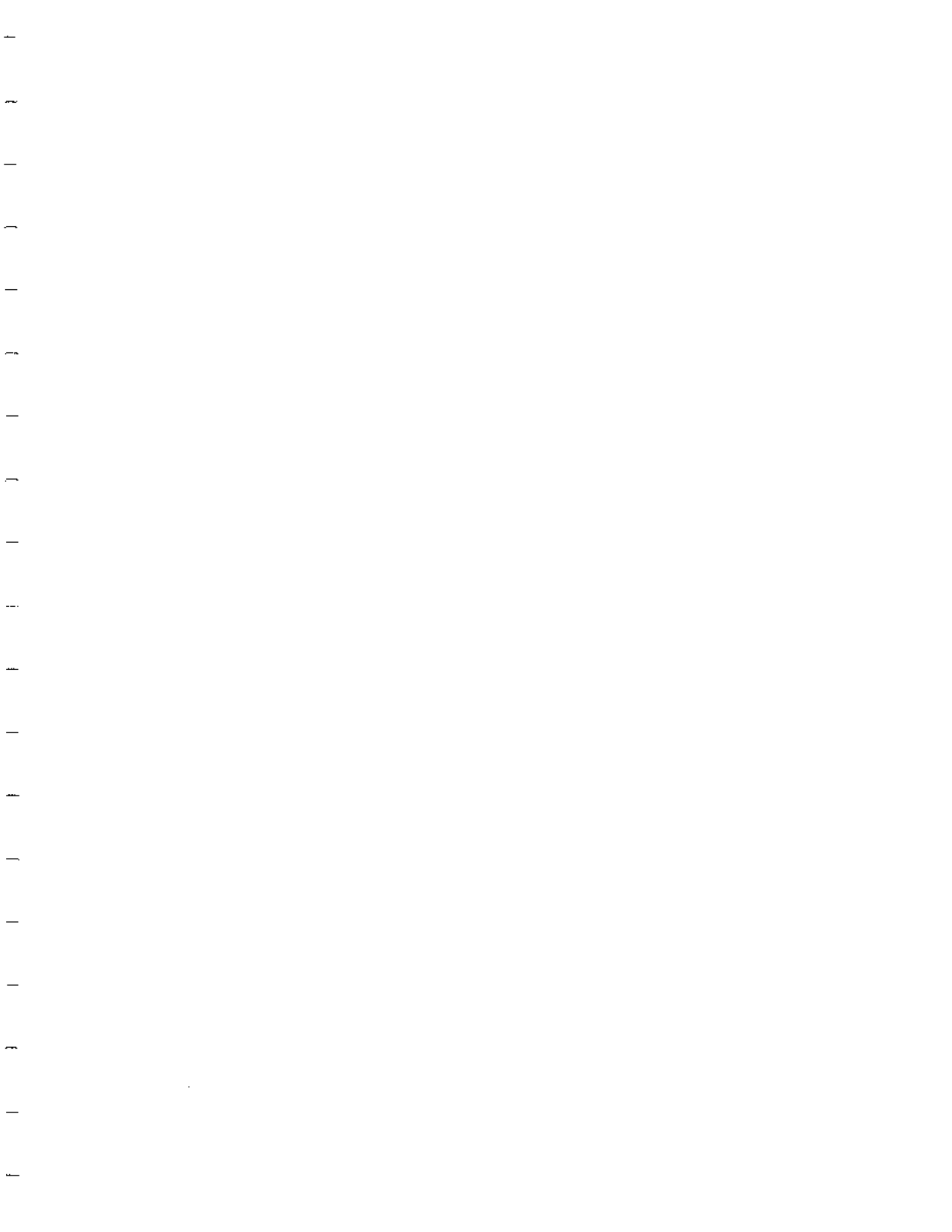




Fig. 3: Outline of the study area and the proposed development (red shaded area).



Fig. 4: The two quarter-sections comprising the study area and proposed development (four corners marked by red symbols).

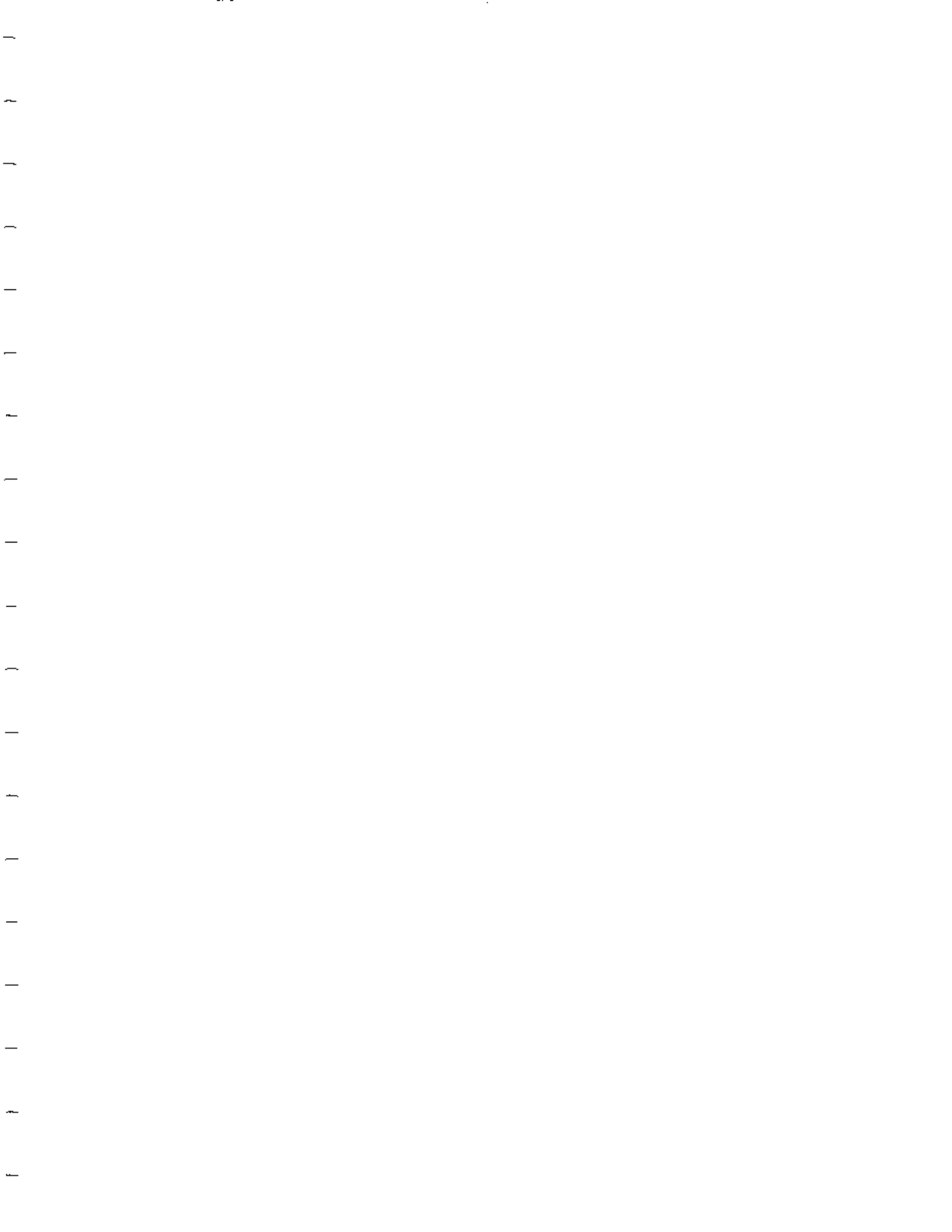
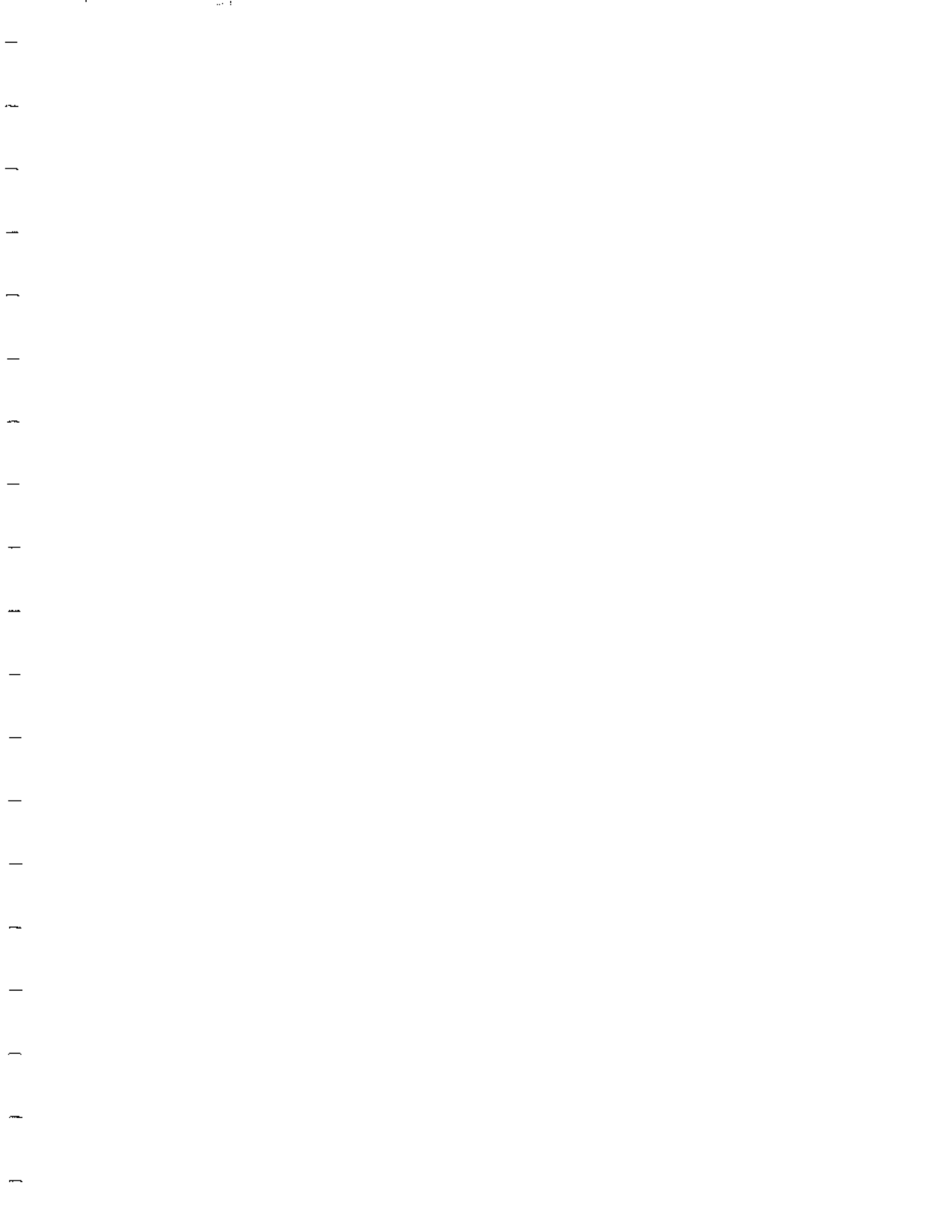




Fig. 5: Aerial photograph of the project site taken in August 2000.



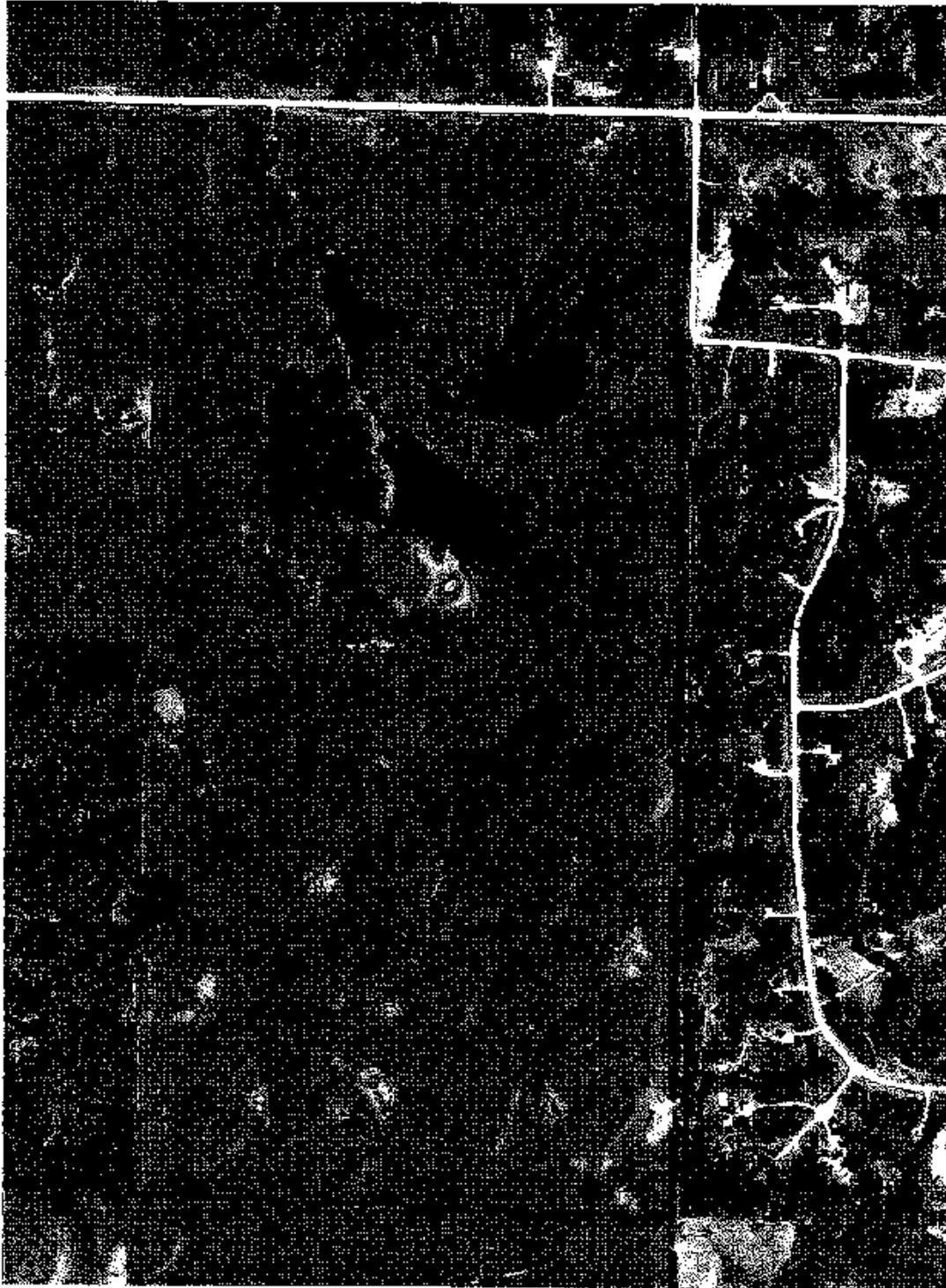


Fig. 6: Aerial photograph of the project site taken in June 1990.

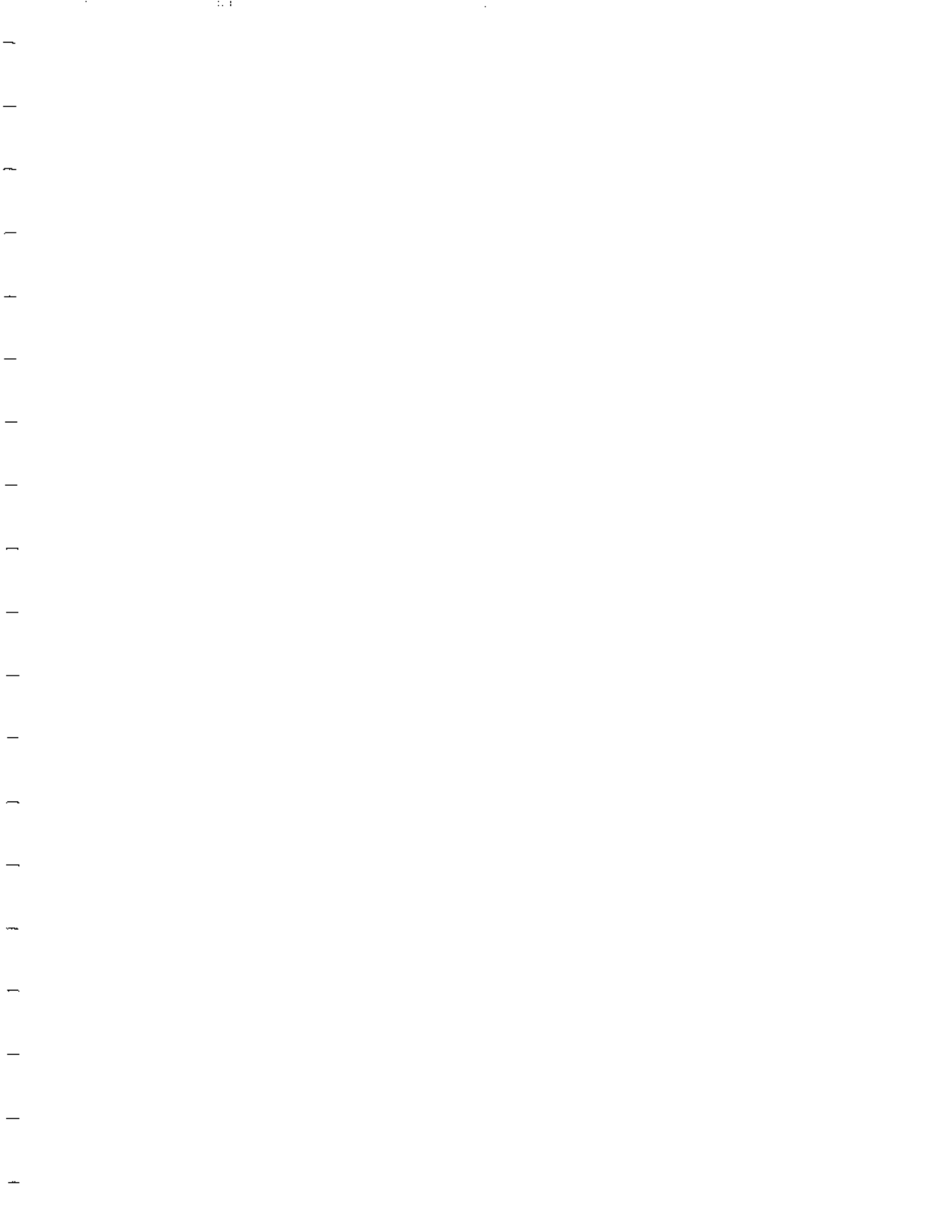
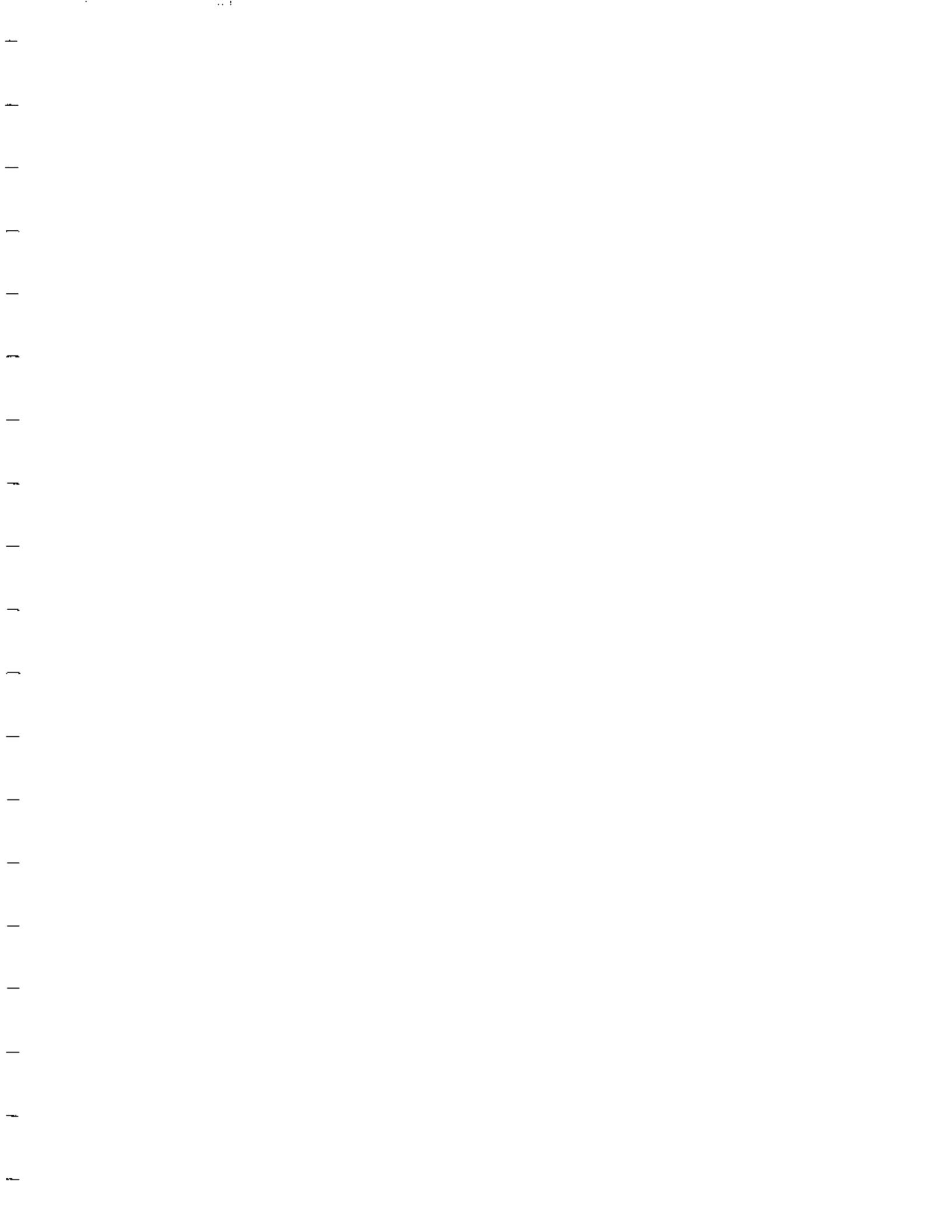




Fig. 7: Aerial photograph of the project site taken in September 1976.



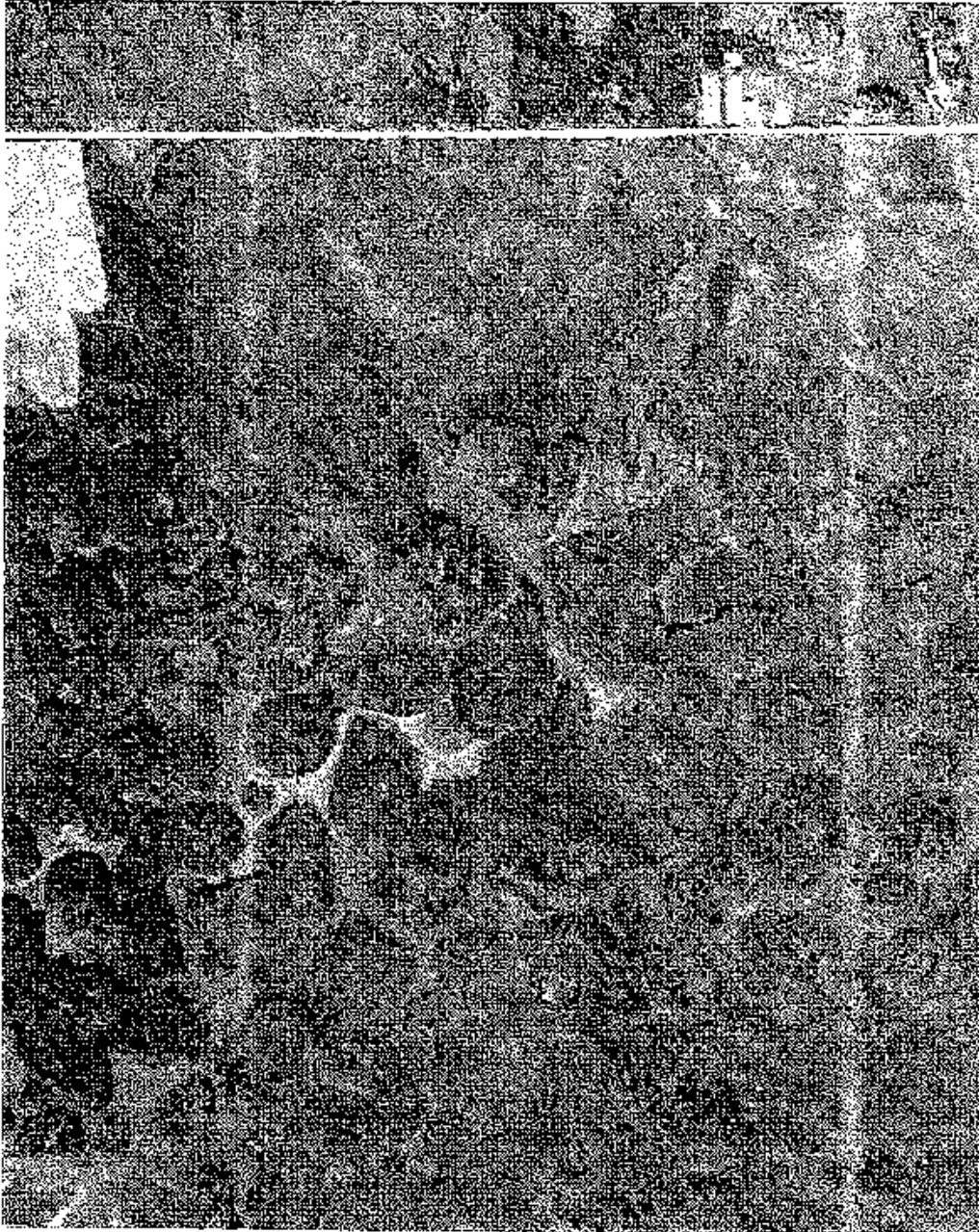
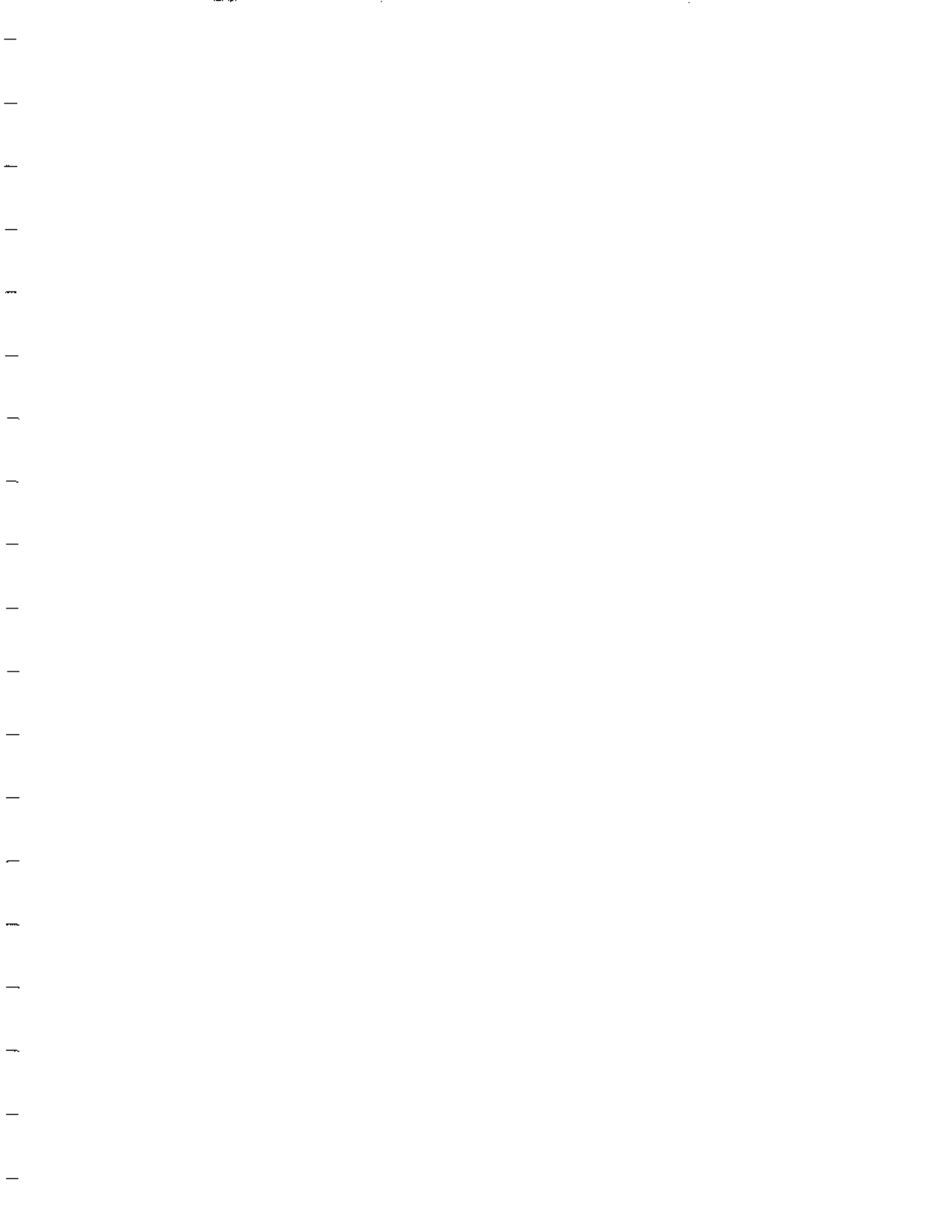


Fig. 8: Aerial photograph of the project site taken in 1950.



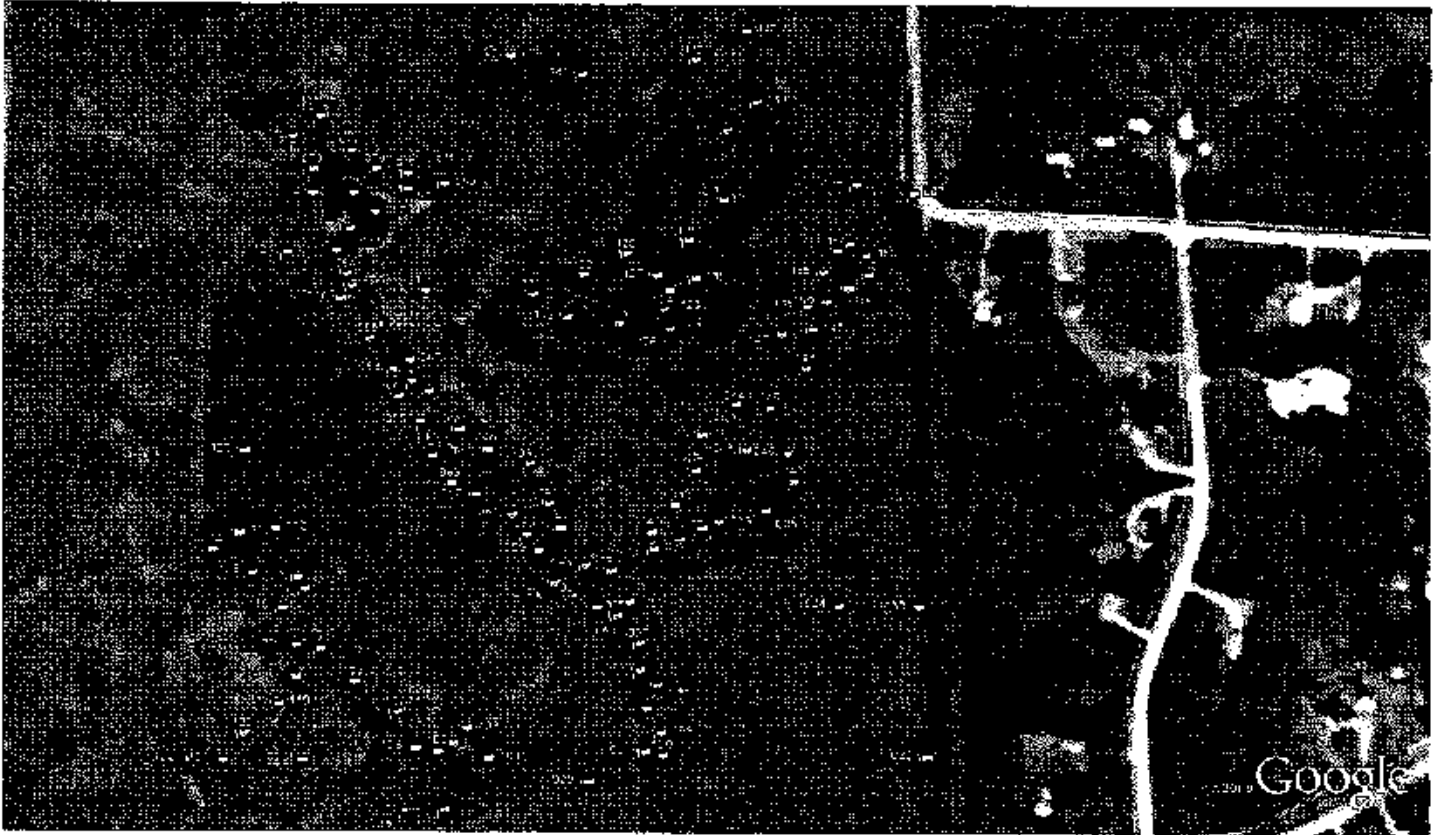


Fig. 9: The GPS waypoints recorded at the site in September/October 2010: north quarter-section. These are used as location references throughout the text of this report. The UTM coordinates data for the waypoints are provided in Appendix A.

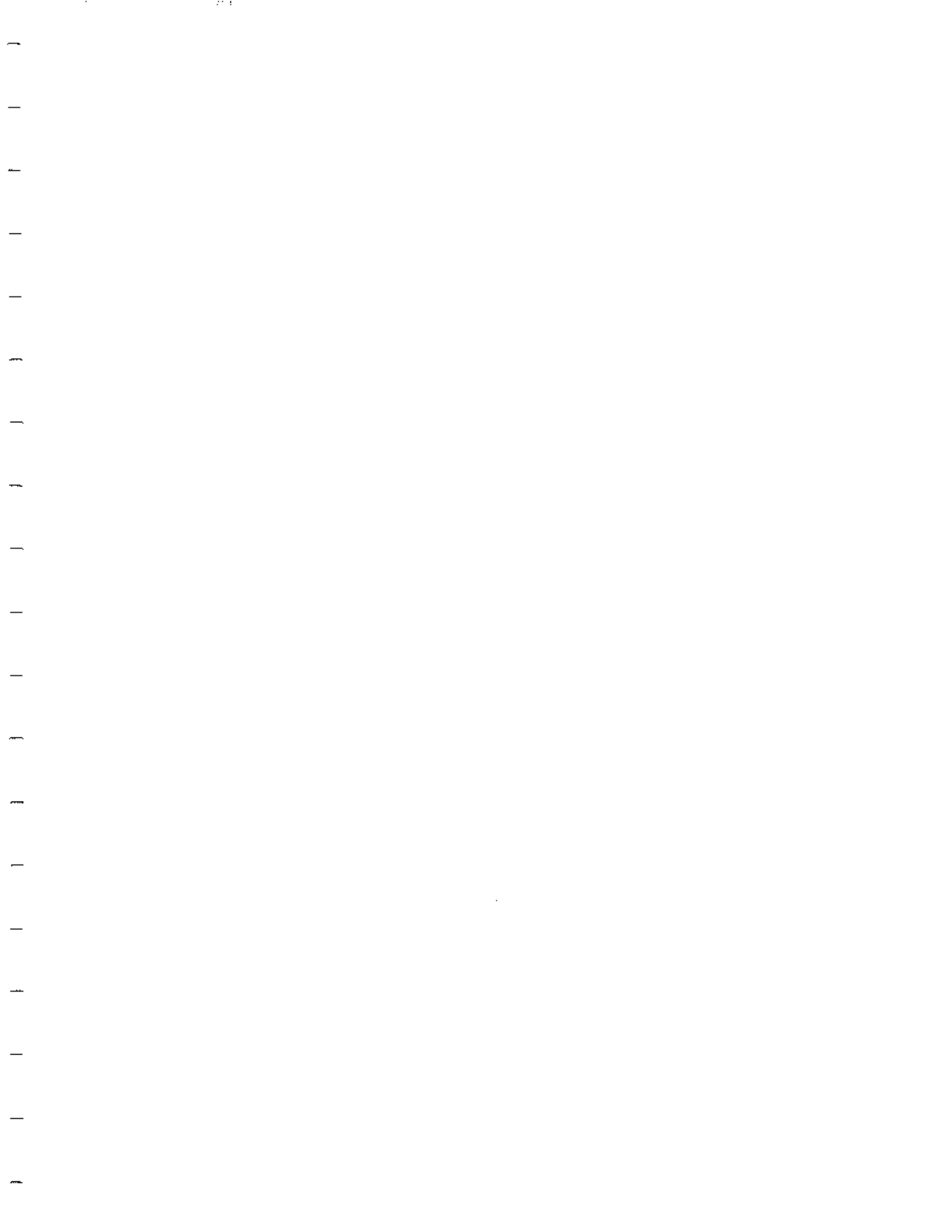




Fig. 10: The GPS waypoints recorded at the site in September/October 2010; south quarter-section. These are used as location references throughout the text of this report. The UTM coordinates data for the waypoints are provided in Appendix A.

