# SASKATCHEWAN LAND SURVEYORS ASSOCIATION SASKATCHEWAN LAND SURVEYORS EXAMINATION 

## Question 1

Winter Resources Ltd. has requested a survey be conducted and a plan prepared for a proposed oil well (directional drill) with surface in SW 7-49-24-3, \& Target / Bottom Hole in SE 12-49-25-3

Using information provided in Appendix A (listed below - i to iii), answer the following questions.
(i) Field Note Sketch (1 Page)
(ii) Coordinate List derived from RTK measurements (Local Coordinates) - assume check measurements have been made
(iii) Ministers Order MRO 381/12 PO6 (2 Pages)
(1) 1. What Provincial Government agency has the mandate to ensure full and responsible development of Saskatchewan's oil and gas resources?
(1) 2. Are there regulatory / legislative requirements for placing monuments at oil \& gas wellsite lease corners?
(2) 3. What are the requirements for restoring or re-establishing survey monuments while conducting surveys for oil \& gas wellsites and related facilities?
(6) 4. Proposed local target coordinates (Forest Bank Sparky Pool) are 701.52 m N of S and 65.70 m W of E . The proposed drilling depth from surface to target is 785 m (vertical drilling distance), target to bottom hole is an additional 79 m (vertical drilling difference). Compute the direction and distance from the well center (surface) to the target, and from the target to the bottom hole.
(4) 5. Compute the rectangular coordinates from well center (surface) to target and bottom hole.
(4) 6. To establish elevations, field measurements held the elevation at ISS monument 1 (published elevation $=650.691 \mathrm{~m}$ ) fixed, and checked to ISS monument 2 (published elevation = 620.592). Compute the vertical closure required. Does this field survey meet the minimum requirement for vertical closure?
(4) 7. Provide the full well name.
(3) 8. What is a Ministers Order, according to The Oil and Gas Conservation Act?
(2) 9. Draw and dimension the oil target for the drainage unit the target lands in, as defined in Ministers Order MRO 381/12 PO6. Include dimensions to section boundaries. What is the distance from the target to the oil target boundaries?
(2) 10. If this well is drilled, the operator will be required to prepare an as-drilled survey plan. How long does the operator have to complete this task (under the Oil and Gas Conservation Regulations, 2012)?

## Question 2

The sketch below shows evidence found and measurements taken to define the boundaries of Section 4, Township.3, Range. 1 W2M. The township plat is also included in Appendix B.
(6) 1. Sketch the LSD boundaries (SW $1 / 44$ ) and dimensions on the sketch
(4) 2. Add the posts that are required to be placed in the event that the survey you are conducting (subdivision) requires the establishment of all of the LSD boundaries of SW 4-3-1-2.
(1) 3. If one of the monuments required in question 2(2) cannot be placed due to the location of a power pole, what do you do?


## Question 3

(5) 1. What is ISC's policy regarding the extent of work an SLS can do on common boundaries defining provincial and federal lands?
(4) 3. What is the Treaty Land Entitlement Framework Agreement? (Bonus Question)

## Question 4

(2) 1. What are the goals of ISC's CAD File and georeferencing specifications?
(1) 2. What datum is to be used for the above mentioned georeferencing specifications?
(4) 3. Outline field procedures/measurements that would satisfy ISC's georeferencing requirements.

## Question 5

Your client, Angus Street Developments, is constructing an attached garage on an existing residence in Regina (Lot 11 Block 567, Plan No 101161303 Extension 3, as described on Certificate of Title 88R29038, description 3). The plans for the new garage have been prepared by an architect and the City of Regina Development Appeals Board has approved the proposed design. The garage deviates from standard setback requirements to the back lane for an attached garage. You have been hired to establish the corners of the lot that the new garage will be situated on, layout the corners of the new garage, and set grades for construction of the garage.

Using information provided in Appendix C (listed below, i to v), answer the following questions.
i. Field Notes (2 pages)
ii. Coordinate list derived from RTK GPS and total station measurements (local coordinates). Assume check measurements have been made
iii. Plans AP3598 and 101161303
iv. Title for Lot 11 Block 567, Plan No 101161303
v. Garage Plans (4 pages)
(6) 1. Establish the 4 lot corners (Lot 11 Block 567, Plan No 101161303). Show how you establish the corners on a separate sketch.
(6) 2. Establish the corners of the proposed garage walls as shown on the plans (display as coordinates or layout from a nearby control spike). Comment on any discrepancies between what has been proposed by the architect and how the proposed garage fits with the measured position of the existing residence and the lot boundaries.
(3) 3. Piles are required for this addition. You are required to set out grades for the top of the piles. How would you accomplish this, and what is the datum that needs to be held to establish the top of pile elevations?
(6) 4. The City of Regina Planning and Development Division has requested a Real Property Report (RPR) be submitted to verify that the attached garage has been built according to the approved plans. What information is required to be shown on the RPR?
(2) 5. What are the requirements for recording Real Property Reports as outlined in Article XIII, Section 2 of the Bylaws of the Saskatchewan Land Surveyors Association?

## Question 6

You have been hired to subdivide 6-20-17-2. You are at a stage in the subdivision process where you must complete the field survey and post the subdivision. The field notes show the approved subdivision configuration.

Using information provided in Appendix D (listed below, i to iv), answer the following question.
i. Field Notes (1 page)
ii. Coordinate list derived from RTK GPS and total station measurements (local coordinates). Assume check measurements have been made
iii. Plan 82R34437
iv. Township Plats (Twp 20, Rge 17 W2M)
(8) Establish and dimension (angles and distances) the section and subdivision boundaries on a separate sketch, including found monuments and placed posts.

## Question 7

You have been hired to subdivide SW 29-22-29-3 (Northerly 150 m of $1 / 4$ ). You are at a stage in the subdivision process where you must complete the field survey and post the subdivision.

Using information provided in Appendix E (listed below, i to iii), answer the following questions.
i. Field Note Sketch (1 page)
ii. Coordinate list derived from RTK GPS and total station measurements (local coordinates). Assume check measurements have been made
iii. Township Plat (Twp 22, Rge. 29 W3M)
(10) 1. Establish and dimension (angles and distances) the section and subdivision boundaries on a separate sketch, including found monuments and placed posts / marker posts.
(2) 2. What notations would need to be on the final plan at $N 1 / 429$ and NE 29?

## Question 8

(2) The Winter 2015 SLSA Corner Post (Quarterly Newsletter of the Saskatchewan Land Surveyors Association) contains an article regarding changes to the PSC sponsored Professional Liability Insurance Program (PLIP). What has changed?

## Question 9

(3) Discuss accuracy requirements as outlined in The Land Surveys Regulations and ISC Policy GO06/002

Appendix A Question 1


## Appendix A Question 1

Question \#1

| Point \# | Northing (m) | Easting (m) | Elevation (m) |  |
| ---: | ---: | ---: | ---: | ---: |
| 1 | -2005.754 | 2915.224 | 650.69 | ISS 1-Control |
| 2 | 7811.306 | 2915.224 | 621.01 | ISS 2 - Control |
| 1000 | 447.427 | 2917.811 | 640.99 | FIP E_1/4_12 |
| 1001 | -375.754 | 2915.224 | 645.23 | FIP NE_1-49-25 |
| 1002 | -375.833 | 2113.046 | 640.12 | FIP N_1/4_1, Mr. |
| 1003 | -371.657 | 3738.617 | 635.21 | FIP N_1/4_6, Mr. |
| 1004 | 446.31 | 4545.927 | 640.99 | FIP E_1/4_7 |
| 1005 | 1252.277 | 2117.962 | 641.56 | FIP N_1/4_12 |
| 1006 | 448.495 | 1289.694 | 642.65 | FIP E_1/4_11 |
| 5000 | 397.372 | 2997.771 | 640.22 | W/C |
| 5001 | 447.331 | 3057.928 | 643.01 | NE Lease Corner - PI Spike |
| 5002 | 337.331 | 3057.582 | 643.21 | SE Lease Corner - PI Spike |
| 5003 | 337.414 | 2937.582 | 639.41 | SW Lease Corner - PI Spike |
| 5004 | 447.413 | 2937.928 | 639.29 | NW Lease Corner - PI Spike |

## Appendix A Question 1

MINISTER'S ORDER
MRO 381/12 PO 6
Under The Oil and Gas Conservation Act
Forest Bank Waseca Sand Pool
Forest Bank Sparky Sand Pool
Forest Bank Mannville Sands Pool
Pursuant to section 17 of The Oil and Gas Conservation Act, MRO 967/10 PO 18, dated November 10,2010, is rescinded and the following provisions shall apply to the drilling of, and production of oil and gas from, oil wells in the Forest Bank Waseca Sand Pool, Forest Bank Sparky Sand Pool and Forest Bank Mannville Sands Pool effective June 1, 2012.

1. The drainage unit shall be one legal subdivision except for the area described in clauses 2(d) and 2(e) where the drainage unit shall be the north half or the south half of a legal subdivision.
2. The target area shall be a 100 m square located 50 m from the south and west sides of the drainage unit except for the following lands lying West of the Third Meridian:
(a) In Township 48, Range 24: Legal subdivisions 9 and 12 to 15 of Section 32;
the target area shall be a 100 m square located 50 m from the south and east sides of the drainage unit.
(b) In Township 49, Range 24: Sections 7 and 18;

In Township 49, Range 25: Legal subdivisions 3 to 6, 8, 9, 12 and 16 of Section 12; Section 13;
the target area shall be a 100 m square located 50 m from the north and east sides of the drainage unit.
(c) In Township 48, Range 24: The north half of Section 30;

Section 31;
In Township 48, Range 25: Legal subdivisions 9 and 10 of Section 25; the north-east quarter of Section 35; legal subdivisions 4, 5, 6 and 12 of Section 36;
In Township 49, Range 25: The south-west quarter and legal subdivisions 2, 7 and 13 to 16 of Section 2; the east half of Section 14; the south-west quarter of Section 24;
the target area shall be a 200 m square located in the south-east corner of the drainage unit.

## Appendix A Question 1

$-2$
(d) In Township 48, Range 24: The west half of Section 28; Section 29; the west half of Section 33;
In Township 49, Range 24: The west half of Section 4; legal subdivisions 2 to 7 and 10 to 15 of Section 8 ; the south-west quarter of Section 16 ; Section 17;
In Township 49, Range 25: Legal subdivisions $1,2,7,10,11,13,14$ and 15 of Section 12;
the target area shall be a 100 m square located:
(i) 50 m from the north and east sides of the legal subdivision in the north drainage unit;
(ii) 50 m from the south and west sides of the legal subdivision in the south drainage unit.
(e) In Township 48, Range 24: The south half and legal subdivisions 10,11 and 16 of Section 32;
In Township 49, Range 24: Section 6;
In Township 48, Range 25: Legal subdivisions 4, 5, 15 and 16 and the north-west quarter of Section 25 ; the east half and legal subdivisions 3, 11, 13 and 14 of Section 36;
In Township 49, Range 25: Section 1; legal subdivisions 1 and 8 to 12 of Section 2;
the target area shall be a 100 m square located:
(i) 50 m from the north and west sides of the legal subdivision in the north drainage unit;
(ii) 50 m from the south and east sides of the legal subdivision in the south drainage unit.
3. Any well previously interpreted by the minister as having been completed within a target area prior to the effective date of this order, shall be considered to be on target.

Dated at Regina, Saskatchewan, May 7, 2012.



FIELD NOTE DIAGRAM


## Appendix C Question 5

| Point \# | Northing | Easting | Elevation Description |
| ---: | ---: | ---: | :--- |
| 1000 | 20000.802 | 20679.029 | 559.67 FIP LARGE NW BLOCK |
| 1001 | 19842.196 | 20679.12 | 559.793 FIP LARGE SW BLOCK 567 |
| 1002 | 19842.171 | 20761.397 | 559.286 FIP LARGE SE BLOCK 567 |
| 1003 | 20000.633 | 20761.201 | 558.595 FIP LARGE NE BLOCK 567 |
| 1016 | 19949.601 | 20705.282 | 559.768 PL SPK |
| 1017 | 19972.945 | 20715.888 | 559.931 PL PAINT MK / spike |
| 1018 | 20019.791 | 20608.324 | 559.654 PL SPK |
| 1019 | 19960.236 | 20711.841 | 559.828 PL PAINT MK / spike |
| 2000 | 19950.311 | 20696.416 | 558.537 SW COR RESIDENCE |
| 2001 | 19957.699 | 20696.427 | 558.912 NE COR RESIDENCE |
| 2002 | 19959.908 | 20693.42 | 558.407 NE COR RESIDENCE |
| 2004 | 19957.783 | 20693.403 | 558.407 CALC COR RESIDENCE |

## 2923 ANGUS STREET

 - ADDITION -


| AREAS | SaM. | SqFt. |
| :---: | :---: | :---: |
| Existing home | 180.79 | 1,946 |
| ExISTING FRONT DECK | 11.33 | 122 |
| REAR DECK | 16.07 | 173 |
| MAIN FLOOR ADDITION | 11.83 | 127 |
| gatage addition | 42.48 | 457 |
| SECOND Fl.oor adotion | 52.92 | 570 |
| TOTAL (IUVING) AREA | 245.54 | 2,643 |


| LOT COVERAGE CALC. |  |  | F.A.R. CALCULATIONS |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{array}{ll} \text { LOT SIZE }= & 370 \\ 50 \% \text { OF LOT }= & 185 . \end{array}$ | $\begin{aligned} & 9 M \quad 39 \\ & 9 M \end{aligned}$ | $\begin{aligned} & 2 \text { Saft } \\ & 6 g_{9} t \end{aligned}$ | $\begin{array}{ll} \text { LOT SIZE }= \\ 75 \% \text { F.A.R. } \end{array}=\begin{aligned} & 370.87 \\ & 278.15 \end{aligned}$ |  | $\begin{aligned} & 2 \text { SaFt } \\ & 4 \text { Saft } \end{aligned}$ |
| AREAS | SaM. | SaFt. | AREAS | SaM. | SaFt. |
| Existing main floor | 84.82 | 913 | ExISTING HOUSE | 180.79 | 1,946 |
| ExISTING FRONT deck | 11.33 | 122 | EXITTING FRONT DECK | 11.33 | 122 |
| REAR DECK | 16.07 | 173 | REAR DECK | 16.07 | 173 |
| MAIN FLOOR ADDITION | 11.83 | 127 | MAIN FLOOR ADDITİN | 11.83 | 127 |
| garage addition | 42.48 | 457 | SECond floor adition | 52.92 | 570 |
| Total site coverage | 166.48 | 1.792 | Floor area ratio - (FAR) | 272.95 | 2,938 |
| $44.89 \%$ |  |  | $73.59 \%$ |  |  |

${ }^{\text {PROUEGT }}$
2923 ANGUS 5
$-\quad$ ADDITION
COT: 11 BLOCK: 567

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Regna, Saskatchewar
DRAWMG Ste plan $\ddagger$ STE PLAN 4
GENERAL NOTES
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 SHEETNO $\quad$ REVISIO
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FOUNDATION PLAN

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\begin{aligned}
& \text { PROJECT } \\
& \text { 2923 ANGUS ST. } \\
& \text { ADDITION }- \\
& \text { LOT: } 11 \\
& \text { BLOCK: } 567 \\
& \text { PLAN: } 101161303 \\
& \text { Regma, Saskatchewan } \\
& \hline
\end{aligned}
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STRUCTURAL NOTES:







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CONCRETE TO CSA A23.1:


REINFORCING TO CSA G3O. 18



5 S. TYP. END WALL DETAIL



## Appendix C Question 5

# Province of Saskatchewan Land Titles Registry <br> Title 

Title \#: 144481338
Title Status: Active
Parcel Type: Surface
Parcel Value: \$250,000.00 CAD
Title Value: \$250,000.00 CAD
Converted Title: 88R29038
Previous Title and/or Abstract \#: 129859150

Angus Street Developments is the registered owner of Surface Parcel \#111957925
Reference Land Description: Lot 11 Blk/Par 567 Plan No 101161303 Extension 3
As described on Certificate of Title 88R29038, description 3.
This title is subject to any registered interests set out below and the exceptions, reservations and interests mentioned in section 14 of The Land Titles Act, 2000.

Registered Interests:

Interest \#:
165000000
Mortgage
Value: $\$ 250,000.00$ CAD
Reg'd: 13 Dec 2013 14:32:12
Interest Registered Amendment Date: N/A Interest Assignment Date: N/A Interest Scheduled Expiry Date: N/A Expiry Date: N/A

Holder:
Royal Bank of Canada
10 York Mills Rd
Toronto, Ontario, Canada M2P 0A2
Client \#: 102218958
Int. Register \#: 119665491
Addresses for Service:

Name
Owner:
Angus Street Developments
Client \#: 129000000
Notes:

Parcel Class Code: Parcel (Generic)

are now the owner $s$ of an estate in fee simple as joint tenants
of and in
the most Northerly 40 feet in width throughout of Lot 2
Block 567

Regina, Saskatchewan

Plan AP 3598

## M \& B

MINERALS INCLUDED

## $\operatorname{Lot} 2$

SUBJECT TO THE ENCUMBRANCES, LIENS AND INTERESTS NOTIFIED BY MEMORANDUM NOW OR HEREAFTER UNDERWRITTEN OR ENDORSED HEREON, OR WHICH ATTACH BY IMPLICATION UNDER THE LAND TITLES ACT. ANY REFERENCE TO AREA IS "MORE OR LESS".

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

| $25 .$. day of | May ............ , A.D. 19 |
| :---: | :---: |
| Post Office Address | 2923 Angus Street |
|  | Regina, Sask. S4S 1Pl |


| abbreviAtpquendix C Question 5 <br> A of EA - Assignment of M of EA - Mortgage of <br> Easement <br> Easement |  |  |  |  |  | Show Other Abbreviations Here |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ASJT - Application by Surviving Joint <br> BL - Builders' Lien <br> C - Caveat <br> E-Enlargement <br> EA - Easement <br> M - Mortgage <br> ML - Mechanics' Lien |  | N - Notice <br> N to L - Notice to Lapse <br> PP - Postponement <br> R - Renewal <br> T - Transfer <br> TL - Tax Lien <br> TR - Transmission <br> WE - Writ of Execution |  | CERTIFICATE OF TITLE <br> Name Bernard Boyd Kelley and Florence Mary Kelley Land...pṭ. . of Lot 2., B1k. 567, Regina, Plan AP 3598 CHARGES, LIENS AND INTERESTS |  |  |  |  |
| Nature of Instrument | Registration Number | Date of Registration | Amount | Particulars | Signature of Registrar | Discharges and Withdrawals |  |  |
|  |  |  |  |  |  | $\begin{aligned} & \text { Registration } \\ & \text { Number } \end{aligned}$ | Date of Registration | Signature of Registrar |
|  |  |  |  | CONTMNED |  |  |  |  |
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## Certificate qe Title

ABBREVIATIONS
AM - Affidavit of Marriage
BL - Builders' Lien
C- Caveat
CA - Commencement of Action CCE - Certificate of Chif Engineer CON - Consolidation

## -Enlargement EA-Easement

 JO - Judge's Order| Nature of | Registration Number |
| :--- | :--- | Instrument

L - Lease
LP - Lis Pendens/ Certificate of Pending Litigation T- Lost Duplicate Certificate of Title M - Mortgage
MBO - Mediation Board Order MEA - Mineral Certificate MEA - Mortgage of Easement ML - Mechanics' Lien

CERTIFICATE OF TITLE NO. 88R29038
NAME Bernard Boyd Kelley et al
LAND Ptn. Lot 2, Blk. 567, Regina, AP 3598

ABBREVIATIONS

MO - Maintenance Order
MTO - Master of Titles Orde
N - Notice
PA - Power of Attorney PLN - Plan
PP - Postponement
PPS - Personal Property
Security Act Notice
SWA - Party Wall Agreem

R-Renewal
REP - Replot
REQ-Request
SJT - Application by Surviving Joint Tenan
T-Transfer
TI - Transfer of instrument
TL - Tax Lien
TR - Transmission
WE - Writ of Execution
WE - Writ of Execution
Date of Registration

| M | 99RA25777 |
| :--- | :--- |

3 Nov $99 \quad \$ 147,000.00$


PLAN SHOWING Change of Survey in blocks 567,600,631,664,695 8, 728 in LAKEVIEW SUBDIVISION
Made for Messes. McCallum Hill \& Co. By W.R. Reilly S.L.S. Scale. 200 ft to finch


Pramed $12 /$ Pacey


Shark Endow Gellant Regina

 Repine Sack e wort man!



Note -Only that portion within colored margin to be registered.



220264

## Appendix D Question 6

Client: $\qquad$ Job \#: $\qquad$
Crew: $\qquad$

LSD. $\qquad$ Sec. $\qquad$ Twp. $\qquad$ Rge. $\qquad$ W. $\qquad$ M. Date: $\qquad$

## Appendix D Question 6

| Point | Northing | Easting Elevation | Description |
| ---: | ---: | ---: | :--- |
| 1 | 5648166.679 | 143458.432500 | FIP 36-19-18 |
| 2 | 5648170.104 | 144287.255500 | FIP 1/4Mr |
| 3 | 5649777.484 | 145092.719500 | FIP 6-20-17cult |
| 4 | 5649777.178 | 144285.659500 | FIP 1/4Mr |
| 5 | 5649776.532 | 143453.628500 | FIPR9Mr |
| 6 | 5649270.757 | 143453.757500 | FIP_R8_Appr |
| 7 | 5648982.207 | 145094.312500 | FIP 1/4cult |

SASKATCHETVAN<br>Plan of Township 20, Range 17, West of the Second Meridian<br>Made under the authority of subsection 4 of section 56 of the

MUSCOWPEETUNG INDIAN RESERVE

$$
\text { No. } 80
$$



TWP. 19 - RGE.18-W.2M TWP. 19 - RGE.17-W.2M TWP. 20-RGE.18-W.2M TWP.20-RGE17-W.2M ${ }^{\circ}$ J. J.P CONDON.s.L.S 1980
SCALE: 1:5000

NPXO5809




## Appendix E Question 7



## Appendix E Question 7

| Point | Northing | Easting Elevation |  |
| ---: | ---: | ---: | :--- | Description

## SASKATCHEWAN



Compiled from official surveys by
 E. Bray ........... ..D.L.S....... 12th Octoler ......... 1882 E. W.arven ......
T. Favicett
T. Fawcett.......
A. G. Stuart....
*R. A. Bennight
A. L. Glover ...........D.L.S........ 2nd October........ 1919
*In part a resurvevy executed indider she provisions of Section 58

Lupon thins plan are lesal subdivisions. Distances aro
in chains. Bearings are reckoned from the astroin chains. Bearings are reckoned from the astro-
nomical meridiant through the centre of the township.
 exccept lands that have been patented. Areas are ataken
to the banks of South Saskatheoun and Red Deer
rivers. The name at a monument is that of the sur-
 monuments not so designated werc erectec orrestor
by E. W. Hubtell
P. stands for standard post ; I. for old pattern iron P. stands for standard post $;$ I. for old patterniron
post $;$ Wo. for wooden post ; Pit. for four pits ; M. for
nound $;$ S. M. for stone mound ; Wt. for witness ; post; Wo. for
nooind $;$ S. $M$.
T. for trench.

Department of the Interior, Ottawa, 21st October, 1921
Approved and Confirmed


Department of the Interior, Ottawa, 21st

Hhanket

