Summer Village of Norglenwold
SUBDIVISION AND DEVELOPMENT APPEAL BOARD AGENDA
October 4th, 2021 @ 10:00 a.m.

1.	Call to Order	Chairman
2.	Purpose of Hearing/Confirmation of Notice	Secretary
3.	Polling for Objections to members	Secretary
4.	Background of appeal	CAO
5.	Duties & Jurisdiction	CAO
6.	Hearing Procedures	Chairman
7.	Background from Development Officer	Development Officer
8.	Statement & Presentation** a) Appellant	 Reg Radford or Representative
9.	Questions from the board	
10.	Written letters in support of appeal	Secretary
11.	Speakers in support of appeal	
12.	Questions from the board to speakers	
13.	Written letters in opposition of appeal	Secretary
14.	Speakers in opposition of appeal	
15.	Questions from board to speakers	
16.	Rebuttal Statement a) Appellant	 Reg Radford or Representative
17.	Development Officer Summary	Development Officer
18.	Additional questions from Board to anyone	
19.	Conclusion of Public Hearing	

****Note – If presenting a written submission to the Board, please have at least ten (10) copies available for the Board members, Board Secretary, the Development Officer and the Appellant/Respondent.**

An appeal was received on September 7, 2021, from the applicant, appealing the Municipal Planning Commission's decision of September 1, 2021, denying a development permit for escarpment work at 205 Grand Avenue (Lot 13 Block 2 Plan 2203KS) in the Summer Village of Norglenwold.

Under the provisions of the *MGA* the Subdivision and Appeal Board may deny the appeal and refuse the permit; or allow the appeal and approve the application; or allow the appeal and approve the application with variations to the permit.

NOTICE BEING GIVEN by mail to the appellant/applicant and owners of property located within 200' radius of the proposed development on September 13, 2021, and by publication in the Sylvan Lake News on September 23rd and 30th, 2021.

MUNICIPAL PLANNING COMMISSION AGENDA
SUMMER VILLAGE OF NORGLENWOLD
SUMMER VILLAGES ADMINISTRATION OFFICE
SEPTEMBER 1, 2021 @ 9:00 A.M.

A. CALL TO ORDER

B. ADOPTION OF AGENDA

C. DEVELOPMENT ITEMS

1. 355 Last Chance Way
2. 205 Grand Ave

D. ADJOURNMENT

Summer Village of Norglenwold – Municipal Planning Commission

September 1, 2021

Agenda Item

205 Grand Avenue (Lot 13, Block 2, Plan 2203KS)

Development Permit Application

Background:

The registered homeowner submitted an application for escarpment work and a dwelling at 205 Grand Avenue (Lot 13, Block 2, Plan 2203KS) in the Summer Village of Norglenwold. This property is in the R-S District (Shoreline Residential) and currently is a vacant lot. An application went forward to MPC in June for escarpment work, boathouse repairs and tree removal but was denied due to unnecessary work to the boathouse and escarpment.

The newly proposed work on the escarpment is to remove the vegetation and reduce the slope of the bank, reshaping it and replanting vegetation to prevent further erosion as well as constructing a new set of stairs to provide access to the boathouse. The boathouse will remain an existing non-conforming building and no changes will be made to it. The escarpment will consist of gabions, a no mow zone, porous pavers, three retaining walls and native plantings between the retaining walls. The stairs will be wood in the middle section and Allan block at the top.

The trees proposed to be removed will be replaced on the property and the proposed dwelling meets the height requirement, and the parcel coverage will be 48.62% under the maximum 50%.

Discussion:

This application is before MPC for the following reasons:

- Mechanized Excavation, Stripping and Grading is listed as a discretionary use; therefore, the decision must come from the Municipal Planning Commission.
- Land located below the top of bank/top of escarpment should be in a natural state, a variance is required.
- The side yard setback to the dwelling of 1.0m (3.28ft.) does not meet the minimum 1.5m (4.92ft.), therefore requires a variance of 0.5m (1.64ft.).

Recommendation:

A discretionary use means a use which may be compatible with other uses in the district, for which a Development Permit may be issued upon an application having been made. The MPC may consider a variance only where warranted by the merits or the proposed development and in response to irregular lot lines, parcel shapes or site

characteristics which create difficulties in siting structures within the required setback or in meeting the usual bylaw requirements, and in our opinion the side yard setback request falls under the above. After reviewing all relevant planning and other statutory documents, it is the recommendation of administration to approve the application. The geotechnical report states in the assessment that the proposed reconfiguration of the slope to a 4H:1V grade will improve the overall stability of the slope by off-loading some of the driving force from the slope. The proposed regrading would increase the Factor of Safety of the slope global (entire slope) from 1.1 to 1.9. A “long-term” stable score is considered to have a Factor of Safety greater than 1.3. The proposed landscaping plans on the escarpment have been revised to include a much more natural area than the previous application with no boathouse repairs and unnecessary work to occur.

Conditions:

If approved, Administration would recommend the following conditions:

- Completions Deposit of $5,000.00
- At minimum, the same number of trees removed from the property to be replaced.
- Minimum 1m no mow zone required adjacent to lake, including native grassy areas and landscaping to be completed according to the landscaping plan.
- Provincial approval is required for any work on the shoreline.
- Development to be followed according to the recommendations in the geotechnical report.
- The boathouse will remain a non-conforming building.
- The dwelling height shall not exceed 10m (32.81ft.) measured from grade.
- Electrical power from the property line to any building shall be constructed underground.
- All parcels shall be graded to ensure that storm water is directed to a drainage ditch without crossing adjacent land, except as permitted by the Development Authority. All maintenance and upkeep shall be the responsibility of the property owner. A lot grade certificate may be required at completion to ensure that proper drainage on the property exists.
- A final as build real property report from an Alberta Land Surveyor at completion of landscaping that includes parcel coverage.

Authorities:

The MPC may:

- Grant a variance to reduce the requirements of any use of the LUB and that use will be deemed to comply with LUB.
- Approve application even though the proposed development does not comply or is a non-conforming building if:
    - It would not unduly interfere with the amenities of the neighborhood, or

    - Materially interfere with or affect the use, enjoyment, or value of neighboring parcels of land, And
    - It conforms with the use prescribed for that land or building in the bylaw.

- Consider a Variance only where warranted by the merits or the proposed development and in response to irregular lot lines, parcel shapes or site characteristics which create difficulties in siting structures within the required setback or in meeting the usual bylaw requirements, except there shall be no variance for Parcel Coverage or Building Height.

For a discretionary use in any district:

- The Municipal Planning Commission may approve an application for a Development Permit:
    - With or without conditions;
    - Based on the merits of the proposed development, including it's relationship to any approved statutory plan, non-statutory plan, or approved policy, affecting the site;
    - Where the proposed development conforms in every respect to this Land Use Bylaw; or
- May refuse an application for a development permit based on the merits of the proposed development, even though it meets the requirements of the Land Use Bylaw; or
- Subject to provisions of section 2.4 (2), the Municipal Planning Commission shall refuse an application for a development permit if the proposed development does not conform in every respect to the Land Use Bylaw.

As per the MGA, a non-conforming building:

- means a building: (i) that is lawfully constructed or lawfully under construction at the date a land use bylaw affecting the building or the land on which the building is situated becomes effective, and (ii) that on the date the land use bylaw becomes effective does not, or when constructed will not, comply with the land use bylaw.
- May continue to be used but the building may not be enlarged, added to, rebuilt or structurally altered except: to make it a conforming building; for routine maintenance of the building; if the development authority considers it necessary; or in accordance with a land use bylaw that provides minor variance powers to the development authority for the purposes of this section.
- Is damaged or destroyed to the extent of more than 75% of the value of the building above its foundation, the building may not be repaired or rebuilt except in accordance with the land use bylaw.

Decision:

In order to retain transparency of the Commission, Administration recommends one of the following:

1. Approve the application with or without conditions *(Section 642 of the MGA),* or
2. Deny the application stating reasons why *(Section 642(4) of the MGA).*

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SILVERSTONE
CUSTOM HOMES

Letter of Intent-205 Grand Avenue, Norglenwold [redacted]Residence

Silverstone Custom Homes proposes to build a single family dwelling with attached garage, basement development and covered rear deck in accordance to the attached construction drawings.

We are requesting a variance to allow the house to be placed 1.0m from the north property line rather than at the 1.50m setback.

This variance is being requested due to the nature of the lot and the size of the home required to accommodate the family living in it. The lot is a reverse pie shape and narrower at the rear where the home is sitting. The home is required to be pushed back from the front setback to allow for ample parking space for the large family and keep them off Grand Avenue. The main floor size is required to accommodate the master bedroom for primary owners to use as they age in this home.

403-848-4080
justin@silverstonecustomhomes.ca
silverstonecustomhomes.ca

Progressive HOME WARRANTY

1 A1 WEST/ FRONT ELEVATION
SCALE: 1/8" = 1'-0"

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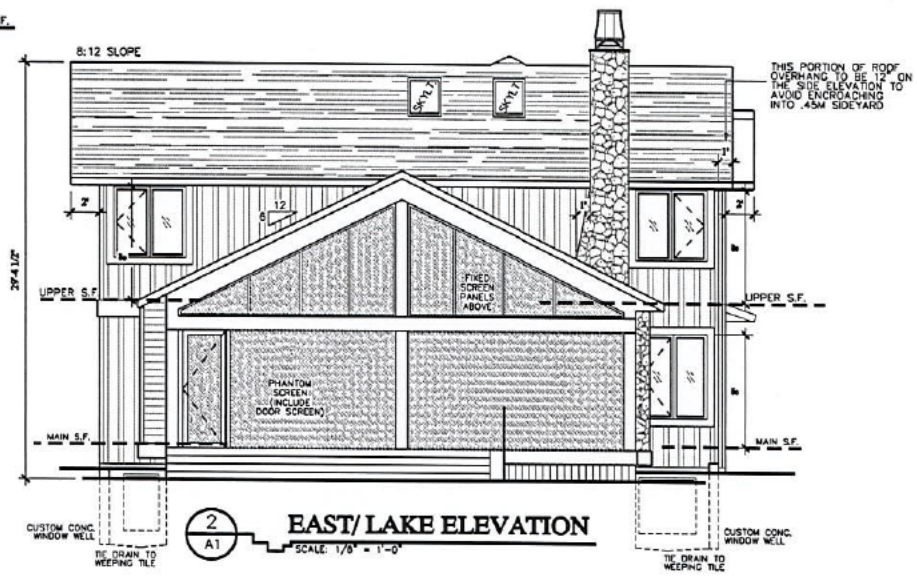
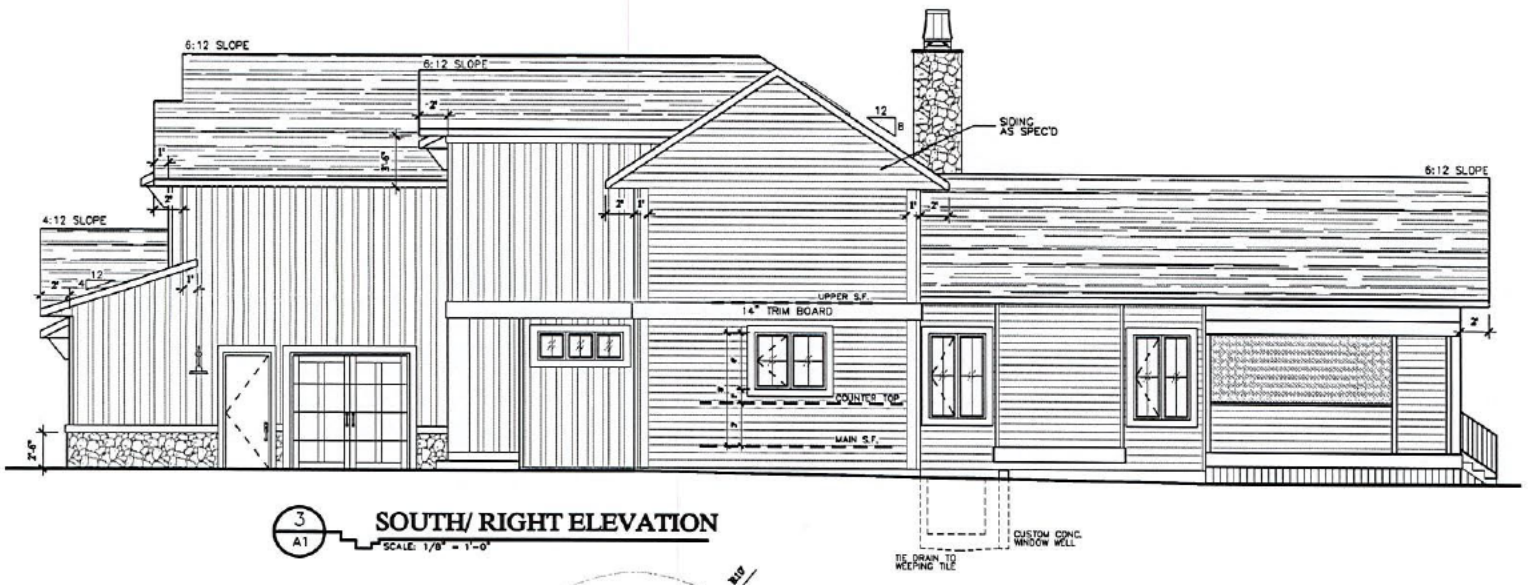
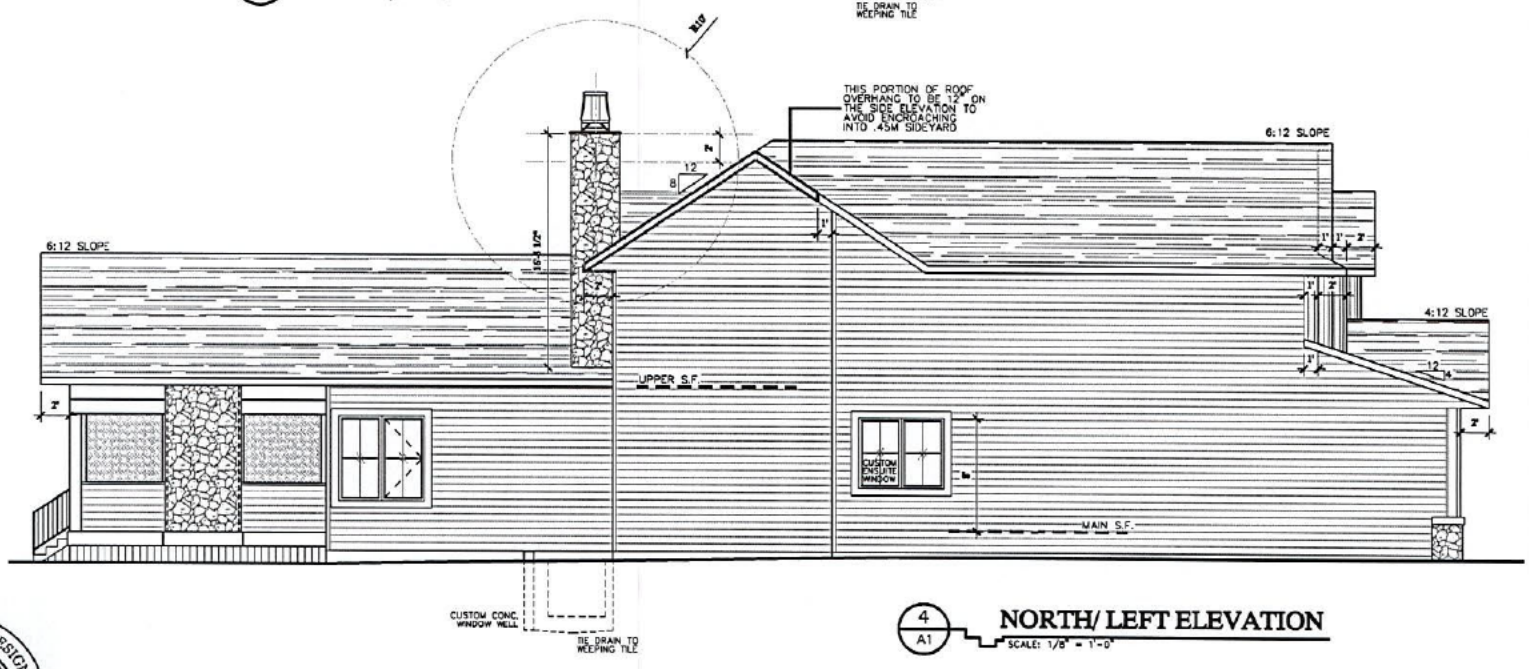


2 A1 EAST/ LAKE ELEVATION
SCALE: 1/8" = 1'-0"



3 A1 SOUTH/ RIGHT ELEVATION
SCALE: 1/8" = 1'-0"



4 A1 NORTH/ LEFT ELEVATION
SCALE: 1/8" = 1'-0"

www.lindseyjohnsondesign.com
lindsey@lindseyjohnsondesign.com
403.505.6659

SILVERSTONE
CUSTOM HOMES

PROJECT INFORMATION:

[redacted] LAKEHOUSE
205 GRAND AVE
L:13 B:02 Pl# 2206 KS
NORGLENWOLD, AB

ISSUED DRAWINGS:

DATE	ISSUE
08.06.21	CONSTRUCTION DWG'S
16.06.21	CONSTR DWG'S REV#1
21.06.21	CONSTR DWG'S REV#2

LIST OF DRAWINGS

A1	ELEVATIONS
A2	MAIN FLOOR PLAN
A3	UPPER FLOOR PLAN
A4	LOWER FLOOR PLAN
A5	SECTION & NOTES

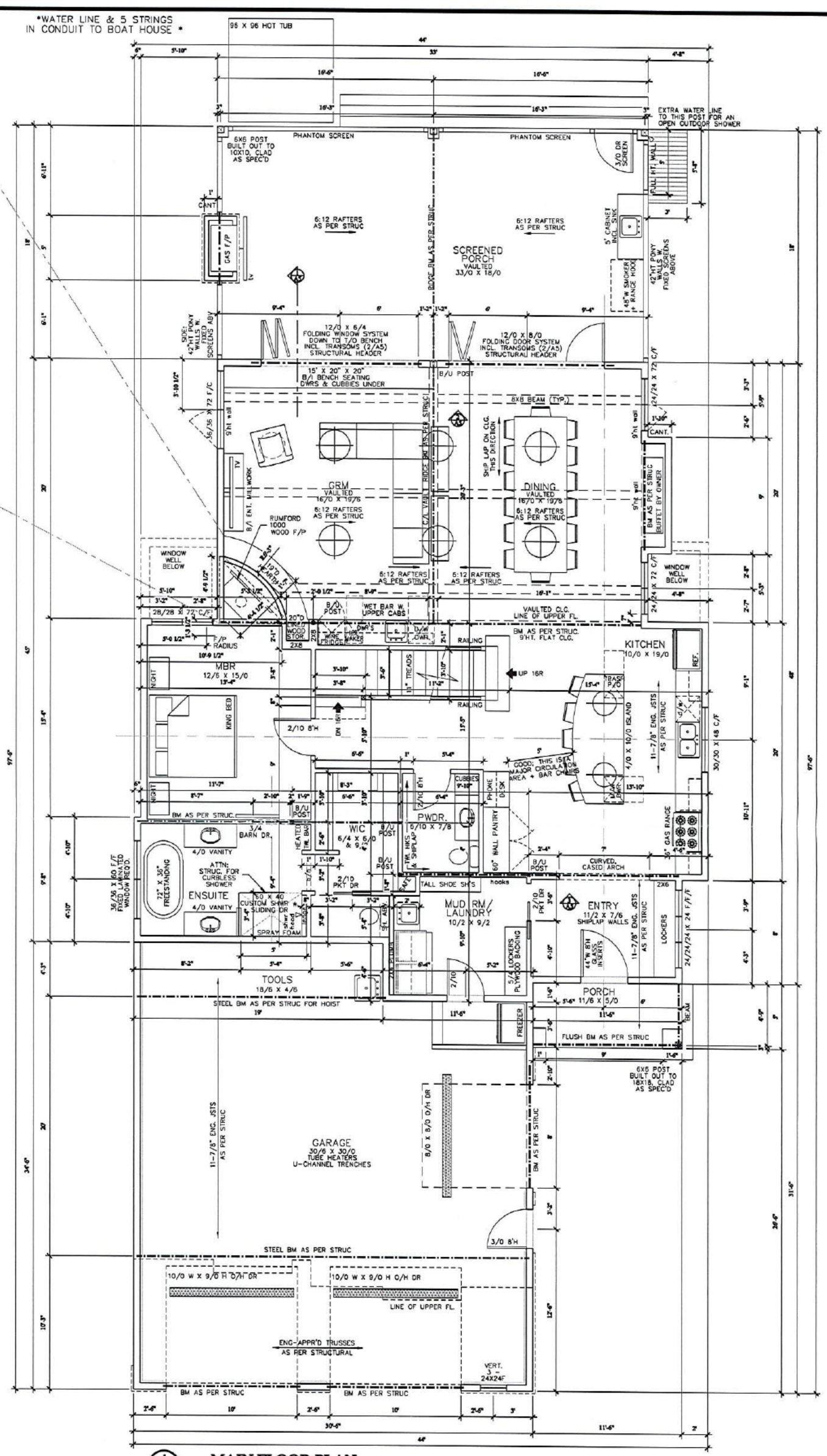
****DRAWING SCALE AS NOTED****

ERRORS, OMMISSIONS, OR DISCREPANCIES MUST BE REPORTED TO THE DESIGNER FOR CLARIFICATION

MAIN FLOOR:	1845 SQ.FT.
UPPER FLOOR:	1948 SQ.FT.
TOTAL AREA:	3793 SQ.FT.
BASEMENT:	1829 SQ.FT.

A1

1a / A2 photo inspiration



1 / A2 MAIN FLOOR PLAN
SCALE: 3/16" = 1'-0"

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JUL 07 2021

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lindsey@lindseyjohnsondesign.com
403.505.6659

SILVERSTONE CUSTOM HOMES

PROJECT INFORMATION:

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205 GRAND AVE
L:13 B:02 Pl# 2206 KS
NORGLENWOLD, AB

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A2

RECEIVED
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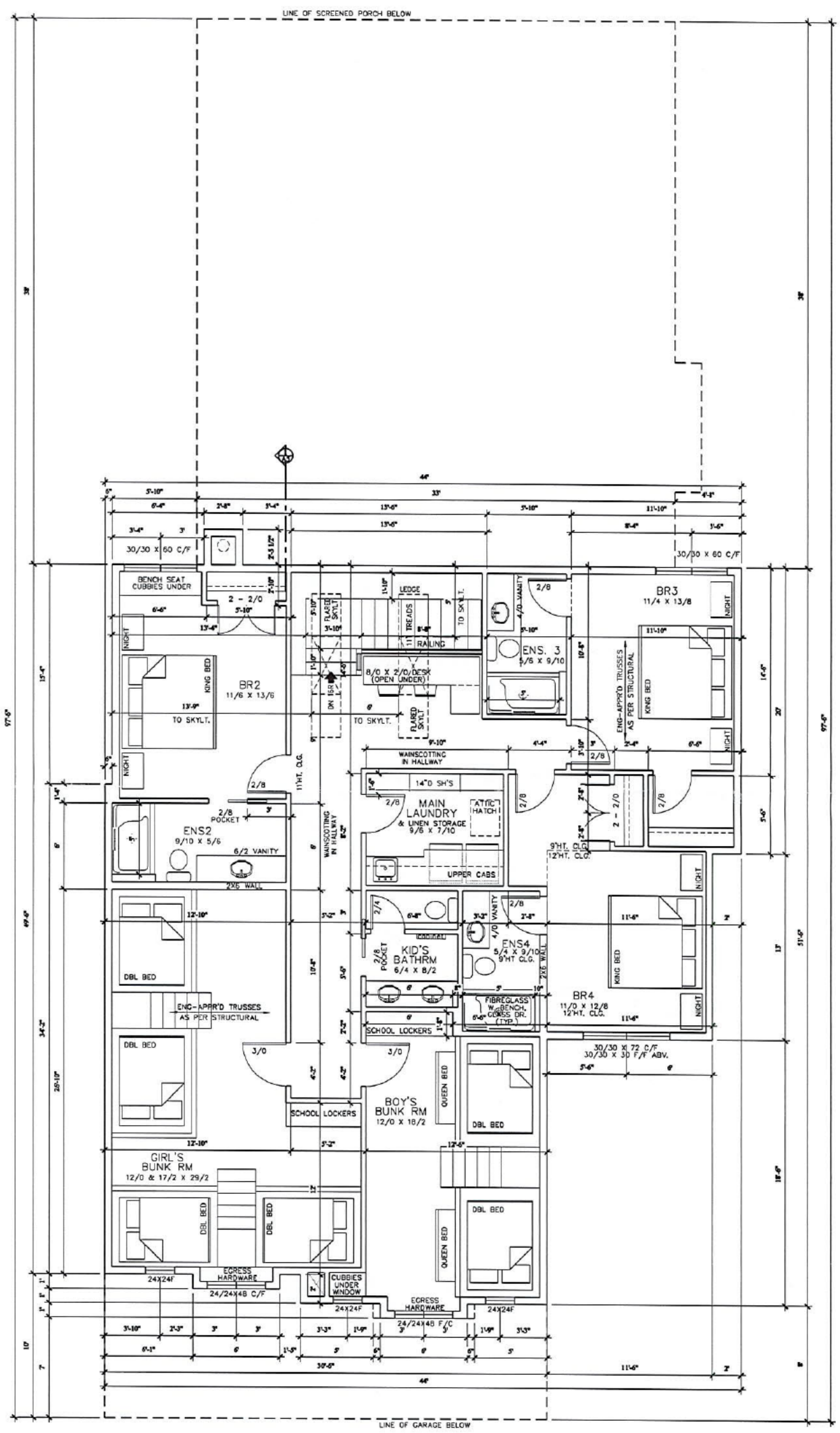

1 A3 UPPER FLOOR PLAN
SCALE: 3/16" = 1'-0"

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403.505.6659

SILVERSTONE CUSTOM HOMES

PROJECT INFORMATION:

[redacted]AKEHOUSE
205 GRAND AVE
L:13 B:02 Pl# 2206 KS
NORGLENWOLD, AB

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A4	LOWER FLOOR PLAN
A5	SECTION & NOTES

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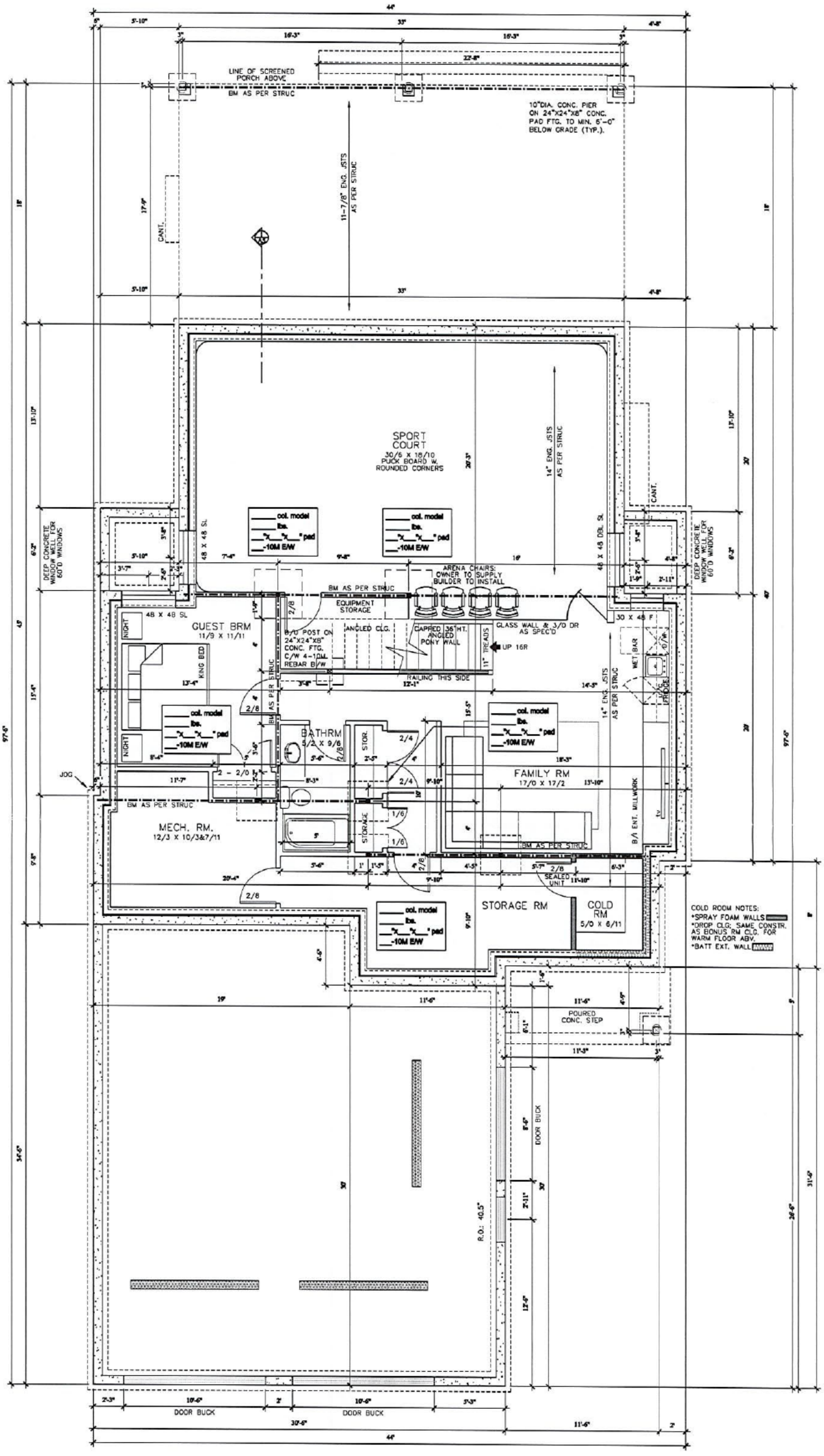
A3



1 A4 BASEMENT PLAN
SCALE: 3/16" = 1'-0"

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JUL 07 2021

LINDSEY JOHNSON DESIGN CO
ARCHITECTURAL & INTERIOR HOME DESIGN
www.lindseyjohnsondesign.com
lindsey@lindseyjohnsondesign.com
403.505.6659

SILVERSTONE
CUSTOM HOMES

PROJECT INFORMATION:

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A4

CONSTRUCTION NOTES:

1. ROOF

INSULATED TRUSS ROOF :
- ASPHALT ARCHITECTURAL LAMINATED SHINGLES.
- ASPHALT ROOFING FELT UNDERLAY.
- ICE & WATER GUARD I ALL EAVES AND VALLEYS
SYNTHETIC ROOFING PREP ACROS ENTIRE ROOF DECK
- 1/2" O.S.B. OR BETTER SHEATHING C/W H-CLIPS.
- ENGINEERED TRUSS SYSTEM AT 24" O.C.
- R-40 BLOWN-IN CELLULOSE A/ OR FIBERGLASS BATT INSULATION.
- INSULATION BAFFLE AT EVERY TRUSS SPACE.
- 6 MIL. POLY VAPOR BARRIER.
- 1/2" GYPSUM CEILING BOARD.
- PROVIDE ROOF VENTS TO PROVIDE 1 sq.ft VENTING PER 300 sq.ft INSULATED CEILING AREA (AS PER A.B.C. 9.19.1)
- REFER TO SUPPLIER'S ENGINEERED DRAWINGS FOR POINT LOAD QUANTITY & LOCATION; ENSURE POINT LOADS FROM ROOF STRUCTURE ARE ADEQUATELY-SUPPORTED WITHIN ROOF SYSTEM OR SUPPORTED BY JOIST SPACE BLOCKING & BUILT-UP STUD POSTS IN MAIN FLOOR WALLS WHERE REQUIRED

1.2 NON-INSULATED TRUSS ROOF :
- ASPHALT SHINGLES.
- ASPHALT ROOFING FELT UNDERLAY.
- PEAL & STICK MOISTURE / ICE BARRIER UNDER PRE-FINISHED METAL FLASHING AT VALLEYS & EAVES.
- 1/2" O.S.B. OR BETTER SHEATHING C/W H-CLIPS.
- ENGINEERED WOOD TRUSSES AT 24" O.C. C/W 12" HEEL (UNLESS NOTED OTHERWISE)
- 1x4 WOOD STRAPPING AT 24" O.C.
- PRE-FINISHED VENTED METAL SOFFIT.
- PRE-FINISHED VENTED METAL SOFFIT
- REFER TO SUPPLIER'S ENGINEERED DRAWINGS FOR POINT LOAD QUANTITY & LOCATION; ENSURE POINT LOADS FROM ROOF STRUCTURE ARE ADEQUATELY-SUPPORTED WITHIN ROOF SYSTEM OR SUPPORTED BY JOIST SPACE BLOCKING & BUILT-UP STUD POSTS IN MAIN FLOOR WALLS WHERE REQUIRED

1.3 EAVE & FASCIA
- REFER TO ELEVATIONS FOR OVERHANG SIZE
- 2x8 (OR AS SPECIFIED) PWF HEADER c/w PRE-FINISHED METAL FASCIA, VENTED SOFFIT, EAVESTROUGH, DOWNSPOUTS & FLASHING AT EDGE OF ROOF SHEATHING
- NON-VENTED SOFFIT ON SIDE OF BUILDING WHEN WITHIN 4' OF PROPERTY LINE, AS PER A.B.C. 9.10.15.5)

2. WALLS

2.1 EXTERIOR WALL (UNLESS NOTED OTHERWISE)
- JAMES HARDIE SIDING AND CORNERS (OR AS PER ELEVATION) AS PER A.B.C. 9.27
- AIR BARRIER/BUILDING WRAP
- 3/8" OSB OR BETTER SHEATHING
- 2x6 SPF #1&2 STUDS @ 16" o/c
- R-20 BATT INSULATION
- 6mm POLY VAPOUR BARRIER
- 1/2" GYPSUM BOARD, TAPED & SANDED w/ PAINT FINISH

2.2 INTERIOR WALL CONSTRUCTION:
- 1/2" GYPSUM WALL BOARD ON BOTH SIDES OF 2x4 #2 S-P-F STUDS AT 16" O.C. (UNLESS NOTED OTHERWISE)

2.3 INTERIOR WALL CONSTRUCTION: (THICK)
- 1/2" GYPSUM WALL BOARD ON BOTH SIDES OF 2x6 #2 S-P-F STUDS AT 16" O.C.

2.4 HALF-WALL CONSTRUCTION: (42" HEIGHT UNLESS NOTED OTHERWISE)
- 1/2" GYPSUM WALL BOARD ON BOTH SIDES OF 2x4 #2 S-P-F STUDS AT 16" O.C.

2.5 - WOOD LEDGE CAP AT TOP OF WALL

EXTERIOR WALL: (45 MIN FIRE RATING AS PER A.B.C. 9.10.15.5)
- PRE-FINISHED VINYL SIDING AND CORNERS (OR AS PER ELEVATION) AS PER A.B.C. 9.27
- AIR BARRIER/BUILDING WRAP
- 1/2" GYPSUM BOARD
- 3/8" OSB SHEATHING
- 2x6 SPF #1&2 STUDS @ 16" o/c (LINE UP STUDS w/ ROOF TRUSSES ON SPANS EXCEEDING 30')
- MINIMUM R20 BATT INSULATION

2.6
- 6mm POLY VAPOUR BARRIER
- 1/2" TYPE 'X' GYPSUM BOARD, TAPED & SANDED w/ PAINT FINISH

EXTERIOR WALL: (OVER 10 FT. HEIGHT)
- PRE-FINISHED VINYL SIDING AND CORNERS (OR AS PER ELEVATION) AS PER A.B.C. 9.27
- AIR BARRIER/BUILDING WRAP
- 3/8" O.S.B OR BETTER SHEATHING.
- 2x6 #2 S-P-F STUDS AT 16" O.C. C/W 1/3 SPAN BLOCKING. ALL STUDS WITHIN ASSEMBLY SECURED TO BASE AND CAP PLATES W/ 4" C.S END NAILED INTO STUD

2.7 ASSEMBLY.
- R-20 BATT INSULATION.
- 6mm POLY VAPOUR BARRIER.
- 1/2" GYPSUM BOARD, TAPED & SANDED w/ PAINT FINISH

INTERIOR BEARING WALL c/w STRIP FOOTING :
- 18" x 8" CAST-IN-PLACE CONCRETE STRIP FOOTING.
- REINFORCE WITH 3-10M BARS (CONTINUOUS).
- 2 PLY 2x4 PRESERVED WOOD CURB.
- BEARING WALL TO BE 2x4 #2 S-P-F STUDS AT 16" O.C. C/W SOLID BLOCKING AT MID-HEIGHT.
- TOP PLATE = 2 PLY 2x4 #2 S-P-F WOOD.
- BOTTOM PLATE = 2x4 PRESERVED WOOD.
- 1/2" GYPSUM WALL BOARD (IF REQUIRED)

3. FLOORS

3.1 FLOOR CONSTRUCTION: (UNLESS NOTED OTHERWISE)
- 3/8" FIBREBOARD UNDERLAY IN AREAS RECEIVING VINYL FLOOR FINISH, OR 3/8" PLYWOOD UNDERLAY IN AREAS RECEIVING TILE & 1/2 PLYWOOD UNDERLAY FOR LAMINATE FLOOR FINISHES. VINYL SUBFLOOR ONLY IF REQ'D
- 23/32" T&G OSB DECKING, GLUED & SCREWED
- 11 7/8" ENGINEERED WOOD "I" JOIST. (SPACING BY SUPPLIER)
- 1/2" GYPSUM CEILING BOARD, TAPED & SANDED w/ TEXTURED FINISH
- CONTINUE INSULATION & VAPOUR BARRIER THROUGH JOIST SPACE AT INSIDE PERIMETER OF EXTERIOR-FACING RIM BOARDS

3.2 EXTERIOR DECK:
- IF STONE TILE DECK, THEN STRUCTURE MAY NEED TO BE INCREASED
- VINYL DECKING SURFACE TYP.
- 3/4" S-P-F PLYWOOD T&G DECKING. (SANDED ONE SIDE)
ENGINEERED JOISTS DUE TO SPAN
- 2x10 PRESERVED WOOD JOISTS AT 12" O.C. C/W SOLID BLOCKING AT 48" O.C. (SLOPE JOISTS 1.5%) TYP.
- 1x4 S-P-F- WOOD STRAPPING AT 24" O.C.
- 1x4 TONGUE & GROOVE CEDAR SOFFIT BOARDS.

3.3 BASEMENT SLAB :
- 3 1/2" CONC. SLAB; 2" ENERSPAN RIGID INSULATION, FLOOR HEAT R/I
- IF WALKOUT, REINFORCE CONC. SLAB WITH 10M BARS AT 24" O.C. E/W. OVER COMPACTED BASE
- 6mm POLY VAPOR BARRIER.
- 6" COMPACTED WASHED ROCK
- SUB-BASE TO BE UNDISTURBED OR COMPACTED GRANULAR FILL.
- SLOPE SLAB TO FLOOR DRAINS.

3.4 ATTACHED GARAGE SLAB :
- 4" CONCRETE SLAB C/W PERIMETER SLAB THICKENING.
- REINFORCE WITH 10M BARS AT 24" O.C E/W; DOWELED 6" COMPACTED BASE
- 6 mm POLY VAPOR BARRIER.
- 12" COMPACTED GRAVEL FILL.
- SUB-BASE TO BE UNDISTURBED OR COMPACTED GRANULAR FILL.
- SLOPE SLAB TO FLOOR DRAINS OR AWAY FROM HOUSE.

3.5 CANTILEVER :
- 6 MIL. POLY VAPOR BARRIER BETWEEN SUBFLOOR SHEATHING & TOP OF JOISTS.
- 2x6 WOOD FURRING UNDER JOISTS.
- R40 FIBERGLASS BATT. INSULATION.
- 3/8" O.S.B. SHEATHING OR 5/8" GYPSUM BOARD.
- PRE-FINISHED METAL SOFFIT (IF REQUIRED)

3.6 FLOOR CONSTRUCTION : (OVER GARAGE)
- 3/8" FIBREBOARD UNDERLAY IN AREAS RECEIVING VINYL FLOOR FINISH, OR 1/2" PLYWOOD UNDERLAY IN AREAS RECEIVING TILE OR LAMINATE FLOOR FINISHES
- 3/4" T&G O.S.B. DECKING; GLUED & SCREWED.
- 11 7/8" ENGINEERED WOOD "I" JOIST (SPACING BY SUPPLIER)
- PUNCH-OUT HOLES IN JOISTS FOR CROSS VENTILATION & PROVIDE HEAT & RETURN AIR INTO JOIST SPACES.
- 6mm POLY VAPOR BARRIER UNDER JOISTS.
- 2x6 WOOD FURRING AT 24" O.C. SECURED TO UNDERSIDE OF FLOOR JOISTS.
- R-20 (MIN.) FIBERGLASS BATT INSULATION.
- 1/2" GYPSUM CEILING BOARD; (TAPE & MUD).
- CONTINUE INSULATION & VAPOUR BARRIER THROUGH JOIST SPACE AT INSIDE PERIMETER OF EXTERIOR-FACING RIM BOARDS
- SPRAY FOAM TO CANTILEVERS

4. BEAMS / LINTELS

4.1 TYPICAL LINTEL: (UNLESS NOTED OTHERWISE)
- 2-2x10 #2 S.P.F. OR BETTER FOR OPENINGS LESS THAN 73"
- 3-2x10 #2 S.P.F. OR BETTER FOR OPENINGS 73"-84"
- FILL VOIDS WITH BATT INSULATION

4.2 WIDE SPAN LINTEL:
- L.V.L. LINTEL ENGINEERED BY TRUSS SUPPLIER FOR OPENINGS GREATER THAN 84", WHERE POINT LOADS BEAR ON A LINTEL AND OVER OPENINGS IN CONCRETE FOUNDATION WALL.
(FILL VOIDS WITH RIGID INSULATION)

4.3 DROPPED L.V.L. OR STEEL BEAM INSTALLED UNDER BOTTOM OF JOISTS &/OR TRUSSES
(SIZE ENGINEERED BY SUPPLIER)

4.4 FLUSH L.V.L. BEAM INSTALLED ON SAME PLANE AS JOISTS
(SIZE ENGINEERED BY SUPPLIER)

4.5 SEMI-FLUSH L.V.L. OR STEEL BEAM INSTALLED WITH 6" SPACE BETWEEN UNDERSIDE OF FLOOR SHEATHING AND TOP OF BEAM:
(SIZE ENGINEERED BY SUPPLIER)

4.6 DECK LEDGER:
- 2x12 PRESERVED WOOD DECK LEDGER C/W BUILDING PAPER BEHIND & PRE-FINISHED METAL FLASHING OVER
- PROVIDE SOLID BLOCKING AT EACH JOIST SPACE INSIDE RIM JOIST SUPPORTING THE DECK LEDGER
- LAG BOLT DECK LEDGER TO RIM JOIST OR STUDS ON HOUSE

4.7 3-PLY 2x8 PRESERVED WOOD BEAM; GLUED & NAIL LAMINATED AS SPECIFIED BY THE ALBERTA BUILDING CODE.

5. FOUNDATION

5.1 HOUSE FOUNDATION WALL :
- PARGING ON EXPOSED CONCRETE.
- SPRAY ON WATERPROOF MEMBRANE, TREMCO WATCHDOG OR EQUIVALENT.
- 8" x 108" CAST-IN-PLACE 20 MPa CONCRETE WALL PLUS 2x6 P-W-F GRADE LADDER = TOTAL WALL HEIGHT OF 9'-3 1/2".
- REINFORCEMENT: 2-10M BARS AT TOP & BOTTOM.
  - VERTICAL 10M BARS AT 12" O.C.
  - HORIZONTAL 10M BARS AT 12" O.C.
- 2x4 #2 S-P-F STRAPPING AT 24" O.C. (P.W.F. BOTTOM PLATE).
- R-12 FIBERGLASS BATT INSULATION.
- 6 MIL. POLY VAPOR BARRIER.
- 1/2" GYPSUM WALL BOARD.

5.2 GARAGE FROST WALL :
- PARGING ON EXPOSED CONCRETE.
- 8" CAST-IN-PLACE 20 MPa CONCRETE WALL (48" MIN. BELOW FINISHED GRADE)
- REINFORCEMENT: 2-10M BARS AT TOP & BOTTOM.
- 2x4 P-W-F GRADE LADDER AT TOP OF FOUNDATION WALL.
- GARAGE DOOR BUCK HEIGHTS AS PER SITE CONDITIONS

5.3 STRIP FOOTING : (UNLESS NOTED OTHERWISE)
- 20" x 8" CAST-IN-PLACE CONCRETE STRIP FOOTING.
- REINFORCE WITH 3-10M BARS (CONTINUOUS).
- CAST-IN VERTICAL 24" LONG 15M J-HOOK DOWELS AT 24" O.C.
- BEARING ON UNDISTURBED SOIL OR COMPACTED GRANULAR FILL.
- 4" WEEPING TILE TIED INTO MUNICIPAL WASTE WATER SYSTEM.
- COVER WITH AND 8" OF WASHED ROCK AND FILTER CLOTH.

5.4 PAD FOOTING C/W STEEL COLUMN :
- ADJUSTABLE STEEL COLUMN; ENGINEERED BY SUPPLIER.
- CAST-IN-PLACE CONCRETE PAD FOOTING; REINFORCE WITH 10M BARS E/W; (3" BOTTOM COVER).
- BEARING ON UNDISTURBED SOIL OR COMPACTED GRANULAR FILL.
- BUILDING CONTRACTOR TO CONFIRM LOAD QUANTITIES WITH THE FLOOR SYSTEM SUPPLIER THEN NOTATE THE COLUMN MODEL NAME, COLUMN LOAD & PAD FOOTING DIMENSIONS IN THE LOCATIONS PROVIDED ON THE FOUNDATION PLAN.
- PAD FOOTING DIMENSIONS AND REINFORCEMENT TO BE AS SPECIFIED BY THE COLUMN MANUFACTURER'S ENGINEERED TABLES.

5.5 PAD FOOTING C/W CONCRETE PIER :
- 12" DIA. x48" CONCRETE PIER; R/W 4-15M VERTICAL BAR.
- PROVIDE 2x4 P-W-F WOOD NAILER CAST INTO TOP OF PIER.
- 30"x30"x10" CONCRETE PAD FOOTING R/W 5-10M BARS E/W.
- DOWEL PAD INTO PIER WITH 15M DOWELS TIED TO PIER VERTS.

5.6 - BEARING ON UNDISTURBED SOIL OR COMPACTED GRANULAR FILL.

GARAGE SLAB SUPPORT PILE :
- 10" DIA. x 42" +/- DEEP PILE; R/W 3-10M VERTICAL BARS BENT TO LAP OVER SLAB REBAR.
- PROVIDE SLUMP PAD AT BOTTOM OF PILE.
- THICKEN SLAB AT TOP OF PILE.

6. MISCELLANEOUS

6.1 HAND / GUARD RAIL:
- HEIGHT, MATERIAL & INSTALLATION TO BE AS PER THE MANUFACTURERS SPECIFICATIONS & THE ALBERTA BUILDING CODE.

6.2 SUMP PIT: (IF APPLICABLE)
- 20"x20"x36" DEEP (MINIMUM)
- DISCHARGE TO MUNICIPAL SEWER SYSTEM OR ON SITE
- PLUMBING CONTRACTOR TO DETERMINE LOCATION ON SITE

6.3 CUSTOM TILED SHOWER:
- 1/2" CONCRETE WALL BOARD.
- SCHLUTER-KERDI WATERPROOFING SYSTEM.
- TILE FINISH WALLS & FLOOR.

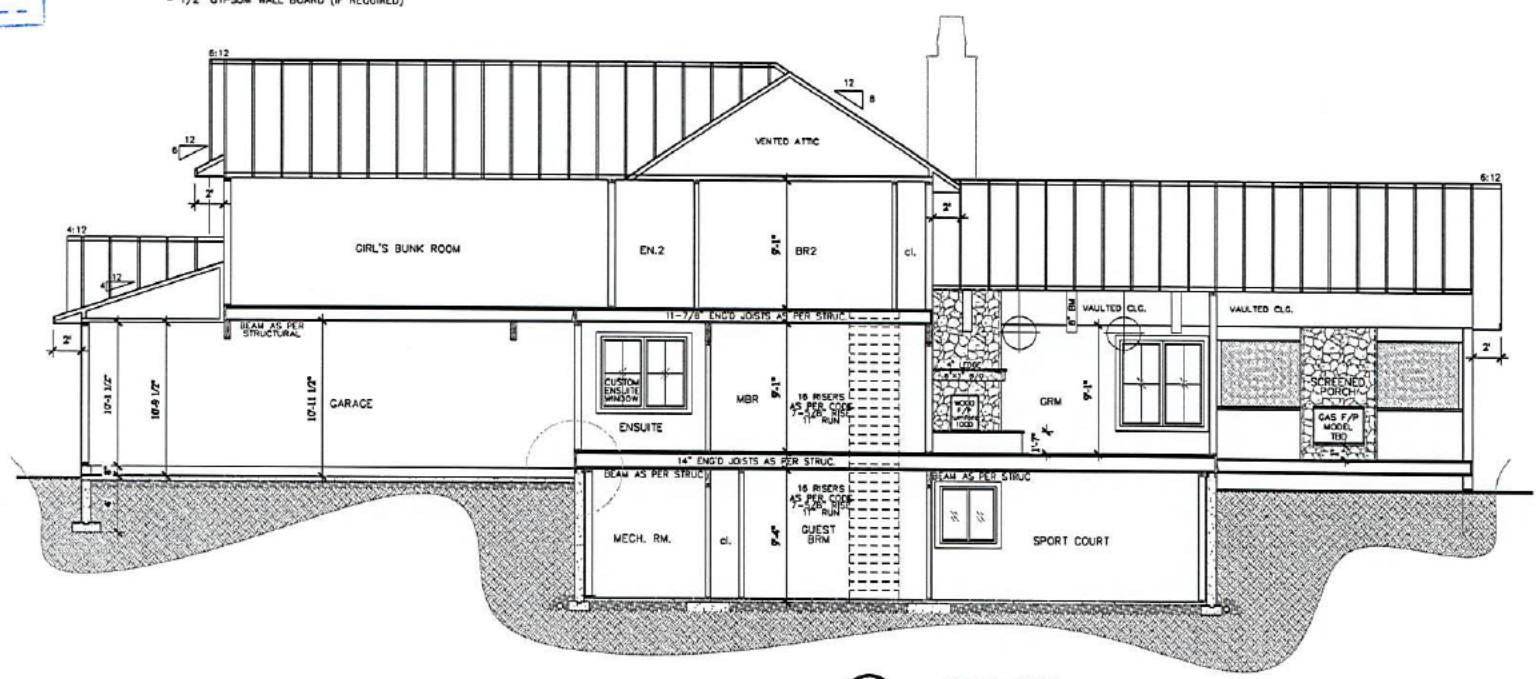
6.4 STRUCTURAL & DECORATIVE COLUMN :
- STRUCTURAL COLUMN AS NOTED ON DRAWINGS
- PRESERVED WOOD STRUCTURAL POST; GLUED & NAIL LAMINATED AS SPECIFIED BY THE ALBERTA BUILDING CODE.
- SHAPE DECORATIVE COLUMN WITH PRESERVED WOOD MATERIALS.
- REFER TO ELEVATIONS FOR DECORATIVE COLUMN SHAPE & FINISH MATERIALS.

6.5 FRONT STEP CONSTRUCTION:
- PRE CAST OR CAST IN PLACE (BEST SUITED FOR SITE)
STANDARD FINISH CONCRETE STEPS & LANDING.
- BOLT ANGLE IRON LEDGERS TO HOUSE FOUNDATION WALL.
- PROVIDE MOISTURE PROTECTION BETWEEN CONCRETE STEP & WOOD STRUCTURE OF HOUSE.

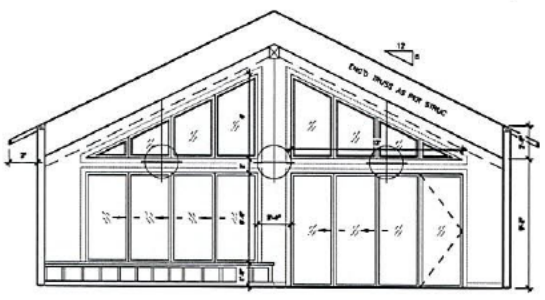
6.6 - SUB-BASE TO BE FIRMLY COMPACTED GRANULAR FILL.

WINDOW WELL:
- CONCRETE WINDOW WELL; SIZE TO MEET EGRESS.
- PERFORATED DRAIN TO WEEPING TILE C/W FILTER CLOTH.
- GROUND COVER TO BE 12" CRUSHED ROCK.

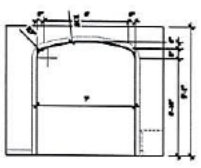
RECEIVED
JUL 07 2021



1 A5 SECTION
SCALE: 1/8" = 1'-0"



2 A5 LAKE WALL INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



3 A5 ENTRANCE ARCHWAY
SCALE: 1/4" = 1'-0"

LINDSEY JOHNSON DESIGN CO
ARCHITECTURAL & INTERIOR HOME DESIGN
EST 2012
www.lindseyjohnsondesign.com
lindsey@lindseyjohnsondesign.com
403.505.6659

SILVERSTONE
CUSTOM HOMES

PROJECT INFORMATION:

[redacted] LAKEHOUSE
205 GRAND AVE
L:13 B:02 Pl# 2206 KS
NORGLENWOLD, AB

ISSUED DRAWINGS:

DATE	ISSUE
08.06.21	CONSTRUCTION DWG'S
16.06.21	CONSTR DWG'S REV#1
21.06.21	CONSTR DWG'S REV#2

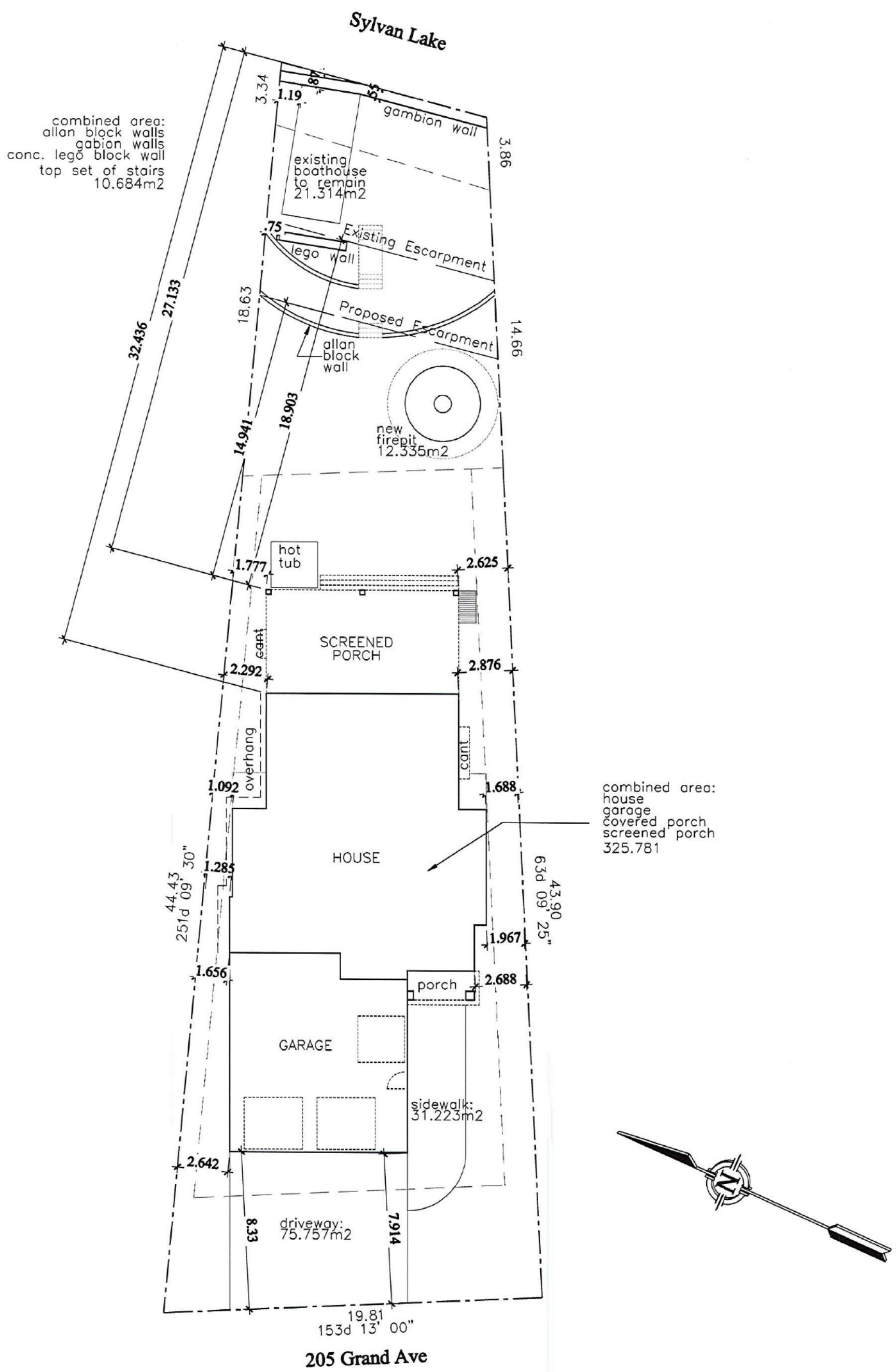
LIST OF DRAWINGS

A1	ELEVATIONS
A2	MAIN FLOOR PLAN
A3	UPPER FLOOR PLAN
A4	LOWER FLOOR PLAN
A5	SECTION & NOTES

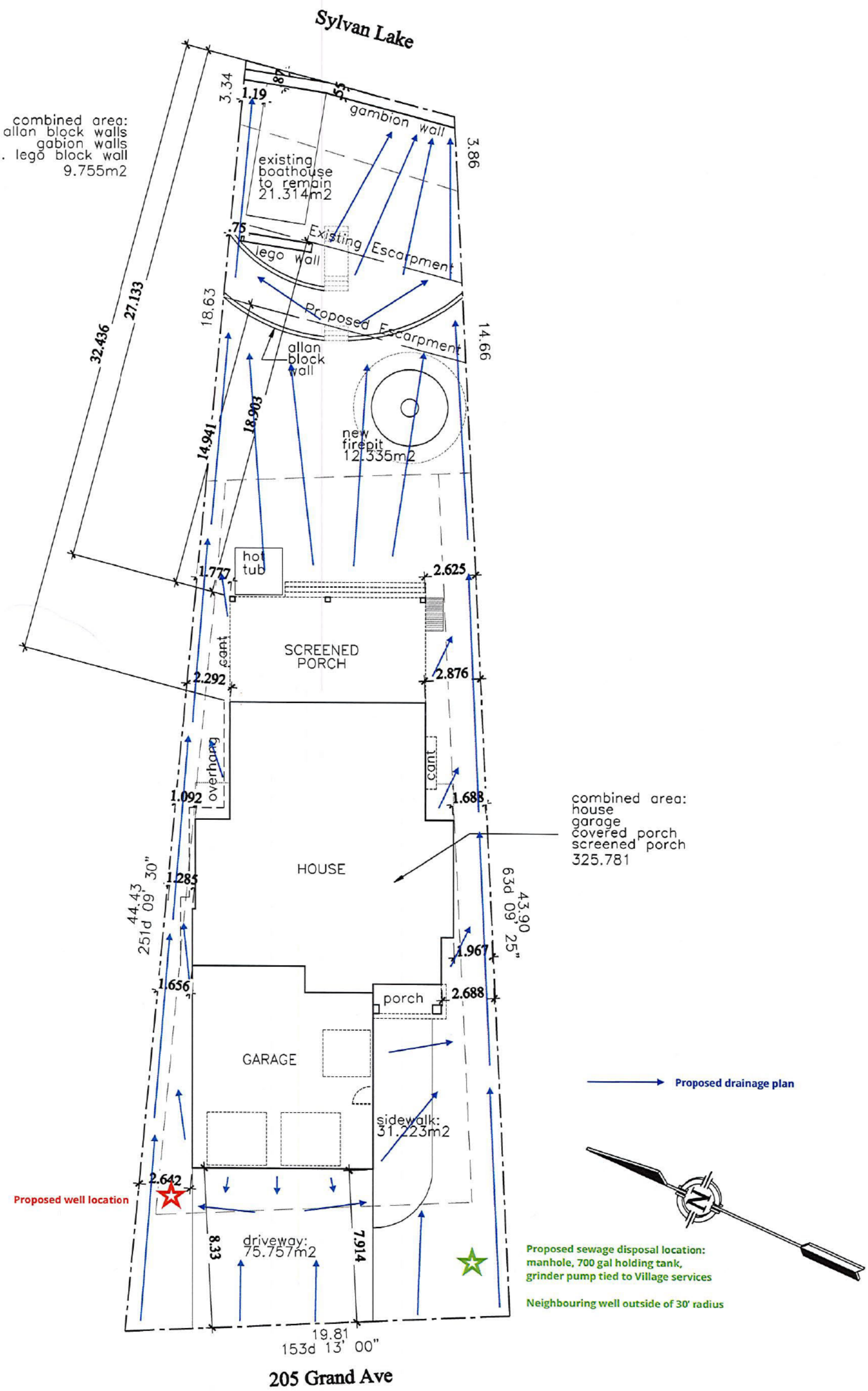
DRAWING SCALE AS NOTED
ERRORS, OMMISSIONS, OR DISCREPANCIES MUST BE REPORTED TO THE DESIGNER FOR CLARIFICATION

MAIN FLOOR:	1845 SQ.FT.
UPPER FLOOR:	1948 SQ.FT.
TOTAL AREA:	3793 SQ.FT.
BASEMENT:	1829 SQ.FT.

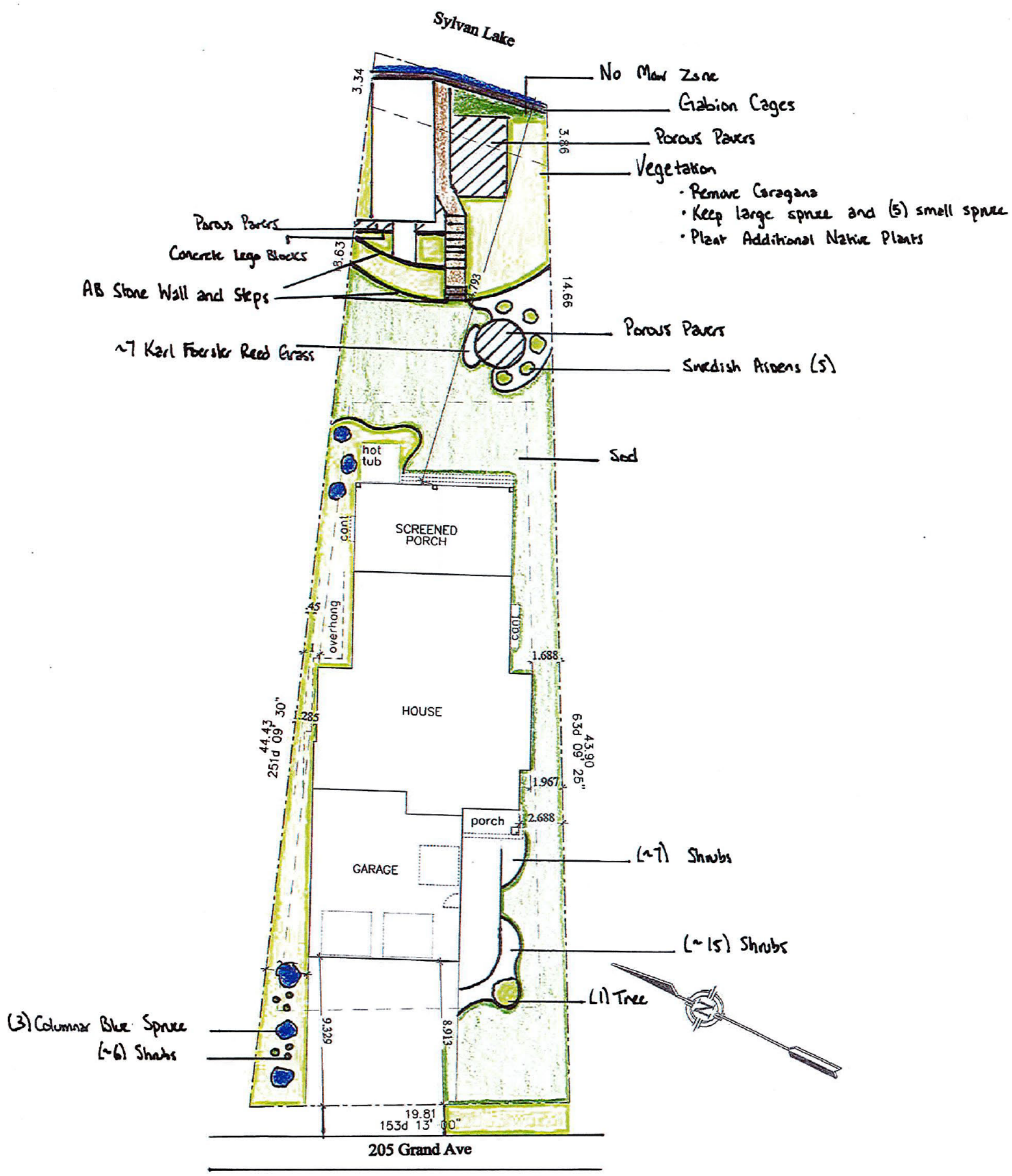
A5



[redacted]Residence	205 Grand Ave, Norglenwold, AB	Lot 13 Block 02 Pl# 2206 KS
LOT AREA: 981.190 m2	BLDG. AREA + hard surfaces: 477.094 m2	PARCEL COVERAGE: 48.62%	DATE: August 16, 2021 SCALE: 1:200

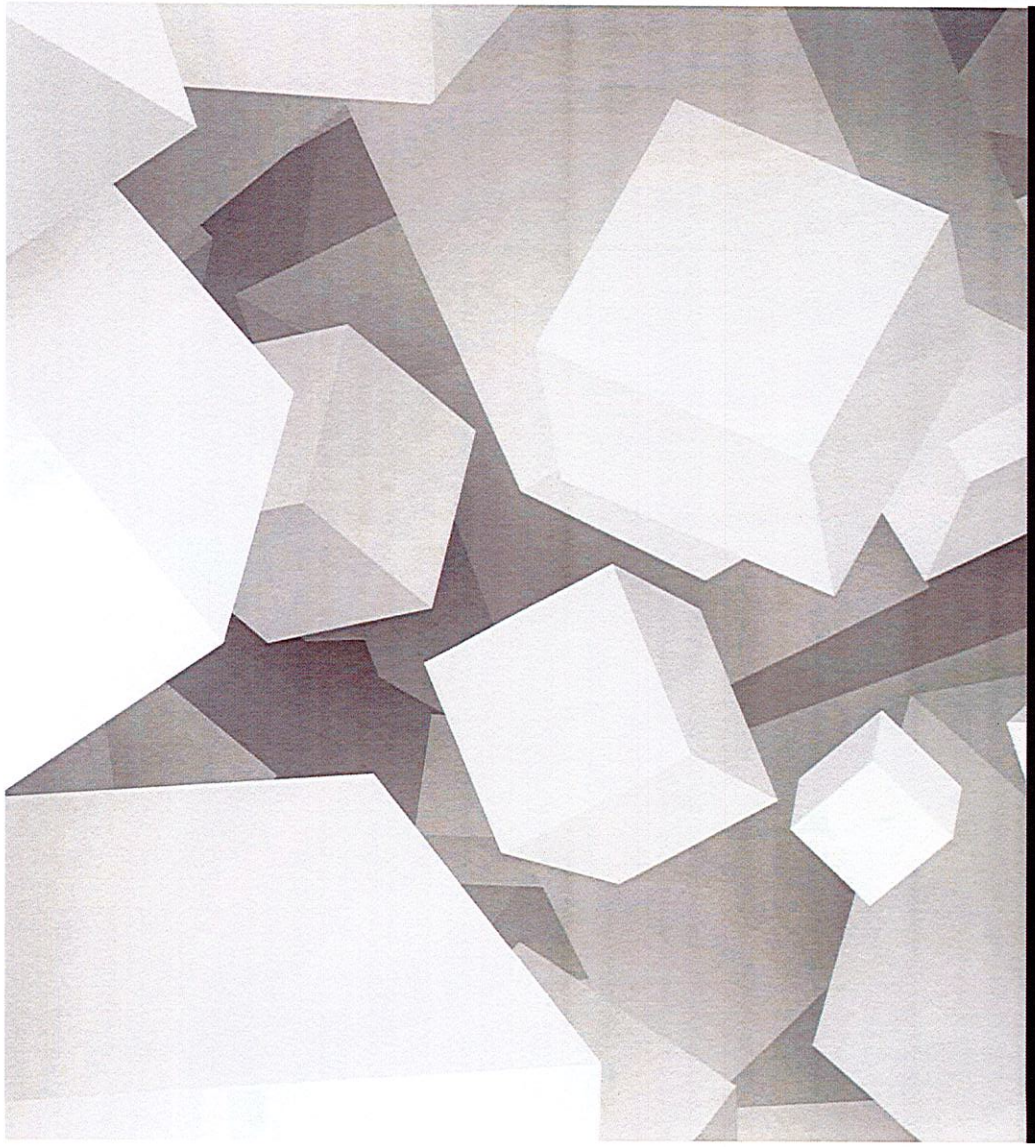


[redacted] Residence 205 Grand Ave, Norglenwold, AB Lot 13 Block 02 Pl# 2206 KS



PROPOSED LANDSCAPING

[redacted] RESIDENCE
205 GRAND AVE



205 Grand Avenue : Lot 13, Block 2, Plan 2203KS

Proposals for :

- Residential Dwelling side yard set back relaxation
- Bank stabilization work
- Tree Removal

Letter of Intent-205 Grand Avenue, Norglenwold
Radford Residence

Silverstone Custom Homes proposes to build a single family dwelling with attached garage, basement development and covered rear deck in accordance to the attached construction drawings.

We are requesting a variance to allow the house to be placed 1.0m from the north property line rather than at the 1.50m setback.

This variance is being requested under s. 2.4 (3)(a) under part 2 of the LUB due to the nature of the lot and the size of the home required to accommodate the family living in it. The lot is a reverse pie shape and narrower at the rear where the home is sitting. The home is required to be pushed back from the front setback to allow for ample parking space for the large family and keep them off Grand Avenue. The main floor size is required to accommodate the master bedroom for primary owners to use as they age in this home.

The landowners have attempted to minimize the impact on adjacent parcels (s. 1(2)(c) of part 3 LUB) by choosing a location for their dwelling adjacent to the neighboring dwellings so as not to block the view. Further, the landowners are requesting a September to May construction season to minimize the interruption of the neighboring properties' use and enjoyment during the extremely popular summer period.

In order to proceed with the safe development of the proposed dwelling, a geotechnical report was commissioned. The report strongly recommends that the bank is regraded to a more gradual slope and reinforced to prevent further erosion as it is not recommended to be left in its current state. The landowners have done extensive work researching, planning and consulting with numerous experts to develop a plan that would provide use and enjoyment of the property while also greatly enhancing the stability and safety of the area as well as considering many environmental factors to minimize any impact.

As stated in the Sylvan Lake Management Plan 2000 update "Improved knowledge of the lake environment and assessment/mitigation techniques has made the concept of sustainable development a practical reality. Consequently, in many cases, it is no longer necessary to prohibit development in order to protect the environment." The landowners intend on carrying out the proposed slope stabilization in an environmentally responsible manner by using trained professionals, utilizing materials, structures and systems that are proven to be highly effective in protecting the shoreline and choosing vegetation in accordance with Red Deer County's horticulturist recommended native plant species with deep-root systems. Further, the proposed plan also takes into consideration the local waterfowl providing platforms within the gabions to facilitate the ducks to be able to come ashore.

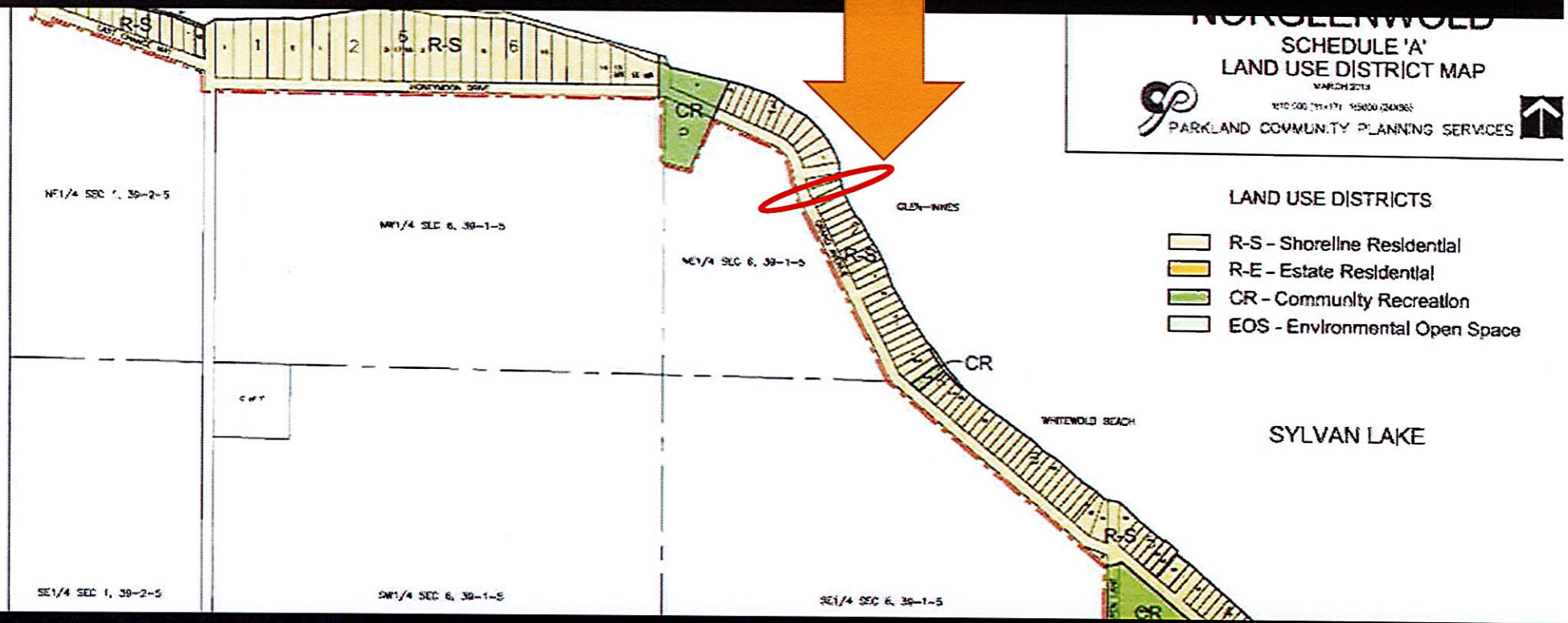
The final item requested in this development permit is the clearing of the dead trees as well as the area where the house dwelling and driveway is intended. The dead trees are posing a significant safety issue and it is recommended by the landscaper that they be removed and replaced according to the provided plan.

The neighbors have been contacted with the proposed plan for development and are very supportive of the application.

Thank you for your time in considering this application.

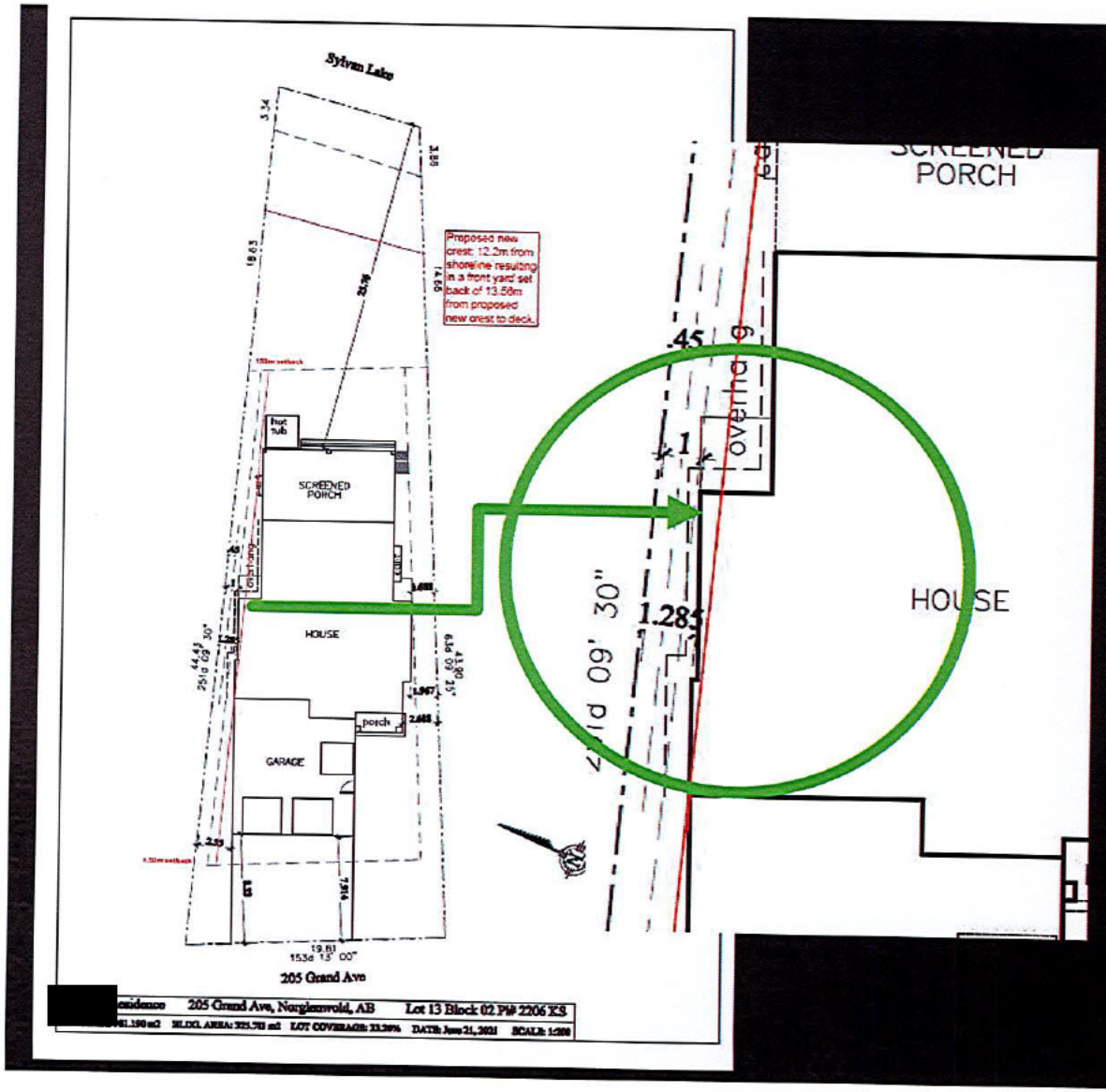
Intent

205 Grand Avenue : Lot 13, Block 2, Plan 2203KS



View from the road to the lake

View from the bank back to the road

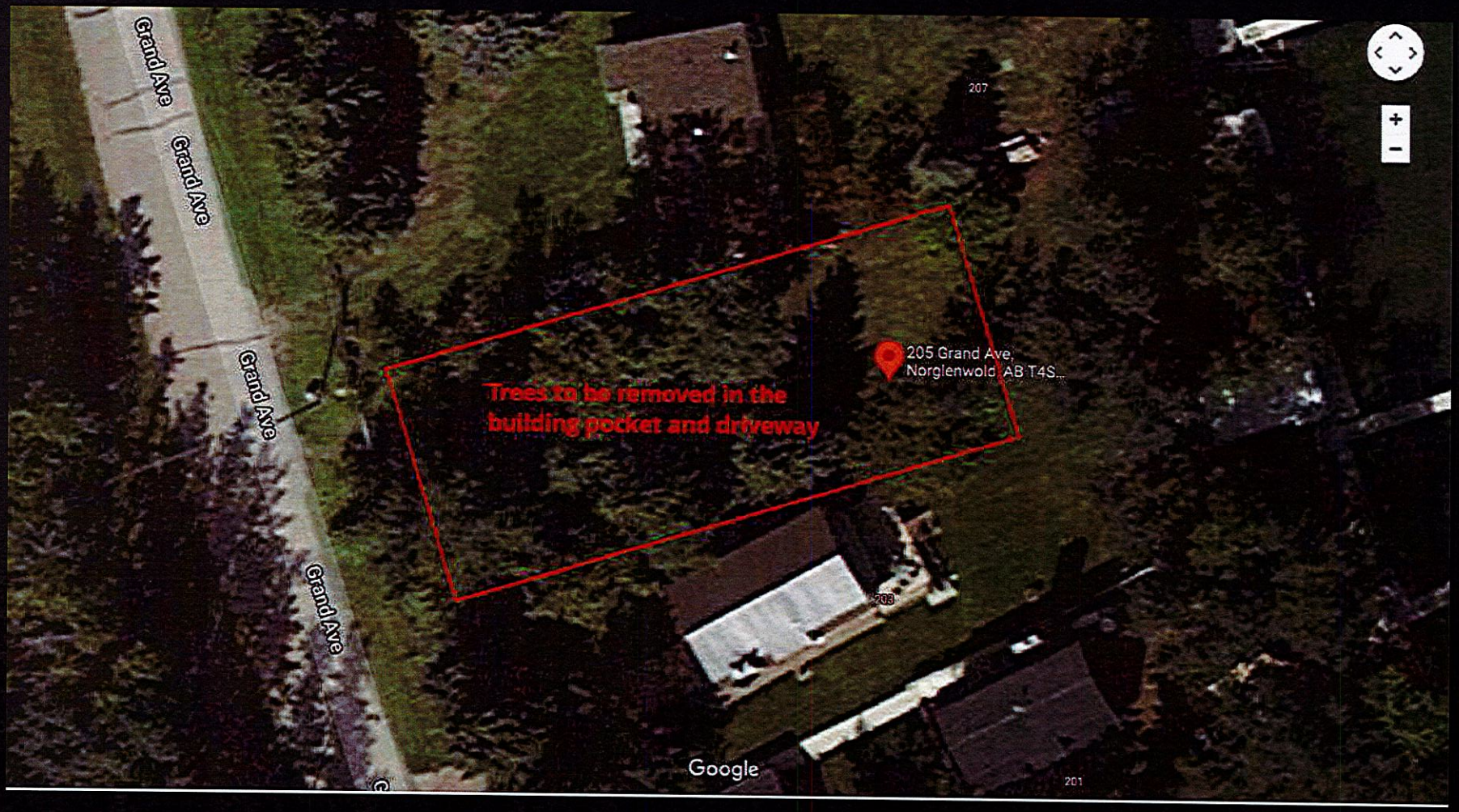


Variance requested for small corner intrusion into north side-yard setback for single family dwelling.


North Lot Line -
Black Poplar that
is passed their
due date

South Lot Line:

- Trees encroach on building envelope
- Trees passed their due date
- Concern that weakened root system and enhanced exposure to wind may pose danger of damage to neighbor's residence


Grand Ave
Grand Ave
Grand Ave
Grand Ave
Trees to be removed in the building pocket and driveway
205 Grand Ave, Norglenwold, AB T4S...
207
203
201
Google

Thank you for your time and consideration!

Proposed Slope Stabilization Plan

Parkland Geo – Geotechnical Report

"The proposed reconfiguration of the slope to a 4H:1V grade will greatly improve the overall stability of the slope by off-loading some of the driving force from the slope."

FILE REFERENCE

To:

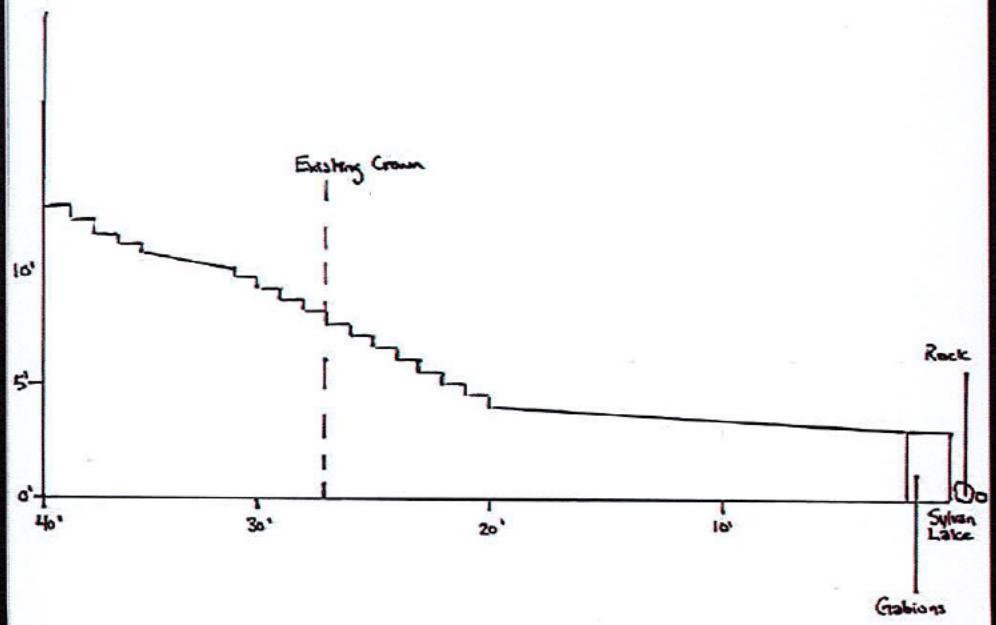
From:

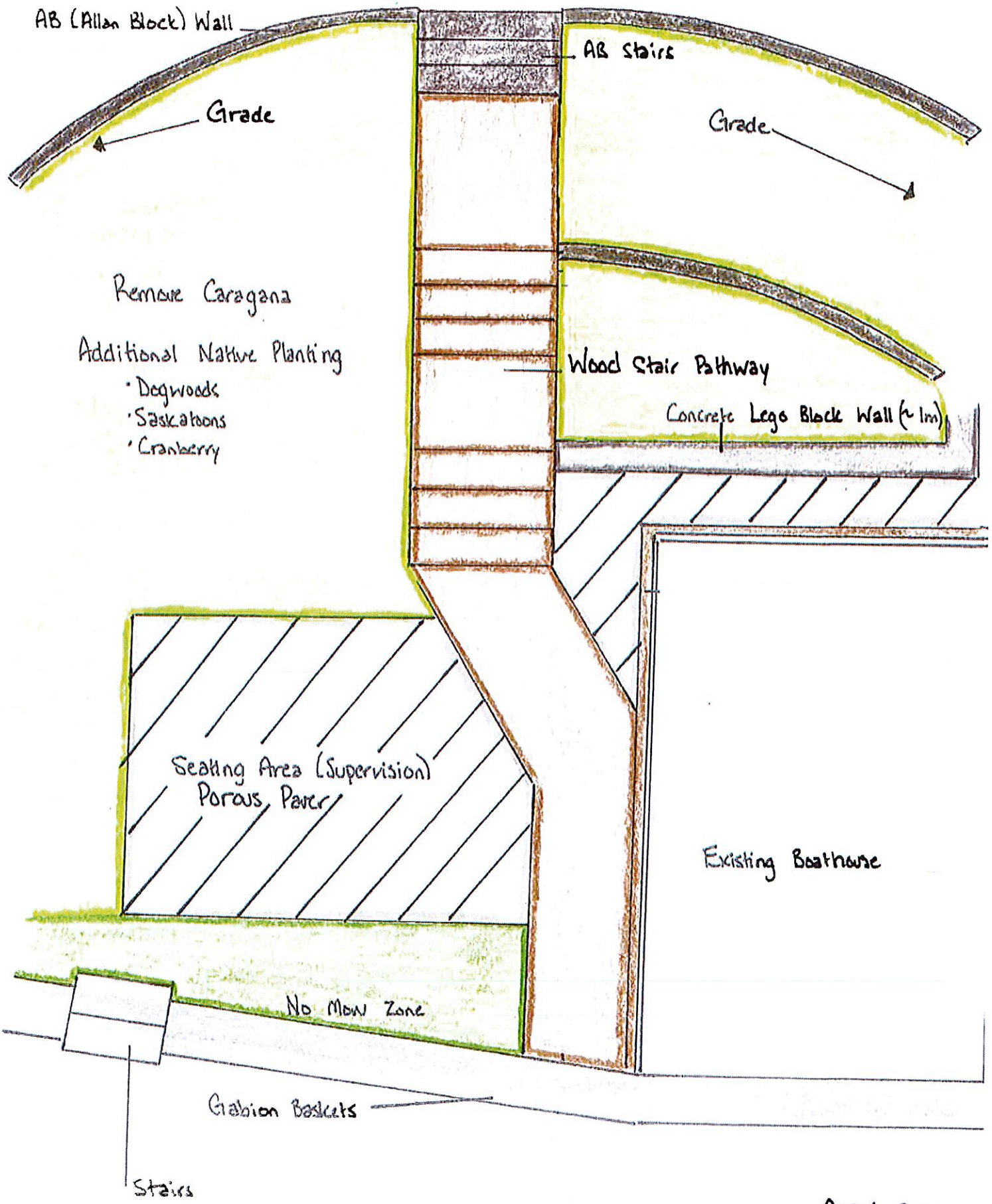
Date: July 29/2021

Subject: [redacted] Cross Section (Proposed)

PARKLAND NURSERY
& Landscape Services Ltd.

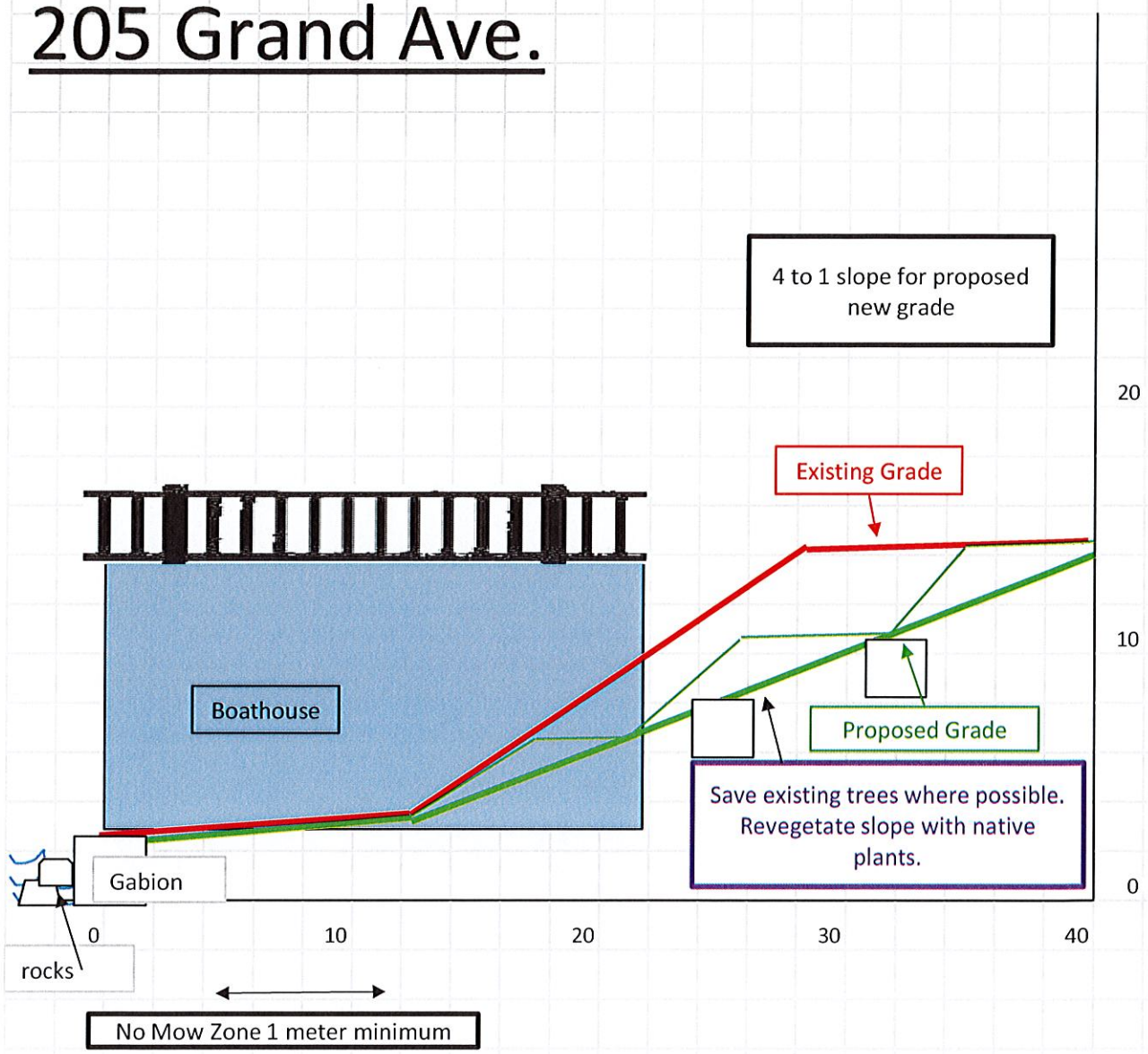
Box 25004 Deer Park P.O.
Red Deer, Alberta CANADA T4R 2M2
Phone: 403.340.8755
Fax: 403.340.8759
Website: www.pnls.ca
Email: admin@pnls.ca

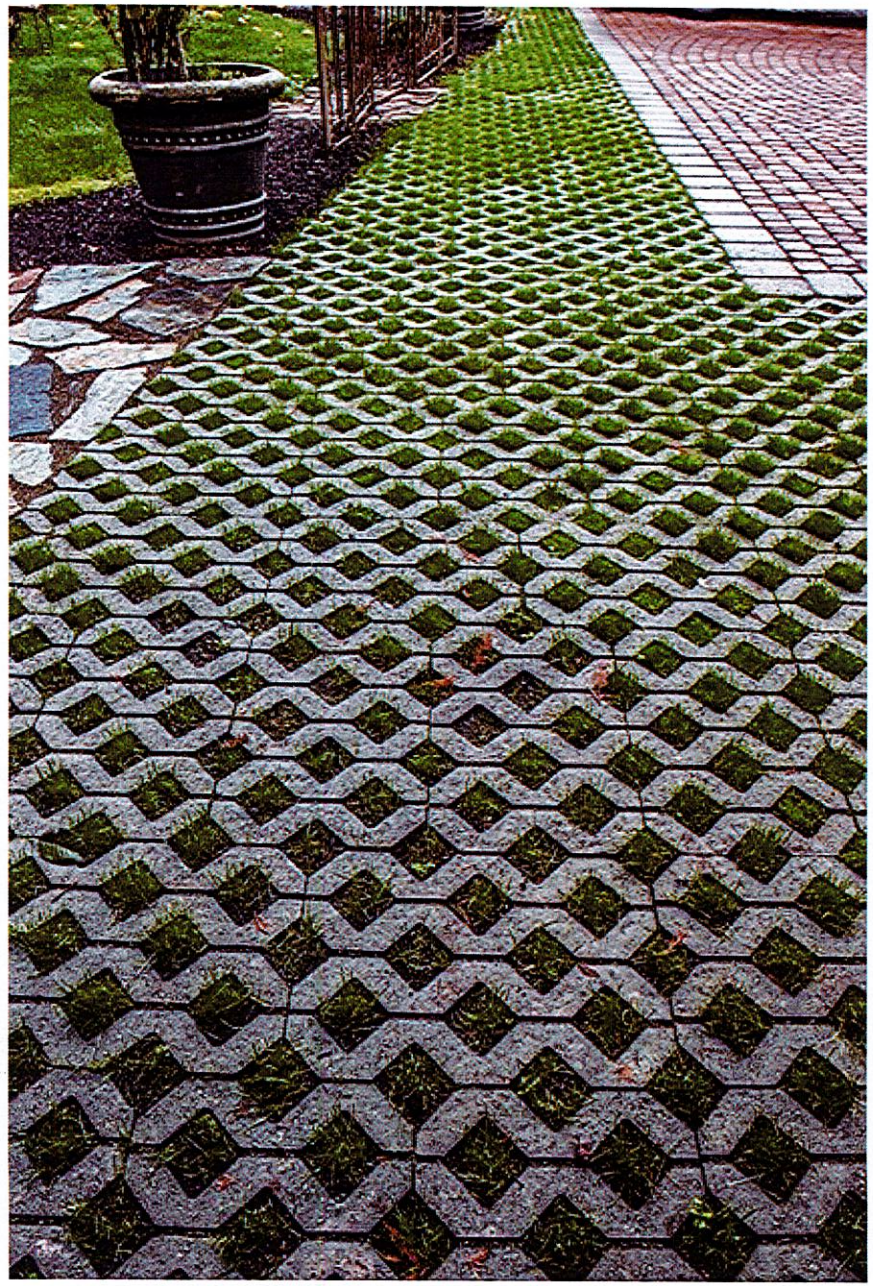




August 2021
B. Beck

205 Grand Ave.





Picture to show porous paver that will be used.


Limestone Fines
Concrete Lego Blocks
Examples of materials to be used for landscaping and retaining walls
Gabion Wall: note boards to facilitate waterfowl movement
Allan Block Stone Retaining Wall

Tree Removal

PARKLAND NURSERY
A Landscape Services Ltd.

Box 25004 Deer Park PO _ Red Deer, Alberta T4R 2M2
Phone: 403-340-8755 • Fax: 403-340-8759 • Website: www.pnls.ca • Email: admin@pnls.ca

April 22, 202

Your Green Connection

Kara Kashuba
Junior Development Officer
Sylvan Summer Villages

Dear Ms. Kashuba,

Parkland Nursery and Landscape Services Ltd. has been approached to help revitalise the bank at Mr. Radford's property in the Summer Village of Norglenwold, on Sylvan Lake. The goal of the revitalization on his property is to create a safe embankment that provides his family access to the lake. We have reviewed parts of the "Caring for Shoreline Properties" to help us design an embankment that meets your standards while increasing the safety and accessibility of the current bank. In addition to our explanation for our plan, we have attached a concept sketch of our intentions.

As most of the large vegetation on Mr. Radford's embankment are dead or past their prime, such as the large popular trees that are comprised of large amounts of deadwood, we propose clearing the dead or dying vegetation and replanting native species such as Saskatoon bushes to help stabilize the slope from erosion.

Existing Stairs

The poplar trees circled in red above are both past their best before date as they have a substantial amount of deadwood.

The birch circled in red above is dead as it had a metal wire wrapped around its trunk which girdled it (see picture below).

The majority of vegetation growing to the left of the staircase are growing through fencing. It is only a matter of time before these trees and shrubs die as a result of girdling from the fence (see close up pictures below).

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JUL 07 2021

SILVERSTONE
CUSTOM HOMES

Miscellaneous Notes-205 Grand Avenue, Norglenwold
Radford Residence

Tree removal:
-see the attached aerial photo of trees and brush to be removed for construction.
-see the proposed landscaping plan for the replanting of trees and shrubs.
-approximately 20 trees on site will be removed to allow for the construction of this home.
-only trees that are within the building envelope and front approach will be removed.

The lot is vacant thus demolition is not required.

The plan for garbage removal is to have a 30 yd bin on site from Empringham Disposal and to have it dumped when full.

Existing use is a vacant lot and proposed use is a single family dwelling. Zoning is Shoreline Residential.

403-848-4080
justin@silverstonecustomhomes.ca
silverstonecustomhomes.ca

Progressive
HOME WARRANTY

MAY 18 2021

MAY 18 2021

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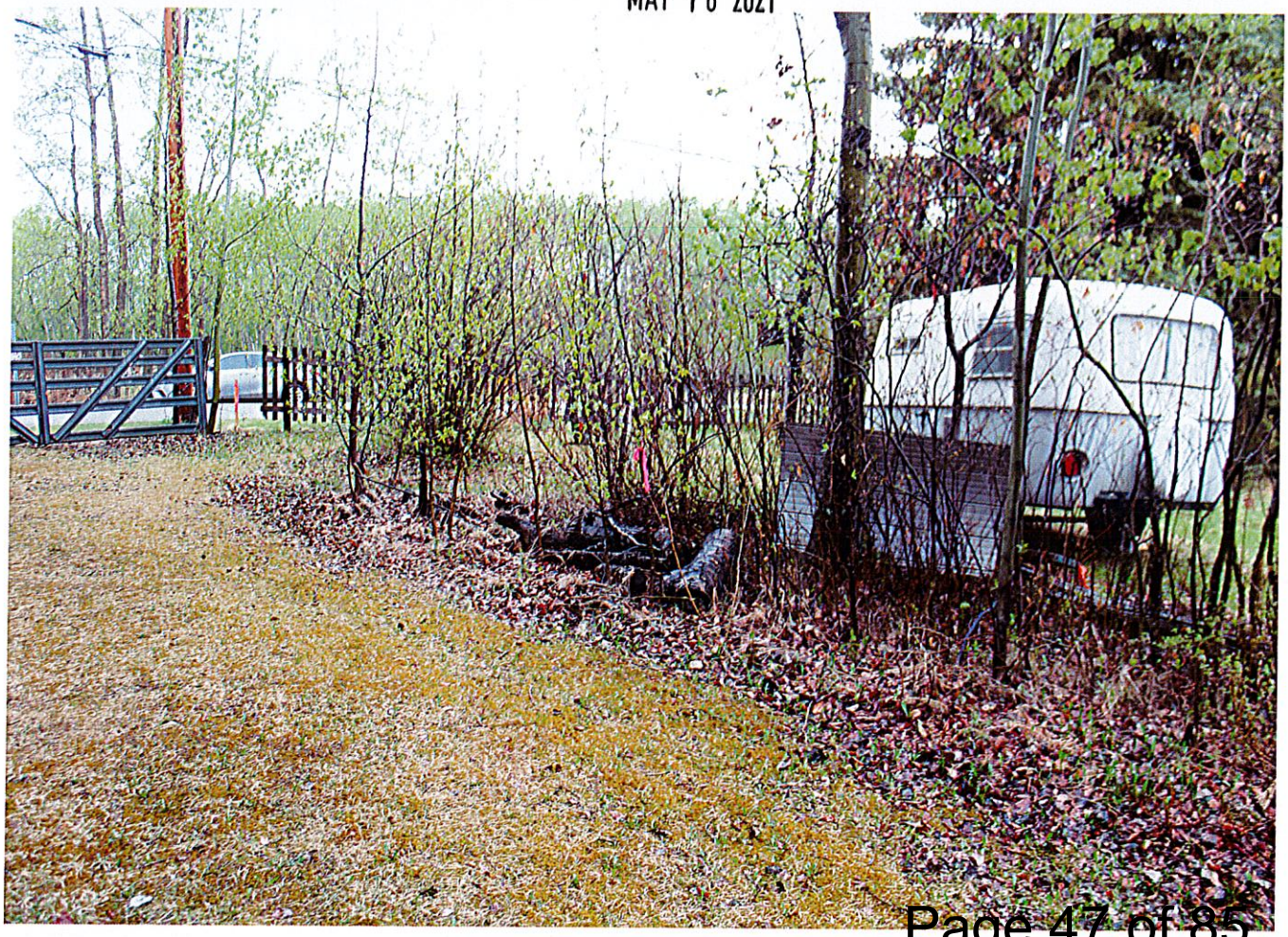

Geotechnical, Environmental and Materials Engineering

Red Deer · Sherwood Park · Grande Prairie · Calgary · Fort McMurray
Peace River · Medicine Hat · Lethbridge · Fort St. John · Estevan · Regina

GEOTECHNICAL SLOPE ASSESSMENT

205 GRAND AVENUE
SUMMER VILLAGE OF NORGLENWOLD, ALBERTA

PREPARED FOR

[redacted]

RED DEER, ALBERTA

PREPARED BY

PARKLAND GEOTECHNICAL CONSULTING LTD.
RED DEER, ALBERTA

ParklandGEO

PROJECT NO. RD7303-07

JUNE 8, 2021

TABLE OF CONTENTS

TABLES

APPENDICES

1.0 INTRODUCTION

[redacted] was proposing to construct a residential home and reconfigure the lake slope at the rear of 205 Grand Avenue in the Summer Village of Norglenwold, Alberta. Parkland Geotechnical Consulting Ltd. (ParklandGEO) was requested to perform a slope stability assessment of the site to provide related recommendations for development of the property. This report provides a review of the slope stability with regards to the proposed residential development.

1.1 SCOPE OF WORK

The scope of work was outlined in ParklandGEO's proposal dated May 7, 2021 (PRO9029rev1). Authorization to proceed with this investigation was given verbally by Mr. Reg Radford. This report summarizes results of the field and laboratory testing programs and presents geotechnical recommendations for the site.

The slope assessment in this report is intended to provide the Owner and municipal authorities with a reasonable expectation with respect to slope stability and potential for slope movement; and to communicate the technical risks so that informed development decisions can be made relating to the slope.

1.2 EXISITNG GEOTECHNICAL INFORMATION

ParklandGEO is not aware of and was not provided any previous geotechnical investigations for this property.

2.0 BACKGROUND

2.1 SITE DESCRIPTION

The property is located at 205 Grand Avenue in the Summer Village of Norglenwold, Alberta as shown on the Key Plan, Figure 1. The legal property description is Lot 13, Block 2, Plan 2203KS. The site was bordered by Grand Avenue to the west, developed residential lots to the north and south, and Sylvan Lake to the West. The greater area around the site is a mix of residential along the lake and agriculture in areas away from the lake.

The lot was previously partially developed with the majority of the trees cleared from the uplands area of the a lot, a small access down the lakeside slope, and a small shed on the lower slope face near the lake. It appears that a house or permanent structure had not previously been constructed in the uplands area at the site.

The lot can be divided into two distinct areas: the upland area; and the lake slope. The upland area extends from Grand Avenue about 50 m east to the crest of the slope. Upland area dips down about 3 m to the east at a grade of about 20H:1V over the length of the lot with a surface elevation of about 943.6 m at Grand Avenue and 940.6 m at the lake slope crest. The uplands

area had a maintained grass surface with thickets of mature trees on the north and south edges of the west half of the property.

The lake slope is about 4 m high with an elevation of about 940.6 m at the crest and 936.6 m at the toe near the lake. The grade of the slope ranged from about 1.4 to 5H:1V with a typical grade of 2.5H:1V. The slope face was vegetated with mature birch trees, bushes, and native prairie grasses. The south side of the slope had a small stairway built onto the slope face. A small shed was also located on the lower slope face, about 0.5 m above the toe. The slope had been previously cut to create a relatively flat platform for the shed. Photographs of the site are shown on Figure 4.

2.2 PROJECT DESCRIPTION

The proposed development is expected to include a newly constructed residential house with a basement. The exact location of the house is not known, however is expected to be located in the uplands area at least 10 m from the crest of the slope. The development may also include changes to the lake slope to allow for updates to the shed structure at the base of the slope. The regraded slope would remove material from the crest and slope face resulting in a more stable. The proposed reconfigured slope grade will be no steeper than 4H:1V, similar to the grade of the lot directly north of the site. This will result in the crest of the slope extending about 10 m west of the current location and the removal of material from the crest.

Summer Village of Norglenwold Land Use Bylaw No. 208/13 Section 2.3.2 requires a geotechnical engineering study for development near slopes exceeding a grade of ten percent. The purpose of the investigation was to identify a suitable development area with regards to slope stability and provide recommendations for development.

3.0 FIELD AND LABORATORY PROGRAM

On May 24, 2021, a site inspection was completed and two boreholes were drilled at the property. Borehole locations are shown on the Site and Aerial Plans, Figures 2 and 3. The following sampling and testing procedures were followed during the field program:

1. Prior to mobilizing the drilling rig, the ParklandGEO completed an Alberta One Call to verify the drill site was clear of underground utilities.

2. The drill rig was owned and operated by Finco Environmental Drilling Ltd. of Red Deer County, Alberta. Drilling operations were monitored by members of ParklandGEO's geotechnical staff. The soil encountered was visually examined during drilling and logged according to the Modified Unified Soil Classification System.

3. Soil samples were collected from auger cuttings at 1.0 m intervals in order to determine the soil/moisture profile. Soil samples were also obtained from auger grab and Standard Penetrations Tests (SPTs) at selected depth intervals.

4. At the completion of drilling, 25 mm hand-slotted PVC standpipes were installed in Boreholes 1 and backfilled with auger cuttings and a bentonite cap. The remaining borehole was backfilled with auger cuttings only. Excess auger cuttings were piled at the borehole locations. Groundwater measurements were recorded on June 7, 2021.

5. All soil samples were returned to ParklandGEO's Red Deer's laboratories for possible further testing. The results of all laboratory testing are shown on the borehole logs and individual test results presented in Appendix A. The laboratory program consisted of moisture contents and water soluble sulphates.

6. A topographic survey of the slope face conducted by Base Surveys Inc.. The borehole locations were surveyed by ParklandGEO using a Trimble GPS receiver and a pole mounted Trimble antenna. The estimated post data correction vertical accuracy of this equipment is ±20 cm. ASCM 991474 was picked up was surveyed as a fixed reference point (elevation 996.745 m) and confirmed the expected accuracy of the equipment. UTM coordinates and geodetic elevations are provided in the boreholes logs in Appendix A.

4.0 SUBSURFACE CONDITIONS

The soil profile encountered at this site was in descending order: topsoil; clay; clay till; residual clay bedrock and weathered bedrock. This profile is considered to be typical in the Summer Village of Norglenwold. The detailed soil conditions encountered at the borehole location are described on the borehole logs. The soil test results and definitions of the terminology and symbols used on the borehole logs are provided on the explanation sheets. The following is a brief description of the soil types encountered.

4.1 TOPSOIL

A 250 to 350 mm layer of topsoil was encountered at the borehole locations. The topsoil encountered was black and moderately organic. Local topsoil is considered to be weak and highly compressible when subjected to loads. The thickness of topsoil may vary between borehole locations.

4.2 CLAY

A 350 mm layer of clay was encountered below the topsoil in Borehole 2. The clay contained some silt and little sand. The layer was considered to be medium plastic, firm and moist.

4.3 CLAY TILL

Clay till was encountered below the topsoil and clay in both boreholes and it extended to depths ranging from 1.7 to 1.9 m below grade (elev. 940.7 to 939.1). The clay till was a mixture of clay, silt and sand with inclusions of coal and occasional rust stains. The clay till was brown considered to be low to medium plastic. SPT 'N' values ranged from 20 to 31 blows indicated that clay till layer very stiff to hard consistency The moisture content of the deposit ranged from 16 to 19 percent. Based on local experience, the estimated Optimum Moisture Content (OMC) of silt is about 16 percent.

4.4 RESIDUAL BEDROCK

Highly weathered bedrock was encountered below the clay till in both boreholes. The residual bedrock extended beyond the depth drilled in Borehole 2 and to 3.9 m below grade in Borehole 1. Both residual clay shale and fine sandstone materials were encountered. The moisture content ranged from 16 to 25 percent. Standard Penetration test (SPT) N in the residual weathered bedrock ranged from 24 to 33 blows indicating a very stiff to hard consistency.

4.5 WEATHERED BEDROCK

Weathered siltstone bedrock was encountered below clay till and residual bedrock in Boreholes 1 about 3.9 m below grade (elev. 938.6 m). Auger refusal was encountered within 2 m of the surface of the weathered bedrock. The typical local formation consists of inter-bedded silt-stone and clay shale with occasional layers of sandstone. The upper zone of the local formation is usually considered to be weak, weathered rock with a very stiff to very hard consistency. The moisture content ranged from 12 to 16 percent. The local bedrock is prone to weathering, quickly breaking down into constituent materials (ie. silt, clay, or sand). The competency of bedrock generally increases with depth.

4.6 WATER SOLUBLE SULPHATES

One soil samples was taken for water soluble sulphate concentration tests. The concentrations of sulphates are expressed as a percent of the dry mass of soil. The concentration of water soluble sulphates at 1.5 m below grade in Borehole 2 was 0.08, which indicates a "negligible potential for sulphate attach on buried concrete in direct contact with soil".

5.0 GROUNDWATER CONDITIONS

Groundwater seepage was not observed during drilling of the boreholes. The groundwater level in Borehole 1 was measured 4.14 m below grade (elev. 936.6 m) on June 7, 2021. The groundwater surface is expected to tie into the lake elevation near the toe of the slope.

The observed groundwater measurements are considered to be near the seasonal average. Groundwater elevations are expected to fluctuate on a seasonal basis and will be highest after periods of heavy or prolonged precipitation and snow-melt. Groundwater seepage is expected for relatively shallow excavations at this site. The volumes of groundwater encountered will be dependent on seasonal conditions and the permeability of the soils within the profile.

Localized areas may experience temporarily perched conditions in the sandy soils layer above the bedrock. Perched water conditions will dissipate over time as the groundwater infiltrates down through the low permeable subgrade soils.

6.0 ASSESSMENT OF SLOPE STABILITY

6.1 METHODOLOGY

Slope stability is described in terms of a factor of safety (FS) against slope failure which is the ratio of total forces resisting failure divided by the sum of forces promoting failure. In general a FS of less than 1.0 indicates that failure is expected and a FS of more than 1.0 indicates that the slope is stable. A steepened slope will slump back over time to establish a stable profile for the existing soil and groundwater conditions. Given the possibility of soil variation, groundwater fluctuation, erosion, delayed strength loss, and other factors, slopes with a FS ranging between 1.0 and 1.3 are considered to be marginally stable and a "long term" stable slope is considered to have a FS greater than 1.3. For permanent structure development at the crest of a slope, a setback corresponding to a factor of safety of 1.5 is considered an industry standard.

Stability analysis was carried out using the Morgenstern-Price method and *Slope/W* software. A series of slope models were prepared to represent various failure cases slopes. Model sensitivity was evaluated by varying slope geometry, soil strength parameters and groundwater conditions.

6.2 LONG-TERM VERSUS SHORT-TERM

Slope stability is dependent on a number of factors such as: slope geometry; groundwater and soil moisture conditions; and soil characteristics including soil strength. It is not uncommon to find slopes with very steep inclinations or even near vertical faces for relatively weak clay soils. This is an example of short-term stability based on short term soil strength of the clay. Soil strength is a function of:

- The friction angle of the soil, which can be visualized looking at the natural angle formed on the outside of a sand or gravel stockpile;
- The cohesion of the soil, which is the combination of physical and chemical bonds between the soil particles, some of which can break down due to conditions like wetting; and,
- Outside physical forces, such as suction of water from the slope subgrade via plant roots which adds strength to the soil similar to cohesion.

The short-term stability of a slope is based on all of the potential strength factors available under current conditions. Under ideal conditions steep clay slopes are possible, but if conditions change like: removal of vegetation; wetting the slope face; or raising of the groundwater table, overly steep slopes will begin failing as the short term strength disappears. With proper management to avoid destabilizing factors, this short-term soil strength can be preserved and steepened slopes can be maintained for extended periods, but not indefinitely. The risk of depending on short term conditions for assessing slope developments is rarely acceptable.

6.3 SLOPE MODELS

6.3.1 Slope Profile

The slope profiles for the site were based on survey data collected by Base Surveys Inc. and as shown on the Contour Plan, Figure 2. A representative profile was taken through the slope on the south side of the lot. Briefly, the side slopes range from about 1.4 to 2.1H:1V, with slope height of about 4 m. The proposed slope reconfiguration was modelled by holding the toe of the slope at the lake and reducing the slope grade to 4H:1V.

6.3.2 Subsurface Conditions

The following effective strength parameters were used in the analysis and derived based on modelling the historical slope movement of the upper slope and previous experience.

TABLE 1
SUMMARY OF SOIL PARAMETERS

Soil	Elevation (m)	Unit Weight γ (kN/m^3)	Cohesion c' (kPa)	Friction Angle Φ' (degrees)
Till	Surface – 939	19	0 – 1	27 – 29
Residual Bedrock	939 – 937	20	1 – 5	22 - 25
Weathered Bedrock	< 937	21	5 – 15	22 – 25

Groundwater conditions used in the analysis were assumed to be around 4 m below grade in the upland area and drop to meet the lake elevation near the slope location.

6.4 RESULTS OF STABILITY ANALYSIS

Stability analysis was carried out using the *SLOPE/W 2019* computer program to evaluate the factor of safety for the representative slope models. The results of the slope analysis are summarized in the below table.

TABLE 2
MODEL RESULTS FOR EXISTING CONDITIONS

Stability Run	Case	Factor of Safety	Figure
Slope Global	Current Slope	1.1	---
Upper Slope	Current Slope	1.1	B1
Setback 4 m from Crest	Current Slope	1.3	---
Setback 7.5 m from Crest	Current Slope	1.5	---
House Setback 8.5 m from Crest	Current Slope	1.5	---
Slope Global	4H:1V Reconfiguration	1.9	---

Upper Slope	4H:1V Reconfiguration	> 2.0	---
House Setback 2.5 m from new Crest	4H:1V Reconfiguration	1.5	B2

Representative slope profiles for the analysis are shown in Appendix B. It should be noted that a series of stability runs have be undertaken for both localized failures and global stability and the example runs provided in Appendix B are just samples of typical analysis results for various cases and conditions.

6.5 ASSESSMENT

The findings of the slope stability analysis for the slope model and the proposed soil parameters listed in Table 2 were in general agreement with observed slope experience. The long term assessment at this site is that the potential for a major slope movement impacting the proposed development is low under normal conditions with a reasonable expectation of seasonal variation. The proposed re-grading of the slope and development of a house site near new crest of the slope appears to have negligible impact on the slope, given proper setback. This is not surprising, as the re-grading measured would act to improve overall stability.

The existing slope face is considered to be marginally stable, with the potential minor movement if vegetation is removed from the slope face or in isolated overstepped areas near the existing shed. The proposed reconfiguration of the slope to a 4H:1V grade will improve the overall stability of the slope by off-loading some of the driving force from the slope.

The FS against a small shallow "slump-type" failure on the existing slope face may fall close to 1.0 if the slope face at the site was subject to grading causing excessive steepening, or if areas of the slope face were to become saturated. However, it would take unusually wet conditions to cause shallow slumping of the slope face. Saturation of the surficial soils, leading to the regressive slumping of the slope face is considered to be the most likely mode of slope failure at this site. If a large movement were to occur, the failure in the subgrade would be expected to be slow moving and would provide some warning in the form of cracks on the slope face prior to failure

7.0 DISCUSSION AND RECOMMENDATIONS

7.1 GEOTECHNICAL EVALUATION

The site soil conditions are considered typical for the Summer Village of Norglenwold and are suitable for the construction of the proposed residence. The foundations loads for the proposed residence are assumed to be light to moderate. The site soil conditions are considered suitable for conventional strip and spread footings bearing on the native till. The proposal to reconfigure the site slope will increase the global stability.

Based on the stability analysis, the critical failure plane at the rear wall of the proposed house footprint is considered to be stable with a FS of over 1.5 based on a design setback of 8.5 m from the crest for the existing slope configuration. The setback can be reduced to 2.5 m from the new crest if the slope is reconfigured to be no steeper than 4H:1V. The construction of the proposed residence is not expected to have a significant impact on the stability of the slope. The overall assessment of the slope issues at this site is that slope stability will not be a significant obstacle to residential development provided reasonable design, construction and long-term slope maintenance practices are followed.

The existing slope face is considered to be marginally stable in its current configuration. Changes to the slope face, such as toe erosion from wave action or loss of vegetation would reduce the stability of the slope face and may result in localized slumping and failures. Without vegetation, erosional forces such as wind and rain may cause spalling slumping on the slope face over time. With the designed house setback from the crest, this slumping is not expected to impact the proposed house. This spalling slumping could undermine the existing lake access stairs and shed area. There are three options to increase the stability of the slope face.

1. Flattening and removing the over steepened area of the slope face. Based on experience with the local soils, proposed reconfiguration to 4H:1V is considered to be suitable.

2. The slope face could be stabilized by installing a retaining wall system. The retaining wall system would need to be designed by a qualified engineer.

It should be understood the stairs and the shed are not considered to be permanent occupied structures, so the other option to slope rehabilitation would be to leave the features remaining after site development in an "as is" condition and maintain or repair them as required. Landscaping or retaining walls may be required to minimize impacts on neighboring properties if the crest area is lowered. Un-retained grade changes between adjacent lots should be no steeper than 3H:1V to ensure long term stability.

If the shed on the lower slope is moved to support a vertical cut of the slope face, there is potential for differential lateral earth pressures on the building due to the sloping grade and unburied east wall. The shed could be redesigned with a concrete wall designed to resist lateral earth pressures or the shed walls can be protected from these pressures by providing retaining walls to create a "pocket" around the shed.

There is potential for the shed to intercept groundwater seepage from the upslope area. This does not appear to have been a major issue with the current shed, but the old timbers were not fully sealed and groundwater would have some outlet towards the lake. It will be prudent to build some features into the design to allow any groundwater seepage from the upslope subgrade to have a pathway towards the natural drainage into the lake. This can be provided by selection of suitable foundation and backfill materials.

7.2 STABILITY OF DEVELOPMENT AREA

The overall assessment of the slope issues at this site are that slope stability will not be a significant obstacle to residential development provided reasonable design and construction practices are followed. Residential development should be setback at least 8.5 m from the existing crest location. If the slope if reconfigured to 4H:1V or flatter, the setback can be reduced to 2.5 m from the new crest location.

The most likely failures to occur at this site are shallow surficial failures during periods of soil saturation. However, the established vegetation at the site will help to prevent these failures from occurring. The surficial soil will also susceptible to erosion due to surface water run-off. This will be most likely to occur in areas that are cleared as part of the site development. It is critical to ensure that new vegetation is established following any re-grading of the lot. If even minor erosion is identified following construction, erosion protection measures should be implemented.

Septic tank or underground water storage should be setback a minimum of 10 m from the crest of the slope to limit the risk of saturation of the slope face. This will require careful planning of the layout of the site to ensure all minimum setback distances are adhered to for the septic tank, water well, and buildings.

7.3 SITE PREPARATION

It is anticipated that stripping and minor grading will be required as part of the residential development. It is anticipated that the maximum grade changes will be less than 1.0 m.

7.3.1 Stripping

In general, all surficial topsoil, organics, non-engineered fill or unsuitable soils should be stripped in the building and pavement areas. Trees and bushes should only be removed from areas required for development. Based on site observations the surficial topsoil ranges up to 350 mm thick. Some areas of the site may require more stripping or undercutting to remove any remaining topsoil, root systems, or foundation debris or pavement debris. Organic materials

should not be mixed with mineral soils. The excavated organics and unsuitable materials may be stockpiled at least 5 m from the crest of the slope for future landscaping use.

7.3.2 Subgrade Preparation

The exposed subgrade should be scarified to a depth of 150 mm and recompacted uniformly to a minimum of 98 percent of SPMDD. Site preparation measures should be monitored by qualified and experienced geotechnical personnel to identify potential soft areas or unsuitable material.

Site preparation should be carried out under dry weather conditions to minimize the risk of disturbance and softening. If adverse weather or groundwater conditions are observed, these recommendations should be reviewed in order to avoid subgrade failure. Uniformity of compaction is of most importance to minimize potential for differential settlement under new loads. Over compaction and wetting should be avoided. Site preparation measures should be monitored by qualified and experienced geotechnical personnel to identify potential soft areas. Soft areas should be sub-cut and replaced with a suitable fill material to a depth sufficient to support construction traffic. Methods to avoid subgrade failure of soft subgrades may include: limiting construction traffic, modification of site preparation procedures (scarification, recompaction, etc.) and sub-cut and replacement with a suitable engineered fill material.

7.3.3 Excavations and Backfill

Temporary excavations will be required for foundations and underground utility installations. All excavation work must comply with the requirements of the Alberta Occupational Health and Safety Act (OHS Act, 2018), OHS Regulation (2018) and OHS Code (2019). The OHS Code contains the technical requirements that support the Act and Regulation. Excavation side slopes are not expected to be able to stand near vertical for extended periods of time. Short term excavations side slopes should be cut back to 1H:1V from up to 1.5 m above the toe in the native cohesive soils. For excavations into the groundwater table or during wet conditions, flatter side-slopes may be required.

If space does not permit the slopes to be cut back, some form of temporary shoring must be installed to protect workers in the trench. All temporary surcharge loads should be kept back from the excavated faces a distance of at least one-half the depth of the excavation. All vehicles delivering materials to the site should be kept back from excavated faces at least 1.0 m or one times the excavation depth, whichever is greater. Fill materials used to bring the site to grade after excavation may consist of low to medium plastic imported clay, sand fill, or an approved granular fill.

Compliance with compaction recommendations around buildings is especially important, because poorly compacted backfill adjacent to foundation walls or grade beams will settle and may lead to ponding of surface water.

7.3.4 Fill/ Backfill and Compaction

Fill required to bring the site up to grade should be low to medium plastic inorganic clay or well graded select sand or gravel. The native sand is considered suitable as fill material; however it will require moisture conditioning in order to achieve proper compaction. The native sand will likely require an addition of moisture in order for proper compaction. The following table provides minimum compaction level and target moisture contents for any engineered fill at the site.

TABLE 3
RECOMMENDED COMPACTION LEVELS AND MOISTURE CONTENTS

Fill Location	Recommended Minimum Compaction Level	Moisture Content
Building Areas		
New fill greater than 0.6m thickness (including trenches)	100% SPMDD	±2% OMC
New fill less than 0.6m thickness (including trenches)	98% SPMDD	±2% OMC
Under structural slabs	95% SPMDD	±3% OMC
Other Development Areas		
Exterior building area outside of road structures	95% SPMDD	±3% OMC

The lift thicknesses should be governed by the ability of the selected compaction equipment to uniformly achieve the recommended density. However, it is generally recommended to use lifts with a maximum compacted thickness of 200 mm for granular fill and 150 mm for clay fill. Uniformity is of most importance. Granular fill is best compacted with large smooth drum vibratory rollers while clay fill is best compacted with vibratory "padfoot" or "sheepsfoot" rollers. Over compaction and excessive use of vibration to achieve density should be avoided to minimize risk of failing the subgrade. In areas which require higher compaction, it is recommended that granular fill be placed at moisture contents 0 to 2 percent below the OMC and that clay fill be placed at moisture contents about 0 to 2 percent above the OMC. This will help reduce compactive effort and potential risk of subgrade disturbance needed to achieve maximum density.

Fill placement and compaction during the winter months is challenging due to the difficulty in moisture conditioning the fill soils and obtaining high compaction levels. Materials and methodology should be reviewed prior to construction if cold weather compaction of clay fills is proposed. High compaction levels can only be achieved using fill soils that are unfrozen provided the compaction area is heated and hoarded to prevent freezing during placement and compaction.

7.3.5 Site Drainage

Surface water should be drained away from the site as quickly as possible, both during and after construction. Site drainage should be directed away from the foundation walls. It is recommended to provide a 5 percent back slope from buildings for a distance of at least 3 m with a 2 percent slope beyond that. Roof and other drains should discharge well clear of buildings and be designed to discharge at several different locations. Discharging all roof runoff at the same location has the potential to cause development of erosion channels that can ultimately impact slope stability.

Compliance with the recommendation for compaction of fill in exterior areas is important because poorly compacted backfill adjacent to foundation structures will settle, which may lead to ponding of surface water against foundation walls or grade beams. The slope of exterior backfill should be checked periodically to verify water is shed away from buildings. If the backfill settles causing water to pond against foundation walls, the surface should be re-graded. Water should not be allowed to pond adjacent to the building or pavement areas.

7.4 FOOTINGS

Standard house basement foundations using strip and spread footings will generally be acceptable at this site. Footings based on undisturbed native sand may be designed based on a maximum allowable bearing pressure of 120 kPa for strip footings and 140 kPa for pad footing placed on undisturbed inorganic soil free from loosened material. The design and construction of residential foundations should conform to the Alberta Building Code. In general, excavations should be protected against surface water runoff and ingress of groundwater; footing bases should not be allowed to dry out excessively during construction; and the bearing soil should be protected against freezing during and after construction.

Additional design and construction recommendations for footings include:

1. Footings should bear on native sand or approved engineered fill free from loosened material. Excavation of the footing trenches should be undertaken in a manner to minimize disturbance to the bearing surface. The use of backhoe or grade-all equipment is strongly recommended over loader or dozer equipment.

2. For protection against frost action, exterior footings in continuously heated structures should be provided with a minimum depth of ground cover of 1.5 m. If any proposed building/structures will be left unheated over the winter they will require at least 2.5 m of ground cover. Artificial insulation may be used to prevent frost penetration where adequate depths of ground cover cannot be economically provided. Insulation should be placed exterior to the footing wall.

3. Footings and foundation walls should be reinforced to span localized soft spots.

4. The footing trenches should be protected against surface water run-off and seepage water through the use of conventional sumps and ditches, if required.

5. Footing bases should not be allowed to dry out excessively during construction.

6. Foundation soils must not be allowed to freeze at any time prior to, during, or after construction.

7. Preparation of the bearing surfaces should be monitored by a qualified geotechnical engineer prior to placement of footings to verify that design criteria are met.

7.5 GRADE SUPPORTED FLOOR SLABS

Floor slabs should rest on at least 150 mm of well graded, free draining, granular base. Suitable materials would include coarse sand or crushed gravel with less than 10 percent passing the 0.080 mm sieve. The drainage layer below the slab should be compacted uniformly to at least 95 percent of SPMDD.

Small vertical subgrade movements may be experienced; therefore provisions should be made for movements between partitions and adjoining columns or load bearing walls. In addition, where partitions are placed under structural members a space should be left at the top of the partition to allow vertical movement (at least 25 mm). Columns in basements which support floor joists should be adjustable. Water lines should be installed carefully to minimize the potential for breakage and leaks below slabs.

7.6 BACKFILL FOR HOUSE STRUCTURES

Backfill soils are capable of exerting significant horizontal pressures onto a basement wall. It is recommended the backfilling be delayed until the concrete has gained enough strength to support the horizontal loads. The top and bottom of the wall should be braced prior to backfilling. Therefore, it is recommended to place the basement floor slab and floor joists prior to backfilling around walls. Backfill should be brought up evenly around the building perimeter to minimize differential horizontal pressures on the basement walls.

Rather than heavily compacting the backfill around the basements, it is recommended to nominally compact the backfill (90 - 95 percent of SPMDD) recognizing that settlement of the backfill will occur, particularly after the first freeze/thaw and moisture infiltration cycle. Backfill around basement walls should be sloped to shed water away from the structure with a recommended slope of at least 5 percent over a distance of 3 metres. The slope of the backfill should be checked periodically to maintain the slope of the ground surface away from the wall. If possible, the upper 500 mm of backfill should be low to medium plastic clay, to reduce potential surface water infiltration against the foundation walls. Roof leaders from houses and garages may be discharged onto the ground surface well clear of the foundation walls to help reduce wet weather infiltration of water around the foundation.

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7.7 BASEMENT AND SUBDRAINAGE SYSTEM

A permanent subdrainage system (weeping tile drain) is not specifically required to control groundwater at this site. However, weeping tile is an inexpensive way to ensure water is unable to pond against foundation walls during heavy rainfall events, spring melt or unforeseen circumstances.

The weeping tile should consist of a minimum 100 mm diameter perforated rigid pipe surrounded by a filter of free draining gravel and enveloped in filter fabric. It is noted that corrugated HDPE is prone to sagging because it is flexible; to plugging because the corrugations of the pipe promotes deposition of the soil; and also to crushing where backfill thickness exceed 1.2 m. PVC pipe (with two 45-degree fittings at building corners) is more easily flushed, snaked, and unplugged; and is also the less prone to breakage.

Weeping drain should be surrounded with granular material to prevent the fine grained native soil from being washed into the drain. The granular filter may consist of free draining crushed rock or washed rock placed around the perforated drain pipe and wrapped with a coarse concrete sand or suitable geotextile. The weeping tile should be directed to a sump for collection and discharge. The discharge should be taken outside well away from the basement and well away from the slope face. Gravity discharge can be considered at this site as the surrounding topography allows. Sump discharge point should be protected from erosion with suitable landscaping features or splash-pad. Infiltration flows into the weeping tile drains from the sand subgrade is expected to be infrequent and minimal. The largest flows will occur during periods of heavy precipitation and snow melt.

7.8 FOUNDATION CONCRETE

Water soluble sulphate concentration results indicate a negligible potential for sulphate attack of subsurface concrete. As per CSA A23.1-14, General Use (GU) hydraulic cement is recommended with a minimum 28 day compressive strength of 28 MPa with a water cement ratio of 0.5. All concrete exposed to a freezing environment either during or after construction should be air entrained. Calcium chloride or any admixture formulation containing chloride should not be used in the subsurface concrete. Calcium salts used as accelerating admixture should be avoided, since they may increase the severity of sulphate attack.

7.9 RETAINING WALL DESIGN RECOMMENDATIONS

For any new retaining walls, the foundations should be designed for an ultimate bearing capacity of 300 kPa for ULS design. The "factored" ULS resistance may be calculated by multiplying the ultimate bearing capacity by a geotechnical resistance factor of 0.5, in accordance with the building code requirements. For SLS design an allowable bearing resistance of 120 kPa may be used.

Earth pressures behind the wing-walls will produce a horizontal sliding force and an overturning moment. It is expected that long term permanent lateral earth pressure cases may be

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encountered on this project. Three long term earth pressure cases may be considered for earth retaining structures on this project.

1. Active Case. Active earth pressures (K_A) should be used behind retaining walls which are unrestrained at the top and flexible walls which are allowed to move away from the restrained soil mass (i.e. shoring).

2. "At Rest" Case. "At rest" pressures (K_O) should be used behind fixed walls or shoring walls with bracing struts installed at the top the shoring walls. "At rest" earth pressures will be larger than active earth pressures, but shoring walls will be more stable.

3. Passive Case. Passive earth pressures (K_P) act on the front of shoring walls on the portion installed below the final excavation grade and on the rear of shoring wall acting as backstops for jacking (i.e. against the base of the wall). Horizontal stresses on the wall push against the soil creating a much larger resisting force than is produced by the active or at rest conditions. It is recommended to ignore passive pressure from soil which slopes down away from the wall.

Lateral earth pressures may be computed using the following equation:

$$P = K\,Q + K\,\gamma\,H$$

where:
P = lateral earth pressure at depth H below ground level (kPa)
Q = any surcharge loading at the ground surface (kPa)
K = coefficient of lateral earth pressure
γ = total unit weight of backfill compacted to 95 % SPMDD (kN/m^3)
H = depth below ground level

TABLE 4
LATERAL EARTH PRESSURE PARAMETERS

Type of Backfill	Total Unit Weight (kN/m^3)	Coefficient of Lateral Earth Pressure			
		β*= 0°		β*= 15°	
		K_A	K_P	K_A	K_P
Clay fill	18.0	0.44	2.28	0.53	1.87
Gravel Fill	21.0	0.27	3.69	0.31	3.25
Native Till	19.0	0.38	2.66	0.44	2.25

* β is the slope angle of any soil material behind the wall measured from the horizontal

1. This relationship makes no allowance for hydrostatic pressure to build up on the wall, as it is expected that the retaining system will be protected by a sub-drainage system.

2. The earth pressure relationship given above assumes nominal compaction of the backfill to a maximum of 95 percent SPMDD. Only light, hand operated equipment should be used within 1.5 m of walls, and walls should be braced prior to backfilling. The use of

heavy compaction effort adjacent to walls will induce significant stresses on the upper portion of the walls requiring additional structural reinforcement. If heavy equipment is proposed, the earth pressure relationship should be reviewed.

3. The preceding relationship makes no allowance for additional horizontal forces due to frost to build up behind the shoring walls on the assumption that frost protection will be installed, if required. If no frost protection is provided the lateral earth pressures pushing on the wall should be increased by a factor of 2 for the depth of frost.

7.10 SLOPE DEVELOPMENT RECOMMENDATIONS

The slope face around the development area will be subject to periodic wetting from precipitation and potential surface erosion from run off. It is important that the proposed site development does not initiate any detrimental changes to the subsurface conditions and slope geometry. In order to minimize the potential for destabilization that could lead to localized failures, the crest areas and the slope faces should be kept well vegetated. Permanent removal of the existing vegetation from the crest area and the slope face is not recommended and growth of new vegetation on the slope and crest area should be encouraged. Vegetation should only be removed from areas that are required for development. Ongoing monitoring of the surficial conditions of the slope should be carried out. Erosion control measures should be implemented in any areas where erosion is identified.

The following general recommendations are intended as a guide to minimize the impact of the proposed development on the stability of the slope.

1. Site grading carried out should be designed to drain surface water due to rainfall and snowmelt away from the slope, promoting infiltration rather than surficial run off. Where surface run-off toward the slope is required it should be designed as sheet flow, rather than directed to a discharge point such as a swale.

2. All discharge from roof leaders and possible weeping tile systems should be directed away from the top-of-bank. Drainage from roof leaders and/or weeping tile sump discharges should not be allowed to flow uncontrolled over the crest or be allowed to pond on the ground surface near the crest of the slope, causing increased water infiltration into the slope.

3. It is suggested that exposed soils around site should be vegetated soon after site grading and construction is complete. It is suggested that any new vegetation for this site be selected from native species with deep root systems that can grow with a minimum of watering. Leaving graded areas of the site unvegetated for extended periods of time will cause increased infiltration into the slope, resulting in the saturation of the upper soils of the slope.

4. Septic fields and water storage/septic tanks (i.e. cisterns) should not be located at the crest of the slope. If required, water storage/septic tanks should be located at least 10 m from the crest of the slope.

5. Swimming pools and underground sprinkler systems should be avoided at the site due to the possibility of long term undetected leakage which could reduce stability of the slope.

6. Building contractors often make the mistake of pushing excavation soil out onto the slope face in an attempt to establish larger level yard area; often placing the material over existing vegetation and topsoil. This usually results in over loading and steepening of the original slope, resulting in very unstable conditions. Under no circumstances should soil or construction debris be placed on the slope face or at the crest of the slope.

The general recommendations in this section are considered to be "common sense" actions to undertake or avoid in order to minimize potential disturbance to the slope. It is considered prudent to follow these recommendations to maintain a low risk to the property (and thereby to the house). It should be noted, that the possibility that future property owners may undertake activities which are detrimental to the stability of the slope is assumed when assessing the factor of safety of the slope. These general recommendations and guidelines may be subject to site specific modifications based on the review of a qualified geotechnical engineer.

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8.0 CLOSURE

This report is based on information at two boreholes location, site reconnaissance and site survey. If different subsoil and groundwater conditions than those described above are encountered, this office must be notified and recommendations submitted herein will be reviewed and revised as required. This report has been prepared for the exclusive use of **Reg Radford**, and their approved agents for the specified application to the residential development within 205 Grand Avenue, Summer Village of Norglenwold, Alberta. It is understood that this report will be submitted to the county as part of a development permit application package. This report has been prepared in accordance with generally accepted soil and geotechnical engineering practices. No other warranty, expressed or implied, is made. The limitations of this report are specified in the General Terms and Conditions section and should be considered part of this report.

We trust this meets with your present needs. If you have any questions or comments regarding this information, please do not hesitate to contact this office.

Respectfully submitted,
PARKLAND GEOTECHNICAL CONSULTING LTD.

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08 June 2021

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Geotechnical Engineer

APEGA Permit to Practice No. P – 7312

8 June 2021

Michael Staple, P.Eng.
Responsible Member

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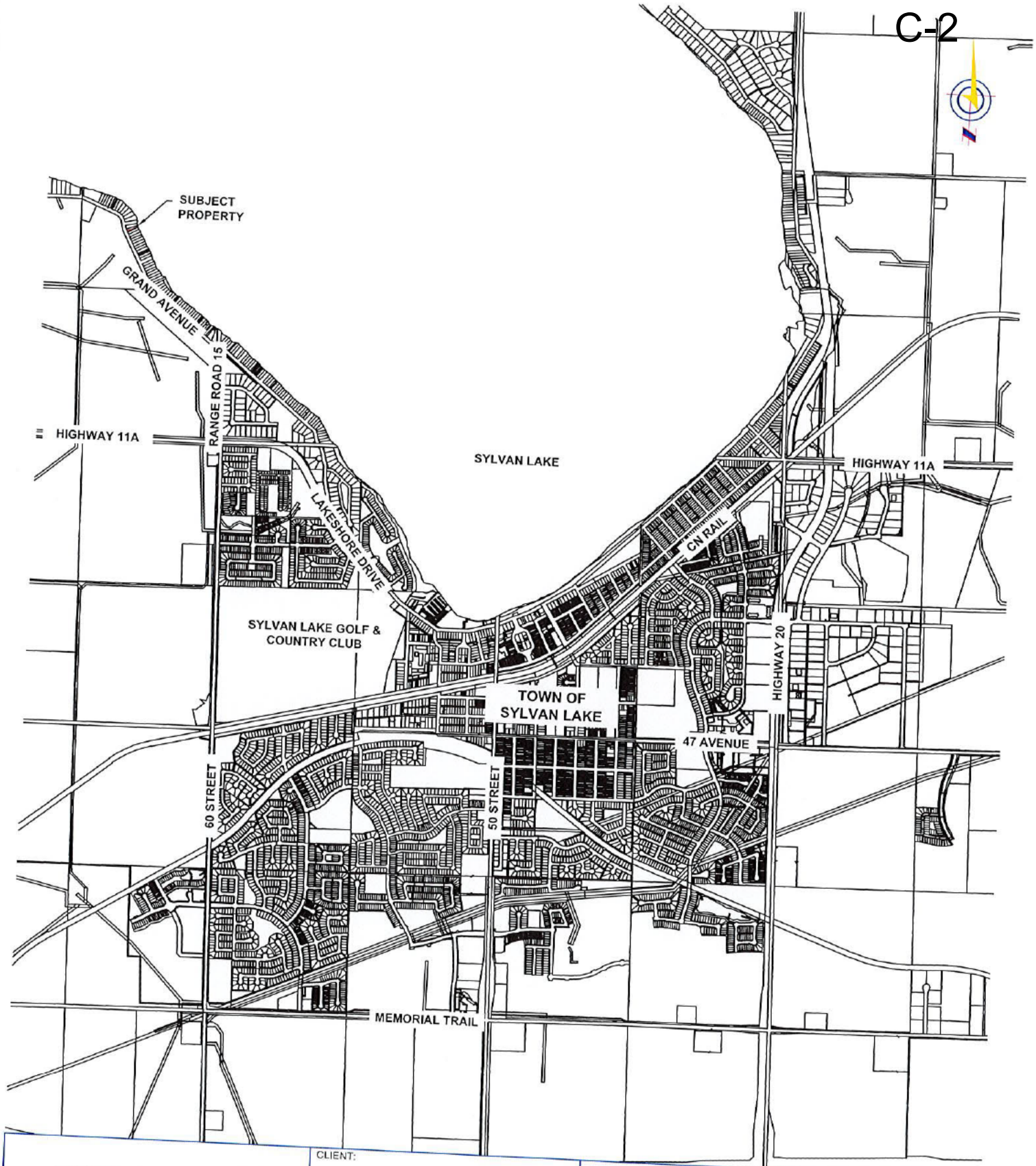
FIGURES



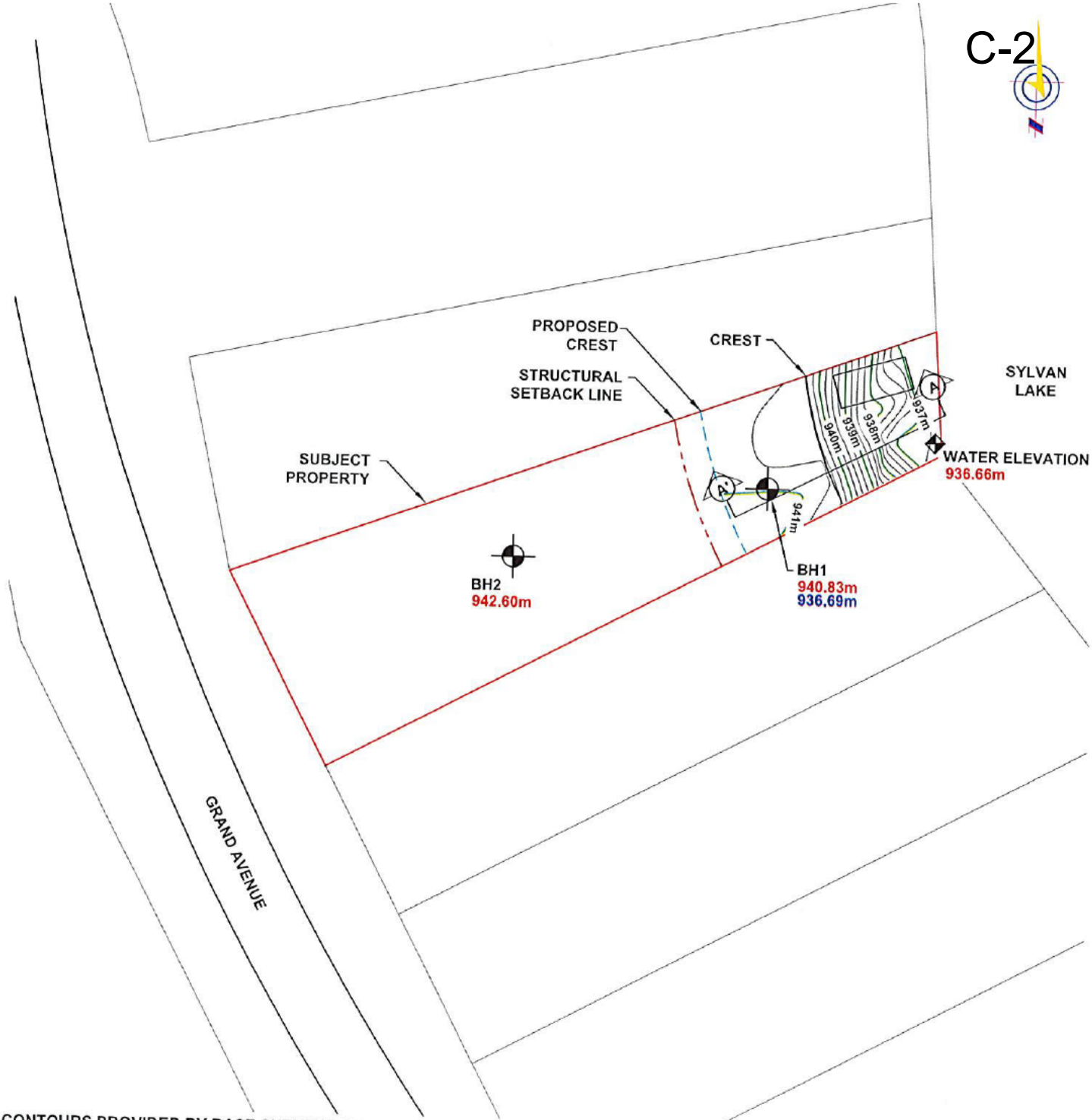
ParklandGEO

CLIENT: [redacted]

KEY PLAN

PROPOSED RESIDENCE SLOPE ASSESSMENT
205 GRAND AVENUE, NORGLENWOLD, ALBERTA

DRAWN:	CHK'D.:	REV #:	DATE:
NC	BL	0	JUNE 2021
SCALE: NTS	JOB NO. RD7303-07		DRAWING NO. FIGURE 1



CONTOURS PROVIDED BY BASE SURVEYS INC., FILE NO. 1153 - PLG, DATED JUNE 3, 2021.

ALL BOREHOLE LOCATIONS ARE APPROXIMATE.

REFERENCE POINT

940.83m SURFACE ELEVATION

936.69m GROUNDWATER ELEVATION (JUNE 7, 2021)

SCALE (metres)

-10 -5 0 5 10 20

Parkland GEO

CLIENT: [redacted]

SITE PLAN

PROPOSED RESIDENCE SLOPE ASSESSMENT
205 GRAND AVENUE, NORGLENWOLD, ALBERTA

DRAWN:	CHK'D.:	REV #:	DATE:
NC	BL	0	JUNE 2021
SCALE: 1:500	JOB NO. RD7303-07		DRAWING NO. FIGURE 2

NOTE: AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH, DATED AUGUST 22, 2015.

ALL BOREHOLE LOCATIONS ARE APPROXIMATE.

SCALE (metres)

-10 -5 0 5 10 20

Parkland GEO

CLIENT: [redacted]

AERIAL PLAN

PROPOSED RESIDENCE SLOPE ASSESSMENT
205 GRAND AVENUE, NORGLENWOLD, ALBERTA

DRAWN:	CHK'D.:	REV #:	DATE:
NC	BL	0	JUNE 2021
SCALE: 1:500	JOB NO. RD7303-07		DRAWING NO. FIGURE 3

PHOTOGRAPH 1: SHOWS BH1 AND SUBJECT PROPERTY, FACING EAST

PHOTOGRAPH 2: SHOWS SUBJECT PROPERTY, TAKEN FROM GRAND AVENUE, FACING EAST

PHOTOGRAPH 3: SHOWS BOATHOUSE SHED AT TOE OF SLOPE, FACING WEST

PHOTOGRAPH 4: SHOWS TOE OF SLOPE, STAIRWAY AND NEIGHBOUR PROPERTY TO THE SOUTH, FACING WEST

ParklandGEO	CLIENT: [redacted]	**SITE PHOTOGRAPHS**		
		PROPOSED RESIDENCE SLOPE ASSESSMENT 205 GRAND AVENUE, NORGLENWOLD, ALBERTA		
		DRAWN: NC	CHK'D.: BL	REV #: 0	DATE: JUNE 2021
		SCALE: NTS	JOB NO. RD7303-07	DRAWING NO. FIGURE 4	

APPENDIX A

Borehole Logs (2)
Explanation of Terms and Symbols
Soil Test Results

Parkland GEO

CLIENT: [redacted]
SITE: 205 Grand Avenue - Norglenwold
NOTES:

BOREHOLE NO.: 01
C-2
PROJECT NO.: RD7303-07
BH LOCATION: Lake Crest

SUBSURFACE PROFILE

Depth (m)	Description	Symbol	Moisture (Wp |-----X-----| Wl) 25 50 75	Type	Sample No	SPT (N)	Comments	Well Completion Details	Elevation (m)
0	GROUND SURFACE								940.80
	Topsoil Black, organic, moist.								940.45
1	***Till*** Clay, some sand, little sand, trace gravel, very stiff, low to medium plastic, brown, occasional coal and rust, damp.		16						
2	***Clay (Residual Bedrock)*** Some sand, medium plastic, very stiff, brown, damp.		16		1D1	31			939.10
				G	1G1				
3			25						
	Weakly Cemented Sand Some silt, fine grained, dense, damp to dry.				1D2	33			937.60
4	***Weathered Bedrock*** Siltstone, some silt, hard, brown, dry.		12						936.90
5	- Grey, very hard at 5.5 m.		21						
6			16		1D3	-	- 25 blows for 50 mm		934.70
	Auger refusal at 6.1 m. Dry upon completion. 25 mm PVC standpipe installed. Backfilled with auger cuttings and bentonite cap. Water at 4.14 m on June 7, 2021.								
7									

LOGGED BY: BL
CONTRACTOR: Finco Enviromental Drilling Ltd.
RIG/METHOD: Track Rig/ 150 mm Solid Stem
DATE: May 24, 2021
CALIBRATION:

GROUND ELEVATION: 940.8 m
NORTHING: 5801627.7 m
EASTING: 695616.5 m

PAGE 1 of 1

Parkland GEO

CLIENT: [redacted]

SITE: 205 Grand Avenue - Norglenwold

NOTES:

BOREHOLE NO.: 02 C-2

PROJECT NO.: RD7303-07

BH LOCATION: House Location

SUBSURFACE PROFILE

Depth (m)	Description	Symbol	Moisture (Wp |-----X-----| Wl) 25 50 75	Type	Sample No	SPT (N)	Comments	Well Completion Details	Elevation (m)
0	GROUND SURFACE								942.60
	Topsoil Black, organic, moist.								942.35
	Clay Some silt, little sand, medium plastic, firm, brown, moist.								942.00
1	***Till*** Clay, some sand, little sand, trace gravel, very stiff, low to medium plastic, brown, occasional coal and rust, damp.		19						
					2D1	20	SO4 = 0.08%		
2	***Clay (Residual Bedrock)*** Some silt, some sand, medium plastic, very stiff, brown, dry to damp.		19						940.70
3			16						
					2D2	24			
4			23						
	Auger refusal at 4.5 m. Dry upon completion. Backfilled with auger cuttings.								938.10
5									
6									
7									

LOGGED BY: BL

CONTRACTOR: Finco Enviromental Drilling Ltd.

RIG/METHOD: Track Rig/ 150 mm Solid Stem

DATE: May 24, 2021

CALIBRATION:

GROUND ELEVATION: 942.6 m

NORTHING: 5801621.1 m

EASTING: 695593.3 m

EXPLANATION OF TERMS AND SYMBOLS

The terms and symbols used on the borehole logs to summarize the results of the field investigation and subsequent laboratory testing are described on the following pages.

The borehole logs are a graphical representation summarizing the soil profile as determined during site specific field investigation. The materials, boundaries, and conditions have been established only at the borehole location at the time of drilling. The soil conditions shown on the borehole logs are not necessarily representative of the subsurface conditions elsewhere across the site. The transitions in soil profile can have gradual rather than distinct boundaries.

1. **PRINCIPAL SOIL TYPE** – The major soil type by weight of material or by behaviour.

Material	Grain Size
Boulders	Larger than 300 mm
Cobbles	75 mm to 300 mm
Coarse Gravel	19 mm to 75 mm
Fine Gravel	5 mm to 19 mm
Coarse Sand	2 mm to 5 mm
Medium Sand	0.425 mm to 2 mm
Fine Sand	0.075 mm to 0.425 mm
Silt	0.020 to 0.075 mm
Clay	Smaller than 0.020 mm

2. **DESCRIPTION OF MINOR SOIL TYPE** – Minor soil types are identified by weight of minor component.

Descriptor	Percent
and	35 to 50
some	20 to 35
little	10 to 20
trace	1 to 10

3. **CONSISTENCY OF FINE GRAINED SOILS** – The following terms are used relative to undrained shear strength and Standard Penetration Test (SPT), N value, for blows per 300 mm penetration (ASTM D1586).

Description	Undrained Shear Strength, C_u (kPa)	SPT N Value
Very Soft	Less than 12	Less than 2
Soft	12 to 25	2 to 4
Firm	25 to 50	4 to 8
Stiff	50 to 100	8 to 15
Very Stiff	100 to 150	15 to 30
Hard	Over 150	Over 30

4. **RELATIVE DENSITY OF COARSE GRAINED SOIL** – The following terms are used relative to Standard Penetration Test (SPT), N value, for blows per 300 mm penetration (ASTM D1586).

Description	SPT N Value
Very Loose	Less than 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very Dense	Over 50

5. **TYPICAL SEDIMENTARY BEDROCK TYPES AND CLASSIFICATION** – The following terms are based on visual inspection and field/laboratory identification tests.

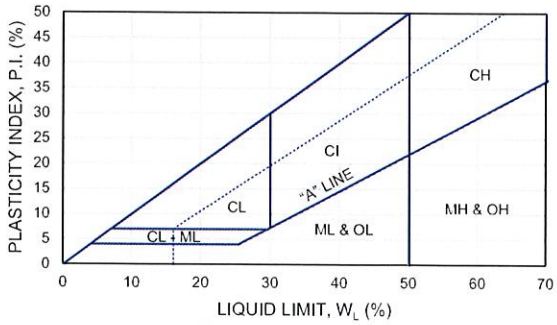
Characteristic	Sandstone	Mudrocks			
		Siltstone	Mudstone	Clayshale	Claystone
Composition	>50% Sand $CaCO_3$ or silica binder. Use weak acid to test for $CaCO_3$.	>50% Silt	33% to 66% Silt & 33% to 66% Clay	>50% Clay & <33% Silt	
Bedding	Banding possible Non- Fissile Wackes – dirty sandstone matrix (>15% clay)	Non-Fissile & Non-laminated	Non-Fissile & Non-laminated	Fissile	Non-Fissile

Definitions

Fissile — Breaks apart on bedding planes, not fractures.
Shale — Only used to describe a fissile clay mudrock.
Slate — Hard mudstone exposed to high pressure and temperature.
Limestone — Sedimentary rock (i.e. particles) formed from calcium carbonate minerals from skeletal fragments of marine organisms such as coral. Particles generally too small to see with eye.

MODIFIED UNIFIED CLASSIFICATION SYSTEM FOR SOILS

MAJOR DIVISION			GROUP SYMBOL	GRAPH SYMBOL	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA	
COARSE GRAINED SOILS (MORE THAN HALF BY WEIGHT LARGER THAN NO. 200 SIEVE)	GRAVELS MORE THAN HALF COARSE GRAINS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)	GW		WELL GRADED GRAVELS, GRAVEL-SAND MIXTURE, LITTLE OR NO FINES	$C_U = \frac{D_{60}}{D_{10}} \geq 4$ AND $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1$ to 3	
			GP		POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS	
		DIRTY GRAVELS (WITH SOME FINES)	GM		SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	CONTENT OF FINES EXCEEDS 12%	ATTERBERG LIMITS BELOW "A" LINE OR P.I. LESS THAN 4
			GC		CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES		ATTERBERG LIMITS ABOVE "A" LINE AND P.I. GREATER THAN 7
	SANDS MORE THAN HALF FINE GRAINS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)	SW		WELL GRADED SANDS, GRAVELLY SANDS WITH LITTLE OR NO FINES	$C_U = \frac{D_{60}}{D_{10}} \geq 6$ AND $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1$ to 3	
			SP		POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS	
		DIRTY SANDS (WITH SOME FINES)	SM		SILTY SANDS, SAND-SILT MIXTURES	CONTENT OF FINES EXCEEDS 12%	ATTERBERG LIMITS BELOW "A" LINE OR P.I. LESS THAN 4
			SC		CLAYEY SANDS, SAND-CLAY MIXTURES		ATTERBERG LIMITS ABOVE "A" LINE AND P.I. GREATER THAN 7
FINE-GRAINED SOILS (MORE THAN HALF BY WEIGHT PASSES NO. 200 SIEVE)	SILTS BELOW "A" LINE NEGLIGIBLE ORGANIC CONTENT	$W_L < 50\%$	ML		INORGANIC SILTS & VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	CLASSIFICATION IS BASED UPON PLASTICITY CHART (SEE BELOW)	
		$W_L > 50\%$	MH		INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS		
	CLAYS ABOVE "A" LINE NEGLIGIBLE ORGANIC CONTENT	$W_L < 30\%$	CL		INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY, OR SILTY SOILS		
		$30\% < W_L < 50\%$	CI		INORGANIC CLAYS OF MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS		
		$W_L > 50\%$	CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS		
	ORGANIC SILTS & CLAYS BELOW "A" LINE	$W_L < 50\%$	OL		ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW AND MEDIUM PLASTICITY		
		$W_L > 50\%$	OH		ORGANIC CLAYS OF HIGH PLASTICITY, ORGANIC SILTS		
HIGHLY ORGANIC SOILS			Pt		PEAT AND OTHER HIGHLY ORGANIC SOILS	STRONG COLOR OR ODOR, AND OFTEN FIBROUS TEXTURE	



NOTES ON SOIL CLASSIFICATION AND DESCRIPTION:

1. Soil are classified and described according to their engineering properties and behaviour.
2. Boundary classification for soil with characteristics of two groups are given combined group symbols (e.g. GW-GC is a well graded gravel sand mixture with clay binder between 5 and 12%).
3. Soil classification is in accordance with the Unified Soil Classification System (ASTM D2487) with the exception that an inorganic clay of medium plasticity (CI) is recognized.
4. The use of modifying adjectives may be employed to define the estimated percentage range of minor components.

Parkland GEO

WATER-SOLUBLE SULPHATE IN SOIL

PROJECT: 205 Grand Avenue, Norglenwold
PROJECT#: RD7303-07
CLIENT: Reg Radford

SAMPLE DATE: June 2, 2021
TEST DATE: June 7, 2021

Sample #:	2D1	Sample #:	
Borehole:	2	Borehole:	
Depth:	1.5m	Depth:	
Result:	0.080%	Result:	
Sample #:		Sample #:	
Borehole:		Borehole:	
Depth:		Depth:	
Result:		Result:	
Sample #:		Sample #:	
Borehole:		Borehole:	
Depth:		Depth:	
Result:		Result:	
Sample #:		Sample #:	
Borehole:		Borehole:	
Depth:		Depth:	
Result:		Result:	
Sample #:		Sample #:	
Borehole:		Borehole:	
Depth:		Depth:	
Result:		Result:	
Sample #:		Sample #:	
Borehole:		Borehole:	
Depth:		Depth:	
Result:		Result:	

Comments: Range of 0.08 to 0.08 percent. Sulphate Exposure Classification Negligible

REQUIREMENTS FOR CONCRETE SUBJECTED TO SULPHATE ATTACK (CAN/CSA-A23.1-14)

EXPOSURE CLASSIFICATION	DEGREE OF EXPOSURE	WATER-SOLUBLE SULFATE (SO_4) IN SOIL SAMPLE, %	SULFATE (SO_4) IN GROUNDWATER SAMPLES, mg/L	MINIMUM SPECIFIED 56-DAY COMPRESSIVE STRENGTH, MPa	MAXIMUM WATER-CEMENTING MATERIAL RATIO	PORTLAND CEMENT TO BE USED
S-1	Very Severe	over 2.0	over 10,000	35	0.40	HS
S-2	Severe	0.20 to 2.0	1,500 to 10,000	32	0.45	HS
S-3	Moderate	0.1 to 0.2	150 to 1,500	30	0.50	MS or HS

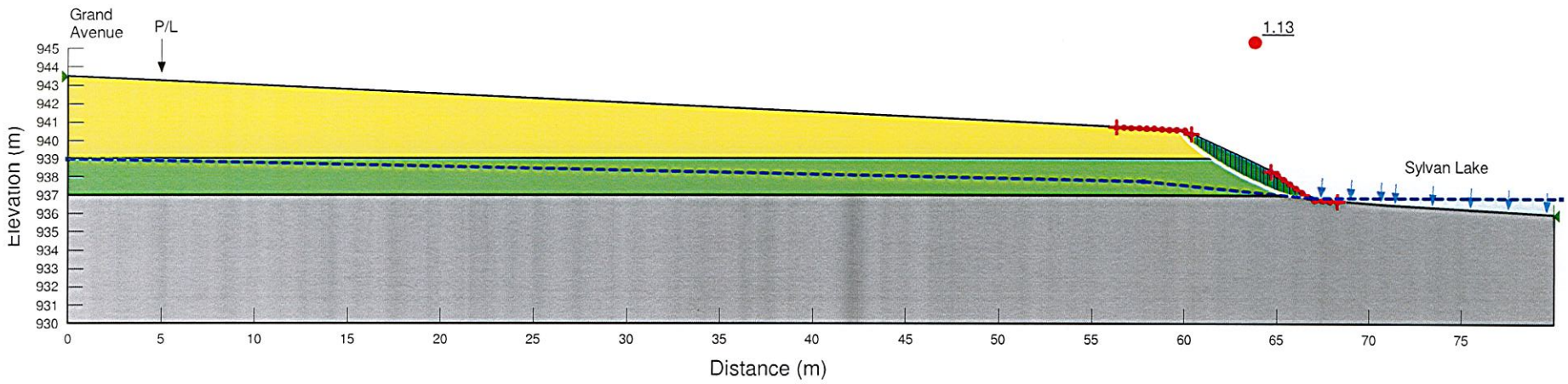
TECH: AB
CHECKED: BL

V4.0 U20190327
Z:\RD7000-RD7999\RD7300-RD7349\RD7303 - 2021 Misc - Bryden Lutz\RD7303-07 - 205 Grand Avenue, Norglenwold\06_Labs\[Sulfate.xlsx]Report

APPENDIX B

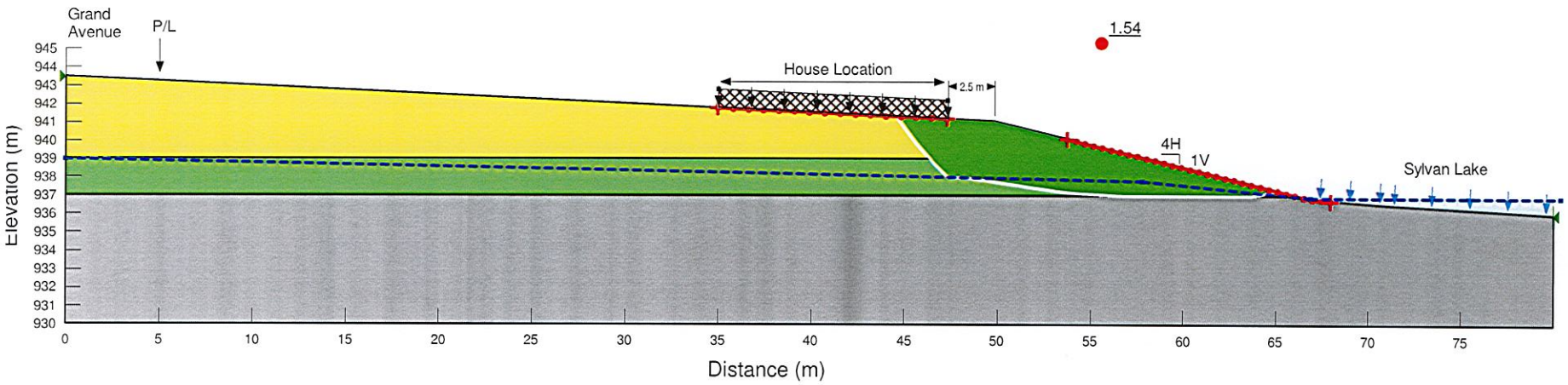
Slope Stability Models (B1 to B2)

Color	Name	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Piezometr Line
	Residual Bedrock	20	2	22	1
	Till	19	0	27	1
	Weathered Bedrock	21	10	25	1



ParklandGEO	Global Stability - Existing Slope	
	DATE:	06/08/2021
	JOB NO.: RD7303-07 205 Grand Ave	B1

Color	Name	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Piezomet Line
	Residual Bedrock	20	2	22	1
	Till	19	0	27	1
	Weathered Bedrock	21	10	25	1



ParklandGEO	House Setback - Proposed Cut Slope	
	DATE:	06/08/2021
	JOB NO.: RD7303-07 205 Grand Ave	B2

LIMITATIONS

General Terms and Conditions

C-2

The use of this attached report is subject to the following general terms and conditions.

1. STANDARD OF CARE - In the performance of professional services, ParklandGEO used the degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession practicing in the same or similar localities. No other warranty expressed or implied is made in any manner.

2. INTERPRETATION OF THE REPORT - The CLIENT recognizes that subsurface conditions will vary from those encountered at the location where borings, surveys, or explorations are made and that the data, interpretations and recommendation of ParklandGEO are based solely on the information available to him. Classification and identification of soils, rocks, geological units, contaminated materials and contaminant quantities will be based on commonly accepted practices in geotechnical or environmental consulting practice in this area. ParklandGEO will not be responsible for the interpretation by others of the information developed.

3. SITE INFORMATION - The CLIENT has agreed to provide all information with respect to the past, present and proposed conditions and use of the Site, whether specifically requested or not. The CLIENT acknowledged that in order for ParklandGEO to properly advise and assist the CLIENT, ParklandGEO has relied on full disclosure by the CLIENT of all matters pertinent to the Site investigation.

4. COMPLETE REPORT - The Report is of a summary nature and is not intended to stand alone without reference to the instructions given to ParklandGEO by the CLIENT, communications between ParklandGEO and the CLIENT, and to any other reports, writings or documents prepared by ParklandGEO for the CLIENT relative to the specific Site, all of which constitute the Report. The word "Report" shall refer to any and all of the documents referred to herein. In order to properly understand the suggestions, recommendations and opinions expressed by ParklandGEO, reference must be made to the whole of the Report. ParklandGEO cannot be responsible for use of any part or portions of the report without reference to the whole report. The CLIENT has agreed that "This report has been prepared for the exclusive use of the named CLIENT. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. ParklandGEO accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report."

   The CLIENT has agreed that in the event that any such report is released to a third party, the above disclaimer shall not be obliterated or altered in any manner. The CLIENT further agrees that all such reports shall be used solely for the purposes of the CLIENT and shall not be released or used by others without the prior written permission of ParklandGEO.

5. LIMITATIONS ON SCOPE OF INVESTIGATION AND WARRANTY DISCLAIMER
   There is no warranty, expressed or implied, by ParklandGEO that:
   a) the investigation uncovered all potential geo-hazards, contaminants or environmental liabilities on the Site; or
   b) the Site is entirely free of all geo-hazards or contaminants as a result of any investigation or cleanup work undertaken on the Site, since it is not possible, even with exhaustive sampling, testing and analysis, to document all potential geo-hazards or contaminants on the Site.

   The CLIENT acknowledged that:
   a) the investigation findings are based solely on the information generated as a result of the specific scope of the investigation authorized by the CLIENT;
   b) unless specifically stated in the agreed Scope of Work, the investigation will not, nor is it intended to assess or detect potential contaminants or environmental liabilities on the Site;
   c) any assessment regarding geological conditions on the Site is based on the interpretation of conditions determined at specific sampling locations and depths and that conditions may vary between sampling locations, hence there can be no assurance that undetected geological conditions, including soils or groundwater are not located on the Site;
   d) any assessment is also dependent on and limited by the accuracy of the analytical data generated by the sample analyses;
   e) any assessment is also limited by the scientific possibility of determining the presence of unsuitable geological conditions for which scientific analyses have been conducted; and
   f) the laboratory testing program and analytical parameters selected are limited to those outlined in the CLIENT's authorized scope of investigation; and
   g) there are risks associated with the discovery of hazardous materials in and upon the lands and premises which may inadvertently discovered as part of the investigation. The CLIENT acknowledges that it may have a responsibility in law to inform the owner of any affected property of the existence or suspected existence of hazardous materials and in some cases the discovery of hazardous conditions and materials will require that certain regulatory bodies be informed. The CLIENT further acknowledges that any such discovery may result in the fair market value of the lands and premises and of any other lands and premises adjacent thereto to be adversely affected in a material respect.

6. COST ESTIMATES - Estimates of remediation or construction costs can only be based on the specific information generated and the technical limitations of the investigation authorized by the CLIENT. Accordingly, estimated costs for construction or remediation are based on the known site conditions, which can vary as new information is discovered during construction. As some construction activities are an iterative exercise, ParklandGEO shall therefore not be liable for the accuracy of any estimates of remediation or construction costs provided.

7. LIMITATION OF LIABILITY - The CLIENT has agreed that to the fullest extent permitted by the law ParklandGEO's total liability to CLIENT for any and all injuries, claims, losses, expenses or damages whatsoever arising out of or in anyway relating to the Project is contractually limited, as outlined in ParklandGEO's standard Consulting Services Agreement. Further, the CLIENT has agreed that to the fullest extent permitted by law ParklandGEO is not liable to the CLIENT for any special, indirect or consequential damages whatsoever, regardless of cause.

8. INDEMNIFICATION - To the fullest extent permitted by law, the CLIENT has agreed to defend, indemnify and hold ParklandGEO, its directors, officers, employees, agents and subcontractors, harmless from and against any and all claims, defence costs, including legal fees on a full indemnity basis, damages, and other liabilities arising out of or in any way related to ParklandGEO's work, reports or recommendations.

Minutes of a Municipal Planning Commission Meeting of the Summer Village of Norglenwold, Province of Alberta, held September 1, 2021, at the Summer Village Administration Office in Sylvan Lake, Alberta.

PRESENT:	Chair:	Jeff Ludwig
	Council Member:	Nav Rattan via Zoom
	Member at Large:	Lorne Therriault
	CAO:	Tanner Evans
	Development Officer:	Kara Kashuba
	Recording Secretary:	Teri Musseau
	Delegates/Gallery:	Gerald Miller
		Laura Miller
		Dwayne Beck
		Pat Sinclair
		Reg Radford
		Ed Ruether
		Diana Ruether
		Ashley Brant via Zoom

CALL TO ORDER: Chair Thiessen called the meeting to order at 9:04 a.m.

AGENDA:

MPC-21-033 Moved by Lorne Therriault to approve the agenda as presented.
CARRIED

DEVELOPMENT APPLICATIONS

1. 355 Last Chance Way – garage with guest house

Application for garage with guest house at 355 Last Chance Way (Lot 4, Block 1, Plan 2857TR).

2. 205 Grand Avenue – detached dwelling and escarpment work

Application for detached dwelling and escarpment work at 205 Grand Avenue (Lot 13, Block 2, Plan 2203KS).

Kara Kashuba, Gerald Miller, Laura Miller, Ashley Brant, left the meeting at 9:41 Ed Rutherford, Diana Rutherford, Pat Sinclair, Dwayne Beck, and Reg Radford left the meeting at 9:41 a.m.

MPC-21-034 Moved by Nav Rattan to deny the application for detached dwelling and escarpment work at 205 Grand Avenue due to the following reasons:

- The Municipal Development Plan 6.3.6. states Norglenwold shall not allow development adjacent to or near the shores of the Lake, including reserves, and other open spaces, unless the proponent can demonstrate to the satisfaction of the Summer Village the development will not:
  (a) reduce lake water quality;

(b) degrade fish or wildlife habitat;
(c) adversely impact the area's visual or natural quality through inappropriate or excessive removal of vegetation, and
(d) lead to soil erosion or instability or damage to the bank or shore.

- More information is required on the necessity of the proposed escarpment. A second Geotechnical Report from a different company is recommended to confirm bank stability. Allowing said variance could hinder future development of adjacent landowners. The requested variance is over 30% and considered to be excessive.
- The side yard setback does not mean the requirements as outlined in the Land Use Bylaw. Allowing said variance could hinder future development of adjacent landowners.

CARRIED

MPC-21-035 Moved by Nav Rattan to approve the application for garage with guest house including a 2-inch variance for the eaves into the side yard setback at 355 Last Chance Way subject to the following conditions being met to the satisfaction of the Development Officer:

- An accessory building erected or placed on a parcel shall not be used as a dwelling unit.
- Electrical power from the property line to any buildings situated on this parcel to be constructed underground.
- The exterior of an accessory building must be finished to match or compliment the exterior finish of the main building.
- In situations where a detached dwelling is being rented out and there is a guest house on the parcel, the guest house shall not be rented out to a separate party than those renting the detached dwelling.
- Height of the accessory building shall not exceed 7.62m (25ft.).
- Guest house means an accessory building containing sleeping facilities for temporary usage only and may have a bathroom but shall not have a kitchen or other cooking facilities.
- All parcels shall be graded to ensure that storm water is directed to a drainage ditch without crossing adjacent land, except as permitted by the Development Authority. All maintenance and upkeep shall be the responsibly of the property owner. A lot grade certificate may be required at completion to ensure that proper drainage on the property exists.
- Completions Deposit of $5,000.00
- Landscaping to be completed according to landscaping plan.

CARRIED

ADJOURNMENT

MPC-21-036 Moved by Chair Thiessen that the Municipal Planning Commission meeting be adjourned at 9:57 a.m.

CARRIED

Initials

_____
JEFF LUDWIG, CHAIR

_____
TANNER EVANS, CAO

Initials

Summer Villages Administration Office
#2 Erickson Drive
Sylvan Lake, AB T4S 1P5
Ph: (403) 887-2822

NOTICE OF DECISION

Municipal Planning Commission

September 2, 2021

Reg Radford
57 Talisman Close
Red Deer, AB T4P 0T7

RE: DEVELOPMENT APPLICATION – DWELLING AND ESCARPMENT WORK

Application was made by Reg Radford and Silverstone Custom Homes Corp on July 7th, 2021, for a dwelling and escarpment work on the property located at 205 Grand Avenue (Lot 13 Block 2 Plan 2203KS).

Finding of Fact:

Upon hearing and considering the representations and the evidence of the parties concerned the Commission find the facts in the matter to be as follows:

1. Mechanized Excavation, Stripping and Grading is listed as a discretionary use; therefore, the decision must come from the Municipal Planning Commission.
2. Land located below the top of bank/top of escarpment should be in a natural state, a variance is required.
3. The side yard setback to the dwelling of 1.0m (3.28ft.) does not meet the minimum 1.5m (4.92ft.), therefore required a variance of 0.5m (1.64ft.).

Decision of the Municipal Planning Commission:

The Summer Village of Norglenwold's Municipal Planning Commission decided to deny the application because as the application is not compliant with the statutory documents as below:

1. The Municipal Development Plan 6.3.6. states Norglenwold shall not allow development adjacent to or near the shores of the Lake, including reserves, and

other open spaces, unless the proponent can demonstrate to the satisfaction of the Summer Village the development will not:
(a) reduce lake water quality;
(b) degrade fish or wildlife habitat;
(c) adversely impact the area's visual or natural quality through inappropriate or excessive removal of vegetation, and
(d) lead to soil erosion or instability or damage to the bank or shore.

2. More information is required on the necessity of the proposed escarpment development. A second Geotechnical Report from a different company is recommended to confirm bank stability.
3. The side yard setback does not mean the requirements as outlined in the Land Use Bylaw. Allowing said variance could hinder future development of adjacent landowners. The requested variance is over 30% and considered to be excessive.

Appeal:

Discretionary Use/Variance Request Applications are appealable to the Subdivision and Development Appeal Board, as provided for in Part 17, of the Municipal Government Act. Written statements relevant to the development and reasons for appeal along with a $400.00 appeal fee should be submitted to the Secretary of the Subdivision and Development Appeal Board of the Summer Village of Norglenwold, #2 Erickson Drive, Sylvan Lake, Alberta T4S 1P5, within 21 days following the date of this notice. For further information contact the Secretary of the Subdivision and Development Appeal Board, Teri Musseau at 403-887-2822.

Sincerely,

Kara Kashuba
Development Officer

Attn: Subdivision and Development Appeal Board

Re: Proposed Development at 205 Grand Avenue, Norglenwold

There are two main components to this appeal, the first is the bank work which was addressed in points one and two of the Municipal Planning Commissions' (MPC) decision and the second component is the side-yard set back which was point #3 of the MPC's decision. We would like to address the two components separately.

The Bank Work

Why is it needed?

Bank work near Sylvan Lake must be approached with the upmost care and attention to many environmental factors so that the use and enjoyment of this resource by not only people, but the fragile ecosystem that relies on it may flourish for many, many years to come.

As stated in the Sylvan Lake Management Plan "Improved knowledge of the lake environment and assessment/mitigation techniques has made the concept of sustainable development a practical reality. Consequently, in many cases, it is no longer necessary to prohibit development in order to protect the environment."

The landowners intend on carrying out the proposed slope stabilization in an environmentally responsible manner by using trained professionals, utilizing materials, structures and systems that are proven to be highly effective in protecting the shoreline and choosing vegetation in accordance with horticulturist recommended native plant species with deep-root systems.

Further, the proposed plan also takes into consideration the local waterfowl providing platforms within the gabions to facilitate the ducks to be able to come ashore. We have gone through all the recommended legislation and guides, including "Caring for shoreline properties" the leading government publication on guiding development of this form.

Why can't it be left as is?

The current state of the slope is in **very poor** condition:

1) There is **no safe passage** to the lake. The slope is very steep, the current stairs are not safe and are in desperate need of replacing. They also do not extend far enough for the extreme grade of the slope making the trek to the water from the last step even more of a challenge.

I myself, a healthy and active adult, have fallen and hurt myself on this path more than once, let alone a child or a senior who were to attempt to access the water. *(see fig 1)*

2) There is a hole in the soil behind the boat house where the slope has failed, this hole poses a **huge safety risk** for our family, guests as well as wild and domestic animals from being trapped and badly injured. *(see fig 2)*

Occupier's Liability Act s. 5: **Duty of care to visitors**

5 An occupier of premises owes a duty to every visitor on the occupier's premises to take such care as in all the circumstances of the case is reasonable to see that the visitor will be reasonably safe in using the premises for the purposes for which the visitor is invited or permitted by the occupier to be there or is permitted by law to be there.

(a) If this parcel of land was owned by the municipality, the municipality would have a duty to make the premises safe. Because it is NOT owned by the municipality, it is the landowners' responsibility and the municipality should support this or take on the liability.

3) There was a poorly executed retaining wall with steel uprights and timber items that have failed and need to be remediated. *(see fig 3)*

4) The intent in leaving the bank in its "natural state" is to promote deep rooted stability of the bank, as well as to cleanse the runoff and promote evaporation of said runoff before it gets to the lake it is also to prevent the introduction of invasive species. All of this can be accomplished if the vegetation on the bank is in a healthy state. Unfortunately, the majority of the existing vegetation is either **dead, damaged or an invasive species** and would not achieve this goal and therefore leaving it in its current state would actually be more detrimental to the environment than cleaning it up and setting it up for long term future success.

5) There is constant erosion that is already apparent and will continue to degrade if nothing is done to mitigate these damages.

How we can remediate the large safety concerns and still protect the environment:

1) Our intent is to properly fortify the bank, slightly adjusting the slope to better match our neighbours while still allowing for proper drainage and revegetating the entire slope with the proper vegetation that will accomplish all of the required and necessary goals, while making it safe for people and animals to traverse.
2) As our geotechnical report states, the bank will be much stronger and safer at the proposed grade. Further, once the house is built, the equipment needed to properly repair the bank will no longer be able to pass, making it almost impossible to do the repairs the bank needs now and will continue to need, if not addressed now. If we get the work done properly now it will be able to survive and thrive for many, many years and will be in a much better state for Sylvan Lake.

MPC's concerns:

Point #1:

In the MPC meeting notice of decision they quoted section 6.3.6 of the Municipal Development Plan. **No other statement was included with this section to indicate that they thought we weren't compliant with any of the requirements of this section, it was simply referenced**. However, I will address each of the requirements separately to evidence that you can be confidently assured that all requirements are being met:

a) Reduce lake water quality;
    - As stated previously, we have an approved drainage plan, and we will be replanting the whole bank with native species that are recommended for this specific area and purpose of maintaining the water quality. There is nothing in our application that would reduce lake water quality.

b) Degrade fish or wildlife habitat;
    - We plan to integrate small wooden steps into the gabions (an example of which can be seen in our original presentation) so that waterfowl can easily access our shore. We will also be maintaining water quality so as not to adversely affect the fish. There is nothing in our application that would negatively affect fish or wildlife habitat. It is a very small area. Further, all of this development is within the surveyed boundaries of our property and does not extend into the water.
    - We have gone through the Government of Canada's self-assessment checklist to see if there are any adverse impacts on fisheries and there was no cause for concern. Additionally Sylvan Lake is not home to any endangered aquatic species, according to the official Government of Canada Endangered Aquatic Species tracking map.
    - We have gone through the recommended guidelines for development near waterbodies and will be adhering to them.
    - We have provided plenty of evidence of the care we have and will take and there has been no evidence produced to show any reason for concern with our project.

c) Adversely impact the area's visual or natural quality through inappropriate or excessive removal of vegetation;
    - The area's visual and natural quality would only be improved upon in this application. We will still be leaving some prominent trees, and as much vegetation as possible that is still healthy and then replanting the rest of the slope. The current state of the bank is full of dead damaged and invasive species. Again, it is a very small area (less than 40 feet across and the boathouse takes up nearly half of that) and it will be full of beautiful plants and vegetation appropriate to the location. We have hired one of the leading landscaping companies in Central Alberta to perform the work on the bank and they are very knowledgeable with the area as they have done very similar (almost exact) projects in Norglenwold recently. Therefore, we are confident that the proposal will not have an adverse impact.

d) Lead to soil erosion or instability or damage to the bank or shore.

- According to the provided **geotechnical report**, the proposal would actually do the opposite and fortify the bank to make it more stable and prevent erosion. This is one of our main concerns (The first being safety!) and also why we need to start our work here on the bank before the house is built as this is the best time to do a proper job to fully fortify the bank. Doing the work in the future with limited access and materials would lead to an incomplete and lower standard of completion, if it would even be possible at all, plus it is in desperate need of care in its current state right now anyway.

We worked closely with the development officer to ensure the utmost care was taken on every aspect of our application and thus the development authority recommended approval of this application because we satisfied all these important elements.

Point #2: The Geotechnical report

In the MPC's reasons for decision they recommend that a second geotechnical report from a different company should be provided.

It pains me to even respond to this point. To imply that Parkland Geo, a well known, well respected and professional company, did not do their due diligence, a company that the Summer Village of Norglenwold themselves employ to do work on their own behalf and now questions their skill and integrity. All engineers are bound by APEGA their own regulatory body and would never jeopardize their professionalism for anything, let alone a small landowner with a tiny project.

No one in administration, or on the MPC, (as was stated in the meeting) is trained to even read and interpret this report. So what, if anything, was there to be gained to request a second one? These reports take weeks to months to prepare and very, very expensive (over $8000). To ask a simple landowner to provide the first one is reserved for only when necessary, because of these reasons. To ask for a second one is completely egregious.

We recognize that the reports are difficult to read and understand, that is why we arranged to have one of the engineers from the company meet with the development officers onsite. He explained the report to help with the construction of our application prior to the MPC meeting. He was also present at the MPC meeting to answer any and all questions that the committee may have had or items for clarification. He will also be present at the appeal to answer questions.

Side Yard Relaxation

To begin this section, I would like to first explain more clearly why we are requesting the side yard set back relaxation and then I would like to address some of the concerns that were expressed.

Why

1) We are asking for a side yard relaxation of 16 inches for a small point on that side yard to stick out, I would like to point out that it is not for the entire length of the house, it is only for an 8 foot section and because it is a corner, it is only one small point that extends that far and becomes gradually less as the point rejoins the rest of the side of the house that is fully within the allowable side yard set back. THE TOTAL AREA OF THE REQUESTED RELAXATION IS 7 SQUARE FEET.
2) Alternatives to a relaxation: Because the parcel is a reverse pie shape, meaning it is wider at the road and narrows considerably along the way up to the shoreline, it is an awkward shape to fit the home on. The reasons we settled on the location are as follows:
    - EAST: We wanted to try to line up our home with the neighbors' homes as much as possible to preserve their sunlight.
    - WEST: If we were to move the house back further towards the road, it wouldn't allow us to park as many cars on the driveway. We have a very large family and there will be many times that a lot of vehicles will be at the property and we would like to avoid having cars parked along Grand Ave as much as possible as we have seen how much it can become congested.
    - SOUTH: If we were to move the house over, we would no longer have enough space to pass by the house for repairs, to carry items such as tubes, kayaks etc from the garage, parking area to the dock. (need dad to comment further or explain this one better)
    - SIZE: If we were to make the house smaller, the piece that protrudes slightly into the side yard is the owners' bedroom and they were trying to keep it so that a wheelchair could go around the bed (as well as to be able to navigate a wheelchair on the main floor) as the owners are aging and are planning to move out to the house permanently as they age further.
3) Neighbors' concern:
    - Before I address the neighbor's concern, I would like to point out that we had many discussions with all the owners of the neighboring homes (as both neighbors have multiple owners). We wanted to approach this process as neighborly as possible as we believe it is very important to respect your neighbors as well as have a good relationship with them. We had planned to try to get approval for the bank work first and then wait for house construction for the start of September so as not to interfere with the neighbors use and enjoyment of this summer and so it would be finished by next summer and again, not interfere with their summer next year either. We had given the neighbours our contact information and they knew how to get a hold of us should they have any concerns. They further did not respond to the Development Officer's letter to them, asking if they had any concerns.

- At the MPC meeting, we were very surprised to have one owner of one of our neighbors speak about our development. The owner expressed that they **did like** our plans and were looking forward to the **beautification of the lot** by our proposed plans. His concern was the hindrance our development would impose on any future development of his own land. And while I can fully appreciate this concern, the fact is, that the minor relaxation that we are asking for would in no way impede their ability to redevelop their property. We have rechecked development permit specifications as well as building codes standards and there is <u>no possible</u> way that our development would ever hinder ANY kind of proposal they could have for their own parcel (even if they, themselves, would need a relaxation). Therefore, I would think the neighbor would thus no longer have any objection to our proposed development and the point is now moot.

Point #3 MPC's concern: The Side-yard set back

- In The MPC meeting decision, the Committee stated that the variance requested is over 30% and therefore deemed to be excessive.
    i. per the site plan submitted and included in the information presented to the MPC council, the side yard of the building is set at 1.092M (not 1.00M) and the variance required is 0.408M (not 0.50M).
    ii. Our variance is actually 27% (0.408/1.50). If 30% is the point at which something is considered excessive, then we are not excessive.
    iii. The variance we are asking for runs across 8' of the home, not the entire side yard. For reference, the house is 98' from front of garage to rear of deck; the relaxation area therefore constitutes only 8% of the north side line of the home. The lot is 218.5' long; our relaxation would be across only 3.6% of the length of the lot.
    iv. The corner protrusion is about 16" at its closest point, which diminishes on both sides given it is a corner of the home.
    v. The relaxation area would not cause any hindrance to sight lines, beautification issues or safety factors.
    vi. 1.20M setbacks are standard in city subdivisions in Edmonton, Calgary and now even Red Deer. We are 4" closer to property than almost every new home built in these subdivisions. This is not excessive and certainly not material. The same construction methods are required in those city subdivisions as is required on any building within 8' of property line in Norglenwold. (While we appreciate that Norglenwold's set backs are different than other municipalities, the other municipalities are only quoted to show that the relaxation requested is not excessive).

RELEVANT LEGISLATION:

Summer Village of Norglenwold Land Use Bylaw:

Part 3 s.4(5)(b)(v):
The retention in their natural state of land located below the bank of the lake

The bank is currently not in its natural state. The bank has been modified by previous owners years ago and has not been maintained and thus fallen in complete disrepair. There are poorly done retaining walls that are now failing, invasive species, dead and dying vegetation that pose a huge safety risk and the slope itself is failing. The proposed work would restore it, as close as possible, to its natural state, while balancing safety and achieving all the goals a natural state intends (cleaning runoff, protecting wildlife etc as discussed above).

Summer Village of Norglenwold Municipal Development Plan:

6.3.6 Norglenwold shall not allow development adjacent to or near the shores of the Lake, including reserves, and other open spaces, unless the proponent can demonstrate to the satisfaction of the Summer Village the development will not: (a) reduce lake water quality; (b) degrade fish or wildlife habitat; (c) adversely impact the area's visual or natural quality through inappropriate or excessive removal of vegetation, and (d) lead to soil erosion or instability or damage to the bank or shore.

This was responded to at length above providing ample evidence that these provisions have been satisfied. No evidence has been provided to refute compliance with this section.

Municipal Government Act

(3) In determining an appeal, the board hearing the appeal referred to in subsection
(1) (a) repealed 2020 c39 s10(52);
(a.1) must comply with any applicable land use policies;
(a.2) subject to section 638, must comply with any applicable statutory plans;
(a.3) subject to clauses (a.4) and (d), must comply with any land use bylaw in effect;
(b) must have regard to but is not bound by the subdivision and development regulations;
(c) may confirm, revoke or vary the order, decision or development permit or any condition attached to any of them or make or substitute an order, decision or permit of its own;
(d) may make an order or decision or issue or confirm the issue of a development permit even though the proposed development does not comply with the land use bylaw if, in its opinion,
(i) the proposed development would not
(A) unduly interfere with the amenities of the neighbourhood, or
(B) materially interfere with or affect the use, enjoyment or value of neighbouring parcels of land, and RSA 2000 Section 688 Chapter M-26 MUNICIPAL GOVERNMENT ACT 447
(ii) the proposed development conforms with the use prescribed for that land or building in the land use bylaw.

In following the provisions of the Municipal Government Act, our proposed development complies with the intent of all land use policies, bylaws and statutory plans. The requested development is a discretionary use however it clearly would not, as stated in s.i (A) unduly interfere with the amenities or (B) the use, enjoyment or value of neighboring parcels. We have gone to great lengths to minimize any and all impact on the neighbors.

Occupiers Liability Act

Duty of care to visitors

5 *An occupier of premises owes a duty to every visitor on the occupier's premises to take such care as in all the circumstances of the case is reasonable to see that the visitor will be reasonably safe in using the premises for the purposes for which the visitor is invited or permitted by the occupier to be there or is permitted by law to be there.*

The purpose of going to a lakefront property is to enjoy the lake. We need to be able to provide safe access to the lake and safe enjoyment of our lakefront property. The current state of the property is completely unsafe even for the fittest of adults. There will be many seniors and many young children using this property, we cannot take the unnecessary risk of injury or death simply do to the neglect of the required maintenance.

Closing comments:

We have been working with the development authority for months to come to a satisfactory plan for our small development, which they have recommended for approval. We have tirelessly reviewed and researched many documents, reached out to countless professionals, and meticulously prepared our application. We strongly believe that we have provided all the necessary information, complied with all the legislation, and provided a development application that will immensely improve the area and not have a negative environmental or safety impact while further adding to your tax base. And still we have been denied, with little to no explanation.

We would like to thank you for your time and I implore you to please consider the merits of our application and the safety of our family, as I am sure you would never want your family to be subjected to such dangerous conditions.

Respectfully Submitted,

Ashley Brant, Reg and Lauralyn Radford

FIGURE 1

FIGURE 2

FIGURE 3

SUMMER VILLAGE OF NORGLENWOLD
PUBLIC NOTICE
SUBDIVISION AND DEVELOPMENT
APPEAL BOARD HEARING

This is to advise that an appeal has been received on September 7, 2021, from the applicant, appealing the Municipal Planning Commission's decision of September 1, 2021, denying a development permit for escarpment work at 205 Grand Avenue (Lot 13 Block 2 Plan 2203KS) in the Summer Village of Norglenwold.

The Development Appeal Board Hearing will be held as follows:

DATE: **Monday, October 4, 2021**

TIME: **10:00 a.m.**

LOCATION: **VIRTUALLY**

Documents regarding the development permit, the Municipal Planning Commission's decision, and the notice of appeal are available for public inspection on the Summer Village Administration Office website. The Subdivision and Development Appeal Board will hear the appellant or any person acting on behalf of the appellant; the development authority or a person acting on behalf of the development authority; any person who received this notice and wishes to be heard or a person acting on behalf of that person; and any other person who claims to be affected by the decision.

Written submissions addressed to the Subdivision and Development Appeal Board Secretary and received at the Administration office prior to 4:00 p.m. on October 1, 2021, will be submitted to the Board at the Hearing.

Teri Musseau
Subdivision and Development
Appeal Board Secretary

LOCATION CHANGE

205 Grand Ave

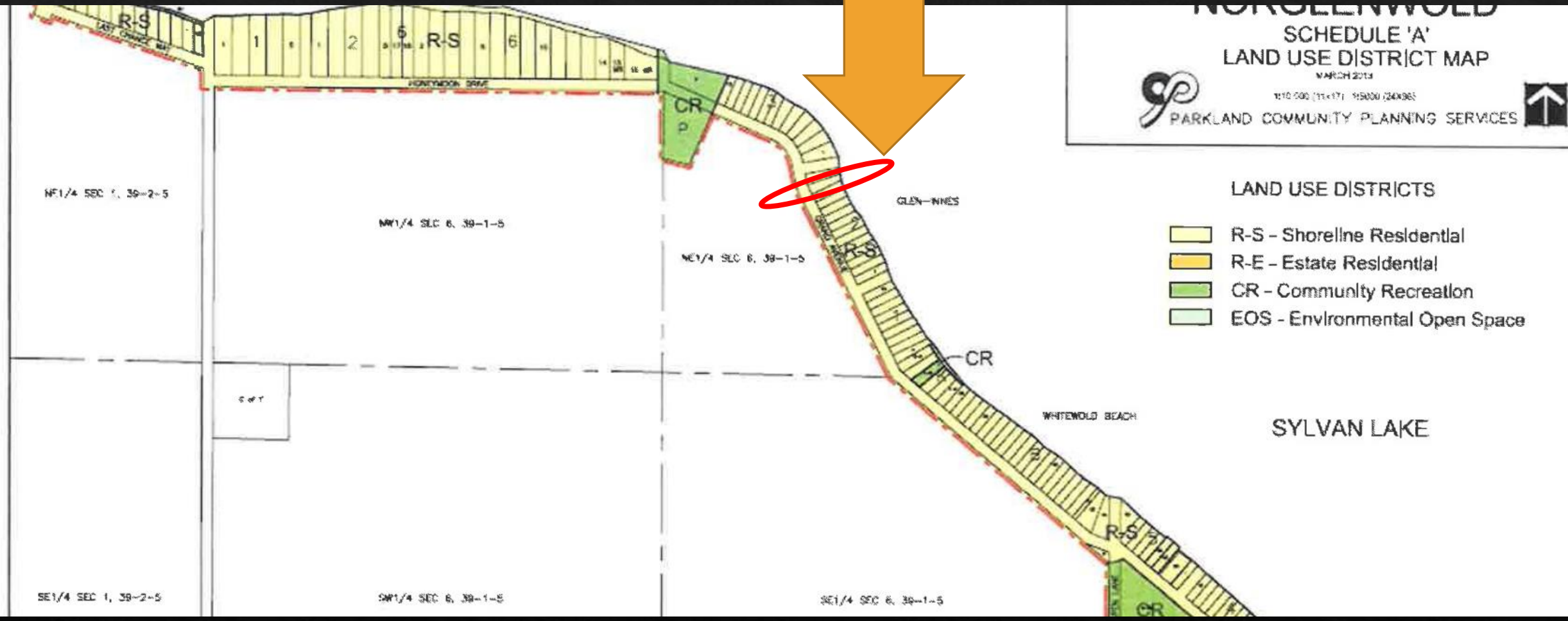
Norglenwold

205 Grand Avenue : Lot 13, Block 2, Plan 2203KS

Appeal for :

- Residential Dwelling side yard set back relaxation
- Bank stabilization work

205 Grand Avenue : Lot 13, Block 2, Plan 2203KS



View from the road to the lake

View from the bank back to the road

Development permit application

APPLICATION FOR DEVELOPMENT PERMIT

Summer Village of Norglenwold

Bay 8, 14 Thevenaz Industrial Trail
Sylvan Lake, Alberta T4S 2J5
Phone: (403)887-2822 Fax: (403)887-2897
Email: information@sylvansummervillages.ca
www.sylvansummervillages.ca

FOR OFFICE USE ONLY

Date Received: _____

I hereby make application under the provisions of the Summer Village of Norglenwold Land Use Bylaw 208/13 for a Development Permit in accordance with the plans and supporting information submitted herewith in which forms part of this application.

APPLICANT INFORMATION

Applicant: Silverstone Custom Homes Corp Phone: 403 848 4080 Cell: _____

Full Mailing Address: 141 Larratt Close, Red Deer, AB T4R0S6 Email: justin@silverstonecustomhomes.ca

Civic Address of property to be developed: 205 Grand Ave Lot: 13 Block: 2 Plan: 2033KS

Registered Owner: Lyn & Reg Radford Full Mailing Address: 57 Talisman Close, Red Deer, AB T4P0T7

Phone: 403 391 1551 (Lyn) 403 391 1550 (Reg) Email: lradford@shaw.ca son7@shaw.ca

DEVELOPMENT INFORMATION

Proposed Development: Single family dwelling, Slope stabilization, Tree removal Existing Development: Vacant lot

Parcel Type: Interior _____ Corner _____ Lakefront X Proposed Sewage Disposal System: Holding tank and grinder pump

Setbacks for Proposed Development: Front Yard: 7.914m Side Yard: 1.0m / 1.688m Rear Yard: 25.76m

Parcel's Total Area: 981.19 m2 Total Parcel Coverage (%) (*as per "Parcel Coverage" Definition*): 33.2%

Height of Building (*as per "Grade" Definition*): 28'8" Driveway Width: 30' Culvert Required: No

Proposed Footprint: 325.78 m2 Proposed Floor Area: 1845 sq ft Exterior Finish: Hardie siding, stone

Proposed Landscaping: See landscaping plan Sight Triangle Calculation (*Corner Lots Only*): N/A

Number of Trees to be Removed: Approximately 20 Estimated Project Costs: $950,000

Builder/Contractor: Silverstone Custom Homes Corp Phone: 403 848 4080

Full Mailing Address: 141 Larratt Close, Red Deer, AB T4R0S6 Email: justin@silverstonecustomhomes.ca

Estimated Start Date: Sept 1, 2021 Estimated Completion Date: May 15, 2022

Letter of Intent-205 Grand Avenue, Norglenwold
Radford Residence

Silverstone Custom Homes proposes to build a single family dwelling with attached garage, basement development and covered rear deck in accordance to the attached construction drawings.

We are requesting a variance to allow one small corner of the house to be placed 1.092m from the north property line rather than at the 1.50m setback. The total area of the variance requested is 7 square feet. The remainder of the house follows all setback requirements.

This variance is being requested under s. 2.4 (3)(a) under part 2 of the LUB due to the nature of the lot and the size of the home required to accommodate the family living in it. The lot is a reverse pie shape and narrower at the rear where the home is sitting. The home is required to be pushed back from the front setback to allow for ample parking space for the large family and keep them off Grand Avenue. The main floor size is required to accommodate the master bedroom for primary owners to use as they age in this home.

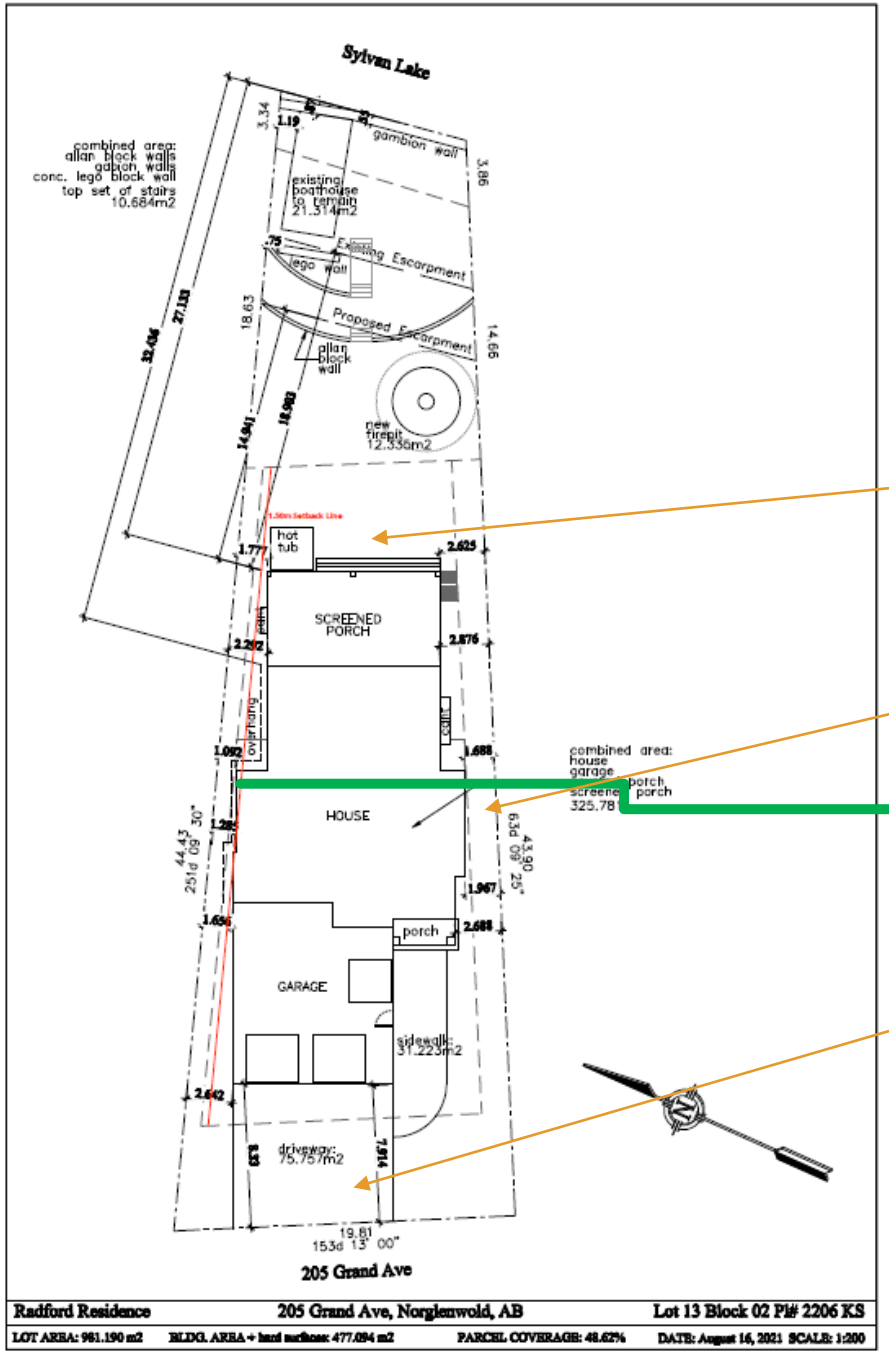
The landowners have attempted to minimize the impact on adjacent parcels (s. 1(2)(c) of part 3 LUB) by choosing a location for their dwelling adjacent to the neighboring dwellings so as not to block the view. Further, the landowners are requesting a September to May construction season to minimize the interruption of the neighboring properties' use and enjoyment during the extremely popular summer period.

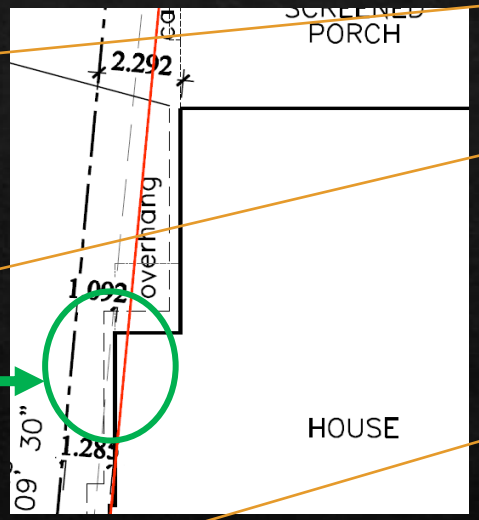
In order to proceed with the safe development of the proposed dwelling, a geotechnical report was commissioned. The report strongly recommends that the bank is regraded to a more gradual slope and reinforced to prevent further erosion as it is not recommended to be left in its current state. The landowners have done extensive work researching, planning and consulting with numerous experts to develop a plan that would provide use and enjoyment of the property while also greatly enhancing the stability and safety of the area as well as considering many environmental factors to minimize any impact.

As stated in the Sylvan Lake Management Plan 2000 update "Improved knowledge of the lake environment and assessment/mitigation techniques has made the concept of sustainable development a practical reality. Consequently, in many cases, it is no longer necessary to prohibit development in order to protect the environment." The landowners intend on carrying out the proposed slope stabilization in an environmentally responsible manner by using trained professionals, utilizing materials, structures and systems that are proven to be highly effective in protecting the shoreline and choosing vegetation in accordance with horticulturist recommended native plant species with deep-root systems. Further, the proposed plan also takes into consideration the local waterfowl providing platforms within the gabions to facilitate the ducks to be able to come ashore.

The bank is not in its natural state and due to years of neglect and lack of maintenance by previous owners, it is in dire need of repairs. It is failing in stability as well as safety and must be remediated.

Intent

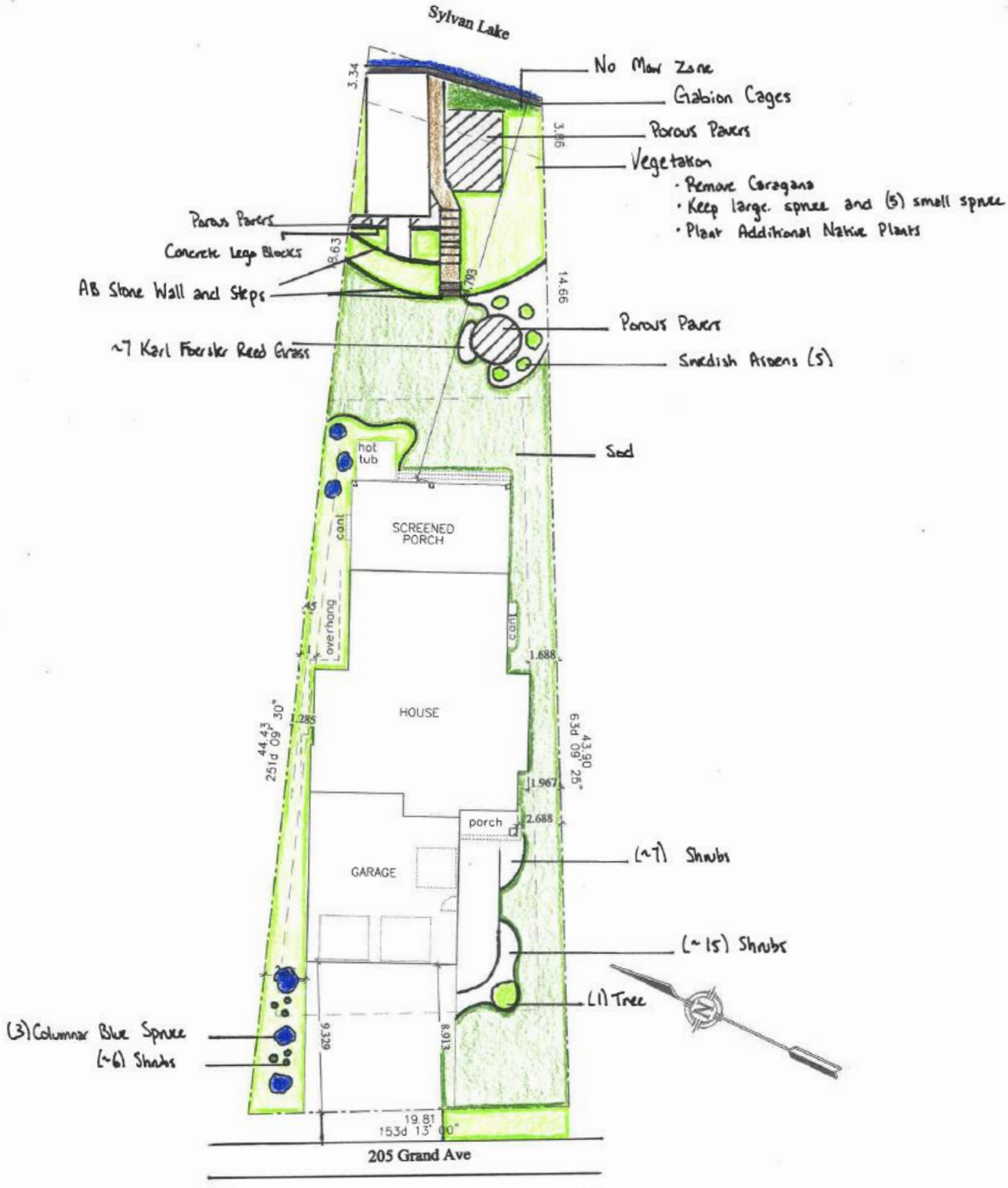




THE TOTAL AREA OF THE REQUESTED RELAXATION IS 7 SQUARE FEET.

Alternatives to a relaxation: Because the parcel is a reverse pie shape, meaning it is wider at the road and narrows considerably along the way up to the shoreline, it is an awkward shape to fit the home on. The reasons we settled on the location are as follows:

- EAST: We wanted to try to line up our home with the neighbors' homes as much as possible to preserve their sunlight.
- WEST: If we were to move the house back further towards the road, it wouldn't allow us to park as many cars on the driveway. We have a very large family and there will be many times that a lot of vehicles will be at the property and we would like to avoid having cars parked along Grand Ave as much as possible as we have seen how much it can become congested.
- SOUTH: If we were to move the house over, we would no longer have enough space to pass by the house for repairs, to carry items such as tubes, kayaks etc from the garage, parking area to the dock.
- SIZE: If we were to make the house smaller, the piece that protrudes slightly into the side yard is the owners' bedroom and they were trying to keep it so that a wheelchair could go around the bed (as well as to be able to navigate a wheelchair on the main floor) as the owners are aging and are planning to move out to the house permanently as they age further.



PROPOSED LANDSCAPING

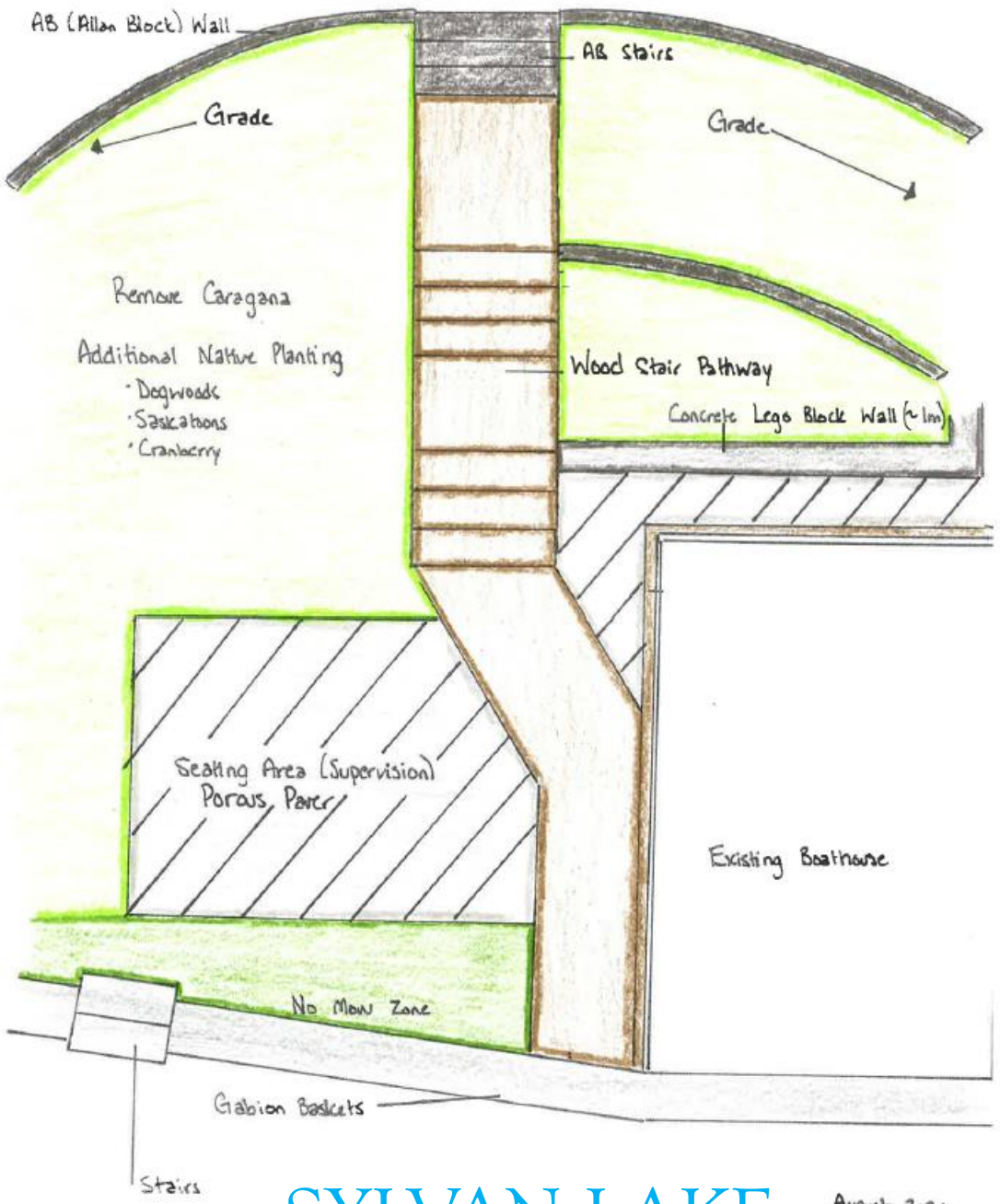
RADFORD RESIDENCE
205 GRAND AVE

Proposed Slope Stabilization Plan

Parkland Geo – Geotechnical Report

"The proposed reconfiguration of the slope to a 4H:1V grade will greatly improve the overall stability of the slope by off-loading some of the driving force from the slope."

- Page 8 -



SYLVAN LAKE

August 2021
B. Beck

FILE REFERENCE _____

To: _____

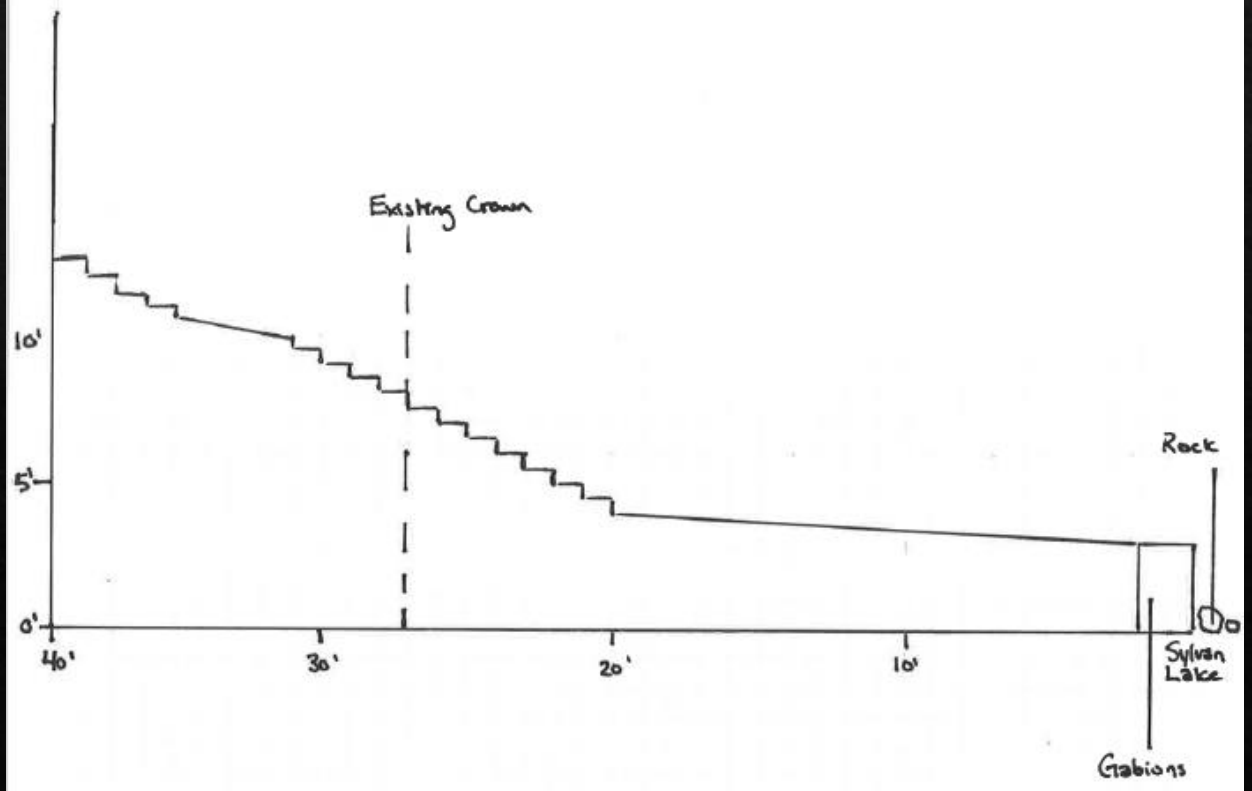
From: _____

Date: July 29/2021

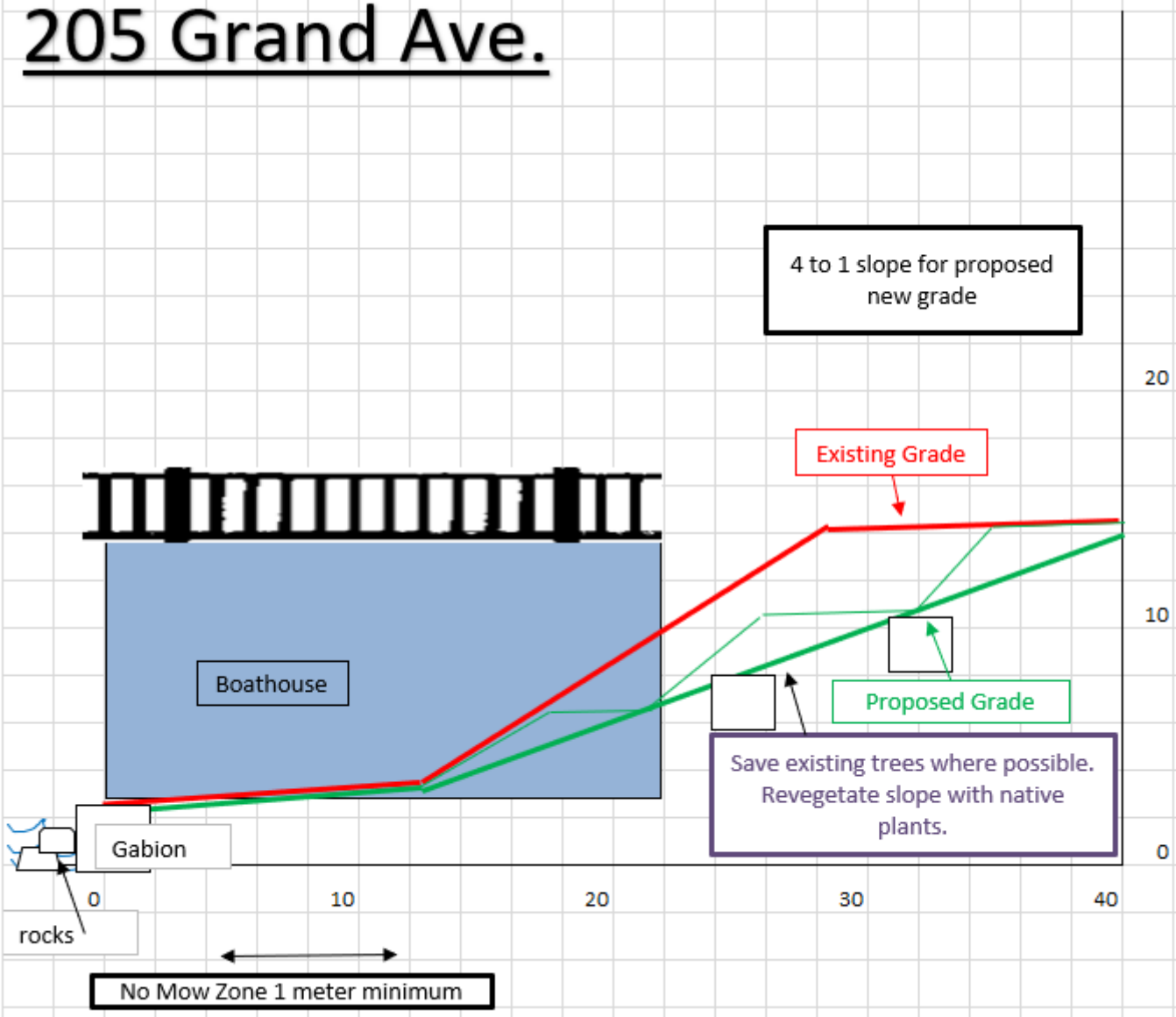
Subject: Radford Cross Section (Proposed)

PARKLAND NURSERY
& Landscape Services Ltd.

Box 25004 Deer Park P.O.
Red Deer, Alberta CANADA T4R 2M2
Phone: 403.340.8755
Fax: 403.340.8759
Website: www.pnls.ca
Email: admin@pnls.ca



205 Grand Ave.



Porous Pavers

Concrete Lego Blocks

Examples of materials to be used for landscaping and retaining walls

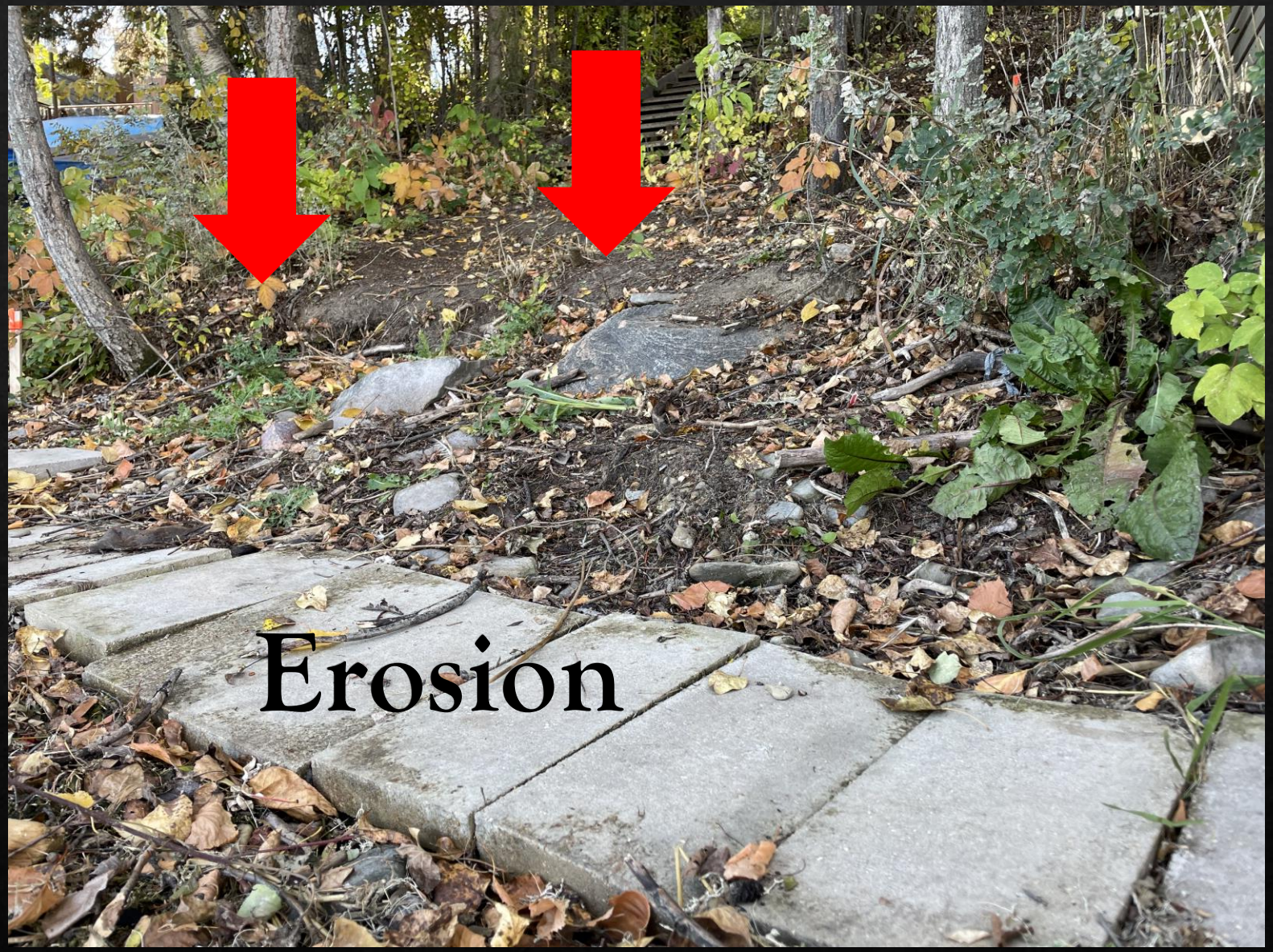
Allan Block Stone Retaining Wall

Gabion Wall: note boards to facilitate waterfowl movement

In this picture, you can see the erosion is 3-4 feet up and 6-8 feet deep. This trend continues across the entirety of the lot frontage.

Continued line of erosion

Application has been submitted to Alberta Environment for erosion control measures along the shoreline.


Erosion

Erosion

South neighbour's property to the left of the picture, erosion on our property is well over 4 feet high in this area.

Erosion

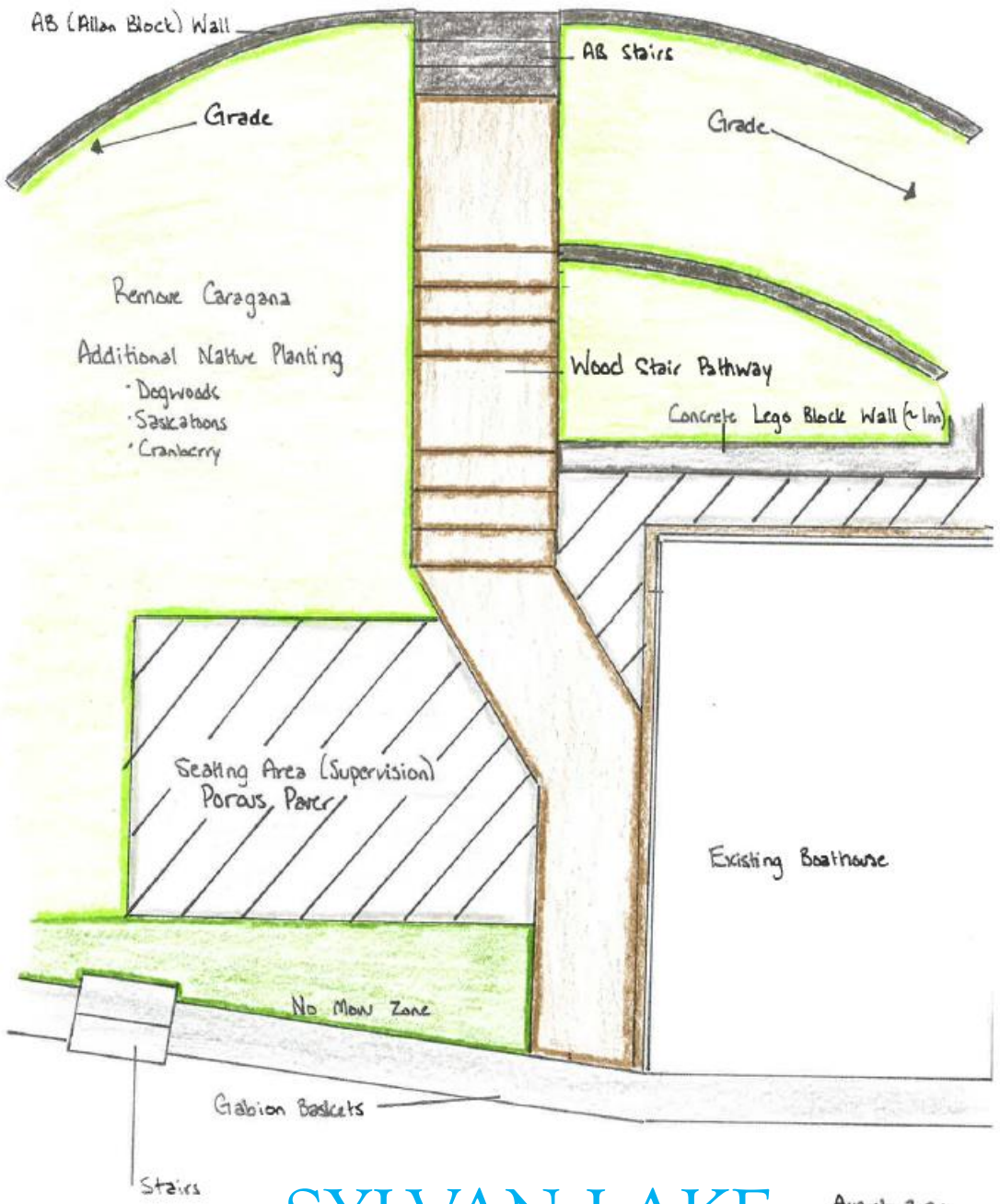
Property pin

North side of property:

Erosion is well over 4 feet high in this area as well.

Steep Slope:

Very difficult to traverse even when dry, becomes increasingly difficult when person or slope is wet.



SYLVAN LAKE

Our landscaping plan for the bank. In the following slides we will show the neighbours properties and how decreasing the slope will tie into their properties better.

South neighbour:

4 levels of retaining walls

North neighbour:

Our proposed slope will better match their 4.5:1 slope

North neighbour:

Rock erosion control

The stairs are rotting and falling apart and are in need of replacing.

SAFETY CONCERN

Occupier's Liability:

Duty to make sure visitors to the property are reasonably safe

Especially for our 11 grandkids!

SAFETY CONCERN

Occupier's Liability: Duty to make sure visitors to the property are reasonably safe

Failed **retaining walls** behind the boathouse, and large amounts of **erosion**.

Huge safety risk for children and animals as there is a three and a half foot **deep hole** where they could get stuck.

Failed retaining walls behind the boathouse, and large amounts of erosion.

Huge safety risk for children and animals as there is a three and a half foot deep hole where they could get stuck.

Consulted with the Sylvan Lake Fire Department who agreed that this must be fixed immediately as it poses a huge safety risk.

Failed retaining walls behind the boathouse, and large amounts of erosion.

Landscaping plan

PARKLAND NURSERY
& Landscape Services Ltd.
Box 25004 Deer Park P.O., Red Deer, Alberta T4R 2M2
Phone: 403-340-8755 • **Fax:** 403-340-8759 • **Website:** www.pnls.ca • **Email:** admin@pnls.ca
Your Green Connection

April 22, 202

Kara Kashuba
Junior Development Officer
Sylvan Summer Villages

Dear Ms. Kashuba,

Parkland Nursery and Landscape Services Ltd. has been approached to help revitalise the bank at Mr. Radford's property in the Summer Village of Norglenwold, on Sylvan Lake. The goal of the revitalization on his property is to create a safe embankment that provides his family access to the lake. We have reviewed parts of the "Caring for Shoreline Properties" to help us design an embankment that meets your standards while increasing the safety and accessibility of the current bank. In addition to our explanation for our plan, we have attached a concept sketch of our intentions.

As most of the large vegetation on Mr. Radford's embankment are dead or past their prime, such as the large popular trees that are comprised of large amounts of deadwood, we propose clearing the dead or dying vegetation and replanting native species such as Saskatoon bushes to help stabilize the slope from erosion.

Once we remove the dead or soon-to-be hazardous vegetation, we would remove the limited remaining vegetation as we propose reshaping the bank to reduce the slope, work which is supported on page 24 of "Caring for Shoreline Properties". The current slope now is steeper than the 3:1 and does not match the slopes of adjacent properties. We propose reshaping the bank and as previously mentioned, replant parts of the revised slope with native species for further erosion protection. With the reshaping, we plan to install a meandering path from the top of the embankment to the shore as the primary access to the lake which is supported by page 20 of the "Caring for Shoreline Properties".

As the boat house has been grandfathered in, we propose to make amendments around the boat house to improve both access and safety. We propose building a new set of stairs 3 feet from the boat house to provide access to the structure. The retaining wall behind the existing boathouse has disintegrated, therefore we propose installing a new retaining wall 3 feet from the boat house once we reshape the embankment.

For the shoreline, we have planned to use Gabions to help stabilize the shoreline which are recommended by Alberta Environmental Protection (Caring for Shoreline Properties, page 25).

If you have any questions regarding our proposal or our concept, please do not hesitate to contact me.

Thank you for your time and your consideration,

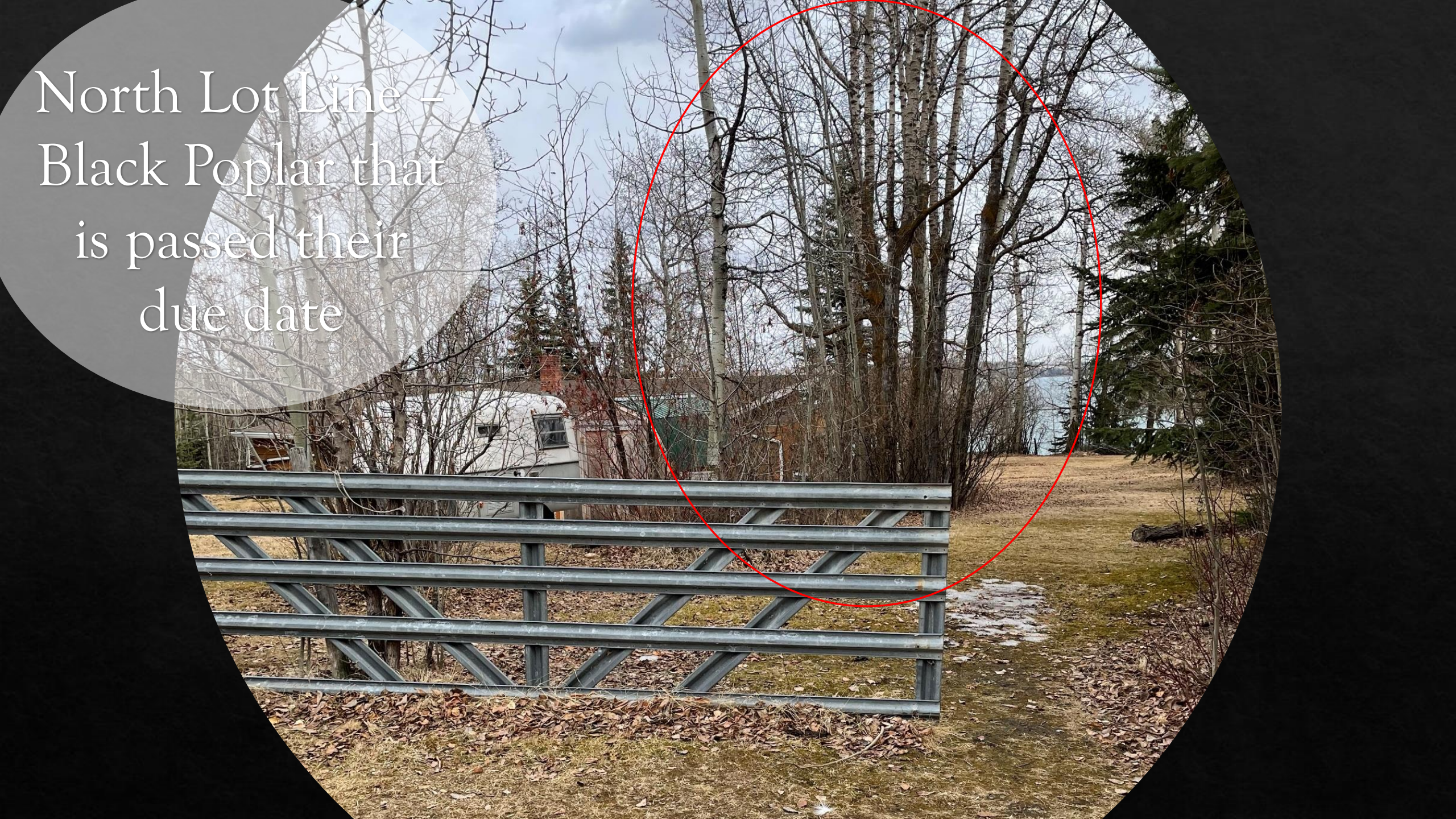
Breanna Beck B.Sc, B.Ed,
Project Manager
403.588.1010
lands@pnls.ca

Existing Stairs

The poplar trees circled in red above are both past their best before date as they have a substantial amount of deadwood.

The birch circled in red above is dead as it had a metal wire wrapped around its trunk which girdled it (see picture below).

The majority of vegetation growing to the left of the staircase are growing through fencing. It is only a matter of time before these trees and shrubs die as a result of girdling from the fence (see close up pictures below).


North Lot Line –
Black Poplar that
is passed their
due date

South Lot Line:

- Trees encroach on building envelope
- Trees passed their due date
- Concern that weakened root system and enhanced exposure to wind may pose danger of damage to neighbor's residence


Grand Ave
Grand Ave
Grand Ave
Grand Ave
207
205 Grand Ave,
Norglenwold, AB T4S...
Trees to be removed in the
building pocket and driveway
203
201
Google

Closing Remarks

- In closing, we have outlined the many issues we are trying to remediate as the landowner, top amongst them being safety of person and property. Understanding that the top priority of the municipality is to BALANCE that with the needs of the environment, we have provided an abundance of material to evidence that we have met all the necessary requirements.

Thank you for your time and consideration!

Geotechnical, Environmental and Materials Engineering

Red Deer · Sherwood Park · Grande Prairie · Calgary · Fort McMurray
Peace River · Medicine Hat · Lethbridge · Fort St. John · Estevan · Regina

GEOTECHNICAL SLOPE ASSESSMENT

205 GRAND AVENUE
SUMMER VILLAGE OF NORGLENWOLD, ALBERTA

PREPARED FOR

REG RADFORD
RED DEER, ALBERTA

PREPARED BY

PARKLAND GEOTECHNICAL CONSULTING LTD.
RED DEER, ALBERTA

ParklandGEO

PROJECT NO. RD7303-07rev1
AUGUST 31, 2021

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TABLES

APPENDICES

1.0 INTRODUCTION

Mr. Radford was proposing to construct a residential home and reconfigure the lake slope at the rear of 205 Grand Avenue in the Summer Village of Norglenwold, Alberta. Parkland Geotechnical Consulting Ltd. (ParklandGEO) was requested to perform a slope stability assessment of the site to provide related recommendations for development of the property. This report provides a review of the slope stability with regards to the proposed residential development.

1.1 SCOPE OF WORK

The scope of work was outlined in ParklandGEO's proposal dated May 7, 2021 (PRO9029rev1). Authorization to proceed with this investigation was given verbally by Mr. Reg Radford. This report summarizes results of the field and laboratory testing programs and presents geotechnical recommendations for the site.

The slope assessment in this report is intended to provide the Owner and municipal authorities with a reasonable expectation with respect to slope stability and potential for slope movement; and to communicate the technical risks so that informed development decisions can be made relating to the slope.

1.2 EXISITNG GEOTECHNICAL INFORMATION

ParklandGEO is not aware of and was not provided any previous geotechnical investigations for this property.

2.0 BACKGROUND

2.1 SITE DESCRIPTION

The property is located at 205 Grand Avenue in the Summer Village of Norglenwold, Alberta as shown on the Key Plan, Figure 1. The legal property description is Lot 13, Block 2, Plan 2203KS. The site was bordered by Grand Avenue to the west, developed residential lots to the north and south, and Sylvan Lake to the East. The greater area around the site is a mix of residential along the lake and agriculture in areas away from the lake.

The lot was previously partially developed with the majority of the trees cleared from the uplands area of the lot, a small access down the lakeside slope, and a small boathouse on the lower slope face near the lake. It appears that a house or permanent structure had not previously been constructed in the uplands area at the site.

The lot can be divided into two distinct areas: the upland area; and the lake slope. The upland area extends from Grand Avenue about 50 m east to the crest of the slope. Upland area dips down about 3 m to the east at a grade of about 20H:1V over the length of the lot with a surface elevation of about 943.6 m at Grand Avenue and 940.6 m at the lake slope crest. The uplands

area had a maintained grass surface with thickets of mature trees on the north and south edges of the west half of the property.

The lake slope is about 4 m high with an elevation of about 940.6 m at the crest and 936.6 m at the toe near the lake. The grade of the slope ranged from about 1.4 to 5H:1V with a typical grade of 2.5H:1V. The slope face was vegetated with mature trees, bushes, and native prairie grasses. The south side of the slope had a small stairway built onto the slope face. A small boathouse was also located on the lower slope face, about 0.5 m above the toe. The slope had been previously cut to create a relatively flat platform for the boathouse. The upslope side of the boathouse has a small wooden retaining wall that appears to have failed, with anchors pulled out of the deadman tiebacks.

Erosion from wave action and ice jamming was also noted along the toe of the slope at the lake shore. This erosion was most apparent below the boathouse, where the boathouse projected out from the slope about 0.6 m above the shore elevation.

Photographs of the site are shown on Figure 4.

2.2 PROJECT DESCRIPTION

The proposed development is expected to include a newly constructed residential house with a basement. The exact location of the house is not known, however is expected to be located in the uplands area at least 10 m from the crest of the slope. The development will also include changes to the lake slope to allow for updates to the boathouse structure and retaining wall as well as gabion baskets at the shoreline to reduce future toe erosion from wave and ice action.

The regraded slope would remove material from the crest and slope face for increased stability and accessibility. The proposed reconfigured slope grade will be no steeper than 4H:1V, similar to the grade of the lot directly north of the site. The slope would project at 4H:1V from the top of the gabion basket wall, about 0.9 m above the lake elevation, at the property line and would result in the crest of the slope moving about 5 m west of the current location and the removal of material from the crest. During reconfiguration of the slope, the boathouse will be removed from the property and gabion baskets will be installed at the toe of the slope to limit further erosion from the lake. Following reconfiguration of the slope, the boathouse will be replaced at its original location.

Summer Village of Norglenwold Land Use Bylaw No. 208/13 Section 2.3.2 requires a geotechnical engineering study for development near slopes exceeding a grade of ten percent. The purpose of the investigation was to identify a suitable development area with regards to slope stability and provide recommendations for development.

3.0 FIELD AND LABORATORY PROGRAM

On May 24, 2021, a site inspection was completed and two boreholes were drilled at the property. Borehole locations are shown on the Site and Aerial Plans, Figures 2 and 3. The following sampling and testing procedures were followed during the field program:

1. Prior to mobilizing the drilling rig, the ParklandGEO completed an Alberta One Call to verify the drill site was clear of underground utilities.

2. The drill rig was owned and operated by Finco Environmental Drilling Ltd. of Red Deer County, Alberta. Drilling operations were monitored by members of ParklandGEO's geotechnical staff. The soil encountered was visually examined during drilling and logged according to the Modified Unified Soil Classification System.

3. Soil samples were collected from auger cuttings at 1.0 m intervals in order to determine the soil/moisture profile. Soil samples were also obtained from auger grab and Standard Penetrations Tests (SPTs) at selected depth intervals.

4. At the completion of drilling, 25 mm hand-slotted PVC standpipes were installed in Boreholes 1 and backfilled with auger cuttings and a bentonite cap. The remaining borehole was backfilled with auger cuttings only. Excess auger cuttings were piled at the borehole locations. Groundwater measurements were recorded on June 7, 2021.

5. All soil samples were returned to ParklandGEO's Red Deer's laboratories for possible further testing. The results of all laboratory testing are shown on the borehole logs and individual test results presented in Appendix A. The laboratory program consisted of moisture contents and water soluble sulphates.

6. A topographic survey of the slope face conducted by Base Surveys Inc. The borehole locations were surveyed by ParklandGEO using a Trimble GPS receiver and a pole mounted Trimble antenna. The estimated post data correction vertical accuracy of this equipment is ±20 cm. ASCM 991474 was picked up was surveyed as a fixed reference point (elevation 996.745 m) and confirmed the expected accuracy of the equipment. UTM coordinates and geodetic elevations are provided in the boreholes logs in Appendix A.

4.0 SUBSURFACE CONDITIONS

The soil profile encountered at this site was in descending order: topsoil; clay; clay till; residual clay bedrock and weathered bedrock. This profile is considered to be typical in the Summer Village of Norglenwold. The detailed soil conditions encountered at the borehole location are described on the borehole logs. The soil test results and definitions of the terminology and symbols used on the borehole logs are provided on the explanation sheets. The following is a brief description of the soil types encountered.

4.1 TOPSOIL

A 250 to 350 mm layer of topsoil was encountered at the borehole locations. The topsoil encountered was black and moderately organic. Local topsoil is considered to be weak and highly compressible when subjected to loads. The thickness of topsoil may vary between borehole locations.

4.2 CLAY

A 350 mm layer of clay was encountered below the topsoil in Borehole 2. The clay contained some silt and little sand. The layer was considered to be medium plastic, firm and moist.

4.3 CLAY TILL

Clay till was encountered below the topsoil and clay in both boreholes and it extended to depths ranging from 1.7 to 1.9 m below grade (elev. 940.7 to 939.1). The clay till was a mixture of clay, silt and sand with inclusions of coal and occasional rust stains. The clay till was brown considered to be low to medium plastic. SPT 'N' values ranged from 20 to 31 blows indicated that clay till layer very stiff to hard consistency The moisture content of the deposit ranged from 16 to 19 percent. Based on local experience, the estimated Optimum Moisture Content (OMC) of silt is about 16 percent.

4.4 RESIDUAL BEDROCK

Highly weathered bedrock was encountered below the clay till in both boreholes. The residual bedrock extended beyond the depth drilled in Borehole 2 and to 3.9 m below grade in Borehole 1. Both residual clay shale and fine sandstone materials were encountered. The moisture content ranged from 16 to 25 percent. Standard Penetration test (SPT) N in the residual weathered bedrock ranged from 24 to 33 blows indicating a very stiff to hard consistency.

4.5 WEATHERED BEDROCK

Weathered siltstone bedrock was encountered below clay till and residual bedrock in Boreholes 1 about 3.9 m below grade (elev. 938.6 m). Auger refusal was encountered within 2 m of the surface of the weathered bedrock. The typical local formation consists of inter-bedded silt-stone and clay shale with occasional layers of sandstone. The upper zone of the local formation is usually considered to be weak, weathered rock with a very stiff to very hard consistency. The moisture content ranged from 12 to 16 percent. The local bedrock is prone to weathering, quickly breaking down into constituent materials (ie. silt, clay, or sand). The competency of bedrock generally increases with depth.

4.6 WATER SOLUBLE SULPHATES

One soil samples was taken for water soluble sulphate concentration tests. The concentrations of sulphates are expressed as a percent of the dry mass of soil. The concentration of water soluble sulphates at 1.5 m below grade in Borehole 2 was 0.08, which indicates a "negligible potential for sulphate attach on buried concrete in direct contact with soil".

5.0 GROUNDWATER CONDITIONS

Groundwater seepage was not observed during drilling of the boreholes. The groundwater level in Borehole 1 was measured 4.14 m below grade (elev. 936.6 m) on June 7, 2021. The groundwater surface is expected to tie into the lake elevation near the toe of the slope.

The observed groundwater measurements are considered to be near the seasonal average. Groundwater elevations are expected to fluctuate on a seasonal basis and will be highest after periods of heavy or prolonged precipitation and snow-melt. Groundwater seepage is expected for relatively shallow excavations at this site. The volumes of groundwater encountered will be dependent on seasonal conditions and the permeability of the soils within the profile.

Localized areas may experience temporarily perched conditions in the soils above the bedrock. Perched water conditions will dissipate over time as the groundwater infiltrates down through the low permeable subgrade soils.

6.0 ASSESSMENT OF SLOPE STABILITY

6.1 METHODOLOGY

Slope stability is described in terms of a factor of safety (FS) against slope failure which is the ratio of total forces resisting failure divided by the sum of forces promoting failure. In general a FS of less than 1.0 indicates that failure is expected and a FS of more than 1.0 indicates that the slope is stable. A steepened slope will slump back over time to establish a stable profile for the existing soil and groundwater conditions. Given the possibility of soil variation, groundwater fluctuation, erosion, delayed strength loss, and other factors, slopes with a FS ranging between 1.0 and 1.3 are considered to be marginally stable and a "long term" stable slope is considered to have a FS greater than 1.3. For permanent structure development at the crest of a slope, a setback corresponding to a factor of safety of 1.5 is considered an industry standard. Typically for new subdivisions, lot lines are setback corresponding to a factor of safety of 1.3.

Stability analysis was carried out using the Morgenstern-Price method and *Slope/W* software. A series of slope models were prepared to represent various failure cases slopes. Model sensitivity was evaluated by varying slope geometry, soil strength parameters and groundwater conditions.

6.2 LONG-TERM VERSUS SHORT-TERM

Slope stability is dependent on a number of factors such as: slope geometry; groundwater and soil moisture conditions; and soil characteristics including soil strength. It is not uncommon to find slopes with very steep inclinations or even near vertical faces for relatively weak clay soils. This is an example of short-term stability based on short term soil strength of the clay. Soil strength is a function of:

- The friction angle of the soil, which can be visualized looking at the natural angle formed on the outside of a sand or gravel stockpile;
- The cohesion of the soil, which is the combination of physical and chemical bonds between the soil particles, some of which can break down due to conditions like wetting; and,
- Outside physical forces, such as suction of water from the slope subgrade via plant roots which adds strength to the soil similar to cohesion.

The short-term stability of a slope is based on all of the potential strength factors available under current conditions. Under ideal conditions steep clay slopes are possible, but if conditions change like: removal of vegetation; wetting the slope face; or raising of the groundwater table, overly steep slopes will begin failing as the short term strength disappears. With proper management to avoid destabilizing factors, this short-term soil strength can be preserved and steepened slopes can be maintained for extended periods, but not indefinitely. The risk of depending on short term conditions for assessing slope developments is rarely acceptable.

6.3 SLOPE MODELS

6.3.1 Slope Profile

The slope profiles for the site were based on survey data collected by Base Surveys Inc. and as shown on the Contour Plan, Figure 2. A representative profile was taken through the slope on the south side of the lot. Briefly, the side slopes range from about 1.4 to 2.1H:1V, with slope height of about 4 m. The proposed slope reconfiguration was modelled by holding the toe of the slope at top of the proposed gabion wall and reducing the slope grade to 4H:1V.

6.3.2 Subsurface Conditions

The following effective strength parameters were used in the analysis and derived based on modelling the historical slope movement of the upper slope and previous experience.

TABLE 1: SUMMARY OF SOIL PARAMETERS

Soil	Elevation (m)	Unit Weight γ (kN/m^3)	Cohesion c' (kPa)	Friction Angle Φ' (degrees)
Till	Surface – 939	19	0 – 1	27 – 29
Residual Bedrock	939 – 937	20	1 – 5	22 - 25
Weathered Bedrock	< 937	21	5 – 15	22 – 25

Groundwater conditions used in the analysis were assumed to be around 4 m below grade in the upland area and drop to meet the lake elevation near the slope location. A surcharge of 60 kPa was applied at the location of the proposed house.

6.4 RESULTS OF STABILITY ANALYSIS

Stability analysis was carried out using the *SLOPE/W 2019* computer program to evaluate the factor of safety for the representative slope models. The results of the slope analysis are summarized in the below table.

TABLE 2: MODEL RESULTS FOR EXISTING CONDITIONS

Stability Run	Case	Factor of Safety	Figure
Slope Global	Current Slope	1.1	---
Upper Slope	Current Slope	1.1	B1
Setback 4 m from Crest	Current Slope	1.3	---
Setback 7.5 m from Crest	Current Slope	1.5	---
House Setback 8.5 m from Crest	Current Slope	1.5	---
Slope Global	4H:1V Reconfiguration	1.9	---
Upper Slope	4H:1V Reconfiguration	> 2.0	---
House Setback 4.0 m from new Crest	4H:1V Reconfiguration	1.5	B2

Representative slope profiles for the analysis are shown in Appendix B. It should be noted that a series of stability runs have be undertaken for both localized failures and global stability and the example runs provided in Appendix B are just samples of typical analysis results for various cases and conditions.

6.5 ASSESSMENT

The findings of the slope stability analysis for the slope model and the proposed soil parameters listed in Table 2 were in general agreement with observed slope experience. The long term assessment at this site is that the potential for a major slope movement impacting the proposed house is low under normal conditions with a reasonable expectation of seasonal variation. The proposed house site near new crest of the slope appears to have negligible impact on the slope, given proper setback.

The existing slope face is considered to be marginally stable, with the potential movement up to 2 m deep. This risk is considered to increase significantly if vegetation is removed from the slope face, if the retaining wall behind the boathouse is left unaddressed, or if continued erosion of the slope toe due to wave and ice action is allowed. The proposed reconfiguration of the slope to a 4H:1V grade will improve the overall stability of the slope by off-loading some of the driving force from the slope. The gabion wall along the shoreline will also significantly reduce the risk of slope movement by eliminating active toe erosion and fixing the toe in place.

The FS against a small shallow "slump-type" failure on the existing slope face may fall close to 1.0 if the slope face at the site was subject to grading causing excessive steepening, or if areas of the slope face were to become saturated. However, it would take unusually wet conditions to cause shallow slumping of the slope face. Saturation of the surficial soils, leading to the regressive slumping of the slope face is considered to be the most likely mode of slope failure at this site. If a large movement were to occur, the failure in the subgrade would be expected to be slow moving and would provide some warning in the form of cracks on the slope face prior to failure

7.0 DISCUSSION AND RECOMMENDATIONS

7.1 GEOTECHNICAL EVALUATION

The site soil conditions are considered typical for the Summer Village of Norglenwold and are suitable for the construction of the proposed residence. The foundations loads for the proposed residence are assumed to be light to moderate. The site soil conditions are considered suitable for conventional strip and spread footings bearing on the native till. The proposal to reconfigure the site slope will increase the global stability.

Based on the stability analysis, the critical failure plane at the rear wall of the proposed house footprint is considered to be stable with a FS of over 1.5 based on a design setback of 8.5 m from the crest for the existing slope configuration. The setback can be reduced to 4.0 m from the new crest if the slope is reconfigured to be no steeper than 4H:1V. The construction of the proposed residence is not expected to have a significant impact on the stability of the slope. The overall assessment of the slope issues at this site is that slope stability will not be a significant obstacle to residential development provided reasonable design, construction and long-term slope maintenance practices are followed.

The existing slope face is considered to be marginally stable in its current configuration. The observed toe erosion due to wave and ice action has not yet resulted in detrimental changes to the slope but in the long term this toe erosion would cause instabilities in the slope face if left unaddressed. Additionally, death of older vegetation at the end of its life cycle and removal of invasive vegetation species would expose the face of the slope to increased risk of saturation from precipitation. Without vegetation, erosional forces such as wind and rain may cause spalling slumping on the slope face over time. With the designed house setback from the crest, this slumping is not expected to impact the proposed house. This slumping could undermine the existing lake access stairs and boathouse area and cause soil to slide into the lake. There are two options to increase the stability of the slope face in conjunction with a gabion basket wall at the toe of the slope.

1. Flattening and removing the over steepened area of the slope face. Based on experience with the local soils, proposed reconfiguration to 4H:1V is considered to be suitable.

2. The slope face could be stabilized by installing a retaining wall system. The retaining wall system would need to be designed by a qualified engineer.

It should be understood the stairs and the boathouse are not considered to be permanent occupied structures, so the other option to slope rehabilitation would be to leave the features remaining after site development in an "as is" condition and maintain or repair them as required. Landscaping or retaining walls may be required to minimize impacts on neighboring properties if the crest area is lowered. Un-retained grade changes between adjacent lots should be no steeper than 3H:1V to ensure long term stability.

If the boathouse on the lower slope is moved to support a vertical cut of the slope face, there is potential for differential lateral earth pressures on the building due to the sloping grade and unburied east wall. The boathouse could be redesigned with a concrete wall designed to resist lateral earth pressures or the boathouse walls can be protected from these pressures by providing retaining walls to create a "pocket" around the boathouse.

There is potential for the boathouse to intercept groundwater seepage from the upslope area. This does not appear to have been a major issue with the current boathouse, but the old timbers were not fully sealed and groundwater would have some outlet towards the lake. It will be prudent to build some features into the design to allow any groundwater seepage from the upslope subgrade to have a pathway towards the natural drainage into the lake. This can be provided by selection of suitable foundation and backfill materials.

7.2 STABILITY OF DEVELOPMENT AREA

The overall assessment of the slope issues at this site are that slope stability will not be a significant obstacle to residential development provided reasonable design and construction practices are followed. Residential development should be setback at least 8.5 m from the existing crest location. If the slope if reconfigured to 4H:1V or flatter, the setback can be reduced to 4.0 m from the new crest location.

The most likely failures to occur at this site are shallow surficial failures during periods of soil saturation and erosion of the slope toe from the lake. The established vegetation at the site will help to prevent these failures from occurring. However, the loss of vegetation due to end of life cycle or removal of invasive species will expose the soil surface directly to precipitation. The surficial soil will also susceptible to erosion due to surface water run-off. This will be most likely to occur in areas that are cleared as part of the site development. It is critical to ensure that new vegetation is established following any re-grading of the lot. If even minor erosion is identified following construction, erosion protection measures should be implemented.

Septic tank or underground water storage should be setback a minimum of 10 m from the crest of the slope to limit the risk of saturation of the slope face. This will require careful planning of the layout of the site to ensure all minimum setback distances are adhered to for the septic tank, water well, and buildings.

7.3 SITE PREPARATION

It is anticipated that stripping and minor grading will be required as part of the residential development. It is anticipated that the maximum grade changes will be less than 1.0 m.

7.3.1 Stripping

In general, all surficial topsoil, organics, non-engineered fill or unsuitable soils should be stripped in the building and pavement areas. Trees and bushes should only be removed from areas required for development. Based on site observations the surficial topsoil ranges up to 350 mm thick. Some areas of the site may require more stripping or undercutting to remove any remaining topsoil, root systems, or foundation debris or pavement debris. Organic materials should not be mixed with mineral soils. The excavated organics and unsuitable materials may be stockpiled at least 5 m from the crest of the slope for future landscaping use.

7.3.2 Subgrade Preparation

The exposed subgrade should be scarified to a depth of 150 mm and recompacted uniformly to a minimum of 98 percent of SPMDD. Site preparation measures should be monitored by qualified and experienced geotechnical personnel to identify potential soft areas or unsuitable material.

Site preparation should be carried out under dry weather conditions to minimize the risk of disturbance and softening. If adverse weather or groundwater conditions are observed, these recommendations should be reviewed in order to avoid subgrade failure. Uniformity of compaction is of most importance to minimize potential for differential settlement under new loads. Over compaction and wetting should be avoided. Site preparation measures should be monitored by qualified and experienced geotechnical personnel to identify potential soft areas. Soft areas should be sub-cut and replaced with a suitable fill material to a depth sufficient to support construction traffic. Methods to avoid subgrade failure of soft subgrades may include: limiting construction traffic, modification of site preparation procedures (scarification, recompaction, etc.) and sub-cut and replacement with a suitable engineered fill material.

7.3.3 Excavations and Backfill

Temporary excavations will be required for foundations and underground utility installations. All excavation work must comply with the requirements of the Alberta Occupational Health and Safety Act (OHS Act, 2018), OHS Regulation (2018) and OHS Code (2019). The OHS Code contains the technical requirements that support the Act and Regulation. Excavation side slopes are not expected to be able to stand near vertical for extended periods of time. Short term excavations side slopes should be cut back to 1H:1V from up to 1.5 m above the toe in the native cohesive soils. For excavations into the groundwater table or during wet conditions, flatter side-slopes may be required.

If space does not permit the slopes to be cut back, some form of temporary shoring must be installed to protect workers in the trench. All temporary surcharge loads should be kept back from the excavated faces a distance of at least one-half the depth of the excavation. All vehicles delivering materials to the site should be kept back from excavated faces at least 1.0 m or one times the excavation depth, whichever is greater. Fill materials used to bring the site to grade after excavation may consist of low to medium plastic imported clay, sand fill, or an approved granular fill.

Compliance with compaction recommendations around buildings is especially important, because poorly compacted backfill adjacent to foundation walls or grade beams will settle and may lead to ponding of surface water.

7.3.4 Fill/ Backfill and Compaction

Fill required to bring the site up to grade should be low to medium plastic inorganic clay or well graded select sand or gravel. The native sand is considered suitable as fill material; however it will require moisture conditioning in order to achieve proper compaction. The native sand will likely require an addition of moisture in order for proper compaction. The following table provides minimum compaction level and target moisture contents for any engineered fill at the site.

TABLE 3: RECOMMENDED COMPACTION LEVELS AND MOISTURE CONTENTS

Fill Location	Recommended Minimum Compaction Level	Moisture Content
Building Areas		
New fill greater than 0.6m thickness (including trenches)	100% SPMDD	±2% OMC
New fill less than 0.6m thickness (including trenches)	98% SPMDD	±2% OMC
Under structural slabs	95% SPMDD	±3% OMC
Other Development Areas		
Exterior building area outside of road structures	95% SPMDD	±3% OMC

The lift thicknesses should be governed by the ability of the selected compaction equipment to uniformly achieve the recommended density. However, it is generally recommended to use lifts with a maximum compacted thickness of 200 mm for granular fill and 150 mm for clay fill. Uniformity is of most importance. Granular fill is best compacted with large smooth drum vibratory rollers while clay fill is best compacted with vibratory "padfoot" or "sheepsfoot" rollers. Over compaction and excessive use of vibration to achieve density should be avoided to minimize risk of failing the subgrade. In areas which require higher compaction, it is recommended that granular fill be placed at moisture contents 0 to 2 percent below the OMC and that clay fill be placed at moisture contents about 0 to 2 percent above the OMC. This will help reduce compactive effort and potential risk of subgrade disturbance needed to achieve maximum density.

Fill placement and compaction during the winter months is challenging due to the difficulty in moisture conditioning the fill soils and obtaining high compaction levels. Materials and methodology should be reviewed prior to construction if cold weather compaction of clay fills is proposed. High compaction levels can only be achieved using fill soils that are unfrozen provided the compaction area is heated and hoarded to prevent freezing during placement and compaction.

7.3.5 Site Drainage

Surface water should be drained away from the site as quickly as possible, both during and after construction. Site drainage should be directed away from the foundation walls. It is recommended to provide a 5 percent back slope from buildings for a distance of at least 3 m with a 2 percent slope beyond that. Roof and other drains should discharge well clear of buildings and be designed to discharge at several different locations. Discharging all roof runoff at the same location has the potential to cause development of erosion channels that can ultimately impact slope stability.

Compliance with the recommendation for compaction of fill in exterior areas is important because poorly compacted backfill adjacent to foundation structures will settle, which may lead to ponding of surface water against foundation walls or grade beams. The slope of exterior backfill should be checked periodically to verify water is boathouse away from buildings. If the backfill settles causing water to pond against foundation walls, the surface should be re-graded. Water should not be allowed to pond adjacent to the building or pavement areas.

7.4 FOOTINGS

Standard house basement foundations using strip and spread footings will generally be acceptable at this site. Footings based on undisturbed native sand may be designed based on a maximum allowable bearing pressure of 120 kPa for strip footings and 140 kPa for pad footing placed on undisturbed inorganic soil free from loosened material. The design and construction of residential foundations should conform to the Alberta Building Code. In general, excavations should be protected against surface water runoff and ingress of groundwater; footing bases should not be allowed to dry out excessively during construction; and the bearing soil should be protected against freezing during and after construction.

Additional design and construction recommendations for footings include:

1. Footings should bear on native sand or approved engineered fill free from loosened material. Excavation of the footing trenches should be undertaken in a manner to minimize disturbance to the bearing surface. The use of backhoe or grade-all equipment is strongly recommended over loader or dozer equipment.

2. For protection against frost action, exterior footings in continuously heated structures should be provided with a minimum depth of ground cover of 1.5 m. If any proposed building/structures will be left unheated over the winter they will require at least 2.5 m of ground cover. Artificial insulation may be used to prevent frost penetration where adequate depths of ground cover cannot be economically provided. Insulation should be placed exterior to the footing wall.

3. Footings and foundation walls should be reinforced to span localized soft spots.

4. The footing trenches should be protected against surface water run-off and seepage water through the use of conventional sumps and ditches, if required.

5. Footing bases should not be allowed to dry out excessively during construction.
6. Foundation soils must not be allowed to freeze at any time prior to, during, or after construction.

7. Preparation of the bearing surfaces should be monitored by a qualified geotechnical engineer prior to placement of footings to verify that design criteria are met.

7.5 GRADE SUPPORTED FLOOR SLABS

Floor slabs should rest on at least 150 mm of well graded, free draining, granular base. Suitable materials would include coarse sand or crushed gravel with less than 10 percent passing the 0.080 mm sieve. The drainage layer below the slab should be compacted uniformly to at least 95 percent of SPMDD.

Small vertical subgrade movements may be experienced; therefore provisions should be made for movements between partitions and adjoining columns or load bearing walls. In addition, where partitions are placed under structural members a space should be left at the top of the partition to allow vertical movement (at least 25 mm). Columns in basements which support floor joists should be adjustable. Water lines should be installed carefully to minimize the potential for breakage and leaks below slabs.

7.6 BACKFILL FOR HOUSE STRUCTURES

Backfill soils are capable of exerting significant horizontal pressures onto a basement wall. It is recommended the backfilling be delayed until the concrete has gained enough strength to support the horizontal loads. The top and bottom of the wall should be braced prior to backfilling. Therefore, it is recommended to place the basement floor slab and floor joists prior to backfilling around walls. Backfill should be brought up evenly around the building perimeter to minimize differential horizontal pressures on the basement walls.

Rather than heavily compacting the backfill around the basements, it is recommended to nominally compact the backfill (90 - 95 percent of SPMDD) recognizing that settlement of the backfill will occur, particularly after the first freeze/thaw and moisture infiltration cycle. Backfill around basement walls should be sloped to boathouse water away from the structure with a recommended slope of at least 5 percent over a distance of 3 metres. The slope of the backfill should be checked periodically to maintain the slope of the ground surface away from the wall.

If possible, the upper 500 mm of backfill should be low to medium plastic clay, to reduce potential surface water infiltration against the foundation walls. Roof leaders from houses and garages may be discharged onto the ground surface well clear of the foundation walls to help reduce wet weather infiltration of water around the foundation.

7.7 BASEMENT AND SUBDRAINAGE SYSTEM

A permanent subdrainage system (weeping tile drain) is not specifically required to control groundwater at this site. However, weeping tile is an inexpensive way to ensure water is unable to pond against foundation walls during heavy rainfall events, spring melt or unforeseen circumstances.

The weeping tile should consist of a minimum 100 mm diameter perforated rigid pipe surrounded by a filter of free draining gravel and enveloped in filter fabric. It is noted that corrugated HDPE is prone to sagging because it is flexible; to plugging because the corrugations of the pipe promotes deposition of the soil; and also to crushing where backfill thickness exceed 1.2 m. PVC pipe (with two 45-degree fittings at building corners) is more easily flushed, snaked, and unplugged; and is also the less prone to breakage.

Weeping drain should be surrounded with granular material to prevent the fine grained native soil from being washed into the drain. The granular filter may consist of free draining crushed rock or washed rock placed around the perforated drain pipe and wrapped with a coarse concrete sand or suitable geotextile. The weeping tile should be directed to a sump for collection and discharge. The discharge should be taken outside well away from the basement and well away from the slope face. Gravity discharge can be considered at this site as the surrounding topography allows. Sump discharge point should be protected from erosion with suitable landscaping features or splash-pad. Infiltration flows into the weeping tile drains from the sand subgrade is expected to be infrequent and minimal. The largest flows will occur during periods of heavy precipitation and snow melt.

7.8 FOUNDATION CONCRETE

Water soluble sulphate concentration results indicate a negligible potential for sulphate attack of subsurface concrete. As per CSA A23.1-14, General Use (GU) hydraulic cement is recommended with a minimum 28 day compressive strength of 28 MPa with a water cement ratio of 0.5. All concrete exposed to a freezing environment either during or after construction should be air entrained. Calcium chloride or any admixture formulation containing chloride should not be used in the subsurface concrete. Calcium salts used as accelerating admixture should be avoided, since they may increase the severity of sulphate attack.

7.9 RETAINING WALL DESIGN RECOMMENDATIONS

For any new retaining walls, the foundations should be designed for an ultimate bearing capacity of 300 kPa for ULS design. The "factored" ULS resistance may be calculated by multiplying the ultimate bearing capacity by a geotechnical resistance factor of 0.5, in accordance with the building code requirements. For SLS design an allowable bearing resistance of 120 kPa may be used.

Earth pressures behind the wing-walls will produce a horizontal sliding force and an overturning moment. It is expected that long term permanent lateral earth pressure cases may be encountered on this project. Three long term earth pressure cases may be considered for earth retaining structures on this project.

1. Active Case. Active earth pressures (K_A) should be used behind retaining walls which are unrestrained at the top and flexible walls which are allowed to move away from the restrained soil mass (i.e. shoring).

2. "At Rest" Case. "At rest" pressures (K_O) should be used behind fixed walls or shoring walls with bracing struts installed at the top the shoring walls. "At rest" earth pressures will be larger than active earth pressures, but shoring walls will be more stable.

3. Passive Case. Passive earth pressures (K_P) act on the front of shoring walls on the portion installed below the final excavation grade and on the rear of shoring wall acting as backstops for jacking (i.e. against the base of the wall). Horizontal stresses on the wall push against the soil creating a much larger resisting force than is produced by the active or at rest conditions. It is recommended to ignore passive pressure from soil which slopes down away from the wall.

Lateral earth pressures may be computed using the following equation:

$$P = K\,Q + K\,\gamma\,H$$

where:
- P = lateral earth pressure at depth H below ground level (kPa)
- Q = any surcharge loading at the ground surface (kPa)
- K = coefficient of lateral earth pressure
- γ = total unit weight of backfill compacted to 95 % SPMDD (kN/m^3)
- H = depth below ground level

TABLE 4: LATERAL EARTH PRESSURE PARAMETERS

Type of Backfill	Total Unit Weight (kN/m^3)	Coefficient of Lateral Earth Pressure			
		β*= 0°		β*= 15°	
		K_A	K_P	K_A	K_P
Clay fill	18.0	0.44	2.28	0.53	1.87
Gravel Fill	21.0	0.27	3.69	0.31	3.25
Native Till	19.0	0.38	2.66	0.44	2.25

* β is the slope angle of any soil material behind the wall measured from the horizontal

1. This relationship makes no allowance for hydrostatic pressure to build up on the wall, as it is expected that the retaining system will be protected by a sub-drainage system.

2. The earth pressure relationship given above assumes nominal compaction of the backfill to a maximum of 95 percent SPMDD. Only light, hand operated equipment should be used within 1.5 m of walls, and walls should be braced prior to backfilling. The use of heavy compaction effort adjacent to walls will induce significant stresses on the upper portion of the walls requiring additional structural reinforcement. If heavy equipment is proposed, the earth pressure relationship should be reviewed.

3. The preceding relationship makes no allowance for additional horizontal forces due to frost to build up behind the shoring walls on the assumption that frost protection will be installed, if required. If no frost protection is provided the lateral earth pressures pushing on the wall should be increased by a factor of 2 for the depth of frost.

7.10 SLOPE DEVELOPMENT RECOMMENDATIONS

The slope face around the development area will be subject to periodic wetting from precipitation and potential surface erosion from run off. It is important that the proposed site development does not initiate any detrimental changes to the subsurface conditions and slope geometry. In order to minimize the potential for destabilization that could lead to localized failures, the crest areas and the slope faces should be kept well vegetated. Permanent removal of the existing vegetation from the crest area and the slope face is not recommended and growth of new vegetation on the slope and crest area should be encouraged. Vegetation should only be removed from areas that are required for development. Ongoing monitoring of the surficial conditions of the slope should be carried out. Erosion control measures should be implemented in any areas where erosion is identified.

The following general recommendations are intended as a guide to minimize the impact of the proposed development on the stability of the slope.

1. Site grading carried out should be designed to drain surface water due to rainfall and snowmelt away from the slope, promoting infiltration rather than surficial run off. Where surface run-off toward the slope is required it should be designed as sheet flow, rather than directed to a discharge point such as a swale.

2. All discharge from roof leaders and possible weeping tile systems should be directed away from the top-of-bank. Drainage from roof leaders and/or weeping tile sump discharges should not be allowed to flow uncontrolled over the crest or be allowed to pond on the ground surface near the crest of the slope, causing increased water infiltration into the slope.

3. It is suggested that exposed soils around site should be vegetated soon after site grading and construction is complete. It is suggested that any new vegetation for this site be selected from native species with deep root systems that can grow with a minimum of watering. Leaving graded areas of the site unvegetated for extended periods of time will cause increased infiltration into the slope, resulting in the saturation of the upper soils of the slope.

4. Septic fields and water storage/septic tanks (i.e. cisterns) should not be located at the crest of the slope. If required, water storage/septic tanks should be located at least 10 m from the crest of the slope.

5. Swimming pools and underground sprinkler systems should be avoided at the site due to the possibility of long term undetected leakage which could reduce stability of the slope.

6. Building contractors often make the mistake of pushing excavation soil out onto the slope face in an attempt to establish larger level yard area; often placing the material over existing vegetation and topsoil. This usually results in over loading and steepening of the original slope, resulting in very unstable conditions. Under no circumstances should soil or construction debris be placed on the slope face or at the crest of the slope.

The general recommendations in this section are considered to be "common sense" actions to undertake or avoid in order to minimize potential disturbance to the slope. It is considered prudent to follow these recommendations to maintain a low risk to the property (and thereby to the house). It should be noted, that the possibility that future property owners may undertake activities which are detrimental to the stability of the slope is assumed when assessing the factor of safety of the slope. These general recommendations and guidelines may be subject to site specific modifications based on the review of a qualified geotechnical engineer.

8.0 CLOSURE

This report is based on information at two boreholes location, site reconnaissance and site survey. If different subsoil and groundwater conditions than those described above are encountered, this office must be notified and recommendations submitted herein will be reviewed and revised as required. This report has been prepared for the exclusive use of **Reg Radford**, and their approved agents for the specified application to the residential development within 205 Grand Avenue, Summer Village of Norglenwold, Alberta. It is understood that this report will be submitted to the county as part of a development permit application package. This report has been prepared in accordance with generally accepted soil and geotechnical engineering practices. No other warranty, expressed or implied, is made. The limitations of this report are specified in the General Terms and Conditions section and should be considered part of this report.

We trust this meets with your present needs. If you have any questions or comments regarding this information, please do not hesitate to contact this office.

Respectfully submitted,
PARKLAND GEOTECHNICAL CONSULTING LTD.

PROFESSIONAL ENGINEER ALBERTA
BRYDEN LUTZ
ID 126288

31 August 2021

Bryden Lutz, P.Eng.
Geotechnical Engineer

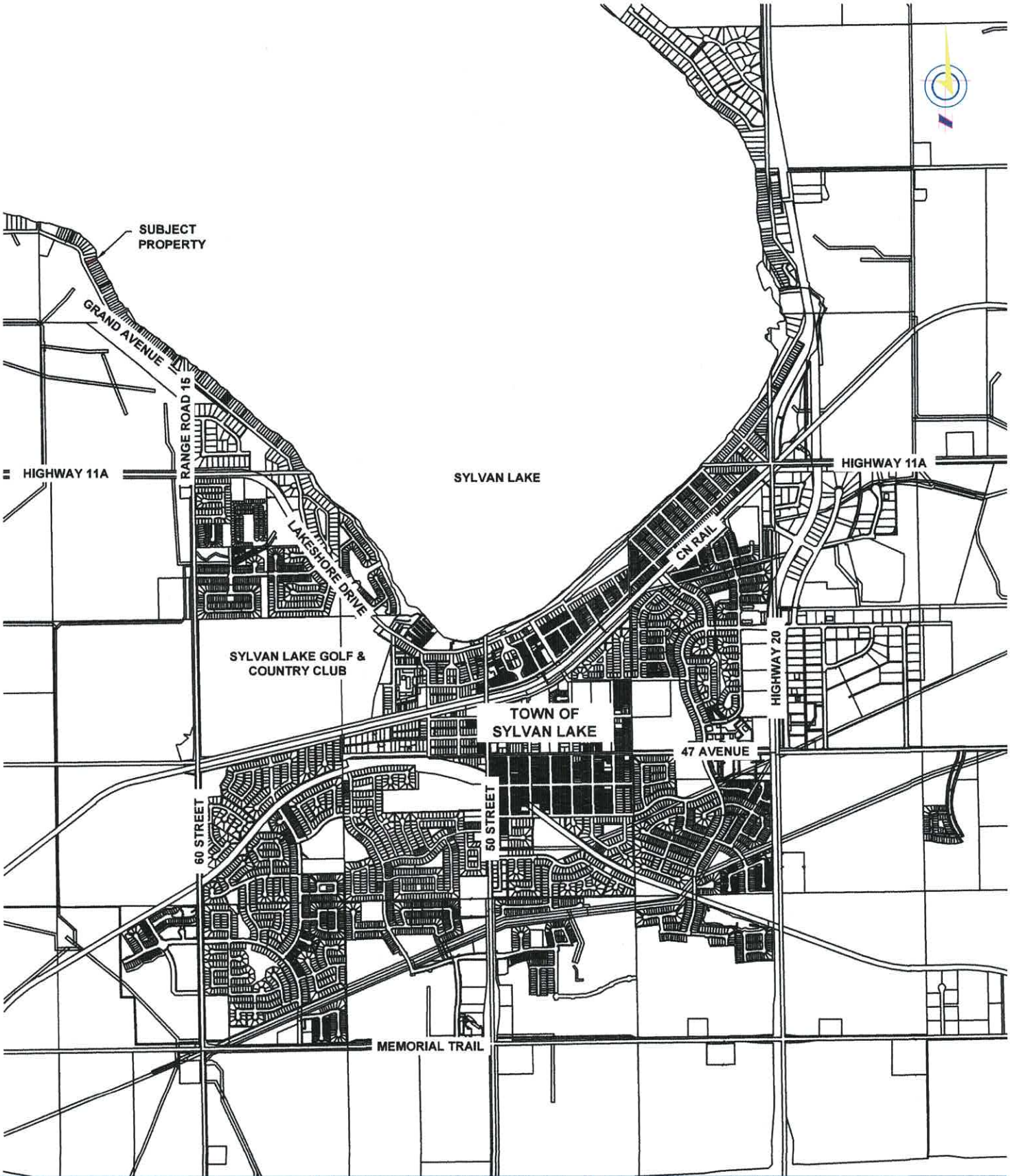
APEGA Permit to Practice No. P – 7312

2021-08-31

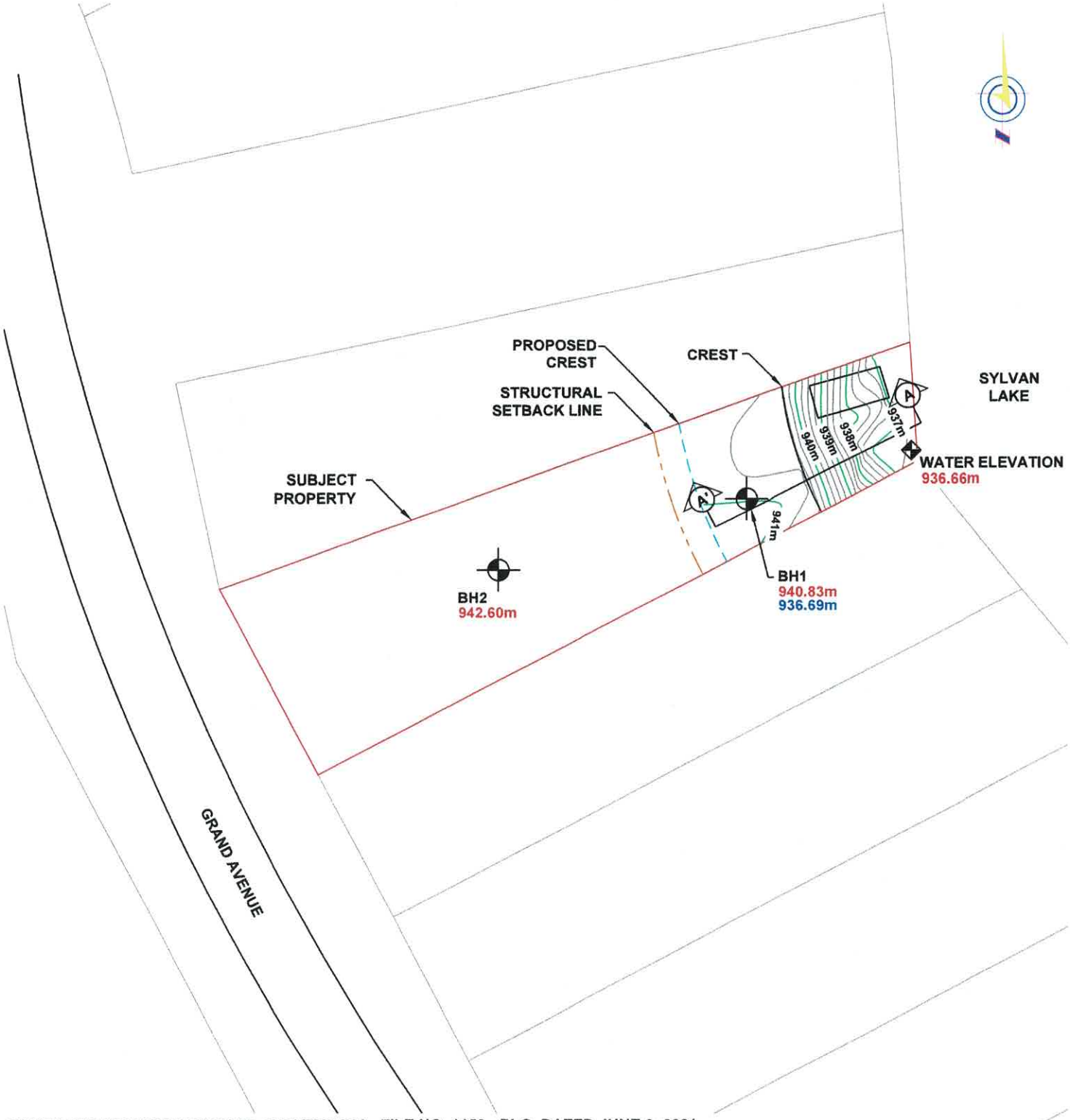
Michael Staple, P.Eng.
Responsible Member

Reviewed by: Christopher Pratt, P.Eng.
Geotechnical Engineer

FIGURES



Parkland GEO	CLIENT: REG RADFORD	**KEY PLAN**			
		PROPOSED RESIDENCE SLOPE ASSESSMENT 205 GRAND AVENUE, NORGLENWOLD, ALBERTA			
		DRAWN: NC	CHK'D.: BL	REV #: 0	DATE: JUNE 2021
		SCALE: NTS	JOB NO. RD7303-07		DRAWING NO. FIGURE 1



CONTOURS PROVIDED BY BASE SURVEYS INC., FILE NO. 1153 - PLG, DATED JUNE 3, 2021.

ALL BOREHOLE LOCATIONS ARE APPROXIMATE.

REFERENCE POINT

940.83m SURFACE ELEVATION

936.69m GROUNDWATER ELEVATION (JUNE 7, 2021)

SCALE (metres)

-10 -5 0 5 10 20

Parkland GEO	CLIENT: REG RADFORD	SITE PLAN			
		PROPOSED RESIDENCE SLOPE ASSESSMENT 205 GRAND AVENUE, NORGLENWOLD, ALBERTA			
		DRAWN: NC	CHK'D.: BL	REV #: 0	DATE: JUNE 2021
		SCALE: 1:500	JOB NO. RD7303-07		DRAWING NO. FIGURE 2

NOTE: AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH, DATED AUGUST 22, 2015.

ALL BOREHOLE LOCATIONS ARE APPROXIMATE.

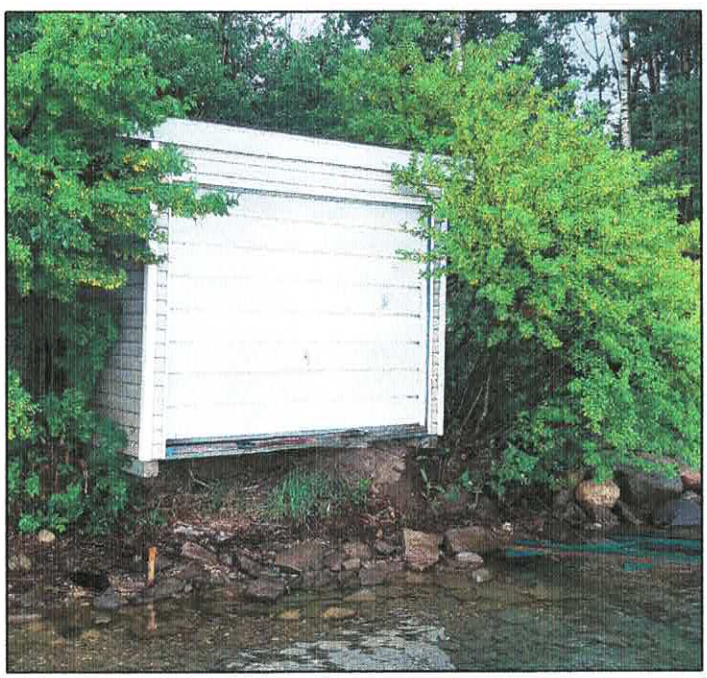
SCALE (metres)

-10 -5 0 5 10 20

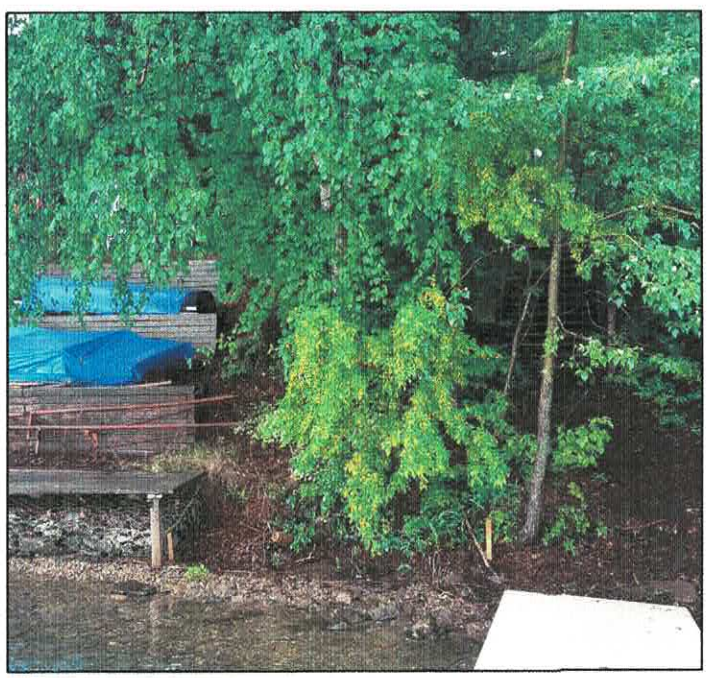
Parkland GEO	CLIENT: REG RADFORD	**AERIAL PLAN**		
		PROPOSED RESIDENCE SLOPE ASSESSMENT 205 GRAND AVENUE, NORGLENWOLD, ALBERTA		
		DRAWN: NC	CHK'D.: BL	REV #: 0	DATE: JUNE 2021
		SCALE: 1:500	JOB NO. RD7303-07	DRAWING NO. FIGURE 3	

PHOTOGRAPH 1: SHOWS BH1 AND SUBJECT PROPERTY, FACING EAST

PHOTOGRAPH 2: SHOWS SUBJECT PROPERTY, TAKEN FROM GRAND AVENUE, FACING EAST



PHOTOGRAPH 3: SHOWS BOATHOUSE SHED AT TOE OF SLOPE, FACING WEST



PHOTOGRAPH 4: SHOWS TOE OF SLOPE, STAIRWAY AND NEIGHBOUR PROPERTY TO THE SOUTH, FACING WEST

ParklandGEO	CLIENT: REG RADFORD	**SITE PHOTOGRAPHS**			
		PROPOSED RESIDENCE SLOPE ASSESSMENT 205 GRAND AVENUE, NORGLENWOLD, ALBERTA			
		DRAWN: NC	CHK'D.: BL	REV #: 0	DATE: JUNE 2021
		SCALE: NTS	JOB NO. RD7303-07		DRAWING NO. FIGURE 4

APPENDIX A

Borehole Logs (2)
Explanation of Terms and Symbols
Soil Test Results

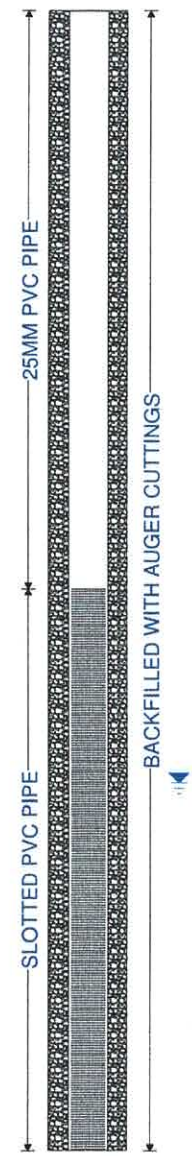
BOREHOLE NO.: 01

CLIENT: Radford
SITE: 205 Grand Avenue - Norglenwold
NOTES:

PROJECT NO.: RD7303-07
BH LOCATION: Lake Crest

SUBSURFACE PROFILE

Depth (m)	Description	Symbol	Moisture (Wp |-----X-----| Wl) 25 50 75	Type	Sample No	SPT (N)	Comments	Well Completion Details	Elevation (m)
0	GROUND SURFACE								940.80
	Topsoil Black, organic, moist.								940.45
1	***Till*** Clay, some sand, little sand, trace gravel, very stiff, low to medium plastic, brown, occasional coal and rust, damp.		16						939.10
					1D1	31			
2	***Clay (Residual Bedrock)*** Some sand, medium plastic, very stiff, brown, damp.		16						
				G	1G1				
3			25						937.60
					1D2	33			
	Weakly Cemented Sand Some silt, fine grained, dense, damp to dry.								936.90
4	***Weathered Bedrock*** Siltstone, some silt, hard, brown, dry.		12						
5	- Grey, very hard at 5.5 m.		21						
6			16		1D3	-	- 25 blows for 50 mm		934.70
	Auger refusal at 6.1 m. Dry upon completion. 25 mm PVC standpipe installed. Backfilled with auger cuttings and bentonite cap. Water at 4.14 m on June 7, 2021.								
7									



LOGGED BY: BL
CONTRACTOR: Finco Enviromental Drilling Ltd.
RIG/METHOD: Track Rig/ 150 mm Solid Stem
DATE: May 24, 2021
CALIBRATION:

GROUND ELEVATION: 940.8 m
NORTHING: 5801627.7 m
EASTING: 695616.5 m

Parkland GEO

CLIENT: Radford
SITE: 205 Grand Avenue - Norglenwold
NOTES:

BOREHOLE NO.: 02

PROJECT NO.: RD7303-07
BH LOCATION: House Location

SUBSURFACE PROFILE

Depth (m)	Description	Symbol	Moisture (Wp |-----X-----| Wl) 25 50 75	Type	Sample No	SPT (N)	Comments	Well Completion Details	Elevation (m)
0	GROUND SURFACE								942.60
	Topsoil Black, organic, moist.								942.35
	Clay Some silt, little sand, medium plastic, firm, brown, moist.								942.00
1	***Till*** Clay, some sand, little sand, trace gravel, very stiff, low to medium plastic, brown, occasional coal and rust, damp.		19						
					2D1	20	SO4 = 0.08%		940.70
2	***Clay (Residual Bedrock)*** Some silt, some sand, medium plastic, very stiff, brown, dry to damp.		19						
3			16		2D2	24			
4			23						938.10
	Auger refusal at 4.5 m. Dry upon completion. Backfilled with auger cuttings.								
5									
6									
7									

LOGGED BY: BL
CONTRACTOR: Finco Enviromental Drilling Ltd.
RIG/METHOD: Track Rig/ 150 mm Solid Stem
DATE: May 24, 2021
CALIBRATION:

GROUND ELEVATION: 942.6 m
NORTHING: 5801621.1 m
EASTING: 695593.3 m

THE PARKLANDGEO CONSULTING GROUP
EXPLANATION OF TERMS AND SYMBOLS

The terms and symbols used on the borehole logs to summarize the results of the field investigation and subsequent laboratory testing are described on the following pages.

The borehole logs are a graphical representation summarizing the soil profile as determined during site specific field investigation. The materials, boundaries, and conditions have been established only at the borehole location at the time of drilling. The soil conditions shown on the borehole logs are not necessarily representative of the subsurface conditions elsewhere across the site. The transitions in soil profile can have gradual rather than distinct boundaries.

1. **PRINCIPAL SOIL TYPE** – The major soil type by weight of material or by behaviour.

Material	Grain Size
Boulders	Larger than 300 mm
Cobbles	75 mm to 300 mm
Coarse Gravel	19 mm to 75 mm
Fine Gravel	5 mm to 19 mm
Coarse Sand	2 mm to 5 mm
Medium Sand	0.425 mm to 2 mm
Fine Sand	0.075 mm to 0.425 mm
Silt	0.020 to 0.075 mm
Clay	Smaller than 0.020 mm

2. **DESCRIPTION OF MINOR SOIL TYPE** – Minor soil types are identified by weight of minor component.

Descriptor	Percent
and	35 to 50
some	20 to 35
little	10 to 20
trace	1 to 10

3. **CONSISTENCY OF FINE GRAINED SOILS** – The following terms are used relative to undrained shear strength and Standard Penetration Test (SPT), N value, for blows per 300 mm penetration (ASTM D1586).

Description	Undrained Shear Strength, C_u (kPa)	SPT N Value
Very Soft	Less than 12	Less than 2
Soft	12 to 25	2 to 4
Firm	25 to 50	4 to 8
Stiff	50 to 100	8 to 15
Very Stiff	100 to 150	15 to 30
Hard	Over 150	Over 30

4. **RELATIVE DENSITY OF COARSE GRAINED SOIL** – The following terms are used relative to Standard Penetration Test (SPT), N value, for blows per 300 mm penetration (ASTM D1586).

Description	SPT N Value
Very Loose	Less than 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very Dense	Over 50

5. **TYPICAL SEDIMENTARY BEDROCK TYPES AND CLASSIFICATION** – The following terms are based on visual inspection and field/laboratory identification tests.

Characteristic	Sandstone	Mudrocks			
		Siltstone	Mudstone	Clayshale	Claystone
Composition	>50% Sand $CaCO_3$ or silica binder. Use weak acid to test for $CaCO_3$.	>50% Silt	33% to 66% Silt & 33% to 66% Clay	>50% Clay & <33% Silt	
Bedding	Banding possible Non- Fissile Wackes – dirty sandstone matrix (>15% clay)	Non-Fissile & Non-laminated	Non-Fissile & Non-laminated	Fissile	Non-Fissile

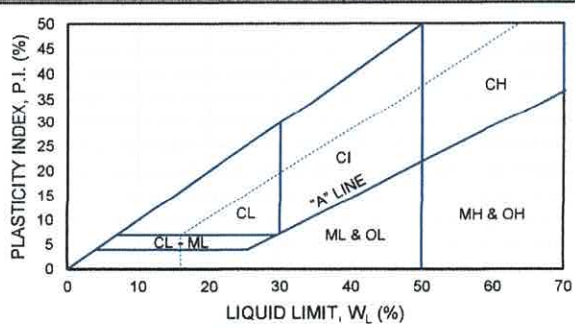
Definitions

Fissile — Breaks apart on bedding planes, not fractures.
Shale — Only used to describe a fissile clay mudrock.
Slate — Hard mudstone exposed to high pressure and temperature.
Limestone — Sedimentary rock (i.e. particles) formed from calcium carbonate minerals from skeletal fragments of marine organisms such as coral. Particles generally too small to see with eye.

THE PARKLANDGEO CONSULTING GROUP
EXPLANATION OF TERMS AND SYMBOLS

MODIFIED UNIFIED CLASSIFICATION SYSTEM FOR SOILS

MAJOR DIVISION			GROUP SYMBOL	GRAPH SYMBOL	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA	
COARSE GRAINED SOILS (MORE THAN HALF BY WEIGHT LARGER THAN NO. 200 SIEVE)	GRAVELS MORE THAN HALF COARSE GRAINS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)	GW		WELL GRADED GRAVELS, GRAVEL-SAND MIXTURE, LITTLE OR NO FINES	$C_U = \frac{D_{60}}{D_{10}} \geq 4$ AND $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1$ to 3	
			GP		POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS	
		DIRTY GRAVELS (WITH SOME FINES)	GM		SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	CONTENT OF FINES EXCEEDS 12%	ATTERBERG LIMITS BELOW "A" LINE OR P.I. LESS THAN 4
			GC		CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES		ATTERBERG LIMITS ABOVE "A" LINE AND P.I. GREATER THAN 7
	SANDS MORE THAN HALF FINE GRAINS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)	SW		WELL GRADED SANDS, GRAVELLY SANDS WITH LITTLE OR NO FINES	$C_U = \frac{D_{60}}{D_{10}} \geq 6$ AND $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1$ to 3	
			SP		POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS	
		DIRTY SANDS (WITH SOME FINES)	SM		SILTY SANDS, SAND-SILT MIXTURES	CONTENT OF FINES EXCEEDS 12%	ATTERBERG LIMITS BELOW "A" LINE OR P.I. LESS THAN 4
			SC		CLAYEY SANDS, SAND-CLAY MIXTURES		ATTERBERG LIMITS ABOVE "A" LINE AND P.I. GREATER THAN 7
FINE-GRAINED SOILS (MORE THAN HALF BY WEIGHT PASSES NO. 200 SIEVE)	SILTS BELOW "A" LINE NEGLIGIBLE ORGANIC CONTENT	$W_L < 50\%$	ML		INORGANIC SILTS & VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	CLASSIFICATION IS BASED UPON PLASTICITY CHART (SEE BELOW)	
		$W_L > 50\%$	MH		INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS		
	CLAYS ABOVE "A" LINE NEGLIGIBLE ORGANIC CONTENT	$W_L < 30\%$	CL		INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY, OR SILTY SOILS		
		$30\% < W_L < 50\%$	CI		INORGANIC CLAYS OF MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS		
		$W_L > 50\%$	CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS		
	ORGANIC SILTS & CLAYS BELOW "A" LINE	$W_L < 50\%$	OL		ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW AND MEDIUM PLASTICITY		
		$W_L > 50\%$	OH		ORGANIC CLAYS OF HIGH PLASTICITY, ORGANIC SILTS		
HIGHLY ORGANIC SOILS			Pt		PEAT AND OTHER HIGHLY ORGANIC SOILS	STRONG COLOR OR ODOR, AND OFTEN FIBROUS TEXTURE	



NOTES ON SOIL CLASSIFICATION AND DESCRIPTION:

1. Soil are classified and described according to their engineering properties and behaviour.
2. Boundary classification for soil with characteristics of two groups are given combined group symbols (e.g. GW-GC is a well graded gravel sand mixture with clay binder between 5 and 12%).
3. Soil classification is in accordance with the Unified Soil Classification System (ASTM D2487) with the exception that an inorganic clay of medium plasticity (CI) is recognized.
4. The use of modifying adjectives may be employed to define the estimated percentage range of minor components.

WATER-SOLUBLE SULPHATE IN SOIL

PROJECT: 205 Grand Avenue, Norglenwold

PROJECT#: RD7303-07

CLIENT: Reg Radford

SAMPLE DATE: June 2, 2021

TEST DATE: June 7, 2021

Sample #:	2D1	Sample #:	
Borehole:	2	Borehole:	
Depth:	1.5m	Depth:	
Result:	0.080%	Result:	
Sample #:		Sample #:	
Borehole:		Borehole:	
Depth:		Depth:	
Result:		Result:	
Sample #:		Sample #:	
Borehole:		Borehole:	
Depth:		Depth:	
Result:		Result:	
Sample #:		Sample #:	
Borehole:		Borehole:	
Depth:		Depth:	
Result:		Result:	
Sample #:		Sample #:	
Borehole:		Borehole:	
Depth:		Depth:	
Result:		Result:	
Sample #:		Sample #:	
Borehole:		Borehole:	
Depth:		Depth:	
Result:		Result:	

Comments: Range of 0.08 to 0.08 percent. Sulphate Exposure Classification Negligible

REQUIREMENTS FOR CONCRETE SUBJECTED TO SULPHATE ATTACK (CAN/CSA-A23.1-14)

EXPOSURE CLASSIFICATION	DEGREE OF EXPOSURE	WATER-SOLUBLE SULFATE (SO_4) IN SOIL SAMPLE, %	SULFATE (SO_4) IN GROUNDWATER SAMPLES, mg/L	MINIMUM SPECIFIED 56-DAY COMPRESSIVE STRENGTH, MPa	MAXIMUM WATER-CEMENTING MATERIAL RATIO	PORTLAND CEMENT TO BE USED
S-1	Very Severe	over 2.0	over 10,000	35	0.40	HS
S-2	Severe	0.20 to 2.0	1,500 to 10,000	32	0.45	HS
S-3	Moderate	0.1 to 0.2	150 to 1,500	30	0.50	MS or HS

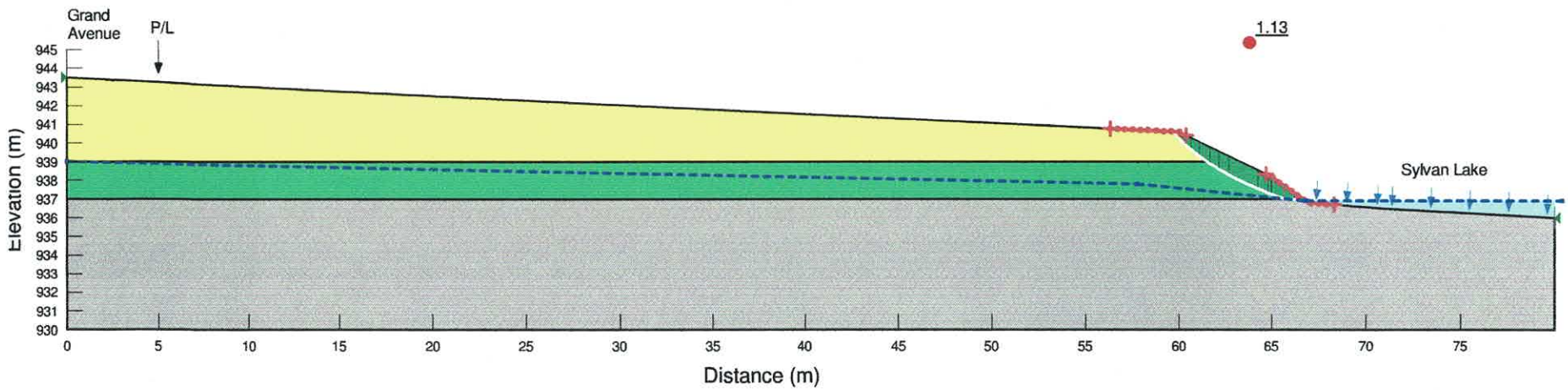
TECH: AB

CHECKED: BL

APPENDIX B

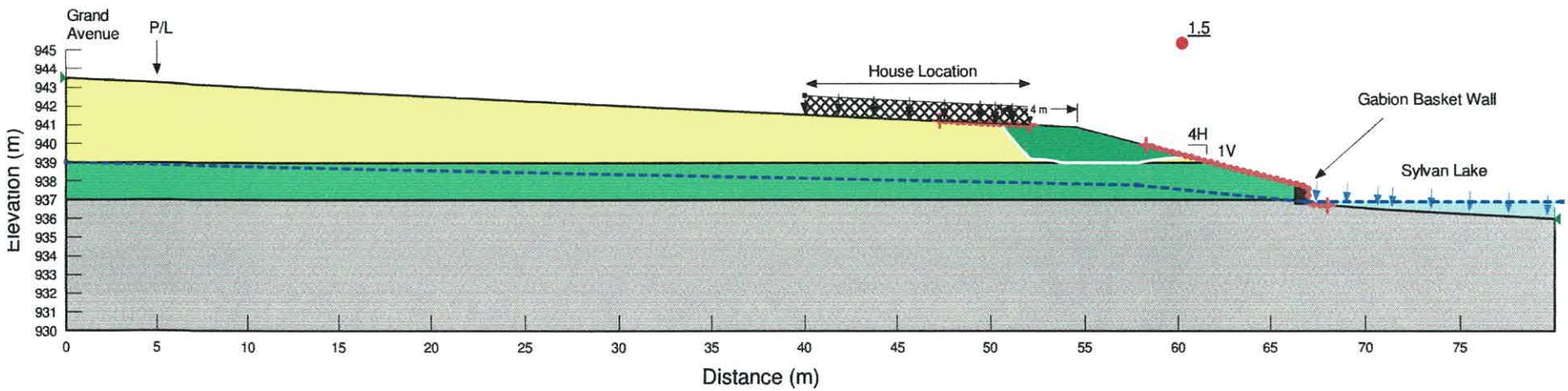
Slope Stability Models (B1 to B2)

Color	Name	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Piezometric Line
	Residual Bedrock	20	2	22	1
	Till	19	0	27	1
	Weathered Bedrock	21	10	25	1



ParklandGEO	Global Stability - Existing Slope	
	DATE: 06/08/2021	
	JOB NO.: RD7303-07 205 Grand Ave	B1

Color	Name	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Piezometric Line
	Gabion Wall	22			1
	Residual Bedrock	20	2	22	1
	Till	19	0	27	1
	Weathered Bedrock	21	10	25	1



ParklandGEO

House Setback - Proposed Cut Slope

DATE: 08/31/2021

JOB NO.: RD7303-07 205 Grand Ave

B2

LIMITATIONS

General Terms and Conditions

The use of this attached report is subject to the following general terms and conditions.

1. STANDARD OF CARE - In the performance of professional services, ParklandGEO used the degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession practicing in the same or similar localities. No other warranty expressed or implied is made in any manner.

2. INTERPRETATION OF THE REPORT - The CLIENT recognizes that subsurface conditions will vary from those encountered at the location where borings, surveys, or explorations are made and that the data, interpretations and recommendation of ParklandGEO are based solely on the information available to him. Classification and identification of soils, rocks, geological units, contaminated materials and contaminant quantities will be based on commonly accepted practices in geotechnical or environmental consulting practice in this area. ParklandGEO will not be responsible for the interpretation by others of the information developed.

3. SITE INFORMATION - The CLIENT has agreed to provide all information with respect to the past, present and proposed conditions and use of the Site, whether specifically requested or not. The CLIENT acknowledged that in order for ParklandGEO to properly advise and assist the CLIENT, ParklandGEO has relied on full disclosure by the CLIENT of all matters pertinent to the Site investigation.

4. COMPLETE REPORT - The Report is of a summary nature and is not intended to stand alone without reference to the instructions given to ParklandGEO by the CLIENT, communications between ParklandGEO and the CLIENT, and to any other reports, writings or documents prepared by ParklandGEO for the CLIENT relative to the specific Site, all of which constitute the Report. The word "Report" shall refer to any and all of the documents referred to herein. In order to properly understand the suggestions, recommendations and opinions expressed by ParklandGEO, reference must be made to the whole of the Report. ParklandGEO cannot be responsible for use of any part or portions of the report without reference to the whole report. The CLIENT has agreed that "This report has been prepared for the exclusive use of the named CLIENT. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. ParklandGEO accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report."

   The CLIENT has agreed that in the event that any such report is released to a third party, the above disclaimer shall not be obliterated or altered in any manner. The CLIENT further agrees that all such reports shall be used solely for the purposes of the CLIENT and shall not be released or used by others without the prior written permission of ParklandGEO.

5. LIMITATIONS ON SCOPE OF INVESTIGATION AND WARRANTY DISCLAIMER
   There is no warranty, expressed or implied, by ParklandGEO that:
   a) the investigation uncovered all potential geo-hazards, contaminants or environmental liabilities on the Site; or
   b) the Site is entirely free of all geo-hazards or contaminants as a result of any investigation or cleanup work undertaken on the Site, since it is not possible, even with exhaustive sampling, testing and analysis, to document all potential geo-hazards or contaminants on the Site.

   The CLIENT acknowledged that:
   a) the investigation findings are based solely on the information generated as a result of the specific scope of the investigation authorized by the CLIENT;
   b) unless specifically stated in the agreed Scope of Work, the investigation will not, nor is it intended to assess or detect potential contaminants or environmental liabilities on the Site;
   c) any assessment regarding geological conditions on the Site is based on the interpretation of conditions determined at specific sampling locations and depths and that conditions may vary between sampling locations, hence there can be no assurance that undetected geological conditions, including soils or groundwater are not located on the Site;
   d) any assessment is also dependent on and limited by the accuracy of the analytical data generated by the sample analyses;
   e) any assessment is also limited by the scientific possibility of determining the presence of unsuitable geological conditions for which scientific analyses have been conducted; and
   f) the laboratory testing program and analytical parameters selected are limited to those outlined in the CLIENT's authorized scope of investigation; and
   g) there are risks associated with the discovery of hazardous materials in and upon the lands and premises which may inadvertently discovered as part of the investigation. The CLIENT acknowledges that it may have a responsibility in law to inform the owner of any affected property of the existence or suspected existence of hazardous materials and in some cases the discovery of hazardous conditions and materials will require that certain regulatory bodies be informed. The CLIENT further acknowledges that any such discovery may result in the fair market value of the lands and premises and of any other lands and premises adjacent thereto to be adversely affected in a material respect.

6. COST ESTIMATES - Estimates of remediation or construction costs can only be based on the specific information generated and the technical limitations of the investigation authorized by the CLIENT. Accordingly, estimated costs for construction or remediation are based on the known site conditions, which can vary as new information is discovered during construction. As some construction activities are an iterative exercise, ParklandGEO shall therefore not be liable for the accuracy of any estimates of remediation or construction costs provided.

7. LIMITATION OF LIABILITY - The CLIENT has agreed that to the fullest extent permitted by the law ParklandGEO's total liability to CLIENT for any and all injuries, claims, losses, expenses or damages whatsoever arising out of or in anyway relating to the Project is contractually limited, as outlined in ParklandGEO's standard Consulting Services Agreement. Further, the CLIENT has agreed that to the fullest extent permitted by law ParklandGEO is not liable to the CLIENT for any special, indirect or consequential damages whatsoever, regardless of cause.

8. INDEMNIFICATION - To the fullest extent permitted by law, the CLIENT has agreed to defend, indemnify and hold ParklandGEO, its directors, officers, employees, agents and subcontractors, harmless from and against any and all claims, defence costs, including legal fees on a full indemnity basis, damages, and other liabilities arising out of or in any way related to ParklandGEO's work, reports or recommendations.

Summer Village of Norglenwold

Subdivision and Development Appeal Board

Duties and Jurisdiction Report

Part 17 of the Municipal Government Act (MGA) establishes a framework for municipal planning and development that is supported by provincial legislation, municipal statutory plans and bylaws. The SDAB evaluates each case before it with reference to the provincial planning framework, statutory plans and bylaws. In making the decision on an appeal case the SDAB must consider among other things, the provincial and municipal legislative and planning framework of any application. An SDAB must:

- Stay within the limits of the legislation;
- Act fairly and reasonably within the limits imposed by administrative law and the principles of natural justice;
- Act in accordance with its enabling bylaw; and
- Apply the applicable planning framework to the appeal before it.

The SDAB is not bound to follow its previous decisions, and other similar developments in the area that may or may not have been granted variances have no bearing for this hearing. Decisions are made on a separate, case-by-case basis.

A SDAB must act within its jurisdiction when it makes a decision. Without jurisdiction, the SDAB does not have the authority to make a decision. In order to maintain jurisdiction, the SDAB must:

- Adhere to the statutory requirements prescribed for SDABs in the MGA
- Comply with the principles of natural justice; and
- Must only make decisions on matters which are properly before the Board.

A SDAB's jurisdiction defines the matters and geographical area over which a SDAB has power to decide. Without jurisdiction, SDABs cannot make binding decisions.

The SDAB cannot change land use bylaw or statutory plans.

The MGA sets out the following guidelines for an appeal of a decision of a development authority. An appeal may be launched:

- Where a permit is not issued within the 40 days
- If a permit was issued with or without conditions
- If a permit was refused
- If a stop order was issued.

This appeal is against a decision issued by the Municipal Planning Commission for 205 Grand Ave in the Summer Village of Norglenwold.

The subdivision and appeal board may revoke an order or decision, or issue or confirm the issue of a development permit even though the proposed development does not comply with the land use bylaw if, in its opinion,

(i) the proposed development would not:
   a. unduly interfere with the amenities of the neighbourhood, or
   b. materially interfere with or affect the use prescribed for that land or building in the land use bylaw,

(ii) the proposed development conforms with the use prescribed for that land or building in the land use bylaw.

The appeal before the board today is for a dwelling and mechanized excavation, stripping, and grading of the escarpment area. This development permit application went to the Municipal Planning Commission for decision and was denied.

Prior to proceeding with the appeal, Administration respectfully requests the board to determine if jurisdiction in the matter resides with the Subdivision and Development Appeal Board.

SUBDIVISION & DEVELOPMENT APPEAL BOARD HEARING
October 4, 2021 @ 10:00 A.M.
MPC Decision Appeal
205 Grand Avenue
Appellant – Ashley Brant, Reg & Lauralyn Radford

Development Officers Report:

Between May and July 2021, two development permit applications for the lands located at 205 Grand Ave were heard by the Municipal Planning Commission. In May, a development permit application was made for escarpment work, boathouse repairs and tree removal. The application was presented to the Municipal Planning Commission for the following reasons:

1. Mechanized Excavation, Stripping and Grading is listed as a discretionary use; therefore, the decision must come from the Municipal Planning Commission.
2. Land located below the top of bank/top of escarpment should be in a natural state, a variance is required.

The recommendation from administration in the first development application was to deny the development permit application as the boat house repairs proposed were significant and in administration's opinion was not considered routine maintenance of the building, and the proposed bank work did not appear to be necessary.

The Commission reviewed the application and decided the following:

> Deny the discretionary use/variance application for the construction of the escarpment work, boathouse repairs and tree removal because the application is not compliant with the Land Use Bylaw as below:
>
> 1. In regards to the boathouse, a non-conforming building may continue to be used but the building may not be enlarged, added to, rebuilt, or structurally altered except to make it a conforming building, and for routine maintenance of the building if the development authority considers it necessary. If a non-conforming building is damaged or destroyed to the extent of more than 75% of the value of the building above its foundation, the building may not be repaired or rebuilt except in accordance with the Land Use Bylaw. The board considered the work to be more than routine maintenance and included structural alterations.
> 2. In the current Land Use Bylaw, an accessory building on a parcel abutting Sylvan Lake shall be situated so that it is not closer to the front parcel boundary and the top of any escarpment area or high-water mark than the front wall of the main building or 15m whichever is least.
> 3. The village strongly desires that the banks and shoreline remain as natural as possible to retain the natural ecosystems. It does not state in the geotechnical report that there are signs of erosion and that the work is necessary.

In July 2021, a new development permit application was made for a dwelling and escarpment work. The application was presented to the Municipal Planning Commission for the following reasons:

1. Mechanized Excavation, Stripping and Grading is listed as a discretionary use; therefore, the decision must come from the Municipal Planning Commission.
2. Land located below the top of bank/top of escarpment should be in a natural state, a variance is required.
3. The side yard setback to the dwelling of 1.0m (3.28ft.) does not meet the minimum 1.5m (4.92ft.), therefore requires a variance of 0.5m (1.64ft.).

The second application for the dwelling and escarpment work did not include boathouse repairs, and the proposed development on the bank was significantly different. The recommendation from administration was to approve the application. The side yard setback variance appeared to be minor, and we did not receive any complaints from neighboring properties until the actual Municipal Planning Commission hearing, and were under the impression that the neighbors were in favor of the proposed development. The geotechnical report states in the assessment that the proposed reconfiguration of the slope grade will improve the overall stability of the slope by off-loading some of the driving force from the slope. The proposed regrading would increase the factor of safety of the slope global (entire slope) from a 1.1 to 1.9. A “long-term” stable score is considered to have a factor of safety greater than 1.3. The proposed landscaping plans on the escarpment were revised to include a much more natural area than the first application with no boathouse repairs and unnecessary work to occur.

The Commission reviewed the application and decided the following:

Deny the discretionary use/variance application for the construction of the dwelling and escarpment work because the application is not compliant with the statutory documents as below:

1. The Municipal Development Plan 6.3.6. states Norglenwold shall not allow development adjacent to or near the shores of the Lake, including reserves, and other open spaces, unless the proponent can demonstrate to the satisfaction of the Summer Village the development will not:
   (a) reduce lake water quality;
   (b) degrade fish or wildlife habitat;
   (c) adversely impact the area’s visual or natural quality through inappropriate or excessive removal of vegetation, and
   (d) lead to soil erosion or instability or damage to the bank or shore.
2. More information is required on the necessity of the proposed escarpment development. A second Geotechnical Report from a different company is recommended to confirm bank stability.
3. The side yard setback does not mean the requirements as outlined in the Land Use Bylaw. Allowing said variance could hinder future development of adjacent landowners. The requested variance is over 30% and considered to be excessive.

On September 7, 2021, Administration received a letter of appeal from Ashley Brant, Reg and Lauralyn Radford, which was submitted within the required timeframe set in the Municipal Government Act.

Discretionary Uses/Variance request applications are appealable to the Subdivision and Development Appeal Board, as provided in part 17 of the Municipal Government Act along with written statements relevant to the development and reasons for appeal. The Subdivision and Development Appeal Board may deny the appeal and refuse the permit or allow the permit and approve the application with variations to the permit.

It is now up to the board to uphold the decision of the Municipal Planning Commission or overturn it.

Prepared By:

Kara Kashuba
Development Officer