MUNICIPAL DISTRICT OF TABER
IN THE PROVINCE OF ALBERTA

BYLAW NO. 1898

BEING a bylaw of the Municipal District of Taber in the Province of Alberta for the purpose of adopting Bylaw No. 1898 being the **Countrylane Estates Area Structure Plan** for LSD 5 and that portion of LSD 6 in the SW¼ Sec 21, Twp 9, Rge 16, W4M which lies west of Horseshoe Lake Reservoir on Plan IRR1424 excepting thereout Plan 0010380 and Plan 0813596.

AND WHEREAS the purpose of proposed Bylaw No. 1898 is to to establish standards and requirements regarding the development and subdivision of the aforementioned lands consistent with the Grouped Country Residential land use designation;

AND WHEREAS the municipality wishes to provide for orderly growth and development to occur while minimizing land use conflicts;

AND WHEREAS the municipality may adopt an area structure plan pursuant to section 633 of the Municipal Government Act, RSA 2000, Chapter M-26, as amended, and provide for its consideration at a public hearing.

NOW THEREFORE, under the authority and subject to the provisions of the Municipal Government Act, RSA 2000, Chapter M-26, as amended, the Council of the Municipal District of Taber in the Province of Alberta, duly assembled does hereby adopt Bylaw No. 1898 being the Countrylane Estates Area Structure Plan (attached) for LSD 5 and that portion of LSD 6 in the SW¼ Sec 21, Twp 9, Rge 16, W4M which lies west of Horseshoe Lake Reservoir on Plan IRR1424 excepting thereout Plan 0010380 and Plan 0813596.

READ a **first** time this 13th day of September, 2016.

***Reeve** – Brian Brewin*

***Municipal Administrator** - Derrick Krizsan*

READ a **second** time this 11th day of October, 2016.

***Reeve** – Brian Brewin*

***Municipal Administrator** - Derrick Krizsan*

READ a **third** time and finally PASSED this 25th day of October, 2016.

***Reeve** – Brian Brewin*

***Municipal Administrator**- Derrick Krizsan*

MUNICIPAL DISTRICT OF TABER
IN THE PROVINCE OF ALBERTA

BYLAW NO. 1954

BEING a bylaw of the Municipal District of Taber in the Province of Alberta, to amend Bylaw No. 1898, being the Countrylane Estates Area Structure Plan.

WHEREAS the Municipal District Council is in receipt of a request to amend the Countrylane Estates Area Structure Plan.

AND WHEREAS THE PURPOSE of proposed Bylaw No. 1954 is to adjust the provisions for ancillary buildings on lots within the Countrylane Estates Area Structure Plan

AND WHEREAS the municipality must prepare a corresponding bylaw and provide for its consideration at a public hearing.

NOW THEREFORE, under the authority and subject to the provisions of the *Municipal Government Act*, Revised Statutes of Alberta 2000, Chapter M-26, as amended, the Council of the Municipal District of Taber in the Province of Alberta duly assembled does hereby enact the following:

1. That the clause in section 3.6 Development Policies Design Details of the Countrylane Estates Area Structure Plan, which states, "A maximum of one accessary building not to exceed 2500 square feet, with a maximum roof height of 26 feet will be allowed and must be constructed on the site." is deleted and replaced with the following:

   A maximum of 3 ancillary buildings permitted per lot with a maximum total combined square footage not to exceed 3500 sq.ft. consisting of:

   - No more than one ancillary building with a maximum size of 2500 sq.ft. and a roof height of no more than 26 ft. and must be constructed on site.

   - No more than two additional ancillary buildings with a maximum combined square footage of 1000 sq.ft. and individual roof heights of no more than 20 ft.

2. Bylaw No. 1898, being the Countrylane Estates Area Structure Plan, is hereby amended.
3. This bylaw comes into effect upon third and final reading hereof.

READ a First time this 27 day of August, 2019.

READ a Second time this 24 day of September, 2019.

READ a Third time this 24 day of September, 2019.

SIGNED and PASSED this 24 day of September, 2019.

Reeve

Chief Administrative Officer

MUNICIPAL DISTRICT OF TABER

APPLICATION FOR A LAND USE BYLAW AMENDMENT

LAND USE BYLAW NO. 1722

APPLICATION NO. RZ 01-16

PROCESSING FEE $ 800.00

FORM E

DATE RECEIVED BY DESIGNATED OFFICER Aug 9, 2016

GENERAL INFORMATION

APPLICANT'S NAME: 909498 ALTA LTD (TOM RODWELL)

ADDRESS: BOX 4564 TABER, ALTA T1G 2C9 330-6753

REGISTERED OWNER'S NAME: 909498 ALBERTA LTD

ADDRESS: BOX 4564 TABER ALTA T1G 2C9

APPLICANT'S INTEREST IF NOT THE REGISTERED OWNER: ______

(Option - Lease - Other)

LEGAL DESCRIPTION OF LAND: LOT(s)______ BLOCK______ PLAN______

N½ QUARTER SW 1/4 SECTION 21 TOWNSHIP 9 RANGE 16

STREET ADDRESS (if applicable) ______

NATURE AND REASONS FOR AMENDMENT REQUEST:

RE ZONE FROM RURAL AGRICULTURE TO GROUP COUNTRY RESIDENTIAL TO ALLOW FOR SUBDIVISION (Create 10 Residential Lots)

SPECIFIC INFORMATION

IN ORDER TO PROPERLY EVALUATE AN APPLICATION FOR AMENDMENT, COUNCIL AND THE DEVELOPMENT AUTHORITY MUST BE PROVIDED WITH A COMPLETE AND CLEAR PICTURE OF THE LAND; EVERYTHING WHICH IS PRESENTLY BUILT ON THE LAND, AND EVERYTHING WHICH IS TO BE BUILT ON THAT LAND.

LAND CONSISTS OF 30 ACRES MORE OR LESS SEEDED PASTURE WITH ALKALI PATCHES AND NO STRUCTURES

Describe the lot/parcel dimensions and acreage 30 ACRES

Indicate data on a scaled PLOT PLAN. (1" = 20' – 0-4 acres; 1" = 100' – 5-9 acres; 1" = 200' – 10 or more acres)

Indicate clearly on the scaled PLOT PLAN the **setbacks** of all buildings from the front, rear, and side yard lot boundaries, as well as **distances** between all buildings/structures (existing and proposed).

I have read and understand the terms noted below and hereby apply for a land use bylaw amendment to facilitate the development described above or shown on the attached plans. I further certify that the registered owner of the land described above is aware of, and in agreement with this application.

Signature of **Applicant:** ______________________

Signature of **Registered Owner** (if not applicant): ______________________

TERMS:

1. Subject to the provisions of the Land Use Bylaw No. 1722 of the Municipal District of Taber, the term "development" includes the making of any change in the use of buildings or land.
2. Although the designated officer is in a position to advise on the principle or details of any proposals, such advice must not be taken in any way as official consent, and is without prejudice to the decision in connection with the formal application. It must be clearly understood that any action taken by the applicant before6 a development permit is received, is at his own risk.
3. Plans and drawings, in sufficient detail to enable adequate consideration of the application, must be submitted in **duplicate** with this application, together with a plan sufficient to identify the land. It is desirable that the plans and drawings should be on a scale appropriate to the development. However, unless otherwise stipulated, it is not necessary for plans and drawings to be professionally prepared.
4. **A decision shall be made by Council within 90 days** from the date of the receipt of the application in its complete and final form, or within such longer period as the applicant may approve in writing.
5. A **refusal** is not appealable and a subsequent application for amendment involving the same lot and/or the same or similar use may not be made for at least 6 months after the date of refusal.
6. An **approval** shall be finalized by amending the land use bylaw in accordance with section 692 of the Municipal Government Act.

Decision of Council:

REFUSED for the following reasons: ______________________

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First Reading Date: ______________________

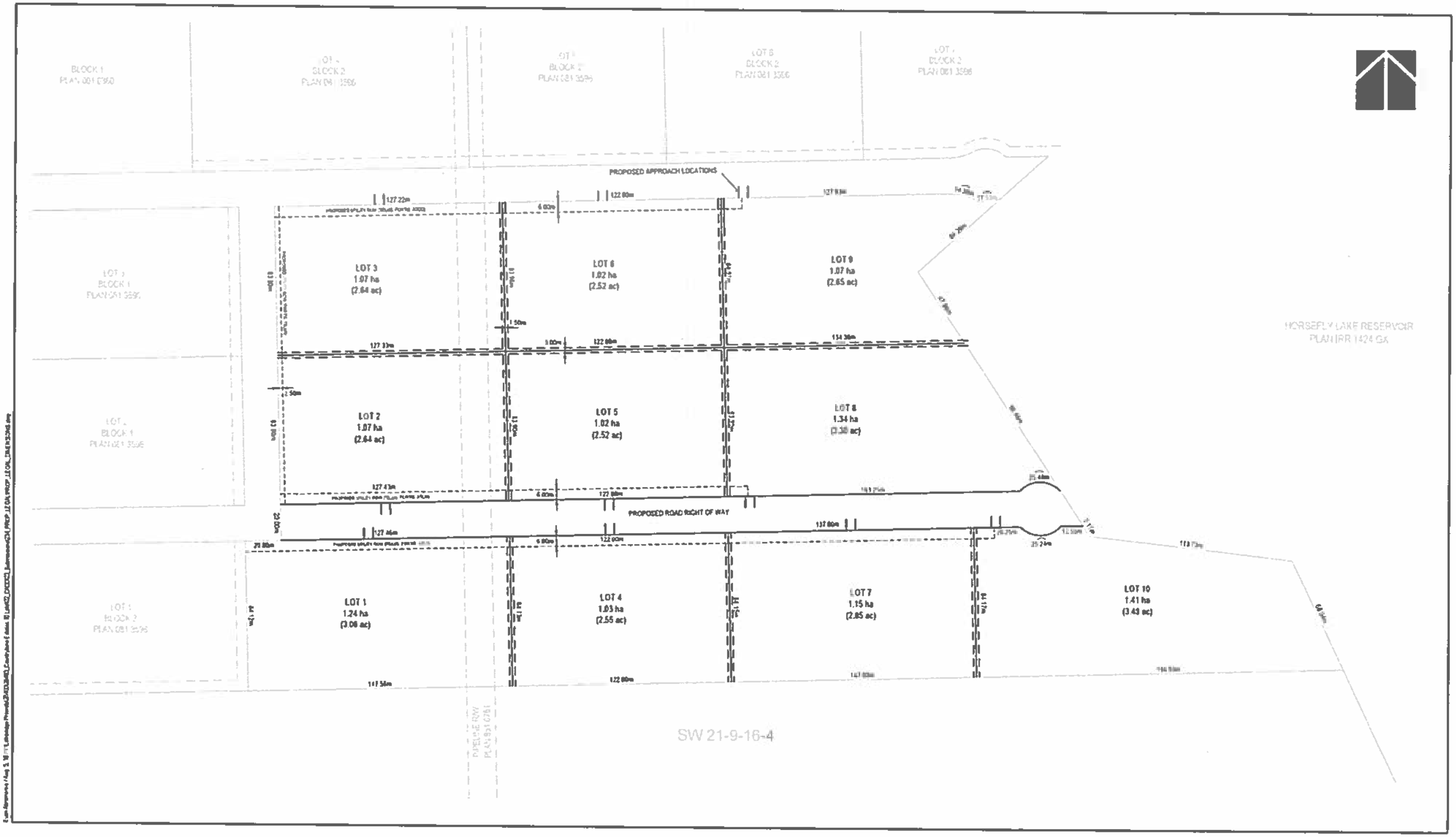
Public Hearing Date: ______________________

Second Reading Date: ______________________

Approved by Amending Bylaw No. ______________

Third and Final Reading Date: ______________________


RGE RD 164
ROAD
LAKEVIEW DR
101 1105
081 2493
UTILITY R/W
081 3596
2
COUNTRYLANE BLVD
ROAD
ROAD
ROAD
ROAD
SW21 9-16-4



ISL Engineering and Land Services

LEGEND:

- PROPOSED PROPERTY LINES
- EXISTING LEGAL BOUNDARY
- PROPOSED EASEMENT BOUNDARY (DRAINAGE EASEMENT)
- EXISTING EASEMENT BOUNDARY
- PROPOSED UTILITY RIGHT OF WAY

COUNTRYLANE ESTATES 10 LOTS

PROPOSED PROPERTY LINES

2016/08/05

Municipal District of Taber

4900B - 50 Street
Taber, Alberta T1G 1T2
Phone: (403) 223-3541

OFFICIAL RECEIPT

909498 ALBERTA LTD. (TOM RODWELL)
BOX 4564
TABER AB T1G 2C9

GST Reg. #: R107747420
Receipt #: 0159970
Receipt Date: 2016/08/09
Page: 1
Receipted by: JJB

Tax Codes: E=Exempt, T=Taxable, I=Included

Reference/Account #	Description	Reference	Tax Code	Tax Amount	Payment
	REZONE PTN. SW 21-9-16-4		E	.00	800.00

Tender Type & Description	Reference	Amount
CQ 909498 ALBERTA LTD. (TOM RODWE	1407	800.00

Total Tax:	.00
Total Amount Paid:	800.00
Tender Received:	800.00
Change Given:	

Come visit our website @

www.mdtaber.ab.ca

Park Enterprises Ltd.
#10, 491 W.T. Hill Blvd S
Lethbridge, AB T1J 1Y8
Phone (403) 394-0017 Fax (403) 329-8514
Toll Free Phone 1-800-621-5440
Toll Free Fax 1-866-406-8484
E-mail [illegible]
Website www.parkinspections.com

Design Review

Agency File #: PI-173

Applicant: ISL Engineering & Land Services

Municipality: MD of Taber

Project Location: SW 21 9 16 W4

Description of Work: Review of PSDS Assesment

NOTES

This design is for a proposed 10 parcel subdivision. The location is west of Horsefly Lake. Each parcel is designed for 4 bedroom house that can have extra fixtures. It is estimated to have a peak flow of 506gal/day. All of the parcels had 1 test pit dug. There is no evidence of where the test pits are in conjunction of where the field or mound is. All sites are required to have a minimum of 2 test pit at the proposed location for the soil based treatment component as per clause 7.1.2.1.(1) of the Standard of Practice 2009. (S.O.P) Also minimum depth of soil investigation is 9ft. for treatment field receiving primary treated effluent level 1 as per clause 7.1.2.2(a)(ii) of the S.O.P. 2009

The evidence that is supplied appears to be adequate to handle a private sewage system and all soil layers appear to be adequate. All the separation distances are noted and meets the S.O.P. However all the parcels are required to have a proper design and will need to follow the permitting process.

Safety Codes Officer Name: Steve Hirose
Designation: D7296
Signature:

Dec. 16/2015
Date of Plans Review

OSPREY ENGINEERING INC.
BOX 1367 · BLACK DIAMOND, ALBERTA · T0L 0H0 CANADA
TEL: 403.933.2226 · FAX: 403.933.2230 · EMAIL: ospreyeng@gmail.com

7 January 2015

Our File: 140233

909498 Alberta Ltd.
Box 4564
Taber, AB T1G 2C9

Attention: Tom Rodwell

RE: **Subdivision of Rodwell Property**
Remainder of North Half of SW21-9-16-4
Municipal District of Taber No. 5, West Shore of Horsefly Lake
Level 3 Private Sewage (PSTS) Assessment

Dear Mr. Rodwell:

The following Level 3 Private Sewage Site Assessment was performed in support of an application for subdivision of the above-noted parcel in December 2014. *All proposed lots were found to be suitable for private sewage treatment systems (PSTS) with limitations noted.*

The site investigation and report were performed and prepared consistent with the following documents:

- Safety Codes Council 2009, *Alberta Private Sewage Standard of Practice*, Alberta Municipal Affairs, Edmonton ["SOP 2009"]
- Alberta Association of Municipal Districts and Counties [AAMDC] 2011, *Model Process for Subdivision Approval and Private Sewage* ["Model Process"] and related documents

PROJECT BACKGROUND

The subject parcels is as follows:

- The remainder of the north half of SW21-9-16-4 containing 12.34 ha [30.48 acres] more or less

The subject parcel is located west of Horsefly Lake, approximately 900 m south of Township Road 94 and approximately 160 m east of Range Road 164. The location of the site is shown on Figure 1.

It is understood that the owner intends to divide the parcel into 10 country residential (acreage) parcels, each of approximately 1 ha [2.4 acres] to 1.3 ha [3.3 acres]. The conceptual lot layout is shown on Figure 2.

The subject parcel is presently grass with no structures.

All the proposed lots are intended to be served by private sewage systems. All new lots will be provided with potable water hauled to individual cisterns located on each lot.

The parcel is provided with a turnout from the Taber Irrigation District pipeline which serves the surrounding subdivision. This water is for irrigation and is not intended for domestic use.

METHODOLOGY AND LIMITATION

As a condition of subdivision, the Municipal District of Taber No. 5 has requested that a Private Sewage (PSTS) Assessment be completed to justify that wastewater from dwellings on the proposed lots can be treated and dispersed on site consistent with relevant Safety Codes. Methodology in describing acceptable conditions for adequate operation of private sewage treatment systems (PSTS) is consistent with SOP 2009 – which was adopted by Alberta Regulation 485/2009 on 5 October 2009 and replaces the previous SOP from 1999.

As such, all loading rates are as per SOP 2009. No percolation tests were performed as these are no longer considered acceptable evidence in support of selection of soil loading rates in SOP 2009.

Observations were taken from publically-available background information and field assessments noted:

- 8 December 2014: soil observations in test pits

Observation and recording of soil profiles was performed as directed in SOP 2009 using forms provided by Alberta Municipal Affairs. Soil samples from each test pit were submitted to KaizenLab of Calgary for texture analysis. These results are appended.

This report is to be used by the owner of the subject parcel and the MD of Taber in support of redesignation and subdivision of the subject parcels, as described in the Model Process. It is not intended as a full system design. Full design and site investigation (including digging additional test holes or other tests as may be required) by the licensed installer consistent with the relevant standard of practice in force at the time is still assumed to be required as part of the permit process.

DESCRIPTION

This description is based on information provided by the land owner and information obtained from various public sources. A topographic survey performed by others (Kitchen 2008) was provided by the owner. No more recent survey was available. Apart from construction of two roads to serve a subdivision in 2008, there is no evidence of significant changes to surface grading within the parcel in the intervening years.

Density and Cumulative Impact

Surrounding parcels are developed as residential acreages of similar size as proposed for this subdivision. Figure 3 indicates the number of parcels in each of the surrounding quarter-sections based on cadastral data provided by AltaLIS and current to the date this report.

All parcels in the area are assumed to be served by individual private sewage systems. Similar to the surrounding residential acreages, potable water is to be provided by cisterns receiving water hauled from offsite.

Osprey contends the impacts of the ten additional lots proposed and will not extend beyond the immediate subdivision. This is based on the following factors:

- the existing density of development in the area,

- the fine textured soil conditions found and
- the types of PSTS likely to be installed on the proposed lots.

Topography, Surface Water and Vegetation

Surface features are shown on Figure 4. Topography was ascertained during the site assessment and from previous reports which the MD has on file. No significant depressions were noted within the subject parcel. At the time of the site visit, a Chinook was occurring resulting in some snowmelt.

No surface water was noted within the subject parcels. An overland drainage route (a grass swale) exists along the existing subdivision roads to the west and north of the subject parcel. These drain surface runoff to Horsefly Lake. Given the lack of significant depressions and surface water on site, the land would generally be amenable to PSTS.

Aerial photography is from Valtus Ltd. and was flown in 2012. The only significant water body near the site is the Horsefly Lake reservoir which is part of the Taber Irrigation District. Only small portions of proposed lots 7, 8 and 10 are within 90 m of the shoreline of the lake. Therefore, the lake does not appear to limit the ability to install PSTS on the effected lots.

No other springs or wells using shallow groundwater (GWUDI) for domestic purposes were noted within 150 m (500 feet) of the subject parcels. No dugouts or surface water bodies were noted as being used for domestic purposes within 150 m (500 feet) of the subject parcels.

Vegetation over all parcels is mixed grasses. The vegetation noted would indicate a site that is amenable to PSTS.

Encumbrances

A single, 15-m wide right-of-way for a gas pipeline runs north-south across the parcel approximately 100 m east of the west boundary. This right-of-way does not appear to limit the ability to install PSTS on the effected lots. Easements may be required for power, domestic natural gas and irrigation pipelines. However, these are unlikely to limit the ability to install PSTS.

Standard setback (separation) distances for various PSTS components as per SOP 2009 are as follows:

- All soil based treatment components (fields, mounds, etc...) must be 90 m from a lake, river, stream or creek *unless* "...a principal building or other development feature is located between the soil based treatment system and the lake, river, stream or creek such that a failure causing effluent on the ground will be obvious and create an undesirable impact on the owner..." (SOP 2009, Art. 2.1.2.4). Generally, if the dwelling is constructed between the stream and the soil based treatment component, this is acceptable and the setbacks to a water source or water course as noted below are applicable.
- Septic tanks, settling tanks and effluent tanks:
  - 10 m from a water source

    - 10 m from a water course
    - 1 m from a property line
    - 1 m from a building
- Packaged (secondary) treatment plants and settling tanks which include pre-aeration:
    - Same as for septic tanks *except*
    - 6 m from a property line
- Sand filters (to foot of berm):
    - Same as for septic tanks
- Recirculating gravel filters (to foot of berm):
    - Same as for septic tanks *except*
    - 3 m from property line
- Treatment field (edge of weeping lateral trench):
    - 15 m from a water source
    - 15 m from a water course (unless building is located between water course and field)
    - 1.5 m from a property line
    - 10 m from a basement, cellar or crawl space
    - 1 m from a building without a permanent foundation
    - 5 m from a building with a permanent foundation but without a basement cellar or crawl space (e.g. slab-on-grade)
    - 5 m from a septic tank or packaged sewage treatment plant
- Treatment mound (from point where side slope of mound berm intersects natural soil contour):
    - Same as for a treatment field *except*
    - 3 m from a property line
    - 3 m from a septic tank
    - 10 m from a basement, cellar or crawl space
    - 10 m from a building with a permanent foundation but without a basement cellar or crawl space (e.g. slab-on-grade)

Soils

According to the Alberta Soil Information Viewer, the following soil series may be present in the subject parcel.

- Cranford (CFD): Orthic brown chernozem on medium textured (loam, silty clay loam or clay loam) materials over medium or fine textured till.
- Chin (CHN): Orthic brown chernozem on medium textured (loam or silt loam) lacustrine (water deposited) sediments

These soils would be generally amenable to PSTS. Limitations would include possible restrictions on dispersing primary-treated effluent on fine-textured soil (e.g. clay loam or finer) with poor structure and high groundwater or seasonal high groundwater conditions.

High groundwater or seasonal high groundwater would restrict system types in all soils noted as follows:

- Groundwater within 1.5 m [5 feet] of the surface would preclude gravity and primary (septic tank only) systems
- Groundwater within 0.9 m [3 feet] of surface would preclude all field type systems – only treatment mounds with a sufficiently deep sand layer would be appropriate

Soil profiles were developed for 10 test pits excavated within the subject parcel, as shown on Figure 2. As noted, detailed soil profiles and laboratory texture analyses are appended. Soils showed some variation between test pits – which was consistent with what was expected given the proximity to the lake. Drainage works constructed in support of previous subdivisions have likely changed natural drainage patterns.

Groundwater and seasonal groundwater conditions were ascertained from:

- Observation of redoximorphic features (mottling and gleying) in the soil profiles observed

Based on the soils found, the following considerations will need to be addressed in the design of PSTS:

- Massive clay loam does not have a loading rate in SOP 2009 giving restricting soil horizons on lots 7, 8 and 9
- Vertical separation distance would be measured from the top of these restricting horizons,
- Possible high seasonal groundwater may limit the depth of treatment field laterals on lots 4 and 10
- Adequate suitable soil exists to allow the construction of PSTS on all lots; however, Lot 7 may require a treatment mound with deeper sand layer to ensure adequate vertical separation to a limiting soil horizon (in this case 0.9 m [3 ft]) is maintained
- Where there is less than 1.2 m [48"] to the restricting layer or groundwater, linear loading rates are prescribed which will set a minimum length of any PSTS soil components installed (this affects lots 4, 7, 8 and 9 and may affect Lot 10 depending on the soil treatment component selected)

ESTIMATE OF SYSTEM DAILY FLOWS

Houses are predicted to be four bedrooms and generally include additional fixtures that can increase peak daily flows.

As such, a peak daily flow rate of 2300 L/day [500 gal/day] is used (a four bedroom house with allowance for *some* extra fixture units). The installation of such fixtures as garbage grinders, large soaker tubs and other high-volume and/or high-strength effluent producing fixtures requires special consideration given the increase in PSTS soil component size required to accommodate such features and possible lack of space for adequately-sized soil treatment components and reserve field areas. Actual size of system components is the responsibility of the system installer and will be determined prior to obtaining permits based on the proposed house size and design.

INFILTRATION COMPONENT SIZING

The following types of PSTS are contraindicated for the proposed lots where restricting soil horizons or seasonal groundwater was encountered such that at least 1.5 m [5 ft] of suitable exists between the bottom of proposed treatment laterals and the restricting soil horizon or seasonal high groundwater:

- Treatment fields (gravity or pressure-distributed), except a raised bed treatment field receiving secondary-treated effluent (e.g. from an ANSI/NSF Standard 40 certified Class I treatment plant (effluent strength < 30 mg/L)

For the purposes of this report, the infiltration component assumes the following:

- Where no restricting soil horizon or groundwater was encountered, a treatment field receiving primary treated effluent is assumed. This requires:
    - A pressure-distributed treatment field system
    - The required vertical separation to ground water for the system proposed is 1.5 m [5 ft]
    - Trenches are 0.9 m [3 ft] in width
    - Pipe is assumed to be laid directly in gravel trench media
    - The bottom of the trenches is assumed to be 0.45 m [18"] below ground surface.
    - Laterals are placed with 1.8 m [6 ft] between trench walls (minimum is 0.9 m [3 ft])
- Where groundwater or restricting soil horizons were encountered, a treatment mound, designed as per SOP 2009, Section 8.4, receiving primary treated effluent is assumed. This requires:
    - a minimum 30 cm [12"] thick sand layer
    - extra depth of sand necessary to ensure 0.9 m [3 ft] of vertical separation from the surface where effluent is distributed to the restricting soil horizon or seasonal groundwater)

Estimated footprints for such systems are shown on Table 1. A typical cross section of a treatment mound is shown on Figure 9.

Estimated costs for the systems proposed are on the order of $15,000 to $30,000 installed, depending on whether a treatment field or mound is required. Annual operating costs are likely less than $1,000.00 based on normal usage.

Footprints are approximate and will depend on dwelling size, type of PSTS chosen, effluent distribution and other factors. Other designs and arrangements are possible for each proposed infiltration component. *Decisions relating to a final design are the responsibility of the landowner and their system installer.*

Table 1 – Infiltration Component Sizing

Lot	Based on test pit	Assumed Peak Daily Sewage Volume	Soil texture, structure and infiltration loading rate	Linear loading rate (justification)	Estimated area occupied by system
Lot 1	TP1	2300 L	loam, grade 1 blocky, 14.7 L/m^2/day [0.3 gal/ft^2/day]	not applicable if more than 1.2 m above restricting soil or seasonal groundwater	Treatment field (Level 1 effluent): 34m × 12m [112 ft × 39 ft]
Lot 2	TP2	2300 L	loam, grade 2 blocky, 22.0 L/m^2/day [0.45 gal/ft^2/day]	not applicable if more than 1.2 m above restricting soil or seasonal groundwater	Treatment field (Level 1 effluent): 38m × 6.4m [124 ft × 21 ft]
Lot 3	TP3	2300 L	loam, grade 2 blocky, 22.0 L/m^2/day [0.45 gal/ft^2/day]	not applicable if more than 1.2 m above restricting soil or seasonal groundwater	Treatment field (Level 1 effluent): 38m × 6.4m [124 ft × 21 ft]
Lot 4	TP6	2300 L	clay loam, grade 3 blocky, 22.0 L/m^2/day [0.45 gal/ft^2/day]	seasonal groundwater at 1.14 m [45"], 0-4% slope 50.7 L/m/day [3.4 gal/ft/day]	Treatment mound, 0.30 m [12"] deep sand layer (Level 1 effluent): 58.4 m × 5.5 m [192 ft × 18 ft]
Lot 5	TP5	2300 L	loam, grade 1 blocky, 14.7 L/m^2/day [0.3 gal/ft^2/day]	not applicable if more than 1.2 m above restricting soil or seasonal groundwater	Treatment field (Level 1 effluent): 34m × 12m [112 ft × 39 ft]
Lot 6	TP4	2300 L	loam, grade 1 blocky, 14.7 L/m^2/day [0.3 gal/ft^2/day]	not applicable if more than 1.2 m above restricting soil or seasonal groundwater	Treatment field (Level 1 effluent): 34m × 12m [112 ft × 39 ft]
Lot 7	TP9	2300 L	clay loam, grade 3 blocky, 22.0 L/m^2/day [0.45 gal/ft^2/day]	seasonal groundwater at 1.12 m [44"], 0-4% slope 50.7 L/m/day [3.4 gal/ft/day]	Treatment mound, 0.30 m [12"] deep sand layer (Level 1 effluent): 58.4 m × 5.5 m [192 ft × 18 ft]
Lot 8	TP8	2300 L	clay loam, grade 2 blocky, 22.0 L/m^2/day [0.45 gal/ft^2/day]	Restricting soil at 1.12 m [44"], 0-4% slope 50.7 L/m/day [3.4 gal/ft/day]	Treatment mound, 0.30 m [12"] deep sand layer (Level 1 effluent): 58.4 m × 5.5 m [192 ft × 18 ft]
Lot 9	TP7	2300 L	clay loam, grade 2 blocky, 22.0 L/m^2/day [0.45 gal/ft^2/day]	seasonal groundwater at 0.81 m [32"], 0-4% slope 50.7 L/m/day [3.4 gal/ft/day]	Treatment mound, 0.40 m [16"] deep sand layer (Level 1 effluent): 59 m × 6.1 m [194 ft × 20 ft]
Lot 10	TP10	2300 L	silt loam, grade 2 blocky, 30.8 L/m^2/day [0.63 gal/ft^2/day]	not applicable if more than 1.2 m above restricting soil or seasonal groundwater	Treatment mound, 0.30 m [3"] deep sand layer (Level 1 effluent): 23.4 m × 8.2 m [77 ft × 27 ft]

LOT DESCRIPTIONS AND RECOMMENDATIONS

The following describes recommended PSTS system design features and locations for the new lots proposed. Figures 5-8 show possible PSTS locations, setbacks and other pertinent information. Figure 9 shows a typical treatment mound design for lots where this is required. A detailed summary of factors affecting each lot's suitability for PSTS is enclosed (Table 2 – PSTS Site Suitability Matrix).

Lot 1

Lot 1 is proposed in the southwest corner of the subject parcel and is approximately 1.15 ha [2.83 acres].
Slopes: generally nearly level (less than 2%).
Soils: One test pit (TP#1) was excavated centrally within the proposed parcel. The soil profile for this test pit is appended. Soils encountered were silt loam with structure evident to below 1.51 m [60"]. Root penetration was evident to a least 0.97 m [38"]. No ground water or evidence of seasonal groundwater was noted.
System sizes indicated for this parcel are as noted on Table 1.
Encumbrances and setbacks required for this lot are shown on Figure 5.
Based on the above observations, it appears that there is adequate space on this lot for a compliant PSTS and reserve area *subject to the limitations noted.*

Lot 2

Lot 2 is proposed to the north of Lot 1 (across a proposed road allowance) and is approximately 0.98 ha [2.41 acres].
Slopes: generally nearly level (less than 2%).
Soils: One test pit (TP#2) was excavated centrally within the proposed parcel. The soil profile for this test pit is appended. Soils encountered were loam or silt loam with structure evident to below 1.51 m [60"]. Root penetration was evident to a least 1.51 m [60"]. No ground water or evidence of seasonal groundwater was noted.
System sizes indicated for this parcel are as noted on Table 1.
Encumbrances and setbacks required for this lot are shown on Figure 5.
Based on the above observations, it appears that there is adequate space on this lot for a compliant PSTS and reserve area *subject to the limitations noted.*

Lot 3

Lot 3 is proposed to the north of Lot 2 and is approximately 0.98 ha [2.41 acres].
Slopes: generally nearly level (less than 2%).
Soils: One test pit (TP#3) was excavated centrally within the proposed parcel. The soil profile for this test pit is appended. Soils encountered were loam with structure evident to below 1.51 m [60"]. Root penetration was evident to a least 1.32 m [52"]. No ground water or evidence of seasonal groundwater was noted.

System sizes indicated for this parcel are as noted on Table 1.
Encumbrances and setbacks required for this lot are shown on Figure 5.
Based on the above observations, it appears that there is adequate space on this lot for a compliant PSTS and reserve area *subject to the limitations noted.*

Lot 4

Lot 4 is proposed to the east of Lot 1 and is approximately 1.12 ha [2.76 acres].
Slopes: generally nearly level (less than 2%).
Soils: One test pit (TP#6) was excavated centrally within the proposed parcel. The soil profile for this test pit is appended. Soils encountered were silt loam to clay loam with structure evident to below 1.51 m [60"]. Root penetration was evident to a least 1.40 m [55"]. Evidence of seasonal groundwater (many distinct mottles) was noted below 1.14 m [45"]. This limits the types of soil treatment components that can be installed to treatment mounds or shallow-bury treatment fields receiving Level 2 (secondary-treated) effluent.
System sizes indicated for this parcel are as noted on Table 1.
Encumbrances and setbacks required for this lot are shown on Figure 6.
Based on the above observations, it appears that there is adequate space on this lot for a compliant PSTS and reserve area *subject to the limitations noted.*

Lot 5

Lot 5 is proposed to the north of Lot 4 and is approximately 1.11 ha [2.75 acres].
Slopes: generally nearly level (less than 2%).
Soils: One test pit (TP#5) was excavated centrally within the proposed parcel. The soil profile for this test pit is appended. Soils encountered were loam to silty clay loam (with a thin layer of medium sand). Structure was evident to below 1.51 m [60"]. Root penetration was evident to a least 1.40 m [55"]. No ground water or evidence of seasonal groundwater was noted.
System sizes indicated for this parcel are as noted on Table 1.
Encumbrances and setbacks required for this lot are shown on Figure 6.
Based on the above observations, it appears that there is adequate space on this lot for a compliant PSTS and reserve area *subject to the limitations noted.*

Lot 6

Lot 6 is proposed to the north of Lot 5 and is approximately 1.11 ha [2.75 acres].
Slopes: generally nearly level (less than 2%).
Soils: One test pit (TP#4) was excavated centrally within the proposed parcel. The soil profile for this test pit is appended. Soils encountered were loam to silt loam (with a thin layer of medium sand). Structure was evident to below 1.51 m [60"]. Root penetration was evident to a least 1.12 m [44"]. No ground water or evidence of seasonal groundwater was noted.
System sizes indicated for this parcel are as noted on Table 1.
Encumbrances and setbacks required for this lot are shown on Figure 6.

Based on the above observations, it appears that there is adequate space on this lot for a compliant PSTS and reserve area *subject to the limitations noted.*

Lot 7

Lot 7 is proposed to the east of Lot 4 and is approximately 1.24 ha [3.06 acres].
Slopes: generally nearly level (less than 2%).
Soils: One test pit (TP#9) was excavated centrally within the proposed parcel. The soil profile for this test pit is appended. Soils encountered were silt loam to clay loam with structure evident to 1.12 m [44"] – below this, massive clay loam was noted constituting a restricting layer. Root penetration was evident to a least 1.12 m [44"]. The restricting layer limits the types of soil treatment components that can be installed to treatment mounds or shallow-bury treatment fields receiving Level 2 (secondary-treated) effluent.
System sizes indicated for this parcel are as noted on Table 1.
Encumbrances and setbacks required for this lot are shown on Figure 7.
Based on the above observations, it appears that there is adequate space on this lot for a compliant PSTS and reserve area *subject to the limitations noted.*

Lot 8

Lot 8 is proposed to the north of Lot 7 and is approximately 1.34 ha [3.30 acres].
Slopes: generally nearly level (less than 2%).
Soils: One test pit (TP#8) was excavated centrally within the proposed parcel. The soil profile for this test pit is appended. Soils encountered were silt loam to clay loam with structure evident to 1.12 m [44"] – below this, massive clay loam was noted constituting a restricting layer. Root penetration was evident to a least 1.12 m [44"]. The restricting layer limits the types of soil treatment components that can be installed to treatment mounds or shallow-bury treatment fields receiving Level 2 (secondary-treated) effluent.
System sizes indicated for this parcel are as noted on Table 1.
Encumbrances and setbacks required for this lot are shown on Figure 7.
Based on the above observations, it appears that there is adequate space on this lot for a compliant PSTS and reserve area *subject to the limitations noted.*

Lot 9

Lot 9 is proposed to the north of Lot 8 and is approximately 1.07 ha [2.65 acres].
Slopes: generally nearly level (less than 2%).
Soils: One test pit (TP#7) was excavated centrally within the proposed parcel. The soil profile for this test pit is appended. Soils encountered were silt loam to clay loam with structure evident to 0.81 m [32"] – below this, massive clay loam was noted constituting a restricting layer. Root penetration was evident to a least 0.81 m [32"]. The restricting layer limits the types of soil treatment components that can be installed to treatment mounds. Evidence of seasonal groundwater (many faint mottles) was noted below 0.81 m [32"].
System sizes indicated for this parcel are as noted on Table 1.

Encumbrances and setbacks required for this lot are shown on Figure 7.
Based on the above observations, it appears that there is adequate space on this lot for a compliant PSTS and reserve area *subject to the limitations noted.*

Lot 10

Lot 10 is proposed to the east of Lot 7 and is approximately 1.32 ha [3.27 acres].
Slopes: generally nearly level (less than 2%).
Soils: One test pit (TP#10) was excavated centrally within the proposed parcel. The soil profile for this test pit is appended. Soils encountered were silt loam to loam with structure evident to 1.32 m [52"]. Root penetration was evident to a least 1.32 m [52"]. Evidence of seasonal groundwater (distinct mottles) was noted below 1.32 m [52"]. The seasonal groundwater may limit the types of soil treatment components that can be installed to treatment mounds or shallow-bury treatment fields receiving Level 2 (secondary-treated) effluent.
System sizes indicated for this parcel are as noted on Table 1.
Encumbrances and setbacks required for this lot are shown on Figure 8.
Based on the above observations, it appears that there is adequate space on this lot for a compliant PSTS and reserve area *subject to the limitations noted.*

SUSTAINABILITY OF PRIVATE SEWAGE

If installed by a qualified installer as recommended in this report and properly operated and maintained, these lots can support viable PSTS for the long term.

CONCLUSIONS

If installed and maintained using accepted best practices, there is more than adequate space on the proposed lots to install compliant, functioning PSTS. It must be noted that system size will vary according to the actual houses proposed on the lots.

If you require anything further, please contact the undersigned.

Yours truly,
OSPREY ENGINEERING INC.
Association of Professional Engineers, Geoscientists of Alberta Permit to Practice No. P10743

07 January 2015

Michael A. Kitchen, P.Eng.
Alberta Municipal Affairs, Certificate of Competency PS 8926, Private Sewage Installer; Group I, Exp. 27 April 2015
President/COO

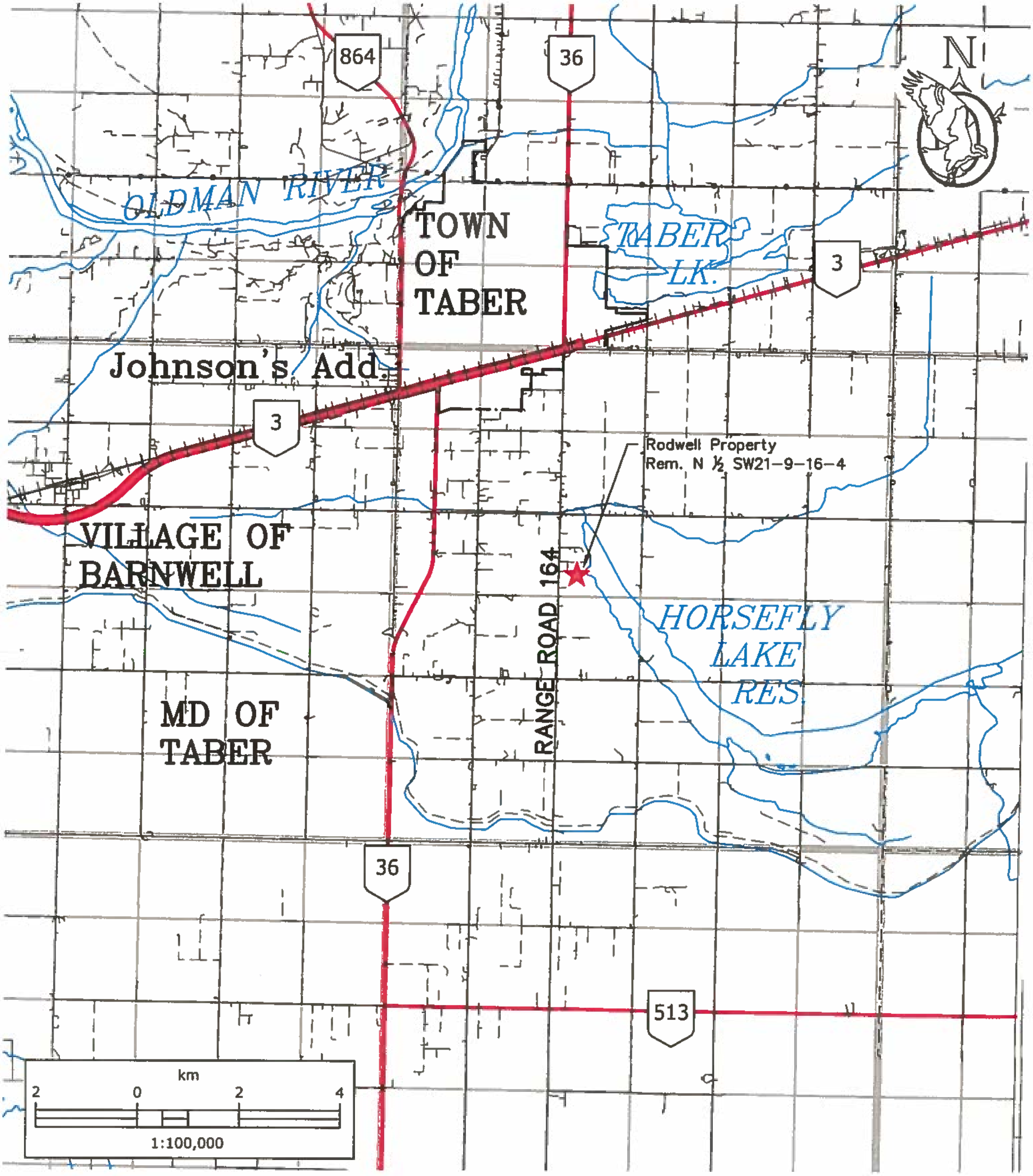
MAK/

Encl.

cc: File

FIGURES

The following figures are referenced in the report.



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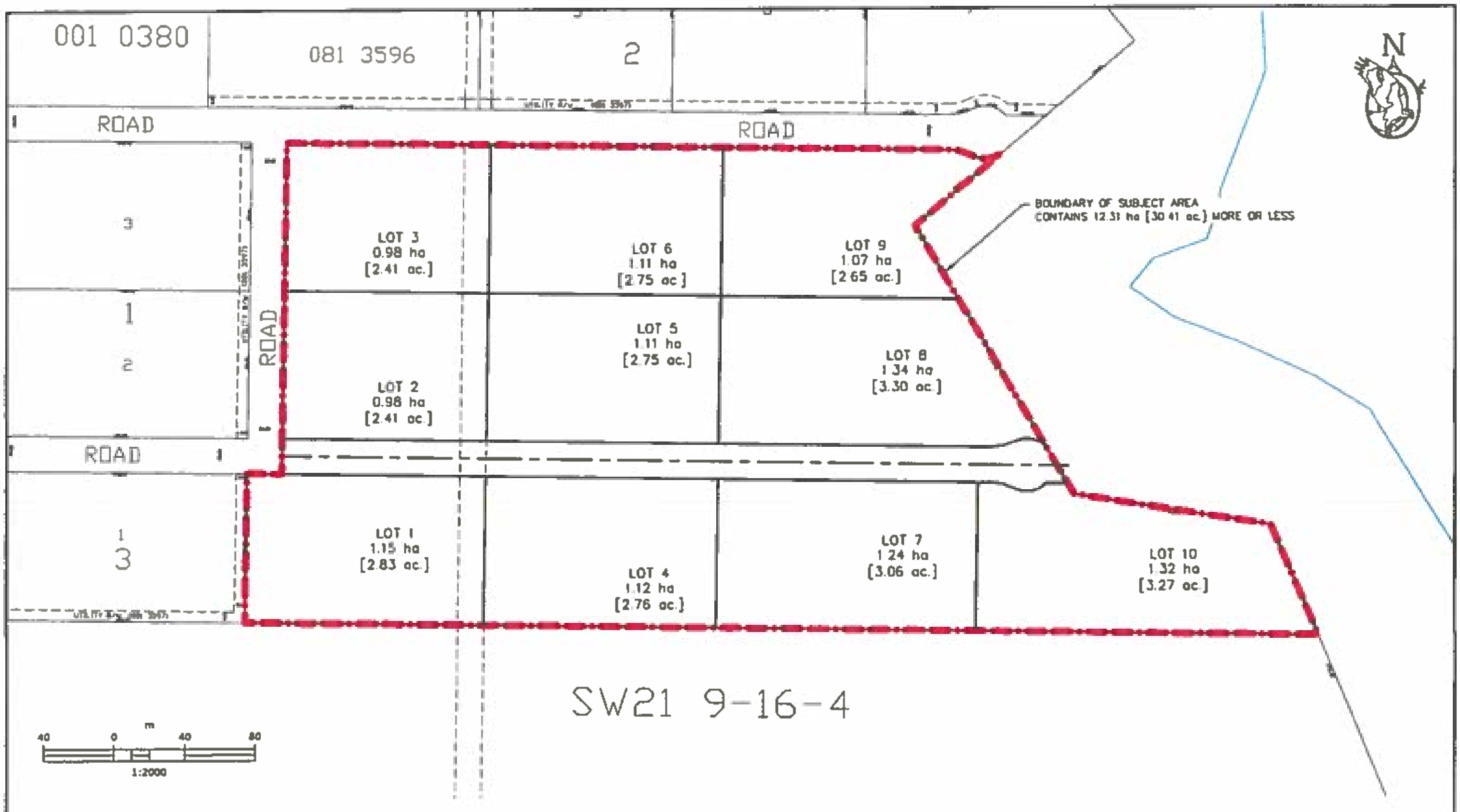
Dec 2014 PROJECT No.: 140233

Rodwell Subdivision (Rem. N 1/2 SW21-9-16-4)
Level 3 PSTS Assessment

Fig. 1 – Location



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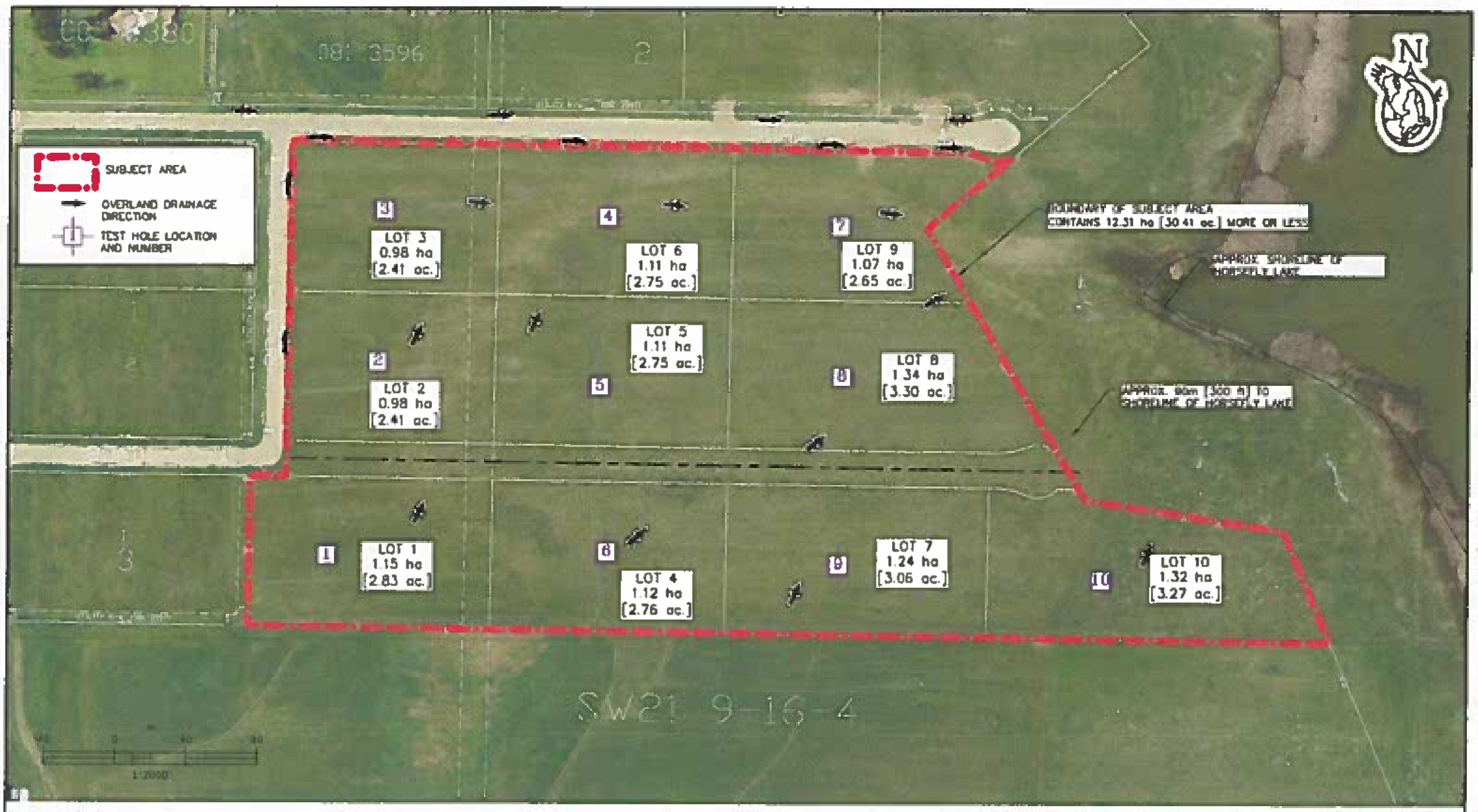
Rodwell Subdivision (Rem. N 1/2 SW21-9-16-4)
Level 3 PSTS Assessment

Surface Features

PROJECT No.	140233	DRAWING/FIGURE No.	4
DATE.	Dec 2014		
BY:	MAK		



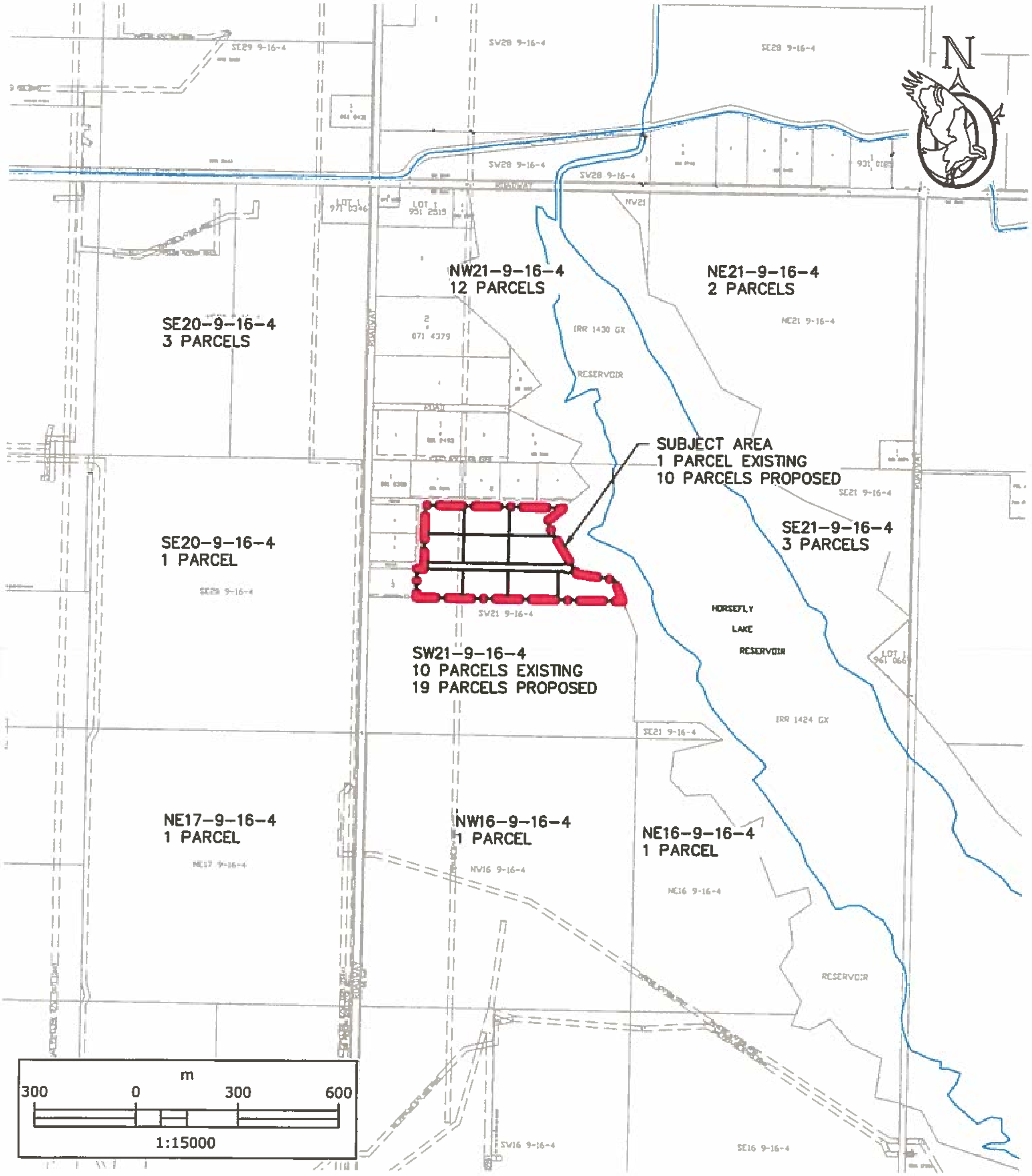
OSPREY ENGINEERING INC.

Rodwell Subdivision (Rem. N 1/2 SW21-9-16-4)
Level 3 PSTS Assessment

Surface Features

PROJECT No.: 140233
DATE: Dec 2014
BY: MAK

DRAWING/FIGURE No. 4



Rodwell Subdivision (Rem. N 1/2 SW21-9-16-4)
Level 3 PSTS Assessment

Fig. 3 – Surrounding Development

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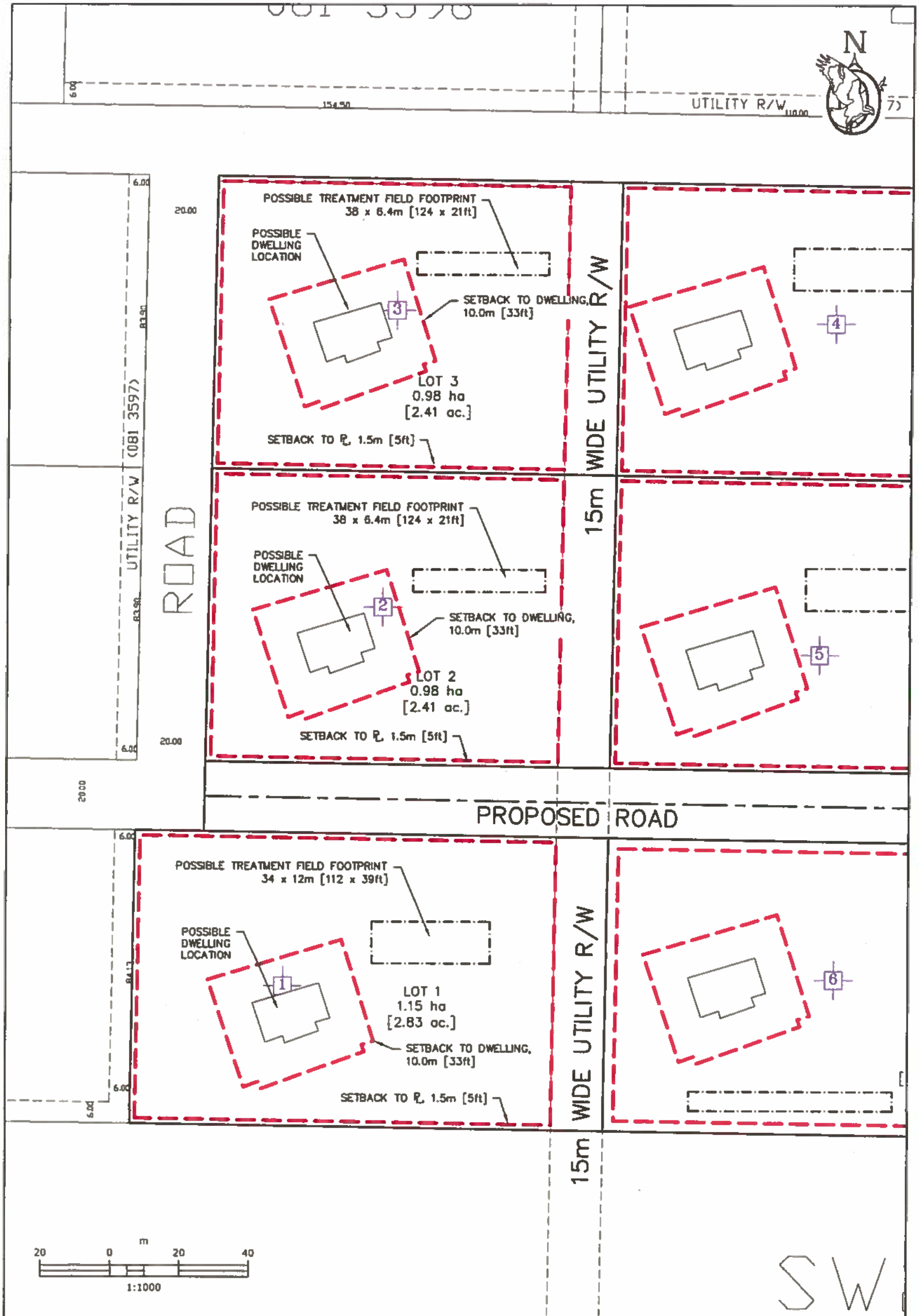


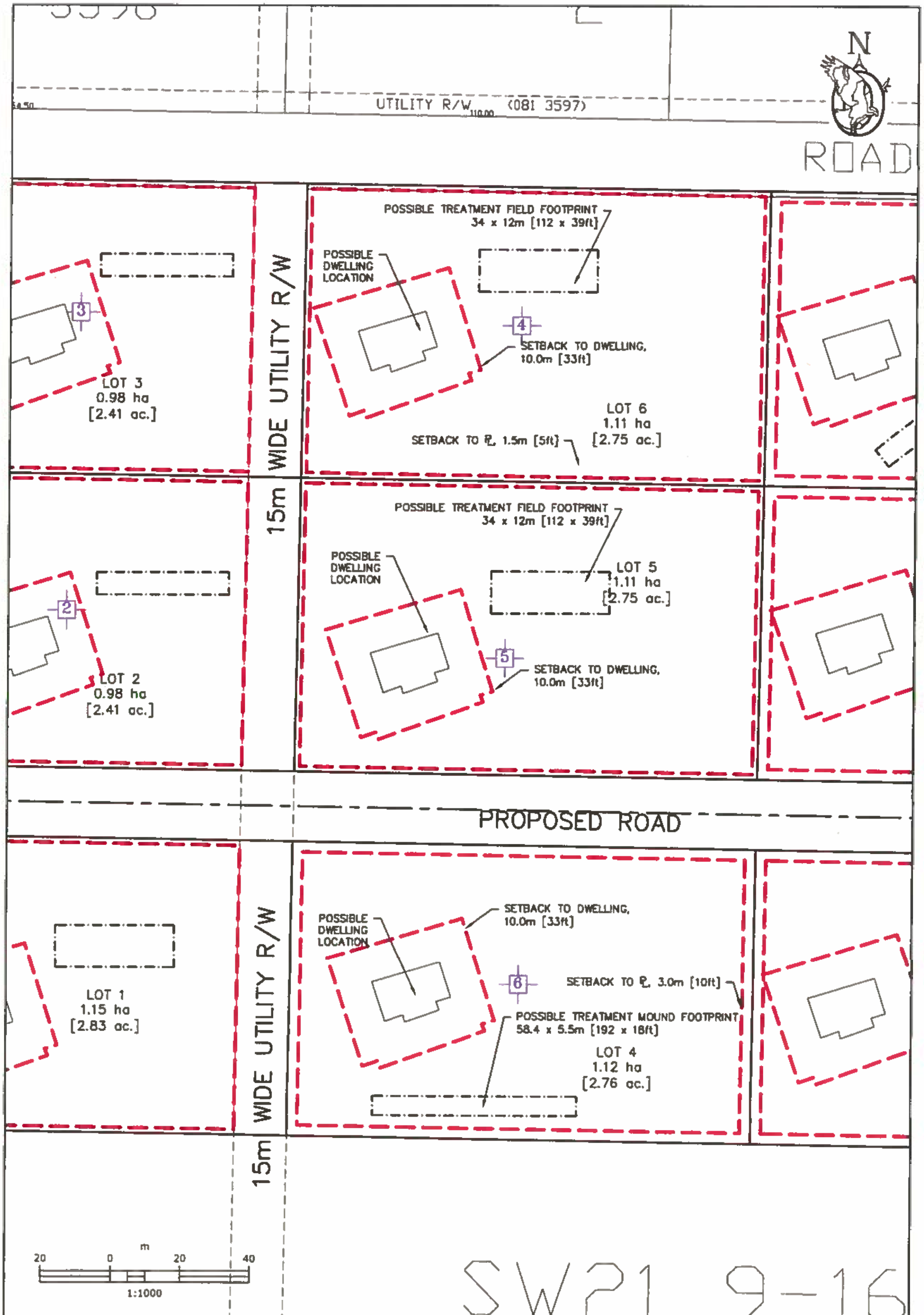
OSPREY ENGINEERING INC.

Rodwell Subdivision
Level 3 PSTS Assessment

Site Assessment
Lots 1–3

PROJECT No.: 140233
DATE: Dec. 2014
BY: MAK

DRAWING/FIGURE No.
5



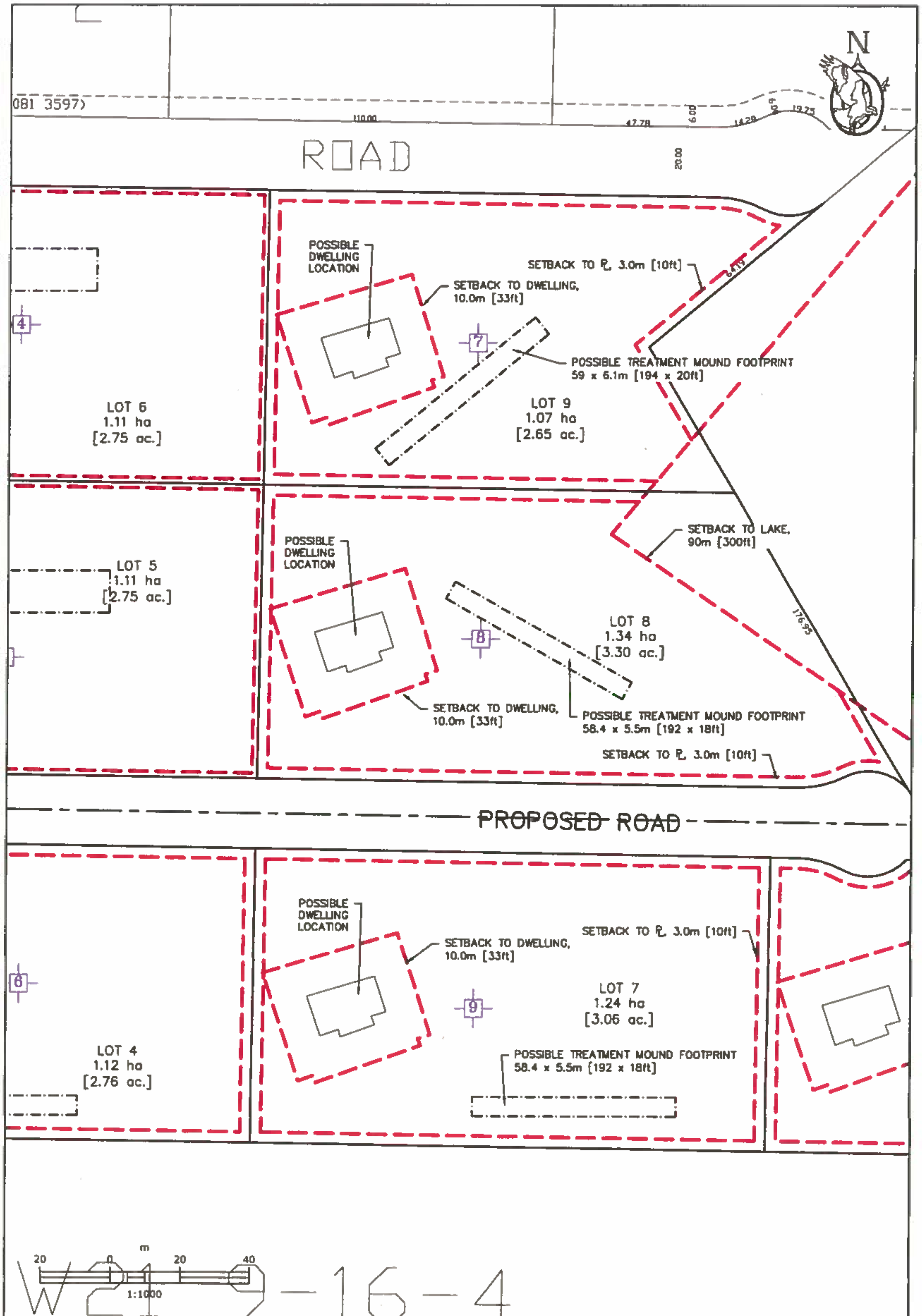
OSPREY ENGINEERING INC.

Rodwell Subdivision
Level 3 PSTS Assessment

Site Assessment
Lots 4-6

PROJECT No.: 140233
DATE: Dec. 2014
BY: MAK

DRAWING/FIGURE No.
6



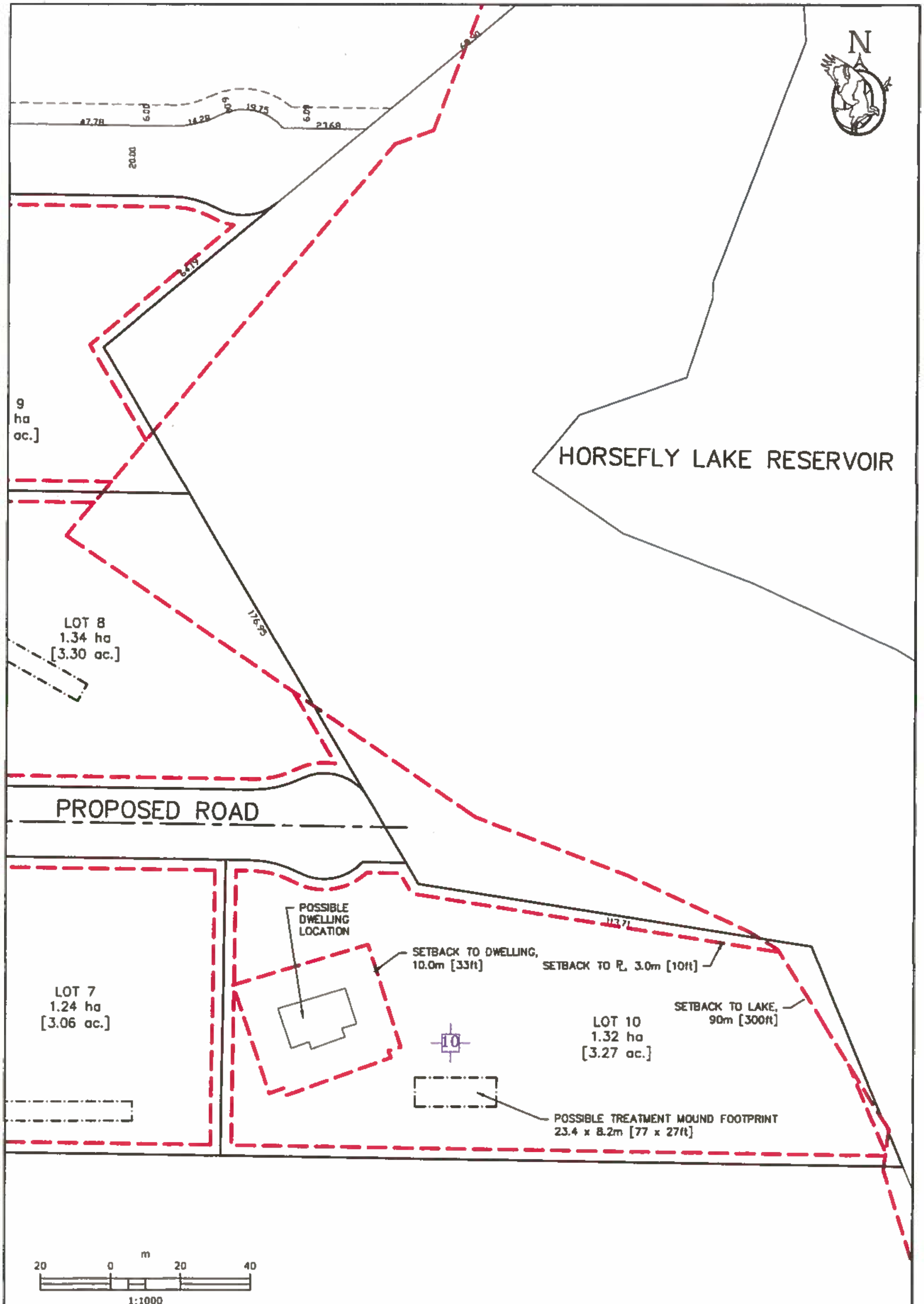
Osprey Engineering Inc.

Rodwell Subdivision
Level 3 PSTS Assessment

Site Assessment
Lots 7–9

PROJECT No.: 140233
DATE: Dec. 2014
BY: MAK

DRAWING/FIGURE No.
7



OSPREY ENGINEERING INC.

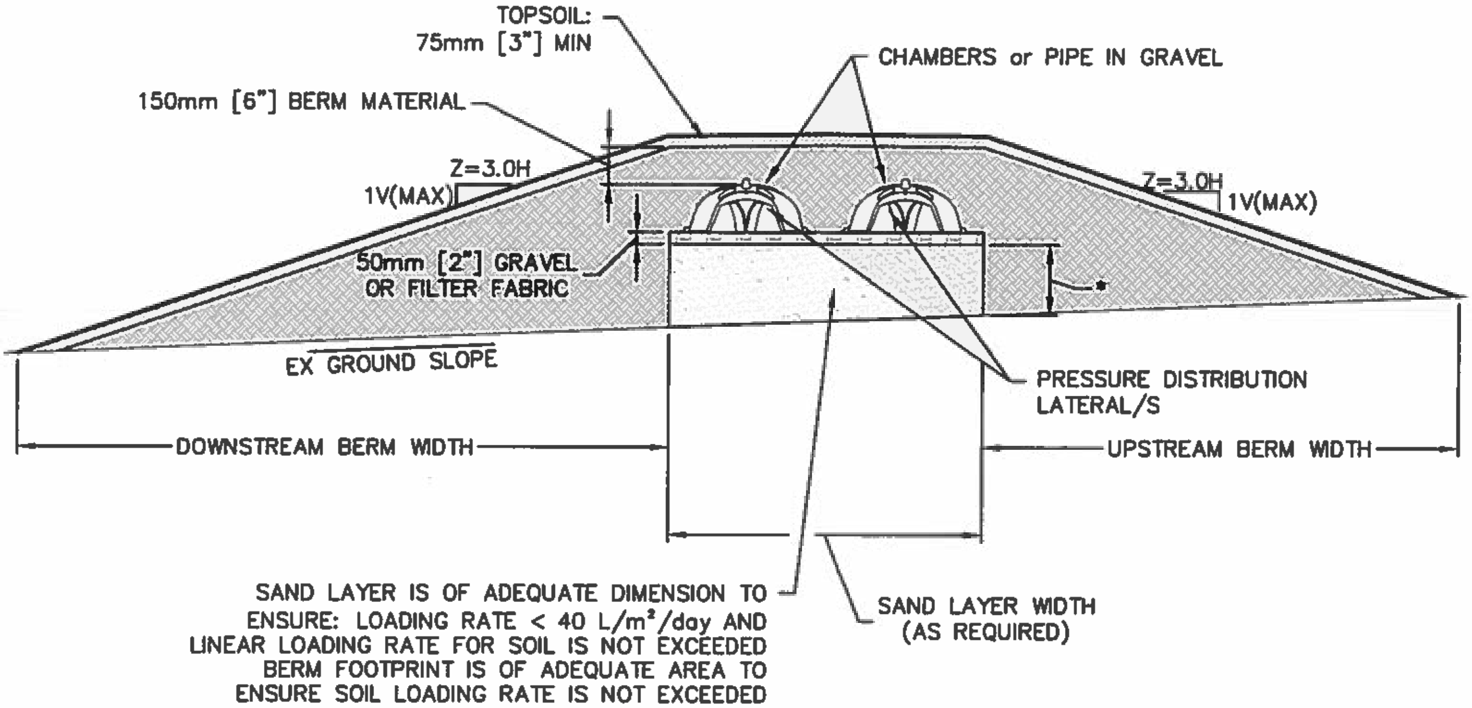
Rodwell Subdivision
Level 3 PSTS Assessment

Site Assessment
Lot 10

PROJECT No.: 140233
DATE: Dec. 2014
BY: MAK

DRAWING/FIGURE No.
8

- * = SAND LAYER DEPTH:
  - ** PRIMARY EFFLUENT: 0.3 m [12"] OR DEPTH REQUIRED TO ENSURE MIN VERTICAL SEPARATION
- SAND LAYER MUST BE CSA–A23.1, ASTM C–33 OR AS NOTED IN SOP 2009 SENT. 5.3.3.4(2)
- BERM MATERIAL MUST BE LOAMY MEDIUM SAND OR COARSER
- MIN VERTICAL SEPARATION TO GROUND WATER OR RESTRICTIVE SOIL HORIZON IS 0.9m [3ft]
- MIN 0.3m [1ft] OF UNDISTURBED NATIVE SOIL WITH A LOADING RATE IN SOP 2009 MUST BE PRESENT



Rodwell Subdivision (Rem. N 1/2 SW21-9-16-4)
Level 3 PSTS Assessment

Fig. 9 – Typical Treatment Mound

OSPREY ENGINEERING INC.

Dec 2014 PROJECT No.: 140233

Table 2 - PSTS Suitability Matrix

	Lot 1	Lot 2	Lot 3	Lot 4	Lot 5	Lot 6	Lot 7	Lot 8	Lot 9	Lot 10
Texture	Very: loam	Very: loam	Very: loam	Moderate: Clay loam	Very: loam	Very: loam	Moderate: Clay loam	Moderate: Clay loam	Moderate: Clay loam	Very: Loam
Structure	Moderate: grade 1 blocky to +1.5m	Very: grade 2 blocky to +1.5m	Very: grade 2 blocky to +1.5m	Moderate: grade 1 blocky to +1.5m	Moderate: grade 1 blocky to +1.5m	Moderate: grade 1 blocky to +1.5m	Moderate: Grade 2-3 structure > 1.5m	Moderate: Grade 2-3 structure > 1.5m	Limited: Grade 2-3 structure to 0.91 m	Moderate: grade 1 blocky to +1.5m
Hydraulic Capability of Soil (Drainage)	Moderate: well drained	Moderate: well drained	Moderate: well drained	Moderate: well drained	Moderate: well drained	Moderate: well drained	Moderate: well drained	Moderate: well drained	Moderate: well drained	Moderate: well drained
Depth of Suitable Soil	Very: >1.5m	Very: >1.5m	Very: > 1.5 m	Very: > 1.5 m	Very: > 1.5 m	Very: > 1.5 m	Very limited: < 0.9 m	Limited: < 1.2 m	Limited: < 1.2 m	Very: > 1.5 m
Depth to Water Table	Very: none found	Very: none found	Very: not found	Limited: Seasonal below 1.14 m	Very: not found	Very: not found	Very limited seasonal < 0.9 m	Limited: Seasonal below 1.12 m	Limited: Seasonal below 1.12 m	Moderate: > 1.2 m
Topography	Very: slopes <15%, no concave slopes	Very: slopes <15%, no concave slopes	Very: slopes <15%, no concave slopes	Very: slopes <15%, no concave slopes	Very: slopes <15%, no concave slopes	Very: slopes <15%, no concave slopes	Very: slopes <15%, no concave slopes	Very: slopes <15%, no concave slopes	Very: slopes <15%, no concave slopes	Very: slopes <15%, no concave slopes
Flooding	Very: not in flood plain, good surface drainage	Very: not in flood plain, good surface drainage	Very: not in flood plain, good surface drainage	Very: not in flood plain, good surface drainage	Very: not in flood plain, good surface drainage	Very: not in flood plain, good surface drainage	Moderate: portions near lake	Moderate: portions near lake	Moderate: portions near lake	Moderate: portions near lake
Density	Moderate - surrounding <30 parcels per ¼ section									
Encumbrances	Moderate: easements don't affect location	Moderate: easements don't affect location	Moderate: easements don't affect location	Very: no easements	Very: no easements	Very: no easements	Very: no easements	Very: no easements	Very: no easements	Very: no easements
Parcel Size	Moderate: parcel size > 1 ha [2.5 ac]	Limited: parcel size < 1 ha [2.5 ac]	Limited: parcel size < 1 ha [2.5 ac]	Moderate: parcel size > 1 ha [2.5 ac]	Moderate: parcel size > 1 ha [2.5 ac]	Moderate: parcel size > 1 ha [2.5 ac]	Moderate: parcel size > 1 ha [2.5 ac]	Moderate: parcel size > 1 ha [2.5 ac]	Moderate: parcel size > 1 ha [2.5 ac]	Moderate: parcel size > 1 ha [2.5 ac]
Surface Water	Very > 90 m	Very > 90 m	Very > 90 m	Very > 90 m	Very > 90 m	Very > 90 m	Moderate: within 90 m	Moderate: within 90 m	Moderate: within 90 m	Moderate: within 90 m
Overall	Moderate	Moderate	Moderate	Limited	Moderate	Moderate	Limited	Limited	Limited	Moderate
Recommended System Type	Treatment field acceptable	Treatment field acceptable	Treatment field acceptable	Requires treatment mound or shallow - bury treatment field receiving Level 2 effluent	Treatment field acceptable	Treatment field acceptable	Requires treatment mound with extra sand layer depth	Requires treatment mound or shallow - bury treatment field receiving Level 2 effluent	Requires treatment mound or shallow - bury treatment field receiving Level 2 effluent	Requires treatment mound or shallow - bury treatment field receiving Level 2 effluent

APPENDIX A – SOIL PROFILES

The following pages contain soil profiles from the site assessment conducted by Osprey Engineering Inc. on 8 December 2014. Samples of soil from the most-limiting soil horizon/s were taken from each test hole and submitted to KaizenLab of Calgary. Laboratory soil texture results are also included. Based on the observed conditions, conclusions were made as to allowable soil loading rates and sizes of dispersal areas needed for treatment fields and mounds.

140233 - Rodwell Property, MD of Taber											08-Dec-14
Legal Land Location								Test Pit GPS Coordinates (UTM Zone 11N)			
LSD-1/4	Sec	Twp	Rge	Mer	Lot	Block	Plan	Easting		Northing	
SW	21	9	16	4	Prop. 1			m		m	

Vegetation notes:	Mixed grasses	Overall site slope %	<2%
		Slope position of test pit	n/a

Test hole No.	Soil Subgroup	Parent Material	Drainage	Depth of Lab sample #1	Depth of Lab sample #2
1	O.BC	Lacustrine	well	61 cm	121 cm

Horizon	Depth (cm)	Texture	Lab or HT	Colour	Gleying	Mottling	Structure	Grade	Consistence	Moisture	% Coarse Fragments
Ap	0-33	SiL	HT	10YR3/3	N	N	GR	3	friable	moist	0%
Bm	33-53	SiL	HT	2.5Y4/4	N	N	PR	3	friable	moist	0%
Cca	53-97	SiL	Lab	2.5Y4/4	N	N	PR	3	friable	moist	0%
Ck	97-151+	L	Lab	2.5Y4/3	N	N	BK	1	firm	moist	5%

Depth to Groundwater	none found	Restricting Soil Layer Characteristic	none found
Depth to Seasonally Saturated Soil	none found	Depth to restrictive Soil Layer	none found
Site Topography	slightly rolling/nearly level	Depth to Highly Permeable Layer Limiting Design	none found

Key Soil Characteristics applied to system design effluent loading	loam, weak (grade 1) blocky structure
Weather Condition notes:	4°C, p cloudy, SW wind, snow on ground
Comments: such as root depth and abundance or other pertinent observations:	Roots noted to 97 cm

140233 - Rodwell Property, MD of Taber									08-Dec-14

Legal Land Location								Test Pit GPS Coordinates (UTM Zone 11N)	
LSD-1/4	Sec	Twp	Rge	Mer	Lot	Block	Plan	Easting	Northing
SW	21	9	16	4	Prop. 2			m	m

Vegetation notes:	Mixed grasses	Overall site slope %	<2%
		Slope position of test pit	n/a

Test hole No.	Soil Subgroup	Parent Material	Drainage	Depth of Lab sample #1	Depth of Lab sample #2
2	O.BC	Lacustrine	well	61 cm	132 cm

Horizon	Depth (cm)	Texture	Lab or HT	Colour	Gleying	Mottling	Structure	Grade	Consistence	Moisture	% Coarse Fragments
Ap	0-15	SiL	HT	10YR3/2	N	N	GR	3	loose	dry	0%
Bm	15-48	SiL	HT	10YR3/3	N	N	BK	3	friable	moist	0%
Cca	48-86	SiL	Lab	2.5Y4/4	N	N	BK	3	friable	moist	0%
Ck	86-151+	L	Lab	2.5Y3/3	N	N	PR	2	firm	moist	10%

Depth to Groundwater	none found	Restricting Soil Layer Characteristic	none found
Depth to Seasonally Saturated Soil	none found	Depth to restrictive Soil Layer	none found
Site Topography	slightly rolling/nearly level	Depth to Highly Permeable Layer Limiting Design	none found

Key Soil Characteristics applied to system design effluent loading	loam, moderate (grade 2) blocky structure
Weather Condition notes:	4°C, p cloudy, SW wind, snow on ground
Comments: such as root depth and abundance or other pertinent observations:	Roots noted to 151 cm+

140233 - Rodwell Property, MD of Taber	08-Dec-14

Legal Land Location								Test Pit GPS Coordinates (UTM Zone 11N)	
LSD-1/4	Sec	Twp	Rge	Mer	Lot	Block	Plan	Easting	Northing
SW	21	9	16	4	Prop. 3			m	m

Vegetation notes:	Mixed grasses	Overall site slope %	<2%
		Slope position of test pit	n/a

Test hole No.	Soil Subgroup	Parent Material	Drainage	Depth of Lab sample #1	Depth of Lab sample #2
3	O.BC	Lacustrine	well	51 cm	121 cm

Horizon	Depth (cm)	Texture	Lab or HT	Colour	Gleying	Mottling	Structure	Grade	Consistence	Moisture	% Coarse Fragments
Ap	0-36	L	HT	10YR3/2	N	N	GR	3	friable	moist	0%
Cca	36-74	L	HT	2.5Y5/4	N	N	BK	3	friable	moist	10%
Ck	74-151+	L	Lab	2.5Y4/4	v few, fine, faint	N	PR	2	firm	moist	10%

Depth to Groundwater	none found	Restricting Soil Layer Characteristic	none found
Depth to Seasonally Saturated Soil	none found	Depth to restrictive Soil Layer	none found
Site Topography	slightly rolling/nearly level	Depth to Highly Permeable Layer Limiting Design	none found

Key Soil Characteristics applied to system design effluent loading	loam, moderate (grade 2) blocky structure
Weather Condition notes:	4°C, p cloudy, SW wind, snow on ground
Comments: such as root depth and abundance or other pertinent observations:	Roots noted to 132 cm

140233 - Rodwell Property, MD of Taber	08-Dec-14

Legal Land Location								Test Pit GPS Coordinates (UTM Zone 11N)	
LSD-1/4	Sec	Twp	Rge	Mer	Lot	Block	Plan	Easting	Northing
SW	21	9	16	4	Prop. 6			m	m

Vegetation notes:	Mixed grasses	Overall site slope %	<2%
		Slope position of test pit	n/a

Test hole No.	Soil Subgroup	Parent Material	Drainage	Depth of Lab sample #1	Depth of Lab sample #2
4	O.BC	Lacustrine	well	51 cm	132 cm

Horizon	Depth (cm)	Texture	Lab or HT	Colour	Gleying	Mottling	Structure	Grade	Consistence	Moisture	% Coarse Fragments
Ap	0-36	SiL	HT	10YR3/2	N	N	GR	3	friable	moist	0%
Bm	36-53	SiL	HT	10YR4/3	N	N	BK	3	friable	moist	0%
Cca	53-91	SiL	Lab	2.5Y5/3	N	N	PR	2	friable	moist	0%
C	91-112	mS	HT	10YR5/4	N	N	SG	0	loose	dry	0%
Ck	112-183	L	Lab	2.5Y5/4	N	few, fine faint	BK	1	firm	moist	10%

Depth to Groundwater	none found	Restricting Soil Layer Characteristic	none found
Depth to Seasonally Saturated Soil	none found	Depth to restrictive Soil Layer	none found
Site Topography	slightly rolling/nearly level	Depth to Highly Permeable Layer Limiting Design	none found

Key Soil Characteristics applied to system design effluent loading	loam, weak (grade 1) blocky structure
Weather Condition notes:	4°C, p cloudy, SW wind, snow on ground
Comments: such as root depth and abundance or other pertinent observations:	Roots noted to 112 cm

140233 - Rodwell Property, MD of Taber											08-Dec-14

Legal Land Location								Test Pit GPS Coordinates (UTM Zone 11N)	
LSD-1/4	Sec	Twp	Rge	Mer	Lot	Block	Plan	Easting	Northing
SW	21	9	16	4	Prop. 5			m	m

Vegetation notes:	Mixed grasses	Overall site slope %	<2%
		Slope position of test pit	n/a

Test hole No.	Soil Subgroup	Parent Material	Drainage	Depth of Lab sample #1	Depth of Lab sample #2
5	O.BC	Lacustrine	well	61 cm	cm

Horizon	Depth (cm)	Texture	Lab or HT	Colour	Gleying	Mottling	Structure	Grade	Consistence	Moisture	% Coarse Fragments
Ap	0-38	SiL	HT	10YR3/2	N	N	GR	3	friable	moist	0%
Bm	38-84	SiCL	Lab	10YR4/3	N	N	PR	3	friable	moist	0%
Cca	84-121	L	HT	2.5Y5/3	N	N	PR	3	friable	moist	0%
C	121-140	mS	HT	10YR5/4	N	N	SG	0	loose	dry	0%
Ck	140-151+	L	HT	2.5Y5/4	N	N	BK	1	firm	moist	10%

Depth to Groundwater	none found	Restricting Soil Layer Characteristic	none found
Depth to Seasonally Saturated Soil	none found	Depth to restrictive Soil Layer	none found
Site Topography	slightly rolling/nearly level	Depth to Highly Permeable Layer Limiting Design	none found

Key Soil Characteristics applied to system design effluent loading	loam, weak (grade 1) blocky structure
Weather Condition notes:	4°C, p cloudy, SW wind, snow on ground
Comments: such as root depth and abundance or other pertinent observations:	Roots noted to 140 cm

140233 - Rodwell Property, MD of Taber											08-Dec-14

Legal Land Location								Test Pit GPS Coordinates (UTM Zone 11N)	
LSD-1/4	Sec	Twp	Rge	Mer	Lot	Block	Plan	Easting	Northing
SW	21	9	16	4	Prop. 4			m	m

Vegetation notes:	Mixed grasses	Overall site slope %	<2%
		Slope position of test pit	n/a

Test hole No.	Soil Subgroup	Parent Material	Drainage	Depth of Lab sample #1	Depth of Lab sample #2
6	O.BC	Lacustrine	well	91 cm	cm

Horizon	Depth (cm)	Texture	Lab or HT	Colour	Gleying	Mottling	Structure	Grade	Consistence	Moisture	% Coarse Fragments
Ap	0-33	SiL	HT	10YR3/2	N	N	GR	3	friable	moist	0%
Bm	33-79	SiL	HT	2.5Y5/4	N	N	BK	3	friable	moist	0%
Cca	79-114	CL	Lab	2.5Y5/3	N	N	BK	3	friable	moist	25%
Ck	114-151+	CL	HT	10YR5/4	weak	many, medium, distinct	BK	1	firm	moist	10%

Depth to Groundwater	none found	Restricting Soil Layer Characteristic	none found
Depth to Seasonally Saturated Soil	114 cm	Depth to restrictive Soil Layer	none found
Site Topography	slightly rolling/nearly level	Depth to Highly Permeable Layer Limiting Design	none found

Key Soil Characteristics applied to system design effluent loading	clay loam, strong (grade 3) blocky structure, possible seasonal saturation below 114 cm
Weather Condition notes:	4°C, p cloudy, SW wind, snow on ground
Comments: such as root depth and abundance or other pertinent observations:	Roots noted to 140 cm, multiple, discontinuous sand lenses noted in Cca horizon

140233 - Rodwell Property, MD of Taber	08-Dec-14

Legal Land Location								Test Pit GPS Coordinates (UTM Zone 11N)	
LSD-1/4	Sec	Twp	Rge	Mer	Lot	Block	Plan	Easting	Northing
SW	21	9	16	4	Prop. 9			m	m

Vegetation notes:	Mixed grasses	Overall site slope %	<2%
		Slope position of test pit	n/a

Test hole No.	Soil Subgroup	Parent Material	Drainage	Depth of Lab sample #1	Depth of Lab sample #2
7	O.BC	Lacustrine	well	76 cm	cm

Horizon	Depth (cm)	Texture	Lab or HT	Colour	Gleying	Mottling	Structure	Grade	Consistence	Moisture	% Coarse Fragments
Ap	0-20	SiL	HT	10YR3/2	N	N	GR	3	friable	moist	0%
Bm	20-66	SiL	HT	10YR5/4	N	N	BK	3	friable	moist	25%
Cca	66-81	CL	Lab	2.5Y4/4	N	few, fine, faint	BK	2	friable	firm	25%
Ck	81-151+	CL	HT	2.5Y4/3	N	many, fine, faint	M	0	firm	moist	10%

Depth to Groundwater	none found	Restricting Soil Layer Characteristic	massive clay loam
Depth to Seasonally Saturated Soil	possible below 81 cm	Depth to restrictive Soil Layer	81 cm
Site Topography	slightly rolling/nearly level	Depth to Highly Permeable Layer Limiting Design	none found

Key Soil Characteristics applied to system design effluent loading	clay loam, medium (grade 2) blocky structure, restriciting layer below 81 cm
Weather Condition notes:	4°C, p cloudy, SW wind, snow on ground
Comments: such as root depth and abundance or other pertinent observations:	Roots noted to 81 cm

140233 - Rodwell Property, MD of Taber	08-Dec-14

Legal Land Location								Test Pit GPS Coordinates (UTM Zone 11N)	
LSD-1/4	Sec	Twp	Rge	Mer	Lot	Block	Plan	Easting	Northing
SW	21	9	16	4	Prop. 8			m	m

Vegetation notes:	Mixed grasses	Overall site slope %	<2%
		Slope position of test pit:	n/a

Test hole No.	Soil Subgroup	Parent Material	Drainage	Depth of Lab sample #1	Depth of Lab sample #2
8	O.BC	Lacustrine	well	91 cm	cm

Horizon	Depth (cm)	Texture	Lab or HT	Colour	Gleying	Mottling	Structure	Grade	Consistence	Moisture	% Coarse Fragments
Ap	0-15	SiL	HT	10YR3/3	N	N	GR	3	friable	moist	0%
Bm	15-30	SiL	HT	10YR5/4	N	N	BK	3	friable	moist	0%
Bm2	30-46	LmS	HT	10YR3/4	N	N	SG	0	friable	firm	50%
Cca	46-112	CL	Lab	2.5Y4/4	N	N	BK	2	firm	moist	5%
Ck	112-183+	CL	HT	2.5Y4/4	N	few, fine, faint	M	0	firm	moist	5%

Depth to Groundwater	none found	Restricting Soil Layer Characteristic	massive clay loam
Depth to Seasonally Saturated Soil	none found	Depth to restrictive Soil Layer	112 cm
Site Topography	slightly rolling/nearly level	Depth to Highly Permeable Layer Limiting Design	none found

Key Soil Characteristics applied to system design effluent loading	clay loam, medium (grade 2) blocky structure, restriciting layer below 112 cm
Weather Condition notes:	4°C, p cloudy, SW wind, snow on ground
Comments: such as root depth and abundance or other pertinent observations:	Roots noted to 112 cm

140233 - Rodwell Property, MD of Taber	08-Dec-14

Legal Land Location								Test Pit GPS Coordinates (UTM Zone 11N)	
LSD-1/4	Sec	Twp	Rge	Mer	Lot	Block	Plan	Easting	Northing
SW	21	9	16	4	Prop. 7			m	m

Vegetation notes:	Mixed grasses	Overall site slope %	<2%
		Slope position of test pit:	n/a

Test hole No.	Soil Subgroup	Parent Material	Drainage	Depth of Lab sample #1	Depth of Lab sample #2
9	O.BC	Lacustrine	well	51 cm	100 cm

Horizon	Depth (cm)	Texture	Lab or HT	Colour	Gleying	Mottling	Structure	Grade	Consistence	Moisture	% Coarse Fragments
Ap	0-23	SiL	HT	10YR3/2	N	N	BK	3	friable	moist	0%
Bm	23-84	CL	Lab	2.5Y5/4	N	N	PR	3	friable	moist	0%
Cca	84-112	CL	Lab	2.5Y5/3	N	N	PR	3	friable	firm	0%
Ck	112-151+	CL	HT	2.5Y4/4	N	some, fine, faint	M	0	firm	moist	0%

Depth to Groundwater	none found	Restricting Soil Layer Characteristic	massive clay loam
Depth to Seasonally Saturated Soil	none found	Depth to restrictive Soil Layer	112 cm
Site Topography	slightly rolling/nearly level	Depth to Highly Permeable Layer Limiting Design	none found

Key Soil Characteristics applied to system design effluent loading	clay loam, medium (grade 2) blocky structure, restriciting layer below 112 cm
Weather Condition notes:	4°C, p cloudy, SW wind, snow on ground
Comments: such as root depth and abundance or other pertinent observations:	Roots noted to 112 cm, multiple disontinuous sand pockets

140233 - Rodwell Property, MD of Taber	08-Dec-14

Legal Land Location								Test Pit GPS Coordinates (UTM Zone 11N)	
LSD-1/4	Sec	Twp	Rge	Mer	Lot	Block	Plan	Easting	Northing
SW	21	9	16	4	Prop. 10			m	m

Vegetation notes:	Mixed grasses	Overall site slope %	<2%
		Slope position of test pit	n/a

Test hole No.	Soil Subgroup	Parent Material	Drainage	Depth of Lab sample #1	Depth of Lab sample #2
10	O.BC	Lacustrine	well	46 cm	121 cm

Horizon	Depth (cm)	Texture	Lab or HT	Colour	Gleying	Mottling	Structure	Grade	Consistence	Moisture	% Coarse Fragments
Ap	0-15	SiL	HT	10YR3/2	N	N	BK	3	friable	moist	0%
AB	15-30	SiL	HT	10YR4/3	N	N	BK	3	friable	moist	0%
Bm	30-56	SiL	Lab	2.5Y5/4	N	N	PR	3	friable	moist	0%
BC	56-87	SiL	HT	2.5Y6/4	N	N	BK	2	firm	moist	0%
Cca	87-132	L	Lab	2.5Y5/3	N	N	BK	2	firm	moist	0%
Ck	132-151+	L	HT	2.5Y5/4	N	few, fine, distinct	M	0	firm	moist	0%

Depth to Groundwater	none found	Restricting Soil Layer Characteristic	none found
Depth to Seasonally Saturated Soil	possible below 132 cm	Depth to restrictive Soil Layer	none found
Site Topography	slightly rolling/nearly level	Depth to Highly Permeable Layer Limiting Design	none found

Key Soil Characteristics applied to system design effluent loading	silt loam, medium (grade 2) blocky structure, possible seasonal saturation below 132 cm
Weather Condition notes:	4°C, p cloudy, SW wind, snow on ground
Comments: such as root depth and abundance or other pertinent observations:	Roots noted to 132 cm

333 50th Ave. S.E.
Calgary, AB, T2G 2B3
Phone (403) 297-0868
Fax: (403) 297-0869

KaizenLAB

ANALYTICAL REPORT

Client: Osprey Engineering
Box 1367
Black Diamond, AB T0L 0H0

Attention: Michael A Kitchen

KaizenLAB JOB #:	168240
DATE RECEIVED:	09-Dec-2014
DATE REPORTED:	11-Dec-2014
PROJECT ID:	RODWELL
LOCATION:	

Samples Analyzed (refer to the Sample Receipt Confirmation report for details on sample conditions)

KaizenLAB #	Sample ID.	Matrix	Date Sampled
168240_001	TP1-1 @ 24"	Soil	08-Dec-2014
168240_002	TP1-2 @ 48"	Soil	08-Dec-2014
168240_003	TP2-1 @ 24"	Soil	08-Dec-2014
168240_004	TP2-2 @ 52"	Soil	08-Dec-2014
168240_005	TP3-1 @ 20"	Soil	08-Dec-2014
168240_006	TP3-2 @ 48"	Soil	08-Dec-2014
168240_007	TP4-1 @ 20"	Soil	08-Dec-2014
168240_008	TP4-2 @ 52"	Soil	08-Dec-2014
168240_009	TP5-1 @ 24"	Soil	08-Dec-2014
168240_010	TP6-1 @ 36"	Soil	08-Dec-2014
168240_011	TP7-1 @ 30"	Soil	08-Dec-2014
168240_012	TP8-1 @ 36"	Soil	08-Dec-2014
168240_013	TP9-1 @ 20"	Soil	08-Dec-2014
168240_014	TP9-2 @ 40"	Soil	08-Dec-2014
168240_015	TP10-1 @ 18"	Soil	08-Dec-2014
168240_016	TP10-2 @ 48"	Soil	08-Dec-2014

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KaizenLAB

Test Methodologies

Particle Size by Hydrometer in Soil: Modified from Soil Sampling & Methods of Analysis, M.R. Carter, 2008

Final Review by:

Joel Sababan
Customer Service Representative / Project Coordinator

Note: The results in this report relate only to the items tested. Information is available for any items in 5.10.2 of ISO/IEC 17025 that cannot be put on a test report.

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ANALYTICAL REPORT

KaizenLAB

Particle Size Distribution by Hydrometer

KaizenLAB #:	Sample ID:	Parameter: / Units:	Clay %	Silt %	Sand %	Texture
168240_001	TP1-1 @ 24"		17.5	65.0	17.5	Silt loam
168240_002	TP1-2 @ 48"		22.5	40.0	37.5	Loam
168240_003	TP2-1 @ 24"		22.5	62.5	15.0	Silt loam
168240_004	TP2-2 @ 52"		25.0	37.5	37.5	Loam
168240_005	TP3-1 @ 20"		25.0	40.0	35.0	Loam
168240_006	TP3-2 @ 48"		23.8	36.2	40.0	Loam
168240_007	TP4-1 @ 20"		22.5	60.0	17.5	Silt loam
168240_008	TP4-2 @ 52"		25.0	40.0	35.0	Loam
168240_009	TP5-1 @ 24"		32.5	57.5	10.0	Silty clay loam
168240_010	TP6-1 @ 36"		28.8	36.2	35.0	Clay loam
168240_011	TP7-1 @ 30"		31.2	41.3	27.5	Clay loam
168240_012	TP8-1 @ 36"		30.0	40.0	30.0	Clay loam
168240_013	TP9-1 @ 20"		32.5	42.5	25.0	Clay loam
168240_014	TP9-2 @ 40"		30.0	42.5	27.5	Clay loam
168240_015	TP10-1 @ 18"		22.5	52.5	25.0	Silt loam
168240_016	TP10-2 @ 48"		25.0	40.0	35.0	Loam

Note: The results in this report relate only to the items tested. Information is available for any items in 5.10.2 of ISO/IEC 17025 that cannot be put on a test report.

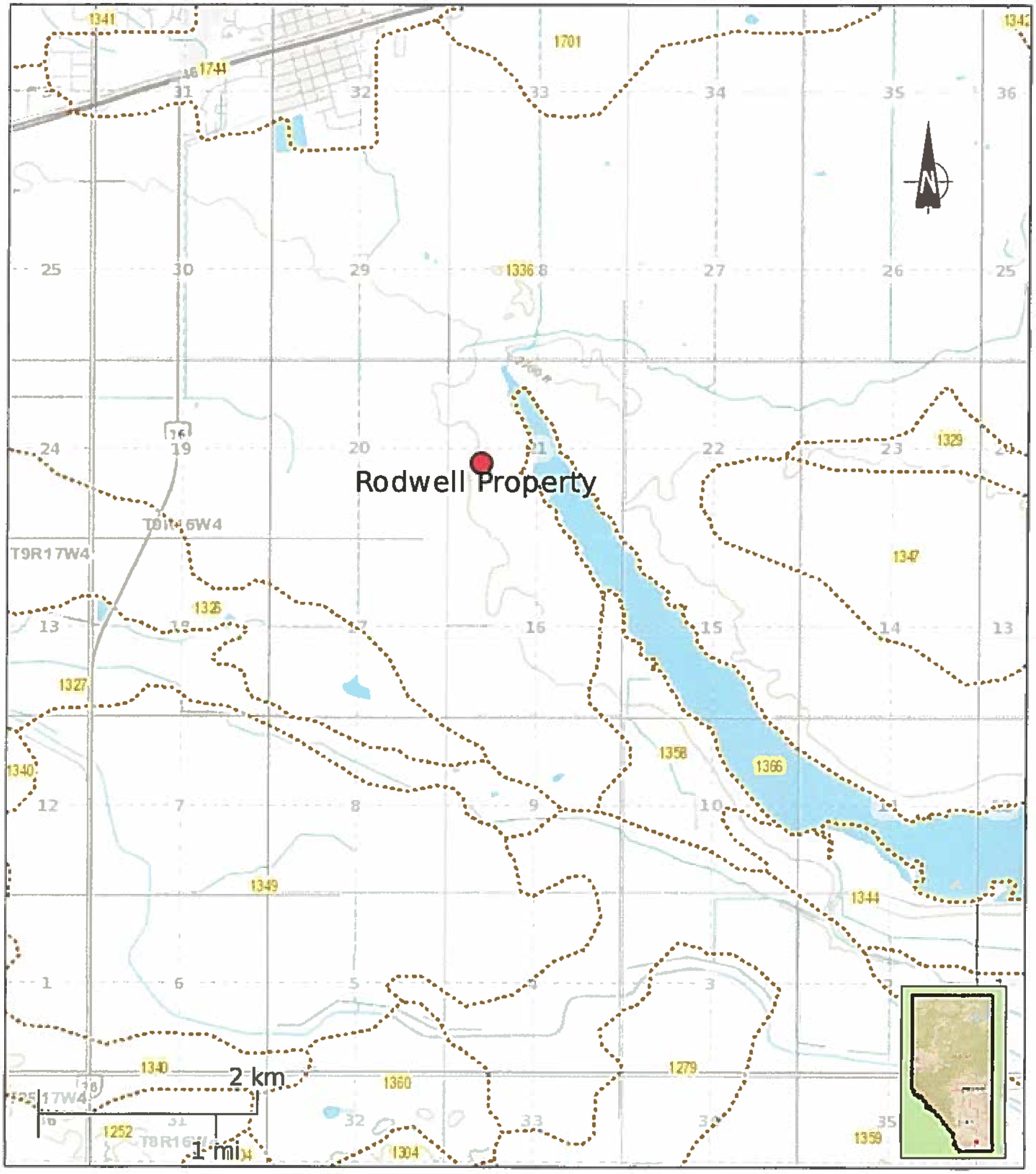
D.L. = Detection Limit

APPENDIX B – BACKGROUND SOILS INFORMATION

The following was obtained from the Alberta Agriculature and Rural Development "Soil Information Viewer."

Agriculture and Rural Development

Rodwell Property
Area Soils



December 19, 2014

Soil Landscape Polygons

Scale 1:50,000
1 inch = 4166.67 feet
1 cm = 500.00 metres
Map centre at latitude +49.738°N and longitude -112.118°E

Sources: Esri, HERE, DeLorme, TomTom, Intermap, Increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Soil Polygon Infomation

POLYNUMB	1336
HECTARES	7392.57059303
LSRSRATING	4M(10)
MUNAME	CFCH1/U1l

Soil Components

NEW_SYMBOL	CFD	CHN
PERCENT	50	50
SERIES	CRANFORD	CHIN
DRAINAGE	W	W
MAS_PM	L3	M2
SG	O.BC	O.BC
COMPONENT	1	2

Coordinate Position

Geographic: 49° 44' 46" N, 112° 07' 23" W

Description for Soil Polygon: 1336

CFCH1/U1l

Orthic Brown Chernozem on medium textured (L, SiCL, CL) materials over medium (L, CL) or fine (C) textured till (CFD).

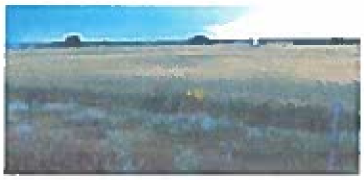
Orthic Brown Chernozem on medium textured (L, SiL) sediments deposited by wind and water (CHN).

The polygon may include soils that are not strongly contrasting from the dominant or co-dominant soils (1).

Undulating, low relief landform with a limiting slope of 2% (U1l).

Example site picture(s)

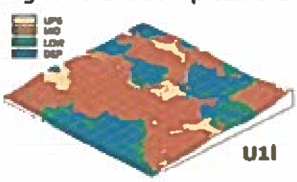
There may be more than one example since different field locations may all fall into the same landform classification.



Click on picture(s) above for larger image.

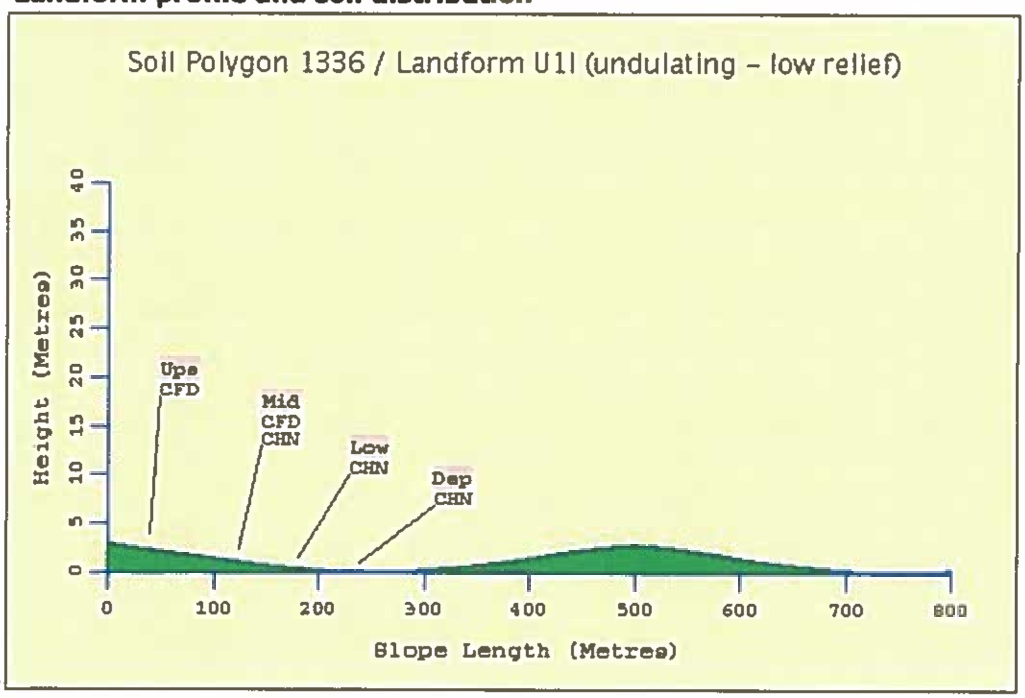
Example 3D picture

Digital elevation picture showing slope distribution.



Click on picture(s) above for larger image.

Landform profile and soil distribution



Print Close Window

APPENDIX D – PHOTOS

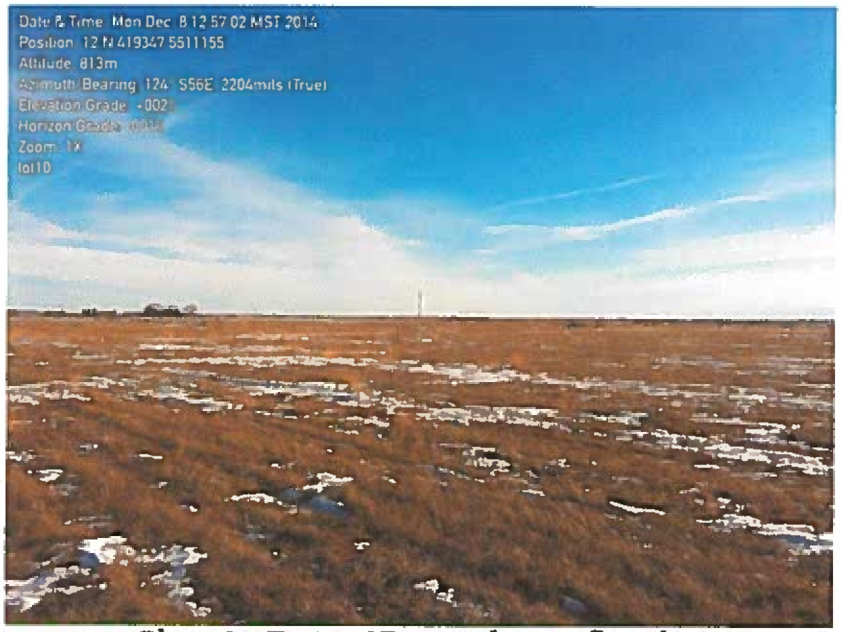


Photo 1 – Facing SE toward Horsefly Lake

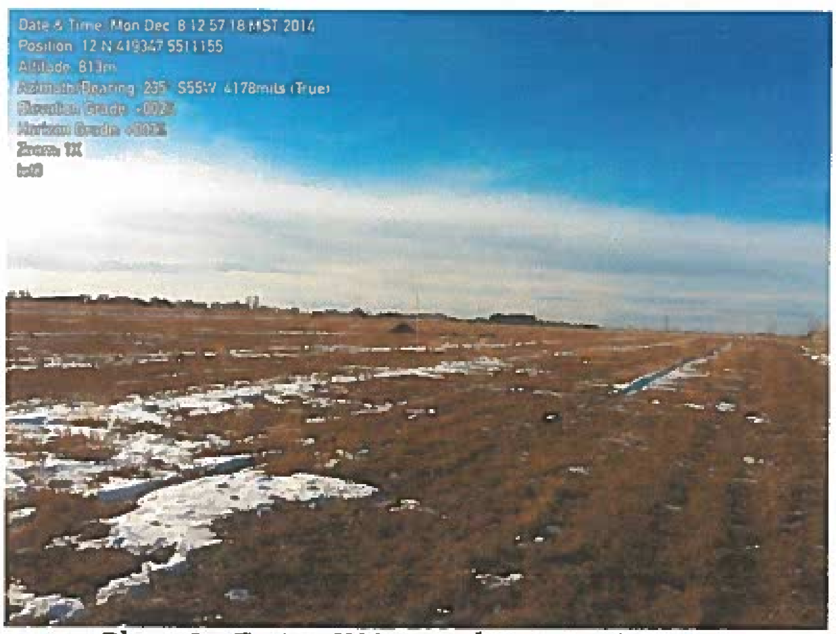


Photo 2 – Facing SW toward Existing Acreages

Photo 3 – Facing NW toward Existing Acreages

Photo 4 – Facing East toward Horsefly Lake from Proposed Lot 7

REFERENCES

Alberta Agriculture and Rural Development 2015, Information for Soil Polygon #1336, *Soil Information Viewer*, URL: http://www4.agric.gov.ab.ca/agrasidviewer/, retrieved: 6 January 2015

Alberta Association of Municipal Districts and Counties [AAMDC] 2011, *Model Process for Subdivision Approval and Private Sewage*

Alberta Land Titles, Instrument No. 051 122 582, 11 April 2005

AltaLIS JV 2014, *Rural Cadastral Base for Township 9-16-4*

AltaLIS JV 2011, *Large Scale Base Map 82p*, Scale 1:250,000

MacMillan RA 1987, *Soil Survey of the Calgary Urban Perimeter – Bulletin No. 54*, Alberta Research Council, Edmonton

Kitchen, M.A., R.E. Martin 2008, *Irrigation and Stormwater Management Plan, Rural Residential Subdivision (LSD 5 & 6, SW21-9-16-4), Municipal District of Taber, Alberta*, Martin Geomatic Consultants Ltd., Lethbridge

Safety Codes Council 2009, *Alberta Private Sewage Systems Standard of Practice*, Alberta Municipal Affairs, Edmonton

Valtus Ltd. 2014, *Orthophoto of Sec. 21-9-16-4*, 0.4 pixels/m resolution

OSPREY ENGINEERING INC.
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TEL: 403.933.2226 · FAX: 403.933.2230 · EMAIL: ospreyeng@gmail.com

17 June 2016 Our File: 140233

Oldman River Regional Services Commission
3105 – 16 Avenue North
Lethbridge, AB T1H 5E8

Attention: Bonnie Brunner – Planner

RE: **Countrylane (Rodwell) Subdivision**
Remainder of North Half of SW21-9-16-4
Municipal District of Taber No. 5, West Shore of Horsefly Lake
Level 3 Private Sewage (PSTS) Assessment – Addendum

Dear Ms. Brunner,

Further to your email of 9 June 2016, I have the following responses to the clarifications you requested:

1. *Impact the density of development within the area has on the selection of the PSTS for the parcels within the subdivision:*
   MAK response: While there are no specific parts of the *Alberta Private Sewage Systems Standard of Practice* (Safety Codes Council 2015) relating to density that would affect these lots, such restrictions as horizontal setbacks, soil hydraulic and linear loading rates can limit system sizes on smaller parcels (e.g. less than 1 ha or with significant encumbrances that building areas are limited). Based on the assumptions detailed in the PSTS assessment, I did not observe such restrictions having an impact in this case.
2. *Whether the additional wastewater load from the subdivision will cause ground water mounding and raise the existing water table levels.*
   MAK response: Given the soil types noted on site and the density of development (less than one lot per hectare), I do not consider groundwater mounding due to private sewage systems to be a significant concern for this site. I base this on the following:
   - With lots larger than 1 ha, spacing between individual effluent dispersal areas becomes large in relation to the size of the individual effluent dispersal areas thus reducing the overall hydraulic loading to any underlying restricting soil horizons or shallow aquifers
   - In the westerly portion of the site (lots 1-6), soils are of medium texture (e.g. loam) and groundwater or seasonal saturation was not observed near the elevation of the potential dispersal areas. As such it is expected that vertical flow will be maintained for a significant depth. Expected effluent dispersal rates are also generally low (2.2 cm/day) and are less than the expected vertical hydraulic conductivity of the soil. As such, I have no significant concern regarding groundwater mounding for these lots.
   - In the easterly portion of the site (lots 6-10), possible seasonal saturation was observed in the soil (however, no actual groundwater was observed). In cases where shallow groundwater is noted, systems would be prescribed by the SOP to be mounds oriented with a long dimension across slope/gradient. Linear loading rates (which determine the cross-slope length of the mound) in the SOP are very conservative and result in very low loading rates across the slope. As such, I have no significant concern regarding groundwater mounding for these lots.
3. *The extent of any cumulative nutrient load from the subdivision on surface and groundwater quality.*

MAK response: From public data, approximate groundwater recharge in this area is 2 cm/yr or 2,468 m^3/yr for the 12.33 ha subdivision area. Given 1.0 m^3 average daily sewage generation [3650 m^3/yr] and 40 mg/L nitrate (146 kg/yr) we have a concentration of 23 mg/L – which is greater than 10 mg/L and may indicate a potential concern. However, as the area is subject to irrigation (all lots have Taber Irrigation District [TID] turnouts), and assuming a very conservative rate of irrigation (say ½" [1 cm] per week for 20 weeks or 31,000 m^3/yr) we have a nitrate concentration of 3.9 mg/L which is less than the maximum acceptable of 10 mg/L. This is a very rudimentary estimate that does not account for such factors as plant uptake, soil denitrification, dilution in soil pore space, and others which would further reduce the amount or dilute the nutrient concentration. Additionally, development in the surrounding quarter-sections is relatively sparse (4.8 lots per quarter) giving a nitrate concentration of 4.7 mg/L over the 582 ha [1440 acres] *not* including irrigation, seepage from Horsefly Lake and other factors which would result in more dilution.
As to surface water, there is unlikely to be any effluent directly entering the surface water due to a properly functioning private sewage system as all effluent is absorbed by the unsaturated soil. The only significant surface water is Horsefly Lake which is an irrigation reservoir receiving drainage from a large upstream agricultural watershed as well as input from supply canals and has equally significant outflows to the TID's downstream canals (it is not endorheic). Any additional nutrient load which might result from this development (i.e. due to shallow groundwater infiltration) is exceedingly small in comparison to both the lake's volume and the flow and nutrient load in the water flowing through the lake. As such, I do not have a concern regarding nutrient loading in this subdivision nor its cumulative impacts.

I trust the above addresses the municipality's concerns. If you have any further questions please contact me.

Yours truly,
OSPREY ENGINEERING INC.
Association of Professional Engineers and Geoscientists of Alberta Permit to Practice No. P10743

PROFESSIONAL ENGINEER ALBERTA
MICHAEL A. KITCHEN
2016-06-17

Michael A. Kitchen, P.Eng.
President

MAK/

cc: Tom Rodwell – 909498 Alberta Ltd.
File

Countrylane Estates

Area Structure Plan and Land Use Bylaw Amendment

South Portion of SW ¼ 21-9-16-4

Prepared by:
ISL Engineering and Land Services Ltd.
416B Stafford Drive South — 403 327.3755 tel
Lethbridge, AB, Canada T1J 2L2 — 403 327.3454 fax

ISL Project Number:
26483

Date:
October 2016

#1, 6325 – 12 Street SE Calgary, AB T2H 2K1 T: 403.254.0544 F: 403.254.9186

Our Reference: 26483

Municipal District of Taber
4900B 50th Street
Taber, Alberta. T1G 1T2

Attention: Mr. Jack Dunsmore
Director of Planning and Infrastructure

Dear Mr. Dunsmore:

Reference: Countrylane Estates
Area Structure Plan and Land Use Bylaw Amendment
South Portion of SW ¼ 21-9-16-4

The attached Area Structure Plan and Land Use Bylaw Amendment application have been prepared in support of a proposed development which would create ten country residential lots as an extension of similar existing development.

We also enclose a cheque in the amount of $500.00, being the required application fee.

We trust that this application is in order. However, please do not hesitate to contact the undersigned at (403) 327-3755 if you have any questions.

Sincerely,

ISL ENGINEERING AND LAND SERVICES LTD.

Evan Abramenko
Project Manager
eabremnko@islengineering.com

c. Arne Gjerlaug, Manager, ISL
Sue Paton, Planning Manager, ISL

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1.0 Introduction

1.1 Purpose of the Plan

The purpose of the Area Structure Plan ASP is to provide a framework for future development of a portion of SW ¼ 21-9-16-4 in the Municipal District of Taber. The Plan provides direction for land use, subdivision and development decisions by establishing a conceptual design that is consistent with the existing country residential development in this area.

1.2 Vision

The Plan is a logical extension of existing country residential development to the north and provides for the development of 10 additional residential lots. Access is provided from the extension of existing public roadways.

The proposed development is consistent with adjacent development of country residential homes and is sufficiently set back from the natural areas associated with Horsefly Lake as to have a negligible impact on wildlife habitats and ecological reserves.

1.3 Policy Context

The ASP is consistent with policies in the MD of Taber Municipal Development Plan (MDP) (Bylaw #1856/2013) and proposes an amendment to the Land Use Bylaw (Bylaw #1855/2013).

1.4 Community Consultation

Being Bylaws of the Municipal District of Taber, the Area Structure Plan and the Land Use Amendment will require appropriate advertising as required by the Municipal Government Act as well as a Public Hearing prior to Council's decision.

2.0 Development Considerations

2.1 Location

The ASP area consists of approximately 12.31 hectares located in the SW ¼ 21-9-16 W4, approximately 4 kilometers south of the Town of Taber as indicated on the Location Plan.

2.2 Site Constraints

The subject site is bordered by Horsefly Lake on the east with an irregular shaped boundary. The land consists of pasture and contains alkali patches throughout. It is not large enough to be considered economically viable as a farming operation and therefore the proposed development has no impact on agricultural operations.

A natural buffer has been established along the east boundary in order to accommodate stormwater in a manner that is sensitive to the natural riparian area along the west side of the Horsefly Lake Reservoir. Adjacent landowners will be subject to specific development constraints established by the Taber Irrigation District (TID).

3.0 Development Concept

3.1 Land Use

The subject lands are currently within the Rural Agricultural (RA) District.

This Area Structure Plan proposes the Land Use Bylaw be amended to Grouped Country Residential (GRC) District to accommodate the proposed development of ten single detached residences.

3.2 Access

Access and servicing for lots 3, 6, and 9 will be provided from the existing road along the North boundary of subject lands. Access and servicing for the remaining seven lots will be provided from an extension of approximately 300 metres to the existing roadway (Countrylane Blvd) as shown in the conceptual plan. The extension to the roadway will be constructed to MD standards similar to the existing roadway to which it connects. The new and existing subdivision would then be serviced by two short dead end roads with speeds limited to 30km per hour and minimal traffic load consisting of local traffic only.

In consideration of the existing gravel roads, extension of the Country Residential Roadway – Low Volume gravel road standard has been determined acceptable to serve the proposed development at this time. If landowners in the subdivision request upgrades to a paved road standard in the future, the costs of such upgrade would be borne by the landowners. Funding mechanisms such as a local improvement tax or other levy acceptable to the MD may be considered.

A 20 metre road right-of-way is dedicated between Lot 1 and Lot 1, Block 3, Plan 0813596 to serve future circulation needs. Construction of this portion of road right-of-way is not required at this time to serve the subdivision.

3.3 Trip Generation

The development proposes to add ten (10) country residential lots as an extension to a similar existing development. The proposed residential lots would access Range Road 16-4 via two existing intersections. Based on the assumption that drivers would utilize the most direct route to a residence the north intersection could provide access for three of the proposed residential lots and the south intersection could provide access for the remaining seven of the proposed residential lots.

Background traffic counts were not completed for this trip generation assessment. From the perspective of available published traffic counts from Alberta Transportation the closest location is the intersection of Highway 3 and Range Road 16-4, however, the traffic volumes at this point also include commercial traffic related to Walmart, Tim Hortons, Coop Gas Bar and other adjacent and associated land uses. Based on the traffic counts at the intersection of Highway 3 and Range Road 16-4 the background two way traffic volumes on Range Road 16-4 at the Countrylane Estates accesses are expected to be less than 200 vehicles per hour for both the AM Peak and PM Peak hours with an expected AADT less than 2000 vehicles per day.

The Institute of Transportation Engineers (ITE) Trip Generation Manual identifies the following trip rates for single family residential:

- AM Peak Trip Generation is approximately 0.75 trips per dwelling unit
- PM Peak Trip Generation is approximately 1.00 trips per dwelling unit
- Daily Trip Generation is approximately 9.52 trips per dwelling unit

The resulting traffic generated by Countrylane Estates is, therefore, ten (10) vehicles per hour or less for the peak hours and roughly 100 vehicles per day.

3.4 Corner Lot Setbacks

Lots 1, 2 & 3 are bordered by Countrylane Road and Countrylane Crossings road. Both roads are short, low volume, low speed roads with a posted speed limit of 30km per hour. Countrylane Crossings road terminates in tee intersections with stop signs at either end. A 25 foot setback shall be used on those corner lots within the subdivision. Nothing shall be erected, placed, planted or allowed to grow in such a manner as to materially impede the vision between a height of 3 and 10 feet above the center-line grades of the intersecting streets in the area bounded by the property lines of such corner lots and a line joining points along the said property line 25 feet from the point of intersection.

3.5 Servicing

Stormwater Management

Stormwater will be managed overland through a network of ditches and culverts within the road right of way, eventually out falling into Horsefly Lake Reservoir.

- Lots 3, 6 & 9 drain northeast towards the existing ditch on the south side of Countrylane Estates.
- Lots 2, 5 & 8 drain southeast towards the proposed ditch on the north side of the proposed new roadway.
- Lots 1, 4, & 7 drain northeast towards the proposed ditch on the south side of the proposed new roadway.
- Lot 10 drains overland to the natural riparian area.

Owners of lots 8,9,10 will be advised of the existence of the TID lands bordering their properties. A natural riparian area has been established to act as filtration for stormwater consisting of an approximately 20 metre wide fenced off area running east from each roadway connecting to a fenced off area running north-south along the west side of Horsefly Reservoir. A 35 metre buffer area between the property line and the north-south fenced natural riparian has been established and is available for limited use by the adjacent land owner under the terms set forth by the TID including but not limited to:

- the TID land may not be landscaped,
- no permanent structures will be allowed on the TID land,
- the use of fertilizers, pesticides are not allowed on the TID land, and

- land owners adjoining the TID land are responsible for the maintenance and preservation of the adjoining land including mowing of the buffer area and maintaining of fences or other infrastructure

The roadside ditches form a part of the network used for stormwater drainage and as such no alterations, modifications or changes to the system are allowed without proper approval. All parts of the system used for stormwater management within the development and on adjacent TID lands are the responsibility of the adjacent lot owners and the residents of the development. The MD of Taber and the Taber Irrigation District accepts no responsibility for the maintenance or upkeep of the stormwater management system.

Water

No domestic water delivery system or infrastructure will be provided. Supply and storage of domestic and potable water shall be the responsibility of each lot owner, utilizing cisterns, water hauling and water storage systems as lot owners deem necessary at their own expense.

A raw water line will be in place to deliver irrigation water to each lot. Each lot owner will be required to enter into a water use agreement with the TID for use of the water. The TID's responsibility will end at the turnout and each lot owner will retain a fractional ownership of the line beyond that. No further altercations to the delivery system will be allowed unless approved by the developer or his designate. Each lot owner will be responsible to maintain the integrity of the system within the boundaries of their property and for any cost incurred as a result of actions by the lot owner. Alterations to the line will not be permitted without the consent of the developer.

Sanitary Sewer

A Level 3 septic study for the proposed 10 lots was conducted by Osprey Engineering Inc. in January 2015. Osprey considers septic fields to be acceptable and feasible.

ISL retained Park Enterprises Ltd. to conduct a thorough review of the Osprey Engineering report, Park Enterprises reviewed the report and concluded that the evidence provided in the report appears to be adequate to handle a private sewage system and all soil layers appear to be adequate.

Each dwelling will require an approved septic system and has been tested to verify the viability of septic systems, however the requirements of individual fields may vary based on location and size. The final design and installation shall be provided by a licensed, qualified technician and must conform to all government standards and regulations.

The possible dwelling locations and treatment field footprint identified on the Site Assessment diagrams 5-8 in the Level 3 PSTS Assessment are illustrative only and are not representative of approved building envelopes. Approval of dwelling location is subject to the MD of Taber Land Use Bylaw development permit approval process. Location of treatment fields is subject to relevant provincial legislation and Alberta Safety Codes approvals.

Other Utilities

All lots will be pre-serviced with underground power and natural gas by way of utility rights-of-way.

There will be no pre-servicing for telephone.

If Telus service is requested, it would be accommodated in a multi-use trench along with Fortis.

3.6 Development Policies

Design Details

A maximum of one principal dwelling unit shall be allowed on each parcel.

Residential dwellings units may be manufactured or constructed on site. Dwellings shall be a minimum 1400 square feet on main level with an attached two car (or more) garage with a permanent foundation under the structure to which it is affixed.

Relocated houses may be allowed provided they are pre-approved by the developer or his assignees, subject to the discretion of the MD of Taber and provided that they are deemed to be similar in style, or will be brought up to similar standards of the existing houses in a pre-established time frame.

A maximum of one accessary building, not to exceed 2500 square feet, with a maximum roof height of 26 feet will be allowed and must be constructed on the site.

Exterior of houses and outbuildings shall be restricted to earth tones, greys and blacks. Other colors may be allowed at the discretion of the developer and must be pre-approved by the developer or his assignees

Roof line must consist of more than one peak with a minimum 4/12 pitch.

No single-wide mobile homes will be allowed.

The MD of Taber is not responsible for administering the design details addressing the minimum square footage of dwellings, attached garage requirements, type and style of dwellings, exterior finish of dwellings or roof line requirements.

Keeping of Animals

No animals, other than domestic pets, will be allowed.

Reserve Dedication

The dedication of reserve lands, as required by the Municipal Government Act, will be provided as cash-in-lieu.

Home Occupations

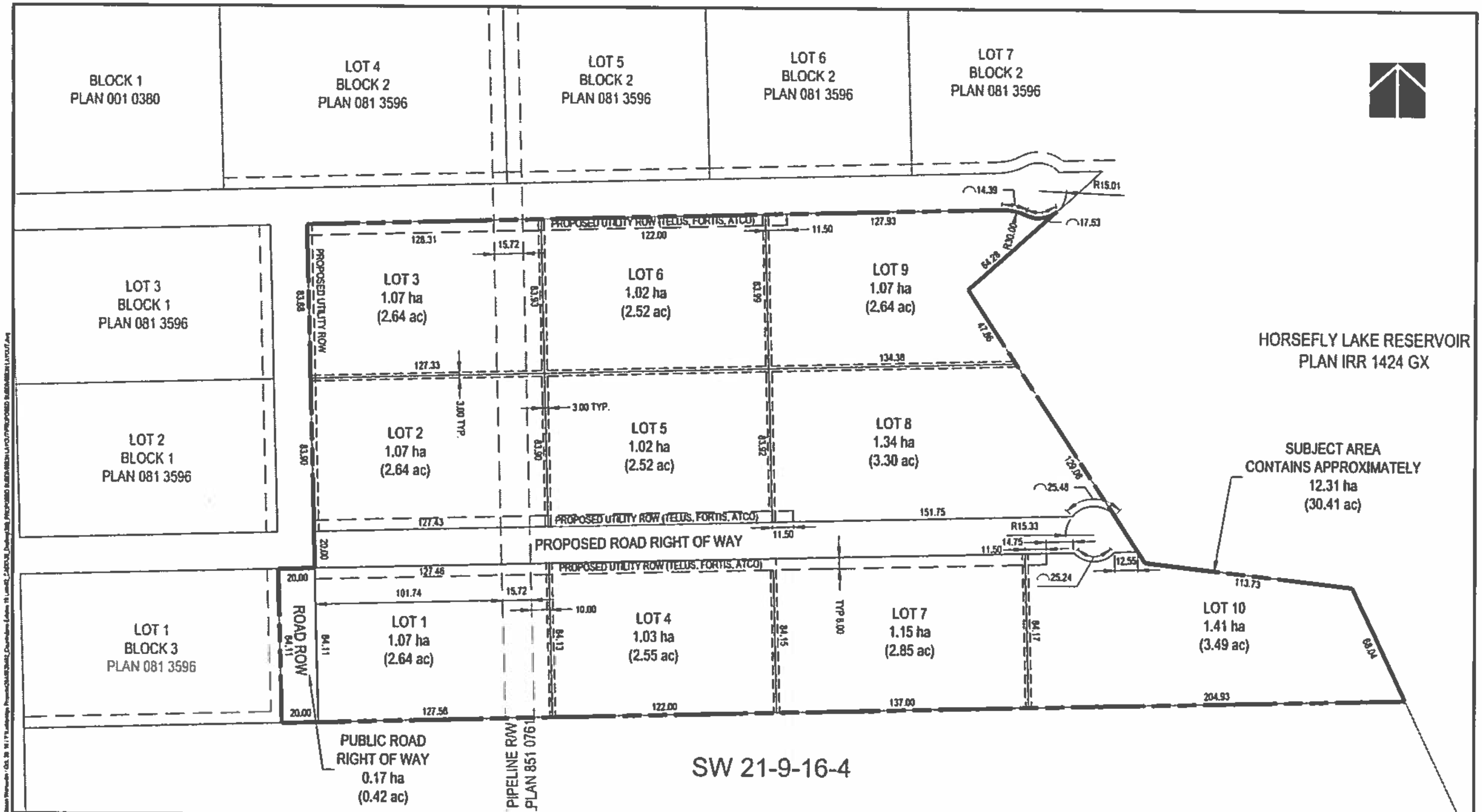
As outlined in the GCR District, a Home Occupation is a discretionary use and no commercial or industrial uses will be allowed.

Notification

As required by Section 5.1.1(v) of the MD of Taber Land Use Bylaw, all land owners will be advised that this is an agricultural area and will be subject to the associated odors, noises and traffic.

3.7 Development Phasing

The proposed Area Structure Plan represents a single phase of development and buildout will occur in response to market demand.



LEGEND:

SUBDIVISION BOUNDARY
PROPOSED PROPERTY BOUNDARY
PROPOSED UTILITY RIGHT OF WAY BOUNDARY
PROPOSED DRAINAGE EASEMENT BOUNDARY
EXISTING PROPERTY BOUNDARY
EXISTING UTILITY RIGHT OF WAY BOUNDARY

ISL Engineering and Land Services

COUNTRYLANE ESTATES 10 LOTS

HORZ 1:2000 0 20 40 60 80m

PROPOSED SUBDIVISION LAYOUT

2016/10/14

ISL Engineering and Land Services

Inspiring sustainable thinking

Memorandum

416B Stafford Drive South, Lethbridge, AB T1J 2L2 T: 403.327.3755 F: 403.327.3454

To:	**909498 Alberta Ltd.**	Date:	**August 5, 2016**
Attention:	**Tom Rodwell, President**	Project No.:	**26483**
Cc:	**Evan Abramenko, P.Tech.(Eng.); Arne Gjerlaug, P.L.(Eng.)**		
Reference:	**Countrylane Estates Stormwater Management Plan**		
From:	**Jason Warkentin, P.Eng.**		

1.0 Introduction

ISL Engineering and Land Services Ltd. (ISL) was retained by Tom Rodwell to provide the Civil Engineering Design services for a 10 lot residential rural development. The proposed development is located immediately west of Horsefly Reservoir in the M.D. of Taber, approximately 4 kms south of the Town of Taber. The proposed development is in the SW Quarter of Section 21-9-16-W4. The subject area of the parcel is approximately 12.31 ha (30.41 acres). A location plan showing the proposed subdivision is provided in Figure 1.

As part of the design process, a stormwater management plan is required to examine the impact of the proposed development on the existing drainage patterns in the area and the impact the adjacent Horsefly Reservoir.

The relative size and type of development will allow for minimal changes in the topography and drainage patterns in the area. This memo outlines the existing conditions, the post development conditions and provides a recommended stormwater management strategy.

2.0 Scope of Work

The following summarizes the scope of this project:

- Identify appropriate documents to outline area guidelines.
- Determine the existing drainage patterns.
- Determine the pre and post-deployment conditions.
- Describe the methodology to be used for stormwater runoff simulation.
- Establish design criteria in compliance with area guidelines.
- Identify input parameters.
- Review stormwater quality treatment options.
- Summarize results and recommendations.

3.0 Existing Site Conditions

The site consists of 12.31 ha and generally drains to the east into Horsefly Lake Reservoir. The highest point of the proposed development is located in the southwest corner of Lot 1. The lowest point of the development is located on the east side of Lot 9. There is a small natural swale that drains west to east along lots 3, 6 and 9. The area immediately adjacent to RGE RD 164 drains toward that road. It is assumed that RGE RD 164 acts as a barrier to flow from the west. Additionally, it is assumed that the areas north and south of the site drain toward the reservoir and that the site therefore receives no external flows.

The development area is currently vegetated with grasses and contains no structures. A vegetated riparian area is located between the east side of the development and Horsefly Reservoir. The reservoir is operated and administered by the Taber Irrigation District. ISL surveyed the water level at the geodetic elevation of 819.9m in October 2015.

Figure 1 shows the catchment areas and existing drainage patterns of the site.

4.0 Design Guidelines

The following sources were used in determining design parameters and modeling parameters for this memorandum:

- Stormwater Management Guidelines for the Province of Alberta – Alberta Environmental Protection – January 1999.
- Standards and Guidelines for Municipal Waterworks, Wastewater, and Storm Drainage Systems – Alberta Environment – January 2006.
- The City of Calgary Wastewater & Drainage – Stormwater Management & Design Manual – City of Calgary – December 2011.
- The City of Lethbridge – Design Standards - 2014

From these sources, the following guidelines were determined:

- Roadway ditches will be required to control surface flows and to convey the runoff to Horsefly Reservoir.
- Corrugated Steel Pipe culverts with a minimum size of 600mm shall be installed as necessary
- Overland surface depths and flows not to exceed the allowed depth-flow relationship specified by Alberta Environment

In addition, the following previous report was reviewed and the following bullet points apply to the new development:

Reference #1:

- – Irrigation and Stormwater Management Plan (Martin Geomatic Consultants Ltd., March 2008)
  - This report outlines drainage catchments for the previously developed 7 lots and recommendations, including a recommendation for a minimum culvert diameter of 600mm.
  - Lot grading should provide positive drainage away from structures, wells and wastewater disposal systems. Sites should be graded to prevent ponding of water in undesirable locations.
  - It is recommended that building footings be set a minimum 0.3m above the Full Supply Level of Horsefly Reservoir, 820.81m, or above the elevation recommended by a qualified geotechnical engineer (whichever is greater).

5.0 Pre-Development Runoff Conditions

To determine stormwater discharge rate limits, Water Survey of Canada stations in the area were compared and Bountiful Coulee Inflow near Cranford with a watershed of 43.2 km^2 was selected due to its location and years of available data.

Annual maximum flows were analyzed with HydroStat and 1.2 m^3/s was indicated as 1:100 year flow. The Comparative Basin Formula with a 0.8 exponent was then used to suggest limiting site flows to 11.0 L/s, a rate of 0.894L/s/ha.

6.0 Post-Development Runoff Conditions

To determine changes in runoff volume, the SCS Method was used. Geotechnical reports describes the soil as silty loam, which corresponds to Hydrological Soil Group B. The curve number pre-development was taken as 61, while the addition of the buildings and gravel road result in a combined curve number of 65. Initial abstraction was taken as 10% of soil storage. The change in land use is estimated to increase runoff by 750 m^3. This presumes that 8.5% of each lot is developed as hard surface (building/driveway), with the remainder being left as grassed.

The increased runoff will be managed by a network of roadway ditches and culverts that ultimately discharge overland into Horsefly Reservoir. The ditches will act as grassed swales that will reduce flow velocities and promote infiltration. A flow dissipation berm will be designed and constructed at the east end of the proposed roadway ditch to ensure laminar distributed sheet flow along the length of the berm. The sheet flow will contribute the stormwater evenly into the natural vegetated buffer area as it flows into the reservoir. Sheet flow from over the berm will have a mitigated flow rate in comparison to flow rates from a point-discharge, such as from an outlet pipe. The sheet flow will have a lower flow depth which results in lower flow velocity, which promotes contaminant filtration, stormwater infiltration, and reduced scour and erosion.

All overland flows will be compared to the Alberta Environment Permissible Depth for Submerged Objects to ensure the proposed flow regime falls within acceptable ranges.

Table 5.1 Alberta Environment Permissible Depth for Submerged Objects

Water Velocity (m/s)	Permissible Depth (m)
0.5	0.80
1.0	0.32
2.0	0.21
3.0	0.09

6.1 Natural Riparian Zone

There is a natural riparian zone between the east sides of lots 8, 9 and 10 that is owned by the Taber Irrigation District (TID). The developer and TID have an agreement that grants limited use by the adjacent landowner for a 35m buffer zone between the lot owner and the reservoir. A copy of the draft agreement between the developer and TID is attached.

The riparian zone identified above will act as natural treatment for the stormwater runoff produced by the development. The riparian zone will be maintained by the adjacent lot owner to ensure that the existing vegetation remains in place. The following paragraphs are from the Stormwater Management Guidelines for the Province of Alberta, January 1999.

"6.4.3.4 Effectiveness"

"Grassed swales have been reported by many agencies in Canada and the U.S. to provide effective quantity and quality control of urban and rural runoff. Grassed swales must be properly maintained to ensure effectiveness and prevent ponding of water. If water is allowed to pond in the swale, wetland vegetation may grow and mosquitoes may become a problem".

"6.4.3.5 Water Quantity"

"Grassed swales infiltrate stormwater and reduce the end-of-pipe discharge volumes normally associated with curb and gutter controls. Significant amounts (up to 95 percent) of runoff reduction are reported in the literature pertaining to grassed swales. Grassed swales also significantly lower peak discharge rates associated with frequent storms. The changes in runoff discharge volumes and rates also reduce erosion in downstream systems".

"6.4.3.6 Water Quality"

"Grassed swales can be effective in filtering and detaining stormwater runoff from a variety of catchment types. Grassed swales are effective for stormwater treatment as long as minimum channel slope is maintained and a wide bottom width is provided. Many stormwater contaminant particulates are effectively filtered by grassed swales including heavy metals, COD, nitrate nitrogen, ammonia nitrogen, and suspended solids. Other contaminant nutrients such as organic nitrogen, phosphorus, and bacteria have been reported to bypass grass swales".

7.0 Stormwater Management Plan

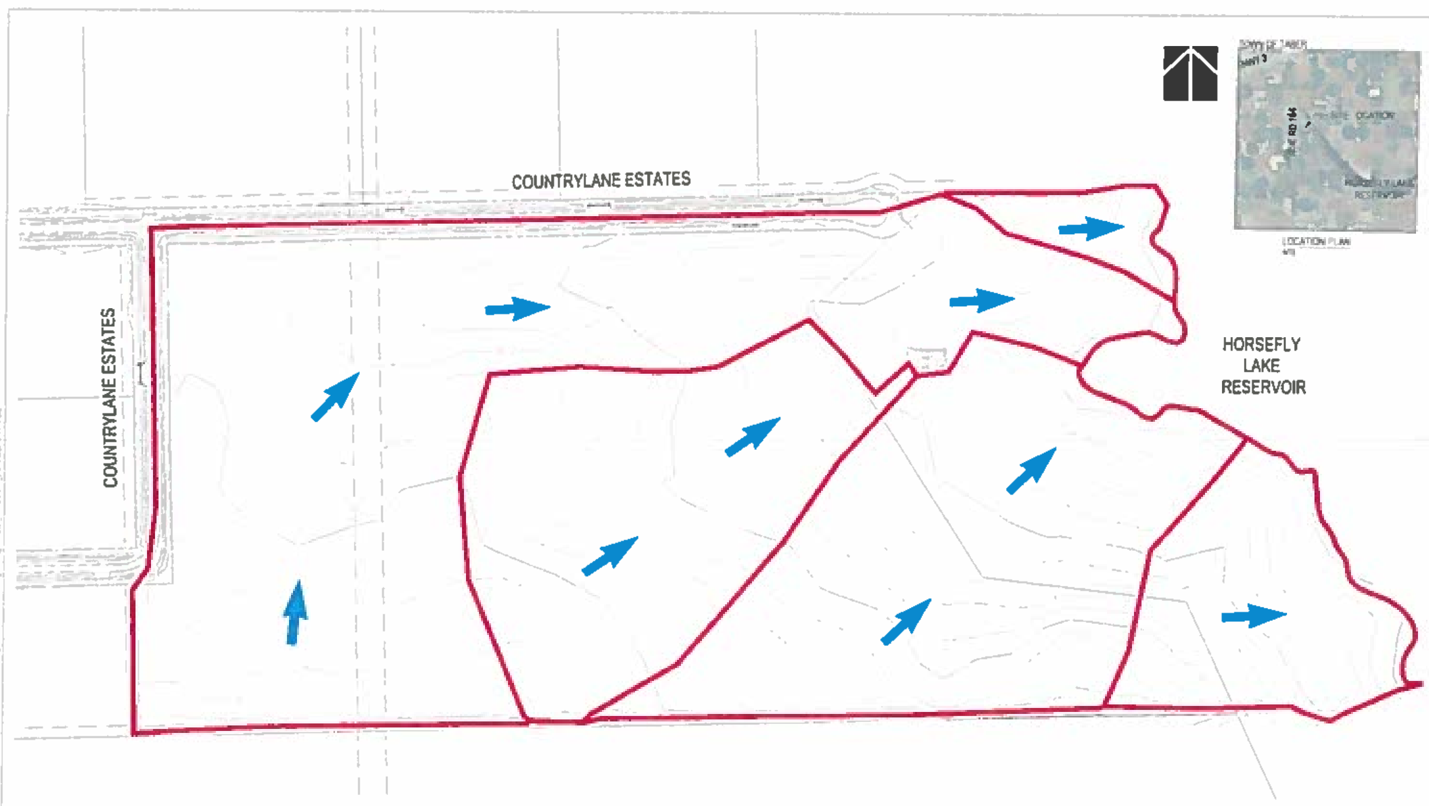
Stormwater runoff from the proposed development will be managed through a network of ditches and culverts along the roadways. A weir is proposed at the east end of the proposed roadway to ensure even sheet flow into the riparian zone. The post-development runoff concept is shown on Figure 2.

The typical cross-section of the roadway/ditch will be the Low Volume Country Residential Roadway as per Figure 1 of the Municipal District of Taber Roadway Standards for Multi-Lot Subdivisions, attached to this document. The top road width will be 7 meters with a minimum 0.75m deep ditch (ditch may be designed as a flat bottom, not the V shape shown in the detail). The minimum culvert size required will be 600mm diameter.

In general, a slope of 10% for a distance of 1.5 meters from house foundations and structures is recommended. Drainage from lots 3, 6, and 9 will be conveyed to the north. Interception swales 0.3m in depth with a 1.0m flat bottom as shown on Figure 2 will be created on lot lines to direct drainage along property lines where it will discharge into the road ditch. Lots 2, 5, and 8 will direct drainage to the north property line, then along the swale on the east-west property line that will flow east to the flow dissipation berm and into the reservoir. Drainage from lots 1, 4, and 7 will direct drainage north to the road ditch, with interception swales along property lines that will flow to the road ditch. Interception swales will require a registered utility easement that will be listed on the respective property titles.

The impervious area on each lot is estimated at 8.5%. Development of impervious areas in excess of 8.5% may require lot specific stormwater management.

It is noted that lot 10 may drain into the unimproved grassed area prior to entering the natural riparian area for filtration, before discharging into the reservoir.



LEGEND:

CATCHMENT BOUNDARY

EXISTING CONTOURS

EXISTING OVERLAND FLOW

ISL Engineering and Land Services

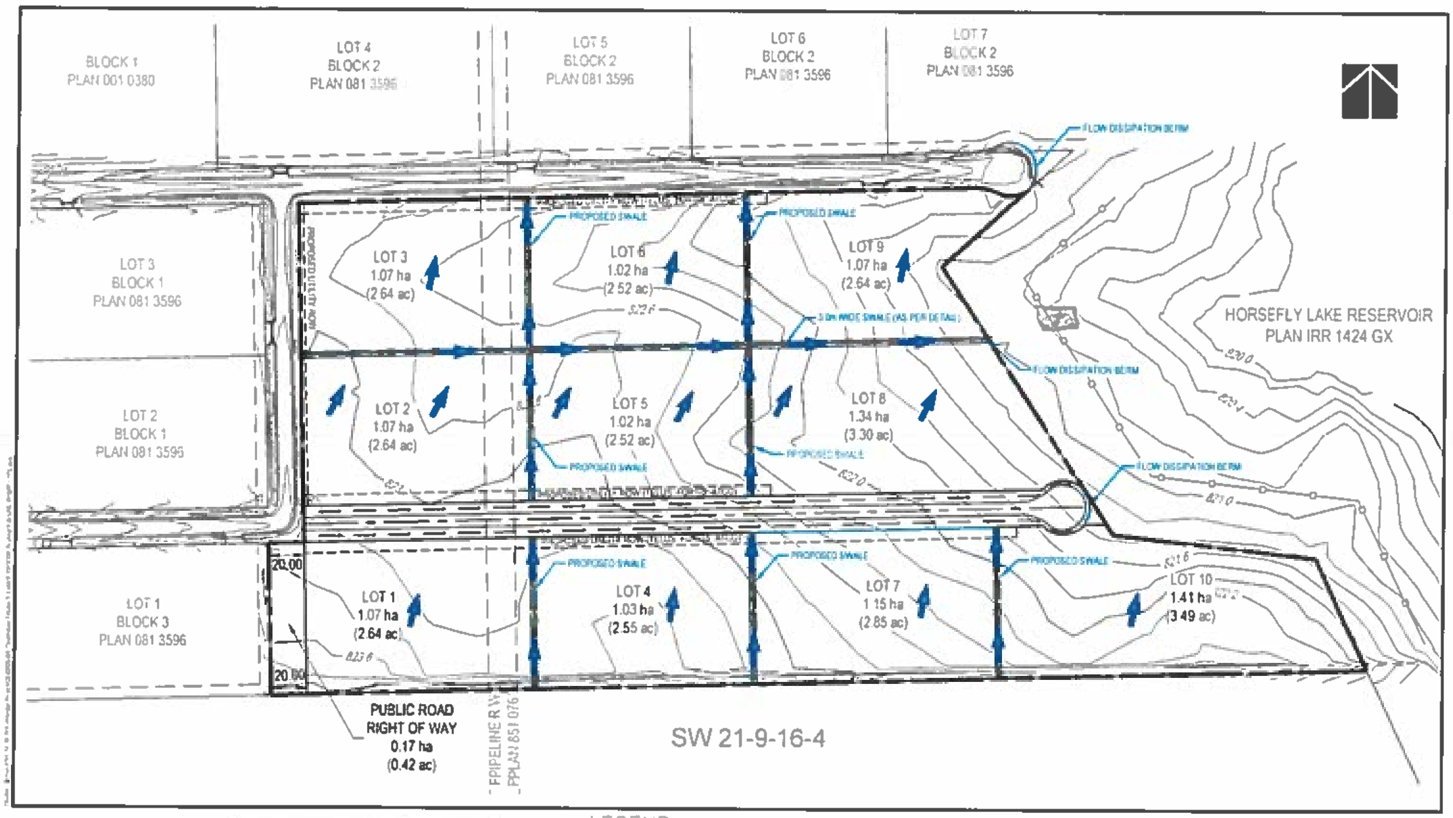
HORZ 0 20 40 60 80m
1:2000

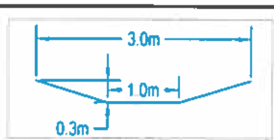
COUNTRYLANE ESTATES 10 LOTS

STORMWATER MANAGEMENT

EXISTING CATCHMENT

FIGURE 1





PROPOSED SWALE DETAIL

LEGEND:

- CATCHMENT BOUNDARY
- EXISTING CONTOURS
- PROPOSED OVERLAND FLOW
- DITCH BOTTOM FLOW DIRECTION
- ROAD CENTERLINE

HORZ 0 20 40 60 80m
1:2000

ISL Engineering and Land Services

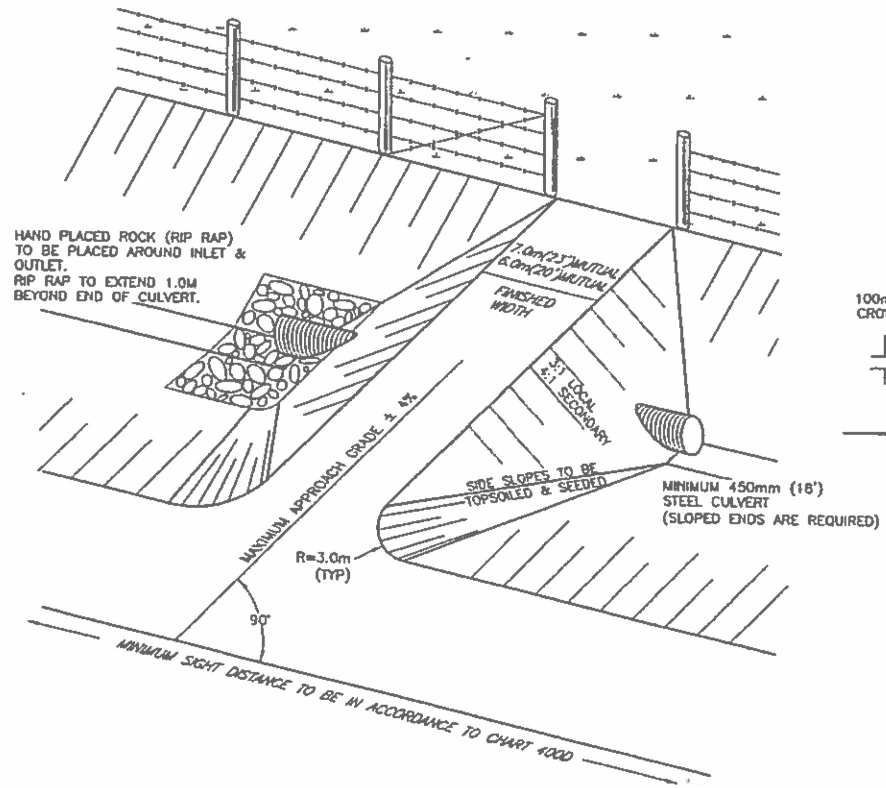
COUNTRYLANE ESTATES 10 LOTS

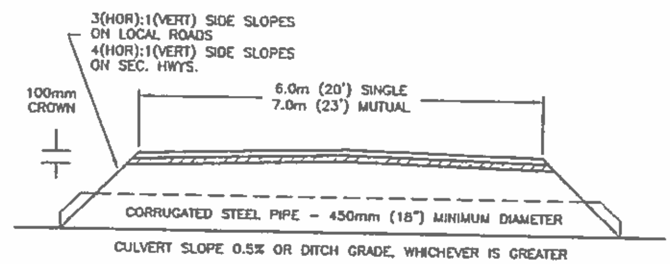
STORMWATER MANAGEMENT

PROPOSED CATCHMENT

FIGURE 2

2016/10/14



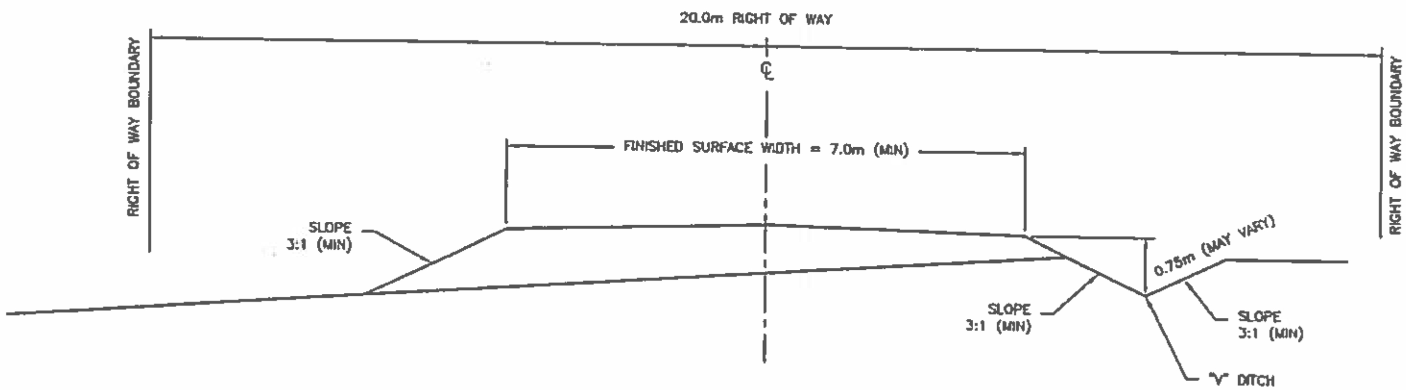


TYPICAL
ROAD APPROACH

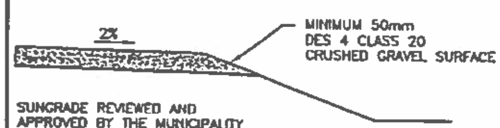
Municipal District of Taber

DATE:	SCALE:	DWN BY:	FIGURE:
APRIL 2010	NTS	AMEC	5

NOTES:
- BACKSLOPING AGREEMENT OR EXTRA ROW REQUIRED MUST BE OBTAINED BY THE DEVELOPER AT THEIR SOLE COST
- SLOPES MAY BE INCREASED OR DECREASED UNDER EXCEPTIONAL CIRCUMSTANCES IF APPROVED BY THE MUNICIPALITY IN WRITING
- ALL DITCH SLOPES AND DITCH BOTTOMS REQUIRE TOPSOIL DRESSING AND SEEDING
- TO BE BUILT WITH GOOD ENGINEERING PRACTICES
- FINAL ACCEPTANCE OF THE ROAD MAY REQUIRE COUNCIL'S DIRECTION



DETAIL



COUNTRY RESIDENTIAL ROADWAY
LOW VOLUME

Municipal District of Taber

DATE:	SCALE:	DWN BY:	FIGURE:
APRIL 2010	NTS	AMEC	1

WATER CONVEYANCE AGREEMENT
(Removal of Storm, Waste or Drainage Water)
(Irrigation District Act - Section 21(2)(b))

BETWEEN

TABER IRRIGATION DISTRICT, hereinafter referred to as the *"District"*

AND

COUNTRYLANE ESTATES (TOM RODWELL),
hereinafter referred to as the ***"Applicant"***

WHEREAS the Applicant has applied to the District to enter into a water conveyance agreement to remove drainage water, stormwater or wastewater from:

Proposed lots 1 through 10 of the Rodwell Subdivision (Rem. N ½ SW 21-9-16-4) as shown on enclosed Drawing/Figure No. 4 [SHOULD WE ADD IN THE EXISTING SUBDIVISION AS WELL? THIS WOULD COVER YOU FOR THE WHOLE DEVELOPMENT. THESE WATERS MIX AT THE END OF THE NORTH ROAD ANYWAY] and,

WHEREAS:

A. The District is the owner and operator of a system of water storage, distribution and drainage conveyance infrastructure (the "Irrigation Works") under the *Water Act* R.S.A. 2000, Chapter W-3 (the "***Water Act***") and the *Irrigation Districts Act* R.S.A. 2000, Chapter I-11 (the "**Irrigation Districts Act**");
B. The District may enter into a Water Conveyance Agreement authorizing the removal of drainage water, stormwater or wastewater from an area as per Section 21(1)(b) of the Irrigation Districts Act;
C. The Applicant proposes to alter the volume, timing and/or rate of flow from the above described area to the Irrigation Works through a collection, conveyance and outfall system (the "Discharge Works");
D. The Parties wish to work together in accordance with the provisions of this Agreement;

NOW THEREFORE in consideration of the mutual covenants and agreements contained in this agreement, the District does hereby grant permission to discharge to the Irrigation Works subject to the terms and conditions hereinafter set out:

1. The volume of water under this agreement is limited to runoff generated within the

boundaries of the Rodwell Development described above [SHOULD WE ADD IN THE EXISTING SUBDIVISION AS WELL? THIS WOULD COVER YOU FOR THE WHOLE DEVELOPMENT. THESE WATERS MIX AT THE END OF THE NORTH ROAD ANYWAY]

2. The outfalls for the Discharge Works are to be located on and adjacent to the west boundary of TID property west of the west shoreline of Horsefly Reservoir within SW 21-9-16-4, and includes the discharge path on TID land from the edge of the property to the edge of water.
3. Authorizations and/or Approvals under applicable Acts, namely the ***Water Act***, and the ***Environmental Protection and Enhancement Act,*** are to be obtained from Alberta Environment and Parks for the proposed work and a copy provided to TID.
4. The Applicant is responsible for securing all rights-of-way, easements and authorities for the provision of the Discharge Works.
5. The Applicant is responsible for all costs to supply, install and maintain the Discharge Works including any costs associated with subsequent alterations, additions or maintenance of the Irrigation Works, to meet the standards set out in the storm water management plan.
6. The outfalls and any alterations and additions to the Irrigation Works are to be designed and constructed in accordance with District specifications and subject to District approval.
7. The proponent is required to provide plans and documents acceptable to TID showing the natural drainage/hydrology and proposed Discharge works and outfalls.
8. The Discharge Works and outfalls are to include design elements to filter, settle or otherwise remove much of the sediment from entering Horsefly Reservoir both during construction and following commissioning. The design elements may include any combination of temporary or permanent catch basins/sediment traps, settling ponds, vegetated swales, buffers and silt fences. The Applicant is encouraged to select elements that maximize effectiveness while allowing for ease of regular maintenance. Specifically, TID has approved in principle, permanent low gradient roadside vegetated swales terminating in a catchment berm and vegetated overflow weir system at the east end of each road. The weir is to be designed and maintained to discharge laminar distributed sheet flow along the length of the weir and into the upland and riparian zone during a 1:100 year design storm. The conditions of the Area Structure Plan, to be registered against titles, is to include protection of the width of the design discharge path of the outfall structure from mowing, fertilizers, pesticides, cultivation, landscaping, structures or other disturbance.
9. The TID District Superintendent (403-330-6705), is to be notified 48 hours prior to start of installation of the Discharge Works, or any construction or maintenance activity on or adjacent to the Irrigation Works.
10. The Applicant will comply with all statutes and regulations applicable to the privileges hereby granted, and with all by-laws of the District regulating the inlet of water into the Irrigation Works.

11. The Applicant is responsible for all costs to modify the outfall if requested to do so by the District. Modifications would be limited to those needed to ensure the outfall meets the performance measures listed in item 8 above. The District will provide the Applicant a minimum of 30 days prior written notice before the work is required to be completed.
12. The Applicant agrees to allow District staff, or assigned representative, access to any water works of the Applicant for the purpose of inspection, water measurement and water sampling.
13. The Applicant agrees to pay for the water quality laboratory analysis costs associated with up to four (4) samples taken for each sampled release event for a period of three (3) years, ending October 31st of the third year following initiation of this agreement. The sampling locations will be on the downstream side of the Discharge Works (1 for each weir) and the end of each outfall (1 for each outfall). Samples will be taken only when there is sufficient flow to justify both a runoff event sample for other sites associated with the TID water quality monitoring program, and also independently for each of the four locations within this agreement. The results of the analysis is to be used by TID, and assigned agencies, for research purposes only with all identifying information removed. The results are for information and will not be associated with any condition within this agreement.
14. The Applicant will be assessed a one-time fee of $250.00. This agreement will not be in effect until such payment is received by the District.
15. This agreement may not be transferred or assigned.
16. Should the Applicant be in default of any of the covenants herein provided, the District may forthwith, upon 10 days' notice to the Applicant, reduce or terminate the acceptance of water from the Applicant until such time as the Applicant has remedied the default hereunder. Where the default constitutes damage or requires maintenance of the Discharge Works, TID reserves the right, under same notice, to effect the necessary repairs and charge the cost of such repairs to the Applicant.

IN WITNESS OF THIS AGREEMENT, THE PARTIES HEREUNTO SET THEIR HANDS

AND SEALS this ____________ day of ________________________, 20 ___.

TABER IRRIGATION DISTRICT

______________________________	______________________________
Christopher W. Gallagher District Manager	Anthony J. Machacek Chair, Board of Directors

WITNESS

APPLICANT

WITNESS

Consent of Owner if not the Applicant