DEVELOPMENT PERMIT

No. **DP- 2020-32**

TO: **Babak Tafreshi**

ADDRESS: [redacted]

(Permittee)

1) This Development Permit is issued subject to compliance with all of the Bylaws of the Town of Gibsons applicable thereto, except those specifically varied or supplemented by this Permit.

2) The Development Permit applies to land within the Town of Gibsons described below:

Parcel Identifier: **012-984-949**

Legal Description: **LOT 22 OF LOT 20 BLOCK 2 DISTRICT LOT 686 PLAN 3307**

Civic Address: **529 GIBSONS WAY**

(the "Lands")

3) The Lands are within Development Permit Area('s) of the Town of Gibsons Official Community Plan (Bylaw 985, 2005). This permit applies to:

- Development Permit Area No. 9 (Gibsons Aquifer) for the purpose of the protection of the Gibsons Aquifer.

4) The Lands shall be developed only in strict accordance with the terms and conditions and provisions of this Permit, including without limitation to the specifications in the following reports, which are attached to and form part of this Permit:

Geopacfic Desktop Hydrogeological Study in support of Schedule E: Proposed Multi-Family Development 529 Gibsons Way, Gibsons, BC. Revision 2, Written by Nathakie Sahakyan, B.Sc., GIT and Reviewed and Stamped by Matt Kokan, M.Sc., P.Eng., dated March 3, 2021.

5) All requirements of the permit and plan(s) are to be followed. On site monitoring by the Geotechnical Engineer during drilling as outlined in the plan(s) is required.

6) Upon completion of the works, a letter from a qualified professional is required to provide all drill well logs and to ensure all conditions of this permit were met.

7) Monitoring wells, boreholes, test pits, or other excavations shall not extend into the Gibsons Aquifer. If the Aquifer is encountered, the driller is to notify the Director of Infrastructure Services before proceeding further. Additional requirements may be imposed.

8) If the Permittee does not commence the development permitted by this Permit within twenty-four months of the date of this Permit, this Permit shall lapse.

9) This Permit is NOT a Building Permit.

ISSUED THIS 19th DAY OF March, 2021.

K Thomas

Katie Thomas
Acting Director of Planning and Development Services

Dave Newman
Director of Infrastructure Services

Copy of permit to the Geotechnical Engineer

GEOPACIFIC
VANCOUVER KAMLOOPS CALGARY

P 604.439.0922
F 604.439.9189
geopacific.ca
1779 W 75th Ave.
Vancouver, B.C. Canada V6P 6P2

Pacific Ray Development Inc.
#4001 – 1077 West Cordova Street
Vancouver, BC
V6C 2C6

March 3, 2021
File: 18256
Rev 2

Attention: Babak Tafreshi

Desktop Hydrogeological Study in Support of Schedule E: Proposed Multi-Family Development 529 Gibsons Way, Gibsons, BC.

1.0 INTRODUCTION

We understand that a multi-family development is proposed for the above referenced site in Gibsons, BC. Revised design drawings provided by Frits de Vries Architects and Associates Ltd (dated February 12, 2021) show the proposed development consists of residential buildings up to 4 stories high, all over a single combined parkade. The parkade design has been stepped to minimize excavation at the site. Based on the sloping nature of the site, there will be 2.5 levels of below grade structure at the high side of the site, decreasing to 1 level of below grade construction at the low side of the site. According to the conceptual drawings, the deepest portions of the parkade slabs will be constructed at depths ranging between 3.6 and 9.2 m below current site grades, or at elevations of between 26.5 and 29.5 m geodetic.

The following desktop study reviews readily available data, summarizes our preliminary findings from a hydrogeological perspective and outlines an approach for further investigation at the site in order to confirm groundwater and sub-surface soil conditions prior to development. This report has been prepared exclusively for Pacific Ray Development Inc, for their use and the use of others on their design team for this project. We understand it will also be provided to the Town of Gibsons, for use in the development and permitting process.

This report has been updated based on the recommendations provided in the DPA 9 Application Review completed by Waterline (dated February 1, 2021).

2.0 SITE DESCRIPTION

The site is located on the north side of the intersection at Gibsons Way and School Road in Gibsons, BC. The site is bounded by School Road to the south, Gibsons Way to the east and residential properties to the north and west. The site is an assembly of 2 lots currently improved with municipal parking to the south, a single-family residence and surrounding landscaping on each.

Based on a site topographical plan provided by the Town of Gibsons, the site slopes from the northwest down to the southeast with a grade difference of approximately 17 m.

The location of the site is shown on our Drawing No. 18256-01, following the text of this report.

3.0 SOIL CONDITIONS

Based on our experience in the area, the soil profile at the site is generally expected to consist of topsoil over post-glacial sandy silt (Salish Sediments) then sand and gravel (Capilano Sediments), over dense to

very dense silty sand with gravel till (Vashon Drift Till), overlying Quadra Sands of the Quaternary period at depth.

Based on previous work in the area, the contact between the Vashon Drift till and Quadra Sands is expected to be at approximately 16 m geodetic. The Quadra Deposits are saturated at depth and provide the Town of Gibsons with its potable water.

4.0 GROUNDWATER CONDITIONS

4.1 General Comments

The Gibsons Aquifer supplies 73% of the Town with potable water, and as such, groundwater should be protected.

In general, there are two groundwater regimes in the Lower Gibsons area: the shallow perched groundwater within the fills and post-glacial sands, and the deep semi-confined groundwater within the pre-glacial material known as the Quadra Sediments. The two groundwater regimes are separated by the Vashon Drift till which acts a leaky aquitard and can vary in thickness locally. The aquifer within the deep Quadra Sediments is locally pressurized and artesian conditions are anticipated in some locations.

The site is located within the Lower Gibsons Sub-Area within the larger DPA9 area. The Town of Gibsons has identified a potential for flowing artesian conditions from the Gibsons Lower Aquifer (Aquifer #560). Excavations that intercept the Gibsons Lower Aquifer could experience appreciable groundwater inflows which the Town of Gibsons considers unacceptable.

4.2 B.C Water Atlas and Surrounding Sites

A search of the BC Water Atlas was conducted on October 30, 2020 in order to find existing hydrogeological information within the vicinity of the site. Six registered wells are located within 500 m of the proposed development site. One well is a dummy record for a well that has not yet been drilled at this time. Five wells can be used to infer the elevation of the contact between the glacial till deposits and underlying Quadra sands, as well as the elevation of the static water level.

Table 1 is a summary of our findings from the BC Water Atlas:

Table 1: Summary of Surrounding Locations

Well ID	Ground Surface Elevation (m geodetic)	Elevation of Glacial Till and Quadra Sands Contact (m geodetic)	Static Groundwater Elevation (m geodetic)
#76196	16	2.5	No Data
#117709	9.1	4.0	12.2 (Springs Noted)
#117708	22.9	16.5	17.4
#19896	14	2.2	No Data
#5468	Municipal Springs		
#116170	Dummy Well Record		

Based on our search of the BC Water Atlas, groundwater flow is inferred to follow topography, in a generally northwest to southeast direction. The location of the wells and all soil logs used to create Table 1 are included in Appendix A.

Further to the data found on the BC provincial database, GeoPacific has previously investigated two sites within close proximity to the current site. Perched groundwater levels at our sites immediately to the north and 55 m to the southwest were measured within glacial till deposits at elevations of ~ 26 m and ~ 24 m geodetic, respectively. Quadra deposits were not encountered to the maximum depth of investigation at either site. We anticipate similar geological conditions at the subject site.

5.0 DISCUSSION AND FUTURE REQUIREMENTS

Based on the current conceptual design drawings provided by Frits de Vries Architects and Associates Ltd (dated February 12, 2021), the proposed development consists of residential buildings up to 4 stories high all over a single combined parkade. Based on the sloping nature of the site, there will be 2.5 levels of below grade structure at the higher elevations, decreasing to 1 level of below grade construction at the lower elevations. The deepest portions of the parkade slabs are shown to be at depths ranging between 3.6 and 9.2 m below current site grades, or at elevations of between 26.5 and 29.5 m geodetic. Based on these slab depths, it is assumed that final excavation depths could be as deep as 10.2 m in some locations or at approximate elevations of between 25.5 and 29.5 m geodetic.

The Gibsons Aquifer underlies the site and is protected under the Development Permit Area 9 guideline (DPA9). The Town of Gibsons requires further site investigation if ground disturbance exceeds 1.5 m depth in order to confirm the hydrogeological conditions on site. The expected excavation and monitoring well termination elevations calculated by GeoPacific are summarized in Table 2. The ground surface elevations at the locations of MW20-01 MW20-02 are based on approximations from the topographic site survey plan completed by Bennett Land Surveyors (dated December 4, 2019).

Table 2: Expected Final Drilling Depths

Well ID	Ground Surface (masl)	Level 1 Slab Elevation (masl)	Level 1 Slab Depth	Proposed Final Drilling Termination	
				Depth (m)	Elevation (masl)
MW20-01	30.8	26.5	4.3	4.3 + 3 = **7.3**	23.5
MW20-02	28.6	26.5	2.1	2.1 + 3 = **5.1**	23.5

Based on the preceding calculations, GeoPacific has revised our initial plan and proposes the following Hydrogeological Investigation in response.

We will mobilize a sonic drill rig to complete the on-site investigation. We will drill and install 2 groundwater monitoring wells (MW20-01 and MW20-02) on site to depths of 5.1 to 7.3 m to confirm both soils conditions and that the Gibsons Aquifer will not be breached during excavation.

These drill depths are based on design drawings provided by Frits de Vries Architects & Associates Ltd. (dated February 12, 2021). Based on the ground surface elevations at the proposed well locations, the depth to the Level 1 slab will be 4.3 m and 2.1 m at MW20-01 and MW20-02, respectively. An extra 1 m has

been added beneath the slab elevation to account for the bulk excavation, and an additional 2 m is added to the total drill depth as a precautionary measure to confirm that the Quadra sands and the Gibsons Aquifer is a sufficient distance below the anticipated excavation depth. Thus, the drill depths at MW20-01 will be ~ 7.3 m and MW20-02 will be ~ 5.1 m.

We will install data loggers to monitor groundwater levels. A siteplan of the proposed test hole locations has been provided following this covering letter as Drawing No 18256-01. Schedule E discusses the proposed drilling program in detail and is included in Appendix B.

No previous drilling or geotechnical investigations have been completed at the site and as a result we have inferred ground conditions based on available literature and our experience in the area. Based on our field investigation at the adjacent site, directly to the north, we believe the potential for breaching the Gibsons Aquifer and encountering flowing artesian conditions during our investigation is low. Test holes were previously drilled to an elevation of ~ 24.5 m geodetic with no Quadra sands noted. Despite this, we are still proposing to install casing for the test hole drilling to mitigate any risks.

Perceived risks are as follows:

- Uncontrolled artesian flow if aquitard which confines the Gibsons Aquifer is breached
- Possible sinkhole development if artesian flow is left unattended and flow is not mitigated
- Possible impact on water wells in the Town of Gibsons if the aquifer is breached
- Potential loss of aquifer pressures if aquifer is breached and not sealed properly

If the aquifer soils (coarse grained sand or gravel) and/or artesian pressures are encountered, the borehole will be abandoned immediately according to the following procedure:

Borehole Abandonment Procedures (in case of artesian flow from well bore)

- Discontinuous drilling with core barrel and place surface casing (and telescoping casing if required) down to the level where flowing conditions were encountered. Continue drilling with core barrel.
- Measure the hydraulic head and determine the grout weight required to withstand the hydraulic pressure.
- 5% bentonite to be use in grout mixture.
- **Barite can be used in grout mixture such that minimum grout weight of 12 lbs/gal is achieved.**
- Grout to be poured with tremie.
- Confirm that cement/grout has set and sealed before moving off location.

Borehole Abandonment Procedure (in case of non-artesian flow from well bore)

- Discontinue drilling with core barrel and place surface casing down to the level where flowing conditions were encountered. Continue drilling with core barrel
- 5% bentonite to be use in grout mixture.
- Grout to be poured with tremie.
- Confirm that cement/grout has set and sealed before moving off location.

Should the aquifer be encountered, GeoPacific will contact the Director of Infrastructure Services immediately. At this stage, we are not requesting that the Town's hydrogeology consultant be on site during soil sample collection.

After completion of the field work, we would prepare a project specific Finalized Hydrogeological Report, suitable for distribution to the design team as well as for the Town of Gibsons, for use in the development and permitting process.

As indicated in the application review by Waterline (dated February 1, 2021), GeoPacific has been asked to include the results of the preliminary geotechnical investigation in the finalized hydrogeological report. In particular, we are required to confirm how the proposed engineered design considers and protects the Gibsons Aquifer, including potential heaving in the confining unit caused by upward pressure from the aquifer due to soil removal for construction of the parkade slab, and/or from the construction of the proposed development on the Gibsons Aquifer.

The site survey and updated cross-section of the proposed development plan with the parkade slab depths has been attached in Appendix C.

6.0 CLOSURE

This study is prepared exclusively for Pacific Ray Development Inc. and the Town of Gibsons in response to the Development Permit Area 9 guideline (DPA 9) requirements.

We are pleased to be of assistance to you on this project and trust that our comments and recommendations are both helpful and sufficient for your purposes at this time. If you require any further details or clarifications, please do not hesitate to contact the undersigned.

For:
GeoPacific Consultants Ltd.

Reviewed By:

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. J. KOKAN
21364

MAR 0 4 2021

Nathalie Sahakyan, B.Sc., GIT
Hydrogeologist

Matt Kokan, M.Sc., P.Eng.
Principal

ORIGINAL PAPER SIZE 8.5"x11"

LEGEND:

◇ MW20-# – MONITORING WELL (MW) LOCATION

SITE PLAN

SCALE = 1:800

*TEST LOCATIONS ARE APPROXIMATE

REVISIONS:	FILE NO.: 18256
A.	
B.	DWG. NO.: 18256-01
C.	

GEOPACIFIC
VANCOUVER KAMLOOPS CALGARY
1779 W. 75th Avenue
Vancouver, B.C. V6P 6P2
P 604.439.0922
F 604.439.9189

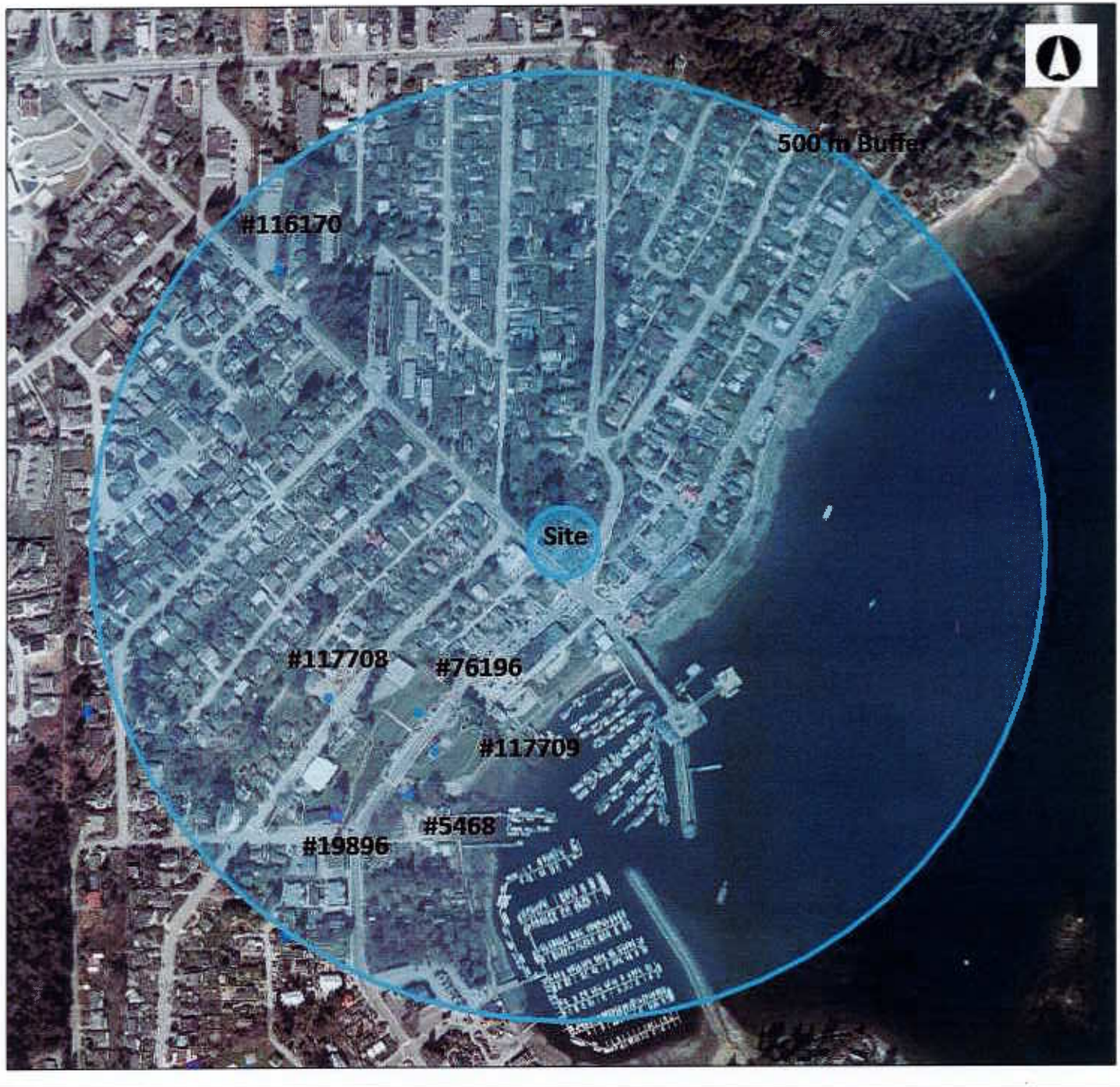
DATE: OCTOBER 22, 2020		
DRAWN BY: N.K.	APPROVED BY: M.J.K.	REVIEWED BY: N.S.
SCALE: AS SHOWN		

STONEHURST – RESIDENTIAL DEVELOPMENT

529 GIBSONS WAY, GIBSONS, B.C.

GROUNDWATER INVESTIGATION

APPENDIX A



BRITISH COLUMBIA

Water Resources Atlas

Legend

Groundwater Wells - All

ARTESIAN_IND

- Reported Artesian Well
- Well

0 0.18 0.37 km

1: 9,028

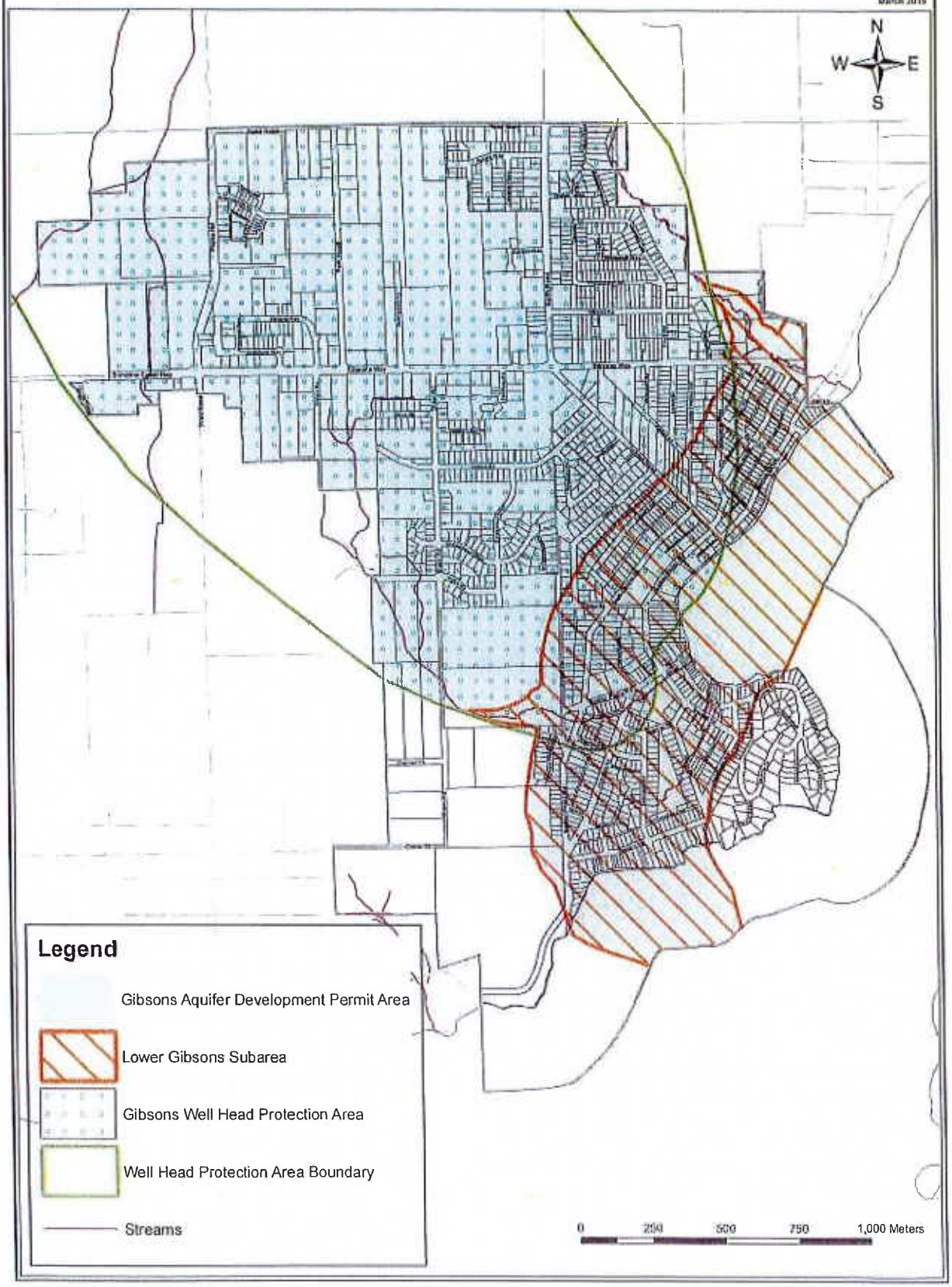
Copyright/Disclaimer

Datum: NAD83

Projection: BC Albers

Key Map of British Columbia

Schedule F - Gibsons Aquifer Development Permit Area No.9



MW18-01

BRITISH COLUMBIA the Best Place on Earth | Ministry of Environment

☒ Well Construction Report ☐ Well Closure Report ☐ Well Alteration Report

DRILLWELL ENTERPRISES LTD
4994 Polkey Road
Duncan, B.C. V9L 6W3
Phone: 250-746-5268

Ministry Well ID Plate Number: [redacted]
Ministry Well Tag Number:
☐ Confirmation/alternative specs. attached
☐ Original well construction report attached

Red lettering indicates minimum mandatory information. See reverse for notes & definitions of abbreviations.

Owner name: Town of Gibsons
Mailing address: Box 340, 474 S. Fletcher Road Town Gibsons Prov. BC Postal Code V0N 1V0
Well Location: Address: Street no. 351 Street name Gower Point Road Town Gibsons
(or) Legal description: Lot 2 Plan 14197 D.L. Block B Sec Twp Rg Land District 36
(or) PID: 007-897-090 (and) Description of well location (attach sketch, if nec.):

NAD 83: Zone: 10 (see note 2) (and) UTM Easting: 0463160 m UTM Northing: 5472100 m (or) Latitude (see note 3): Longitude:

Method of drilling: ☒ air rotary ☐ cable tool ☐ mud rotary ☐ auger ☐ driving ☐ jetting ☐ excavating ☐ other (specify): Dual Rotary
Orientation of well: ☒ vertical ☐ horizontal Ground elevation: 30' ft (asl) Method (see note 4): GPS
Class of well (see note 5): Monitoring Sub-class of well: Permanent
Water supply wells: Indicate intended water use: ☐ private domestic ☐ water supply system ☐ irrigation ☐ commercial or industrial ☐ other (specify):

Lithologic description (see notes 7-14) or closure description (see notes 15 and 16)

From ft (bgl)	To ft (bgl)	Relative Hardness	Colour	Material Description (Use recommended terms on reverse. List in order of decreasing amount, if applicable)	Water-bearing Estimated Flow (USgpm)	Observations (e.g., fractured, weathered, well sorted, silty wash), closure details
0	6"	med soft	Brn	Soil + gravel		
6"	8'	med	Brn	Gravel, silty, organics		
8'	12'	med soft	Brn	Gravel, very silty + wood		
12'	17'	med soft	Grey	Clay with wood, gravel silt		
17'	48'	med	Brn	Gravel, coarse Sandy	WB	
48'	55	Loose	Brn	Sand, med coarse sand gravel	WB	

Casing details

From ft (bgl)	To ft (bgl)	Dia in	Casing Material / Open Hole	Wall Thickness in	Drive Shoe
0	15'	10"	Steel/Pulldout	—	—
0	16'	8"	Steel	.250	No
0	55	6"	Steel	.219	DR

Screen details

From ft (bgl)	To ft (bgl)	Dia in	Type (see note 18)	Slot Size
48.5	50.5	5"	K Packer + Riser	—
50.5	55	5"	SS Screen	.010"

Surface seal: Type: Cement Depth: 16' ft
Method of installation: ☐ Poured ☒ Pumped Thickness: 1" in
Backfill: Type: Depth: ft
Liner: ☐ PVC ☐ Other (specify):
Diameter: in Thickness: in
From: ft (bgl) To: ft (bgl) Perforated: From: ft (bgl) To: ft (bgl)

Intake: ☒ Screen ☐ Open bottom ☐ Uncased hole
Screen type: ☒ Telescope ☐ Pipe size
Screen material: ☒ Stainless steel ☐ Plastic ☐ Other (specify):
Screen opening: ☒ Continuous slot ☐ Slotted ☐ Perforated pipe
Screen bottom: ☐ Ball ☒ Plug ☐ Plate ☐ Other (specify):
Filter pack: From: ft To: ft Thickness: in
Type and size of material:

Developed by:

☒ Air lifting ☐ Surging ☐ Jetting ☐ Pumping ☒ Bailing
☐ Other (specify): Total duration: 2.5 hrs
Notes:

Well yield estimated by:

☐ Pumping ☒ Air lifting ☒ Bailing ☐ Other (specify):
Rate: 20 USgpm Duration: 2.5 hrs
SWL before test: ft (btoc) Pumping water level: ft (btoc)

Obvious water quality characteristics:

☒ Fresh ☐ Salty ☒ Clear ☐ Cloudy ☐ Sediment ☐ Gas
Colour/odour: Water sample collected: ☐

Well driller (print clearly):

Name (first, last) (see note 19): Scott Burrows
Registration no. (see note 20): WD0412407
Consultant (if applicable; name and company):

DECLARATION: Well construction, well alteration or well closure, as the case may be, has been done in accordance with the requirements in the Water Act and the Ground Water Protection Regulation.
Signature of Driller Responsible: S Burrows

Final well completion data:

Total depth drilled: 55 ft Finished well depth: 55' ft (bgl)
Final stick up: 12" Below in Depth to bedrock: NA ft (bgl)
SWL: 10' Above ground (btoc) Estimated well yield: 20 USgpm
Artesian flow: USgpm, or Artesian pressure: 10 ft
Type of well cap: Welded Butt Flange Well disinfected: ☒ Yes ☐ No
Where well ID plate is attached: on well

Well closure information:

Reason for closure:
Method of closure: ☐ Poured ☐ Pumped
Sealant material: Backfill material:
Details of closure (see note 17):

Date of work (YYYY/MM/DD):
Started: 2019/01/28 Completed: 2019/01/30
Comments: MW18-01 Winegarden Park

PLEASE NOTE: The information recorded in this well report describes the works and hydrogeologic conditions at the time of construction, alteration or closure, as the case may be. Well yield, well performance and water quality are not guaranteed as they are influenced by a number of factors, including natural variability, human activities and condition of the works, which may change over time.

white: Customer copy
canary: Driller copy
pink: Ministry copy

Sheet 1 of 1

MW18-02

BRITISH COLUMBIA The Best Place on Earth | Ministry of Environment

☒ Well Construction Report ☐ Well Closure Report ☐ Well Alteration Report

DRILLWELL ENTERPRISES LTD.
4994 Polkey Road
Duncan, B.C. V9L 6W3
Phone: 250-746-5268

Ministry Well ID Plate Number: [redacted]
Ministry Well Tag Number
☐ Confirmation/alternative specs. attached
☐ Original well construction report attached

Red lettering indicates minimum mandatory information. See reverse for notes & definitions of abbreviations.

Owner name: Town of Gibsons
Mailing address: Box 340, 474 S. Fletcher Road Town Gibsons Prov. BC Postal Code V0N 1V0
Well Location: Address: Street no. 494 Street name S. Fletcher Road Town Gibsons
(or) Legal description: Lot 3 Plan 14197 D.L. Block B Sec. Twp. Rg. Land District 36
(or) PID: 007-897-103 (and) Description of well location (attach sketch, if nec.):

NAD 83: Zone: 10 (see note 2) (and) UTM Easting: 0463049 m UTM Northing: 5472157 m (or) Latitude (see note 3): Longitude:

Method of drilling: ☒ air rotary ☐ cable tool ☐ mud rotary ☐ auger ☐ driving ☐ jetting ☐ excavating ☐ other (specify): Dual Rotary
Orientation of well: ☒ vertical ☐ horizontal Ground elevation: 75' ft (asl) Method (see note 4): GPS
Class of well (see note 5): Monitoring Sub-class of well: Permanent
Water supply wells: indicate intended water use: ☐ private domestic ☐ water supply system ☐ irrigation ☐ commercial or industrial ☐ other (specify):

Lithologic description (see notes 7-14) or closure description (see notes 15 and 16)

From ft (bgl)	To ft (bgl)	Relative Hardness	Colour	Material Description (Use recommended terms on reverse. List in order of decreasing amount, if applicable)	Water-bearing Estimated Flow (USgpm)	Observations (e.g., fractured, weathered, well sorted, silty wash), closure details
0	1'	med	Brn/Black	Asphalt + Gravel Road base		
1'	9'	med	Brown	Gravel + Sand		
9'	21'	med	Gry/Brn	Till + Silt		
21'	56'	med/Loose	Brown	Gravel, Sand zones coarse at Bottom 53-56 WB		

Casing details

From ft (bgl)	To ft (bgl)	Dia in	Casing Material / Open Hole	Wall Thickness in	Drive Shoe
0	15'	10"	Steel/Pollident		
0	15'	8"	Steel	.250"	No
0	56'	6"	Steel	.219"	DR

Screen details

From ft (bgl)	To ft (bgl)	Dia in	Type (see note 18)	Slot Size
49.5	51.5	5"	Packer + Riser	—
51.5	56'	5"	SS Screen	.020"

Surface seal: Type: Cement Depth: 15" ft
Method of Installation: ☐ Poured ☒ Pumped Thickness: 1" in
Backfill: Type: Depth: ft
Liner: ☐ PVC ☐ Other (specify):
Diameter: in Thickness: in
From: ft (bgl) To: ft (bgl) Perforated: From: ft (bgl) To: ft (bgl)

Intake: ☒ Screen ☐ Open bottom ☐ Uncased hole
Screen type: ☒ Telescope ☐ Pipe size
Screen material: ☒ Stainless steel ☐ Plastic ☐ Other (specify):
Screen opening: ☒ Continuous slot ☐ Slotted ☐ Perforated pipe
Screen bottom: ☐ Ball ☒ Plug ☐ Plate ☐ Other (specify):
Filter pack: From: ft To: ft Thickness: in
Type and size of material:

Developed by:

☒ Air lifting ☐ Surging ☐ Jetting ☐ Pumping ☒ Bailing
☐ Other (specify): Total duration: 2.5 hrs
Notes:

Well yield estimated by:

☐ Pumping ☒ Air lifting ☐ Bailing ☐ Other (specify):
Rate: 30 USgpm Duration: 2.5 hrs
SWL before test: ft (btoc) Pumping water level: ft (btoc)

Obvious water quality characteristics:

☒ Fresh ☐ Salty ☒ Clear ☐ Cloudy ☐ Sediment ☐ Gas
Colour/odour: Water sample collected: ☐

Final well completion data:

Total depth drilled: 56 ft Finished well depth: 56 ft (bgl)
Final stick up: 12" Below in Depth to bedrock: NA ft (bgl)
SWL: 18' ft (btoc) Estimated well yield: 30 USgpm
Artesian flow: USgpm, or Artesian pressure: ft
Type of well cap: Bolton Flange Well disinfected: ☒ Yes ☐ No
Where well ID plate is attached: On well

Well closure information:

Reason for closure:
Method of closure: ☐ Poured ☐ Pumped
Sealant material: Backfill material:
Details of closure (see note 17):

Well driller (print clearly):

Name (first, last) (see note 19): Scott Burrows
Registration no. (see note 20): WD04214107
Consultant (if applicable; name and company):

DECLARATION: Well construction, well alteration or well closure, as the case may be, has been done in accordance with the requirements in the *Water Act* and the Ground Water Protection Regulation.
Signature of Driller Responsible: S Burrows

Date of work (YYYY/MM/DD):

Started: 2019/01/25 Completed: 2019/01/27
Comments: MW18-02 Holland Park

PLEASE NOTE: The information recorded in this well report describes the works and hydrogeologic conditions at the time of construction, alteration or closure, as the case may be. Well yield, well performance and water quality are not guaranteed as they are influenced by a number of factors, including natural variability, human activities and condition of the works, which may change over time.

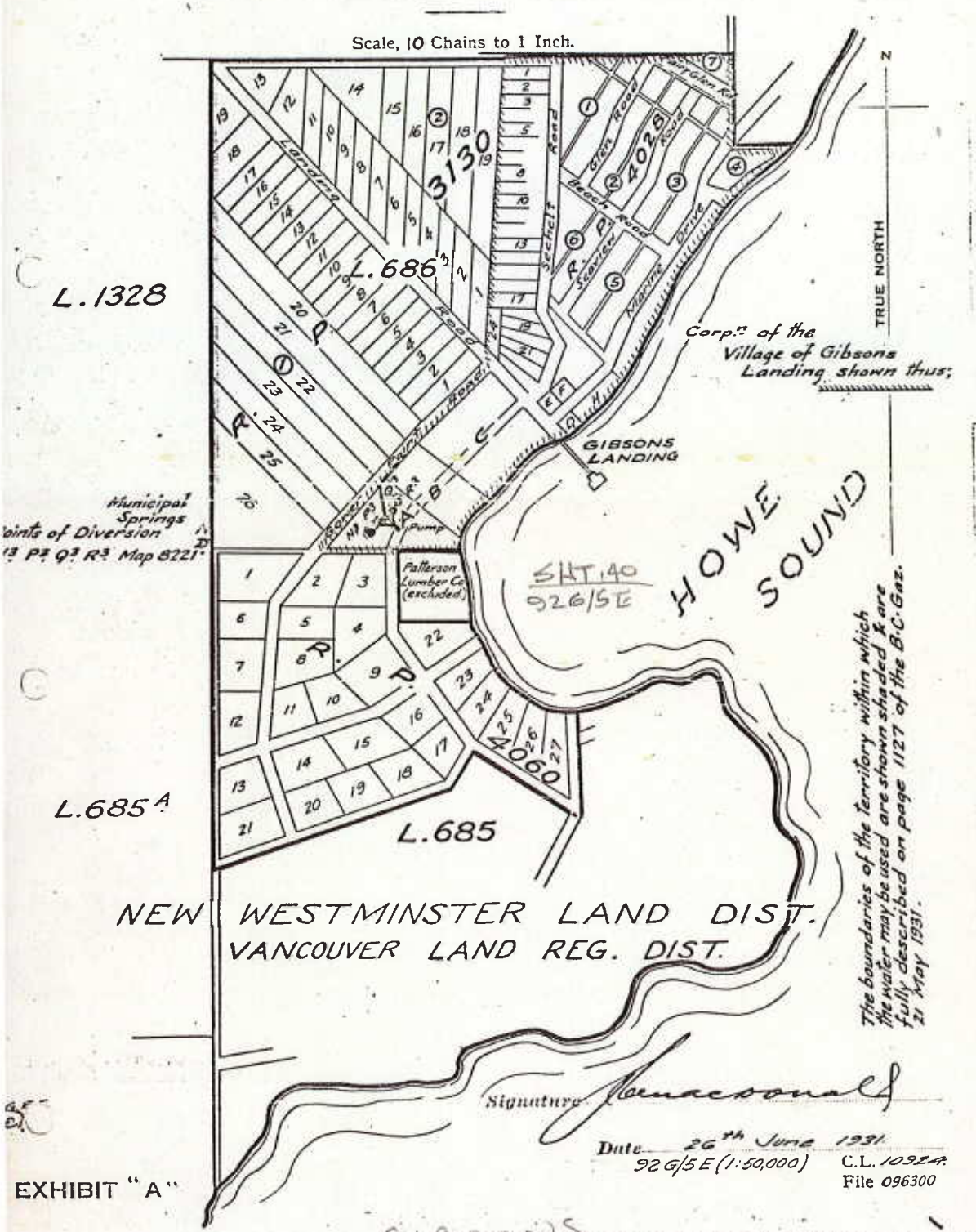
white: Customer copy canary: Driller copy pink: Ministry copy

SP

British Columbia.

To accompany Conditional Licence No. 10924

VANCOUVER WATER DISTRICT.



GIBSONS

x.71 y.28

92G.048.1.2.2

TOWNSHIP	MERIDIAN	RANGE	SECTION	QUARTER	LAND DISTRICT
	5 4 C E	TENS 2 1 / UNITS 7 4 2 1	TENS 2 1 / UNITS 7 4 2 1	NE SE SW NW	TENS 4 2 1 / UNITS 7 4 2 1

MUNICIPALITY: UNITS 1 2 4 7 / TENS 1 2 4 7

GROUND – WATER DIVISION, WATER INVESTIGATIONS BRANCH, DEPT. OF LANDS, FORESTS, and WATER RESOURCES, VICTORIA, B.C.

WTN 5468

92 G/5 h

X71 Y28 #3

(2)

LOCATION D.LOT 686 (COMPLETE LEGAL DESCRIPTION) NEW WEST DIST.

OWNER'S NAME VILLAGE OF GIBSONS — ADDRESS GIBSONS

DRILLER'S NAME ____ ADDRESS ____ DATE OF COMPLETION ____

DEPTH SPRINGS ELEVATION OF COLLAR ____ CASING DIAM. ____ LENGTH ____ TYPE ____

METHOD OF DIGGING ____ SCREEN ☐ SIZE ____ LENGTH ____ TYPE ____

LOCATION OF SCREEN ____ DEVELOPED ☐ DESCRIBE ____

SHT. 40 92G/5E

PERFORATED CASING ☐ LENGTH ____ LOCATION OF PERFORATIONS ____

GRAVEL PACK ☐ LENGTH ____ DIAM. ____ SIZE GRAVEL, ETC. ____

PUMP ☐ TYPE ____ POWER ____

CAPACITY ____ OTHER DATA ____

COSTS WELL ____ PUMP ____ PUMP HOUSE, ETC. ____

MAINTENANCE ____

DISTANCE TO WATER FROM TOP OF CASING SPRINGS ☐ ESTIMATED ☐ MEASURED ELEVATION ____ FLUCTUATION ____

HIGH WATER ____ MONTH ____ LOW WATER ____ MONTH ____ OBSERVATION DATA ☐ FILE No. ____

WATER USE ____

MAX. RATE WITHDRAWAL ☐ ESTIMATED ☐ MEASURED ____

TEMPERATURE ____ PUMPS SAND ☐ ____

CLOGS SCREEN ☐ TYPE DEPOSIT ____ AQUIFER DATA ____

LICENSE No. ____ DATE LICENSE ____ AMOUNT ____

DATE APPLICATION ____ USE ____

MUNICIPAL SPRINGS

SEE ATTACHED MAP.

N

LOCATION SKETCH-INDICATE NORTH

METHOD: DUG, DRIVEN, DRILLED, JETTED, BORED

DEPTH: 0 – 25, 25 – 30, 50 – 100, 100 – 200, 200 – 400, > 400

OBSERVATION, ABANDONED, DEVELOPED, SCREEN, PERF. CASING, GRAVEL ENV., PUMP

TYPE WELL: FLOWING, NON-FLOW ARTESIAN, WATER TABLE, PART CONFINED

WATER QUALITY: ANALYSIS, SOFT, HARD, HIGH IRON, HIGH SULPHUR, SALTY, ALKALINE, SALINE, POLLUTED, INADEQUATE QUALITY

DRY HOLE, INADEQUATE QUANTITY, PUMPING TEST

CAPACITY GPD.: 0 – 10^3, 10^3 – 10^4, 10^4 – 10^5, 10^5 – 10^6, 10^6

CHARACTER OF SUPPLY AQUIFER: SAND, GRAVEL, TILL

WATER USE: DOMESTIC, GARDEN, STOCK, COOLING, IRRIGATION, INDUSTRIAL, WATERWORKS

RELIABILITY OF DATA: GOOD, FAIR, POOR

ROCK, SPRING

SUPPLY AQUIFER: UNITS 1 2 4 7 / TENS 1 2 4 7

OTHER AQUIFER PRESENT: UNITS 1 2 4 7 / TENS 1 2 4 7

OTHER AQUIFER PRESENT: UNITS 1 2 4 7 / TENS 1 2 4 7

LOG

FROM	TO	DESCRIPTION	NAME
		SPRINGS	

SAMPLE NO. _____ DATE _____

LAB. _____

COLIFORM ORGANISMS _____

TOTAL BACTERIA _____

COLOUR _____ ODOUR _____

TASTE _____

PUMPING TEST SUMMARY

TEST BY _____

DATE _____ FILE NO. _____

SPECIFIC CAPACITY _____ PERMEABILITY _____

STORAGE COEFF _____ TRANSMISSIBILITY _____

REMARKS _____

OTHER DATA

SIZE ANALYSIS, ETC. _____

ANALYSIS

	PPM
Total Hardness	
Carbonate Hard	
Magnesium Hard	
Fe	
SO_2	
Ca	
Mg	
Na	
K	
HCO_3	
CO_3	
Cl	
SO_4	
NO_3	
B	
E	
Total Dis-solids	
Total Alkalinity	
Suspended Solids	
Ph	

CARD BY N.T Lomas DATE 26th July 1974.

SOURCES INFORMATION Public Utilities Comm.

DIVISION OF LABORATORIES
Health Branch
Vancouver [illegible] Avenue,

Report Form L 76 (Rev. 11/61)

CHEMICAL ANALYSIS

TO:

Report No.:
Date Reported:
Date Received:

COPY TO: DIRECTOR, DIVISION OF PUBLIC HEALTH ENGINEERING

Collector's Name:
Address:
Date Sampled:
Time Sampled:
Water Works System:
Sampling Point:
Source of Water:
Treatment:

Test(s) done in field:
Residual Chlorine:
Temperature (°C):
pH:
Other:

Determinations Reported as mg/l unless noted otherwise

Colour (in units)	5	Alkalinity (as $CaCO_3$)	
Turbidity (in units)	2.6	Phenolphthalein	12
Temperature (°C) (on arrival)		Methyl Orange (total)	204
pH (in units) (on arrival)	7.6	Free Carbon Dioxide (as CO_2)(calculated)	
Total Solids	05	Hardness (as $CaCO_3$)	
Fixed Solids		Total	
Volatile Solids (calculated)		Carbonate (temporary)(calculated)	
Dissolved Solids	09	Non-Carbonate (permanent)(calculated)	
Dissolved Solids (calculated)		Silica (as SiO_2)	
Suspended Solids		Surfactants (as A.B.S.)	
Albuminoid Nitrogen (as N)		Nitrite Nitrogen (as N)	0.009
Ammonia Nitrogen (as N)		Nitrate Nitrogen (as N)	0.21
Calcium (as Ca)	6.2	Bicarbonate (as CO_3)(calculated)	
Magnesium (as Mg)	2.9	Carbonate (as CO_3)(calculated)	
Iron (total) (as Ferric ion)	0.05	Sulphate (as SO_4)	0.0
Conductance (micro mho)	20	Chloride (as Cl)	1.3
		Fluoride (as F)	
		Ortho-phosphate (as PO_4)	

Remarks:

Analyzed by:
(Miss) J. Gray

926.043.1.2.2

MERIDIAN | RANGE | SECTION | QUARTER | LAND DISTRICT

(X71, Y28)

GROUND — WATER DIVISION, WATER INVESTIGATIONS BRANCH, DEPT. OF LANDS, FORESTS, and WATER RESOURCES, VICTORIA, B.C.

SHEET #1

LOCATION (COMPLETE LEGAL DESCRIPTION)

OWNER'S NAME Village of Gibsons ADDRESS Gibsons Landing

DRILLER'S NAME Rural Well Drillers ADDRESS 4739 Lockheed Hwy DATE OF COMPLETION April 66

DEPTH 73' ELEVATION OF COLLAR (120) CASING DIAM 12" and 10" LENGTH 10' TYPE

METHOD OF DIGGING Drilled SCREEN ☑ SIZE #30 slot, 8" dia. LENGTH 10' TYPE

LOCATION OF SCREEN 65' - 75' DEVELOPED ☑ DESCRIBE Surged & Pumped

PERFORATED CASING ☐ LENGTH LOCATION OF PERFORATIONS

GRAVEL PACK ☐ LENGTH DIAM SIZE GRAVEL, ETC.

WTN 19896

PUMP ☐ TYPE POWER

CAPACITY 110 USgpm + OTHER DATA

COSTS WELL PUMP PUMP HOUSE, ETC

MAINTENANCE

DISTANCE TO WATER FROM TOP OF CASING Flowing ☐ ESTIMATED ☑ MEASURED ELEVATION FLUCTUATION

HIGH WATER MONTH LOW WATER MONTH OBSERVATION DATA ☐ FILE No.

WATER USE

MAX. RATE WITHDRAWAL ☐ ESTIMATED ☐ MEASURED

TEMPERATURE PUMPS SAND ☐

CLOGS SCREEN ☐ TYPE DEPOSIT AQUIFER DATA Sand

LICENSE No. DATE LICENSE AMOUNT

DATE APPLICATION USE

This well is to be completed with a 10", 20 ft long screen bottomed at 75 feet.

LOCATION SKETCH—INDICATE NORTH
Village of Gibsons

METHOD: SAT 40 / DUG / 926/SE / DRIVEN / DRILLED / JETTED / BORED

DEPTH: 0 — 25 / 25 — 50 / 50 — 100 / 100 — 200 / 200 — 400 / >400

OBSERVATION / ABANDONED / DEVELOPED / SCREEN / PERF. CASING / GRAVEL ENV. / PUMP

TYPE WELL: FLOWING / NON-FLOW ARTESIAN / WATER TABLE / PART CONFINED

ROCK / SPRING

RELIABILITY OF DATA: GOOD / FAIR / POOR

WATER USE: DOMESTIC / GARDEN / STOCK / COOLING / IRRIGATION / INDUSTRIAL / WATERWORKS

CHARACTER OF SUPPLY AQUIFER: SAND / GRAVEL / TILL

SUPPLY AQUIFER | OTHER AQUIFER PRESENT | OTHER AQUIFER PRESENT

MUNICIPALITY

WATER QUALITY: ANALYSIS ✓ FL / on back / SOFT / HARD / HIGH IRON / HIGH SULPHUR / SALTY / ALKALINE / SALINE / POLLUTED / INADEQUATE QUALITY

GSC ✓

DRY HOLE / INADEQUATE QUANTITY / PUMPING TEST

CAPACITY GPD: 0 — 10^3 / 10^3 — 10^4 / 10^4 — 10^5 / 10^5 — 10^6 / 10^6

SYSTEMS EQUIPMENT LIMITED VICTORIA—CANADA D 2231-65 SYSTEMSORT

LOG

FROM	TO	DESCRIPTION	NAME
0	2	FILL	
2	4	SOFT ORGANIC TOP SOIL	
4	8	COBBLES INTERFILLED WITH SILTY FINE SAND.	
8	21	BOULDERS - INTERSPACED WITH COMPACT SANDY SILT - FEW ISOLATED LAYERS OF GRAVEL & SAND.	
21	26	SANDY GRAVEL MEDIUM TO COARSE, FEW ISOLATED LAYERS OF SILT (3" TO 6" THICK) W.B. FLOWING	✓
26	33	SANDY GRAVEL (MEDIUM TO COARSE) W.B.	✓
33	39	COARSE SAND & GRAVEL, 2" TO 4" & LARGER. W.B.	
39	42	COARSE SAND & FINE GRAVEL MOSTLY SAND (W.B.)	
42	64	SAND, MEDIUM TO COARSE WITH OCCASIONAL SEAMS OF GRAVEL.	
64	76	MEDIUM TO COARSE SAND (W.B)	✓
76	83	COARSE SAND SOME FINE GRAVEL	
83	96	SILTY SAND FINE TO MEDIUM COMPACT	
96	98	SAND FINE TO MEDIUM (W.B)	✓
98	101	COMPACT SILTY SAND	
101	108	COMPACT SILT WITH PEAT STRINGERS.	
108	110½	SAND FINE TO MED., SOME SILT.	
110½	113	COMPACT SILTY SAND	
113	115	SILTY SAND MEDIUM	
115	117	LIGHT GREY FINE SILTY SAND.	
117	132	FINE GREY SAND (VERY LITTLE SILT) W.B.	✓
132	137	FINE GREY SAND WITH A LITTLE SILT.	

SAMPLE No. _____ DATE 8-6-66

LAB HEALTH BRANCH, 828 W. 10TH AVE. VANCOUVER 9, B.C.

COLIFORM ORGANISMS _____

TOTAL BACTERIA _____

COLOUR 5 (IN UNITS) ODOUR _____

TASTE _____

PUMPING TEST SUMMARY

TEST BY _____

DATE _____ FILE No. _____

SPECIFIC CAPACITY _____ PERMIABILITY _____

STORAGE COEFF _____ TRANSMISSIBILITY _____

REMARKS PUMPED AT 110 U.S. G.P.M. FOR 2 HOURS, WATER LEVEL STABILIZED AT 40 FT AFTER ½ HOUR. WELL FLOWED AGAIN IN 2 MIN. 40 SECS. AFTER STOPPING PUMP.

OTHER DATA

SIZE ANALYSIS ETC. _____

WITH THE 12" CASING AT 64 FT AND THE 10" AT 74 FT. THE MAXIMUM FREE FLOW OCCURRED AND WAS MEASURED AT 40 TO 50 GALS PER MINUTE.

CARD BY L.J. DATE Jan. 67

SOURCES INFORMATION RURAL WELL DRILLERS

ANALYSIS L

(ON MAP)	PPM
Total Hardness	27.6
Carbonate Hard	
Magnesium Hard	
Fe	.05
SO_2	
Ca	6.2
Mg	2.9
Na	
K	
HCO_3	
CO_3	
Cl	1.3
SO_4	8
NO_3	
B	
E	
CONDUCTANCE	70
PHENOLPHTHALEIN	NIL
Total Dis-solids	
Total Alkalinity	27.5
Suspended Solids	
Ph	7.6

APPENDIX B

~SCHEDULE E~

Proposed Drilling Program for [*529 Gibsons Way, Gibsons*]

Submitted to: The Town of Gibsons Date Issued:_____

PREPARED BY: [*GeoPacific Consultants for Pacific Ray Development Inc.*]

CC: Town of Gibsons representative — Dave Newman & Daniel Tardif
Town's hydrogeology consultant — Waterline Resources - Simon Wing
Drilling contractor — BlueMax Drilling
Barge Contractor (if applicable) — _____
Other personnel on site (if applicable) — _____

CONTACT LIST

EMERGENCY NUMBERS

Town of Gibsons Representative:	[*Dave Newman (604) 741-8370 and/or Daniel Tardiff (604) 841-7491*]
Drilling Contractor Owner/Principal:	[*Cole Bertsch (778) 995-2583*]
Ambulance/Hospital	**911**

Prime Consultant in Charge

Principal Consultant:	[*Matt Kokan (604) 341-6360*]
Field Consultant:	[*Nathalie Sahakyan (604) 439-0922*]

Town Hydrogeology Consultant

Principal Hydrogeologist:	[*None Requested*]
Field Hydrogeologist:	[ ]

SERVICE COMPANIES

Drilling Contractors:	[*BlueMax Drilling (778) 237-2583*]

TO BE POSTED ON SITE

~SCHEDULE E~

1 OVERVIEW

1.1 The purpose of subject the drilling program is to:

- *To determine underlying stratigraphy up to 8 m depth and confirm the Gibsons Aquifer will not be breached during construction*

1.2 As outlined in the Town of Gibsons Development Permit Area Guidelines, the proposed drilling area is underlain by a known artesian aquifer (the Gibson Aquifer) and therefore an increased standard of care is needed to protect the aquifer.

- *The site is within the Lower Gisbsons Sub-Area, Gibsons Well Head Protection Area and Development Permit Area. According to the BC Water Atlas and our investigations in the area, our wells are the closest to the site, at 30 m to the North.*

1.3 [*We*] envisage that the following risks would be involved in the proposed drilling program:

- *Uncontrolled artesian flow if aquitard is breached.*
- *Development of a sink hole if artesian flow is left unattended or site worker are unprepared to mitigate the flow.*
- *Impact on the Town of Gibsons' water wells if the aquifer is breached and left unsealed.*
- *Potential loss of aquifer pressure if the aquifer is breached and not sealed properly.*

1.4 Table 1 summarizes the proposed drilling program with anticipated depth, location, and decommissioning plan. The proposed borehole locations are shown on [*e.g. Figure 1*].

Table 1: Example table of proposed borehole details

Borehole Name	*Location*	*Planned Depth*	*Decommission Plan*
MW20-01 & MW20-02	Refer to Siteplan attached	MW20-01 to 7.3 m MW20-02 to 5.1 m	*Decommission as per attached cover letter*

~SCHEDULE E~

2 PRE-DRILLING REQUIREMENTS

2.1 The following must be established prior to drilling commencement:

- Knowledge and understanding of British Columbia's Groundwater Protection Regulation
  - *(http://www.bclaws.ca/Recon/document/ID/freeside/11_299_2004) Yes*
- WorkSafe BC program
  - *Hard Hat, Safety Vest, Steel Toe Boots, Safety Glasses if required*
- Permit Requirements:
  - *Town of Gibsons Development Permit*
- Driller certification:
  - *Please see attached Certificate*
- All rig lifting equipment, and overhead equipment must be certified to the Original Equipment Manufacturers Specifications (OEM).
  - *All equipment is certified*
- Casing handling and running procedures:
  - *See Job Hazard Analysis attached*
- Certificate of Insurance and WorkSafe BC letter are attached
  - *Please see attached from GeoPacific and BlueMax Drilling*
- Drill rig specifications are attached
  - *Please see attached Spec Sheet*
- Additional pre-drilling requirements:

~SCHEDULE E~

3 RIG MOVE, RIG UP AND SITE SAFETY

3.1 The following procedures site safety provisions must be followed in mobilizing, set up and operation of the drilling rig:

- *Please see attached Job Hazard Analysis:*

  - *Drilling contractor to contact prime consultant in change the day before mobilization to site to confirm site and drill is ready.*
  - *Move in and rig up drilling rig and auxiliary equipment on site (or onto the barge if applicable). Prior to initiating drilling, carry out detailed rig inspection and report any unsafe conditions to prime consultant.*
  - *Hold a pre-drilling safety meeting with the rig crew and all consultants on site to discuss the Hazardous Operations and drilling program.*
  - *Certified driller to be onsite at all times during drilling.*

4 GENERAL DRILLING PROCEDURES

4.1 Roles and responsibilities:

- *Utility Locator, Driller and 2 Driller Helpers, Field Consultant*

4.2 Methodology of data and sample collection:

- *Describe roles and responsibilities of all personnel on site. For example:*

Utility Locator will complete a BC One Call and clear utilities before drilling using GPR

4.3 Drilling Details

4.3.1 Borehole ####

- *Provide details on each proposed borehole, e.g.:*

These drill depths are based on design drawings provided by Frits de Vries Architects & Associates Ltd. (dated February 12, 2021). Based on the ground surface elevations at the proposed well locations, the depth to the Level 1 slab will be 4.3 m and 2.1 m at MW20-01 and MW20-02, respectively. An extra 1 m has been added beneath the slab elevation to account for the bulk excavation, and an additional 2 m is added to the total drill depth as a precautionary measure to confirm that the Quadra sands and the Gibsons Aquifer is a sufficient distance below the anticipated excavation depth. Thus, the drill depths at MW20-01 will be ~ 7.3 m and MW20-02 will be ~ 5.1 m.

- *Screens located according to the BC Water Sustainability Act and Water Regulations*

- *Refer to Siteplan for Locations*
- *We would install larger diameter surface casing into the upper confining layer above the Quadra sands (Gibsons Aquifer) prior to proceeding with the sonic drilling at both well locations. BlueMax will install surface casing (7") into and within the upper confining layer, then advance with smaller (6") casing to the hole completion depth.*
- *We have reviewed the storm sewer system drawing provided by the Town of Gibsons and determined that the closest storm sewer outfall is some 7 m distance away from MW20-01 and 23 m distance away from MW20-02. BlueMax will have 100 ft of diversion (layflat) hose to divert then discharge to the nearest stormwater outfall system. Transfer pumps will be on hand if uphill pumping is required.*
- *BlueMax is qualified to stop and control flowing artesian conditions as per the GWPR. BlueMax has qualified well drillers (Environmental/Geotechnical) as lead drillers and Qualifed Professionalss with suitable experience in hydrogeology as the supervisor leading operations.*

4.3.2 Monitoring Well / Piezometer Installation Details (If Required)

- *10 slot PVC screen with 10/20 sandpack*
- *Bentonite seal to ground surface around solid PVC pipe*
- *Well cap at surface*
- *Pressure gauge if necessary*

4.3.3 Borehole Abandonment Program (Artesian Flowing Well Bore)

- *As per the Water Sustainability Act, Section 53, a flowing artesian well must be controlled*
- *During drilling: fill the casing with a cement grout seal. Retract casing as it is filled and ensure no pathway for water to migrate to the surface. Can use barite in difficult conditions*
- *After drilling: Install a packer to control the flow. Refer to cover letter for full details.*

~SCHEDULE E~

4.3.4 Borehole Abandonment Program (Non-artesian Flowing Well Bore)

- *As per BC Provincial Regulations, a borehole can be abandoned with bentonite to ground surface. Refer to cover letter for details.*

5 FIELD PACKAGE

- The following documents are attached:
  - *Proposed borehole/well location plan*
  - *Site specific Health and Safety Plan*
  - *Drilling Contractor Materials (procedures, rig equipment and operation)*
  - *Utility clearances*


Fernwhistle Lane
S Fletcher Rd
School Rd
N Fletcher Rd
Fernwhistle Lane
Gower Point Rd
School Rd
Mollys Lane
School Rd
Gibsons Way
Gibsons Way
Seaview Rd
Marine Dr
Cruice Ln
Jacks Lane
Jacks Ln
McCall Lane
Marine Dr

BFL CANADA Insurance Services Inc.
1177 West Hastings Street, Suite 200
Vancouver BC V6E 2K3
Tel: 604-669-9600
Toll Free: 1-866-669-9602
Fax: 604-683-9316

Certificate of Insurance

Certificate No: 2020-00002

This is to certify to: **To Whom It May Concern**

that the following described policy(ies) or cover note(s) in force at this date have been affected to cover as shown below:

Named Insured: **Geopacific Consultants Ltd.**
Address: **1779 West 75th Avenue, Vancouver, BC V6P 6P2**

Description of operations and/or activities and/or locations to which this certificate applies: Engineering and Surveying

Type	Insurer / Policy No.	Policy Period from (mm/dd/yyyy) to (mm/dd/yyyy)	Limits
General Liability	Intact Insurance Company of Canada Policy No: 5A1197902	01/24/2020 to 01/24/2021	
Bodily Injury and Property Damage Per Occurrence			$ 5,000,000
Personal & Advertising Injury			$ 5,000,000
Non Owned Automobile Liability			$ 5,000,000
Products/Completed Operations Aggregate			$ 5,000,000
Tenants Legal Liability			$ 500,000
PARTICULARS OF INSURANCE - General Liability Premises Property and Operations, Products and Completed Operations, Cross Liability, Blanket Contractual (all written agreements), Occurrence Bodily Injury and Property Damage, Broad Form Property Damage, Contingent Employers Liability, Cross Liability and Seperation of Insureds, Advertising and Personal Injury, Limited Pollution Liability Coverage Endorsement			
Professional Liability (Claims Made)	Encon Group Inc. Policy No: ENG543675	01/24/2020 to 01/24/2021	
Each Claim			$ 2,000,000
Aggregate			$ 2,000,000

Additional Information

This certificate is issued as a matter of information only and is subject to all the limitations, exclusions and conditions of the above-listed policies as they now exist or may hereafter be endorsed. We accept no responsibility whatsoever for any inadvertent or negligent act, error or omission on our part in preparing these statements or for any loss, damage or expense thereby occasioned to any recipient of this certificate.

Limits shown above may be reduced by Claims or Expenses paid. This Policy contains a Clause(s) which may limit the amount payable.

BFL CANADA Insurance Services Inc.

Authorized Representative
Jeff McLellan

Signed in Vancouver this January 21, 2020

WORK SAFE BC
WORKING TO MAKE A DIFFERENCE

Assessment Department
Mailing Address
PO Box 5350
Station Terminal
Vancouver BC V6B 5L5

Location
6951 Westminster Highway
Richmond BC
V7C 1C6
www.worksafebc.com

Clearance Section
Telephone 604 244 6380
Toll Free within Canada
1 888 922 2768
Fax 604 244 6390

TOWN OF GIBSONS
474 South Fletcher Road
Box 340
TOWN OF GIBSONS, BC V0N 1V0

October 21, 2020

Person/Business : GEOPACIFIC CONSULTANTS LTD
Account number : 374728

This letter provides clearance information for the purposes of Section 258 of the *Workers Compensation Act*.

We confirm that the above-referenced firm is active, in good standing, and has met WorkSafeBC's criteria for advance clearance. Accordingly, if the addressee on this letter is the prime contractor, the addressee will not be held liable for the amount of any assessment payable for work undertaken by the above-referenced firm to January 01, 2021.

This firm has had continuous coverage with us since June 22, 1987.

Employer Service Centre
Assessment Department

Clearance Reference # : C131929098
CLRAAA

For more information about Section 258 and clearance letters visit WorkSafeBC.com

Please refer to your account number in your correspondence or when contacting the Assessment Department.
To alter this document constitutes fraud.

CSIO

CERTIFICATE OF LIABILITY INSURANCE

This certificate is issued as a matter of information only and confers no rights upon the certificate holder and imposes no liability on the insurer. This certificate does not amend, extend or alter the coverage afforded by the policies below.

1. CERTIFICATE HOLDER - NAME AND MAILING ADDRESS			2. INSURED'S FULL NAME AND MAILING ADDRESS		
Town of Gibsons			Blue Max Drilling Inc		
474 South Fletcher Road, Box 340			12247 103A Ave		
Town of Gibosns					
Gibsons	BC	POSTAL CODE V0N 1V0	Surrey	British Columbia	POSTAL CODE V3V 3G7

3. DESCRIPTION OF OPERATIONS/LOCATIONS/AUTOMOBILES/SPECIAL ITEMS TO WHICH THIS CERTIFICATE APPLIES (but only with respect to the operations of the Named Insured)

Environmental Drilling Contractor

4. COVERAGES

This is to certify that the policies of insurance listed below have been issued to the insured named above for the policy period indicated notwithstanding any requirements, terms or conditions of any contract or other document with respect to which this certificate may be issued or may pertain. The insurance afforded by the policies described herein is subject to all terms, exclusions and conditions of such policies.

LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS

TYPE OF INSURANCE	INSURANCE COMPANY AND POLICY NUMBER	EFFECTIVE DATE YYYY/MM/DD	EXPIRY DATE YYYY/MM/DD	LIMITS OF LIABILITY (Canadian dollars unless indicated otherwise)		
				COVERAGE	DED.	AMOUNT OF INSURANCE
COMMERCIAL GENERAL LIABILITY ☐ CLAIMS MADE OR ☑ OCCURRENCE ☑ PRODUCTS AND / OR COMPLETED OPERATIONS ☐ EMPLOYER'S LIABILITY ☑ CROSS LIABILITY ☑ TENANTS LEGAL LIABILITY ☐ POLLUTION LIABILITY EXTENSION	Intact Insurance Company - 5A1198359	2020/04/13	2021/04/13	COMMERCIAL GENERAL LIABILITY BODILY INJURY AND PROPERTY DAMAGE LIABILITY - GENERAL AGGREGATE	$2,500	$10,000,000
				- EACH OCCURRENCE		$10,000,000
				PRODUCTS AND COMPLETED OPERATIONS AGGREGATE		$10,000,000
				☐ PERSONAL INJURY LIABILITY OR ☑ PERSONAL AND ADVERTISING INJURY LIABILITY		$10,000,000
				MEDICAL PAYMENTS		$50,000
				TENANTS LEGAL LIABILITY	$2,500	$500,000
				POLLUTION LIABILITY EXTENSION		
☑ NON-OWNED AUTOMOBILES ☐ HIRED AUTOMOBILES	Intact Insurance Company - 5A1198359	2020/04/13	2021/04/13	NON OWNED AUTOMOBILE		$10,000,000
AUTOMOBILE LIABILITY ☐ DESCRIBED AUTOMOBILES ☐ ALL OWNED AUTOMOBILES ☐ LEASED AUTOMOBILES ** ** ALL AUTOMOBILES LEASED IN EXCESS OF 30 DAYS WHERE THE INSURED IS REQUIRED TO PROVIDE INSURANCE				BODILY INJURY AND PROPERTY DAMAGE COMBINED		
				BODILY INJURY (PER PERSON)		
				BODILY INJURY (PER ACCIDENT)		
				PROPERTY DAMAGE		
EXCESS LIABILITY ☐ UMBRELLA FORM ☐				EACH OCCURRENCE		
				AGGREGATE		
OTHER LIABILITY (SPECIFY) ☑ Employer's Liability	Intact Insurance Company - 5A1198359	2020/04/13	2021/04/13			
☐						
☐						

5. CANCELLATION

6. BROKERAGE/AGENCY FULL NAME AND MAILING ADDRESS			7. ADDITIONAL INSURED NAME AND MAILING ADDRESS (but only with respect to the operations of the Named Insured)		
Metrix Professional Insurance Brokers Inc.			Town of Gibsons		
400 - 555 Burrard Street, Box 275			474 South Fletcher Road, Box 340		
			Town of Gibosns		
Vancouver	BC	POSTAL CODE V7X 1M8			
BROKER CLIENT ID: BLUEM-2			Gibsons	BC	POSTAL CODE V0N 1V0

8. CERTIFICATE AUTHORIZATION

ISSUER Metrix Professional Insurance Brokers Inc.	CONTACT NUMBER(S) TYPE Main NO. (604) 683-5583	TYPE Fax	NO. (604) 683-8032
AUTHORIZED REPRESENTATIVE Phil Webb	TYPE	NO.	TYPE NO.
SIGNATURE OF AUTHORIZED REPRESENTATIVE	DATE April 06, 2020	EMAIL ADDRESS pwebb@mpib.com	

CZ

WORK SAFE BC
WORKING TO MAKE A DIFFERENCE

Assessment Department
Mailing Address
PO Box 5350
Station Terminal
Vancouver BC V6B 5L5

Location
6951 Westminster Highway
Richmond BC
V7C 1C6
www.worksafebc.com

Clearance Section
Telephone 604 244 6380
Toll Free within Canada
1 888 922 2768
Fax 604 244 6390

Blue Max Drilling Inc.
12247 103A Avenue
SURREY, BC V3V 3G7

October 07, 2020

Person/Business : BLUE MAX DRILLING INC.
Account number : 835234

We confirm that the above-mentioned account is currently **active** and **in good standing**.

This firm has had continuous coverage with us since October 01, 2009 and has satisfied assessment remittance requirements to **October 01, 2020**.

The next payment that will affect this firm's clearance status is due on October 20, 2020.

This information is only provided for the purposes of Section 258 of the *Workers Compensation Act*, which indicates that a person using a contractor or subcontractor to perform work may be responsible for unpaid assessments of the contractor or subcontractor.

Employer Service Centre
Assessment Department

Clearance Reference # : C131892508
CLRA1A

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Please refer to your account number in your correspondence or when contacting the Assessment Department.
To alter this document constitutes fraud.

Blue Max Drilling
Job Hazard Analysis (JHA)
Sonic Drilling

Site Training Requirements:	Tools/Equipment Required	Material Required	PPE Required
• Sonic Rig Orientation • Ground Disturbance • First Aid Lvl 1 • WHIMIS • Incident Investigation	Track Drill Rig (Sonic) Various Hand Tools; Wrenches, Hammers, Shovel, Barrel Grounding Cable (if in substation)	Bentonite Sand Concrete Grout (cement/bentonite)	Hard Hart Safety Glasses Hearing Protection His Vis FR Clothing Work Gloves

Safe Job Procedure	Potential Hazards	Risk Assessment	Safe Work Practices
1. Site Orientation/ rig inspection	1. Parking rig for inspection	1. Moderate	• Ensure rig is parked in designated area free of traffic for inspection to take place safely • Workers must be in proper PPE at all time while in substation • All workers must complete Site Specific Orientation at start of job and Sign off on Tailgate Meeting
2. Drill set-up	1. Moving Drill 2. Raising tower 3. Overhead and underground utilities locating 4. High Voltage Lines 5. Pinch Points	1. Moderate 2. High 3. Moderate 4. Critical 5. Moderate	• Pay attention to visitors approaching work area. If necessary, setup barriers to keep vehicles and visitors out of the work area and use caution tape, cone delineation or traffic control if available. • Underground utilities must be marked out before drilling begins. • Observe overhead lines, utility line locates and other objects before raising the mast of the drill rig. Anticipate the radius of sweep going up and coming down, and plan appropriately. Position the drill rig no closer than 10 feet (3m) from overhead power lines • Spotter must be used when moving vehicle into place or raising tower • Beware of pinch points while raising mast, setting up supports and unstrapping augers
3. Drilling – General Activates	1. Loud Noise 2. Rotating Equipment 3. Auto Hammer 4. Suspended Loads 5. Dust due to climate 6. Slip/trips/falls 7. Pinch points 8. Non Blue Max Workers 9. Heavy Lifting	1. Moderate 2. Moderate 3. Moderate 4. High 5. Moderate 6. Moderate 7. Moderate 8. Moderate 9. High	• Wear approved safety ear plugs when noise level about 85 dBA (e.g. smoke alarm or blender) • Hearing Protection must be worn when Auto Hammer in use. • When necessary, wear appropriate PPE to protect from dust for inhalation hazard. At minimum an N95 dust mask • Make sure helpers are clear whenever rotation begins. Use eye contact and verbal communication for all steps in drilling process. A minimum distance of 2ft is required, as well as a "show me your hands "rule for the driller helpers before any rotation can begin • Use proper lifting techniques, use legs not back, do not twist while lifting • Keep body parts clear of pinch points. • Drill rig should be shut down if non-Blue Max Driller approaches the rig for soil inspection or staff communication

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4. Drilling – Advancing Pipe	1. Physical injury from moving parts of machinery, including changing of augers or rod 2. Physical Injury from cables under tension that suddenly release	1. High 2. High	• Drill Cage MUST be closed while drilling • Avoid moving parts of machinery. Keep fingers, hands, and arms away from rotating drill head near the top (connection to drive) or near the bottom (hole entrance). Wear gloves when handling objects, and steel-toed boots and hard hat at all times. Keep hands away from hydraulic clamps when activated. Keep fingers away from pinch points when screwing pipe joints together. Keep all drill bits secured when not in use, to prevent rolling off the rig or other movement. • Do not come near cables under tension, such as those lifting drill pipe, as they tend to twist rapidly until the tension is equalized. Inspect cable and hooks frequently for signs of damage and wear. Do not stand directly underneath a load suspended by cable. Suspended loads are not to be left unattended.
5. Drilling – Adding/removing pipe	1. Work area can become messy with dirt from hole 2. Suspended rod 3. Pinch points from adding rods 4. Pipe Arm	1. Moderate 2. High 3. Moderate 4. High	• Keep work area tidy, dirt should be piled nicely off to the side or drummed • All Hanging equipment (e.g. drill rod, casing) must be held in secure place with a clip or strap away from drill teams work zone. • Keep hands away from the bottom of the bit assembly when removing it from, or inserting it into, the casing or boring. Set the assembly on the ground and remove it from the overshot. Suspended loads are not to be left unattended. • Helpers must remain 2m clear of pipe arm with in operation. • Hands must be kept clear of pipe clamp when in operation. • Pipe and rod lengths are to be added/removed from head by pipe arm. • Short section (2'lengths) that need to be added by hand should never be handled while drill head is rotating. Watch hand placement when adding pipe. Hold onto pipe away from attachment points. Use jaws to remove from head. Then manually lift from jaws. • Drillers hands must be off controls while cage is open except when helper needs to stabilize short sections as head's threads are lowered into pipe. Helper MUST be clear and cage closed before head threads onto pipe
6. Filling hole after work done or installation	1. Heavy Lifting 2. Silica Dust 3. Slip/trips falls 4. Mixing Concrete or grout.	1. Moderate 2. Moderate 3. Moderate 4. Moderate	• Lift with legs not back, avoid twisting motion while lifting. Use 2 men for heavy loads. • Use of dust mask n95 if need to stand right over hole if filling with sand or bentonite when dust clouds are created and there is no air-flow. • Beware of ground conditions. Ground might be slick and mud covered depending on ground condition. Try to keep work area as clean as possible. Excess clean soil should be drummed or spread evenly around site with EM permission only. . • Grout to be mixed slowly, avoid pouring in full bag into drums as this can cause dust clouds and clumping in the mixture.

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Safe Job Procedure	Potential Hazards	Risk Assessment	Safe Work Practices
7. Unsafe Conditions	1. Unknown Hazards identified in the field 2. Changing/ Abnormal conditions 3. Long Days	1. Moderate 2. Moderate 3. Moderate	• Where a situation presents a hazardous condition, the exposed employee will be removed from the hazardous area until allnecessary precautions have been taken to eliminate the hazard and ensure their safety • Stop work authority will be used when unsafe conditions arise Use Field Level Risk Assessment to identify risks, update as conditions change. • Use the rule, every 20mins – look away at 20'– for 20 sec to give yourself a visual and mental break
8. Re-Fueling / Spills	1. Unmonitored spills 2. Fuel system failure 3. Spills in sensitive areas	1. Moderate 2. Moderate 3. Moderate	• Placing secondary containment beneath all equipment with a fuel source and have appropriate spill containment equipment on hand. • Performing daily equipment inspections on all fuel systems. • Refueling away from watercourses and sensitive areas.

YOUR TICKET.

June 28, 2018

David Jonathan Rooker
13727 111 Ave
Surrey BC V3R 2C1

Dear David:

This letter is to confirm your recent successful completion of the trades qualification examination. An endorsed Certificate of Qualification and wallet card are enclosed.

Geotechnical/Environmental Driller
00003-GN-18
2018-JUN-20

In this regard, we are certain that the effort and time spent in acquiring and demonstrating your skill and knowledge will ensure recognition throughout the trade.

We are very pleased to extend our congratulations to you on your achievement in attaining this certification and wish you every success in your future endeavors.

Yours truly,

Gary Herman

Gary Herman, CEO

This is to certify that
DAVID JONATHAN ROOKER
holds a
CERTIFICATE OF QUALIFICATION
in the trade of
GEOTECHNICAL/ENVIRONMENTAL DRILLER

ita YOUR TICKET. | BRITISH COLUMBIA | Industry Training Authority

Issue Date: 20/6/2018 | Certificate #: 00003-GN-18

Ref: 106295660

www.itabc.ca

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BRITISH COLUMBIA

ita
YOUR TICKET.

No. 00003-GN-18

CERTIFICATE OF QUALIFICATION

This is to certify that

David Jonathan Rooker

has met the certification requirements in the occupation of

Geotechnical/Environmental Driller

In accordance with the Statutes of the province of British Columbia.

Given at Victoria, British Columbia, this 20th day of June, 2018

PROVINCE OF BRITISH COLUMBIA

BOARD CHAIR

CHIEF EXECUTIVE OFFICER

BRITISH COLUMBIA

Heli/Mini Sonic Drill Rig

Environmental | Geotechnical | Exploration

BLUE MAX DRILLING

This is a full service sonic drill rig as a helicopter portable unit, used on major projects since summer 2016. This light weight helicopter portable drill rig has each module at less than 1,900 lbs, allowing for small helicopter transport in remote access areas. This is a multi-functional unit that can sonic drill and conventional diamond drill (rock drill) for geotechnical, hydrogeological, environmental or exploration purposes. The rig is a fully functioning sonic drill, capable of 4x6 sonic drilling and BQ, NQ and HQ diamond drilling.

Note: The rig can also sit on a **TRACK** platform for a truly versatile sonic drill!

HELI Rig Specs	Imperial	Metric
Weight, per Lift	<1,900 lbs	<860 kg

HELI Drill Depths	Imperial	Metric
Sonic, (Overburden)	200'	60m
Coring, HQ (Rock)	1,500'+	460m+

TRACK Rig Specs	Imperial	Metric
Height, Mast Up	12.5'	3.81m
Height, Mast Down	9'	2.7m
Length, Mast Up	15'	4.6m
Length, Mast Down	15'	4.6m
Width	8'	2.4m
Weight	17,000 lbs	7,700 kg

TRACK Drill Depths	Imperial	Metric
Sonic, (Overburden)	200'	60m
Coring, HQ (Rock)	300'+	100m+

TRACK Additional Features

- Automatic Rod Loader
- Engineered Safety Drill Cage
- Remote controlled
- Rock coring head attachment (NQ, HQ)
- Angle drilling capable
- 4" x 6" rod/casing system
- SPT & DCPT testing capable with Auto Hammer
- CPT capable

Locations

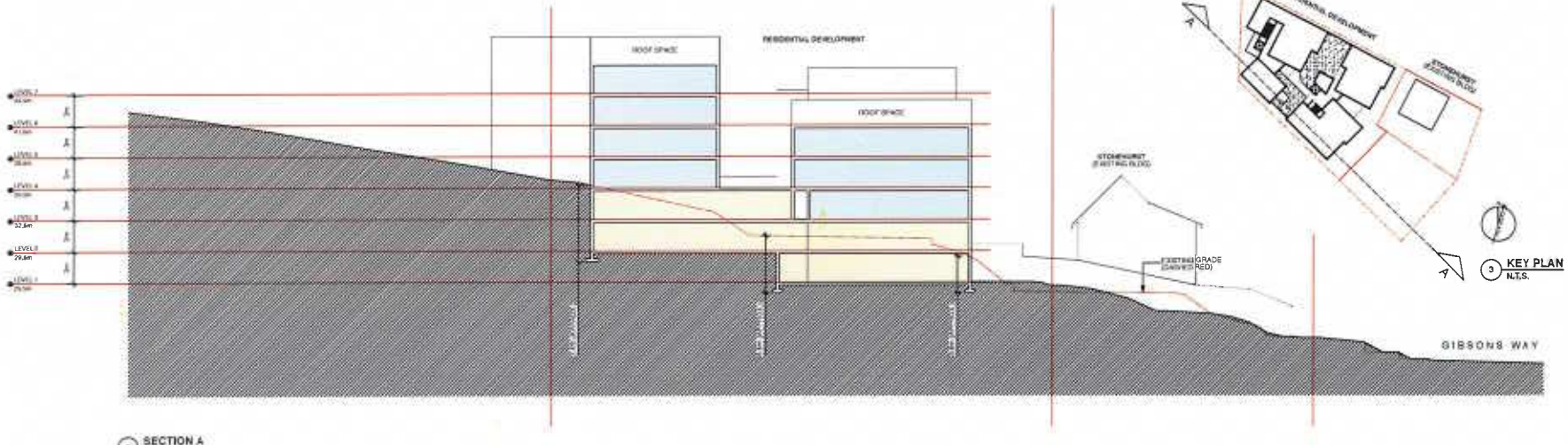
Surrey, BC (Head Office)
Vancouver Island, BC
Terrace, BC

www.bluemaxdrilling.com
(778) 237-BLUE (2583)

BLUE MAX DRILLING INC.

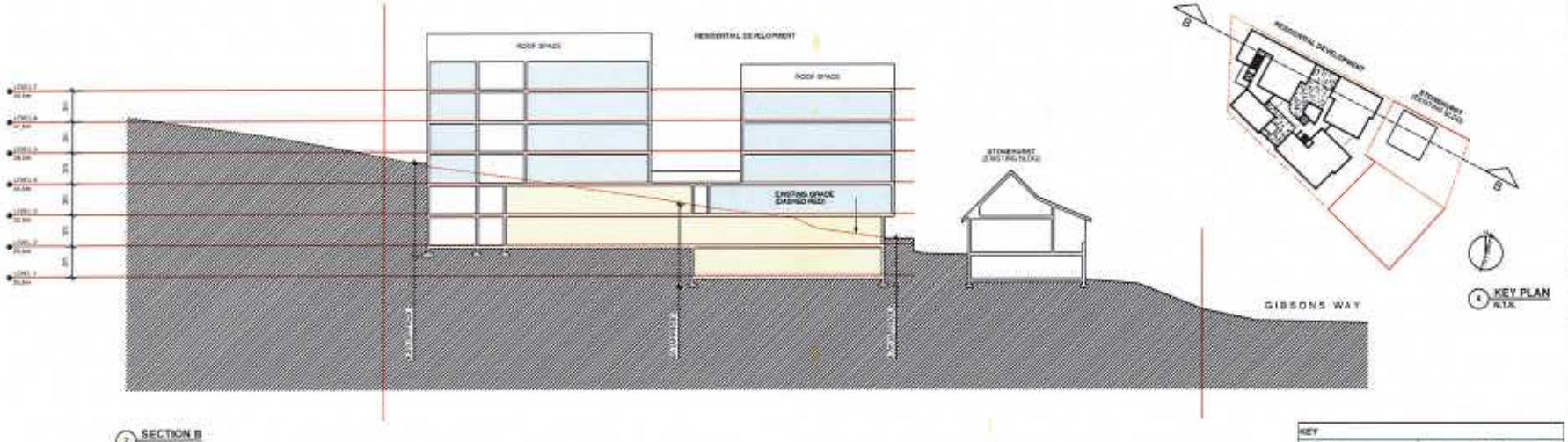
APPENDIX C

529 GIBSONS WAY
INFORMATION



1 SECTION A
1/16"=1'-0"

3 KEY PLAN
N.T.S.



2 SECTION B
1/16"=1'-0"

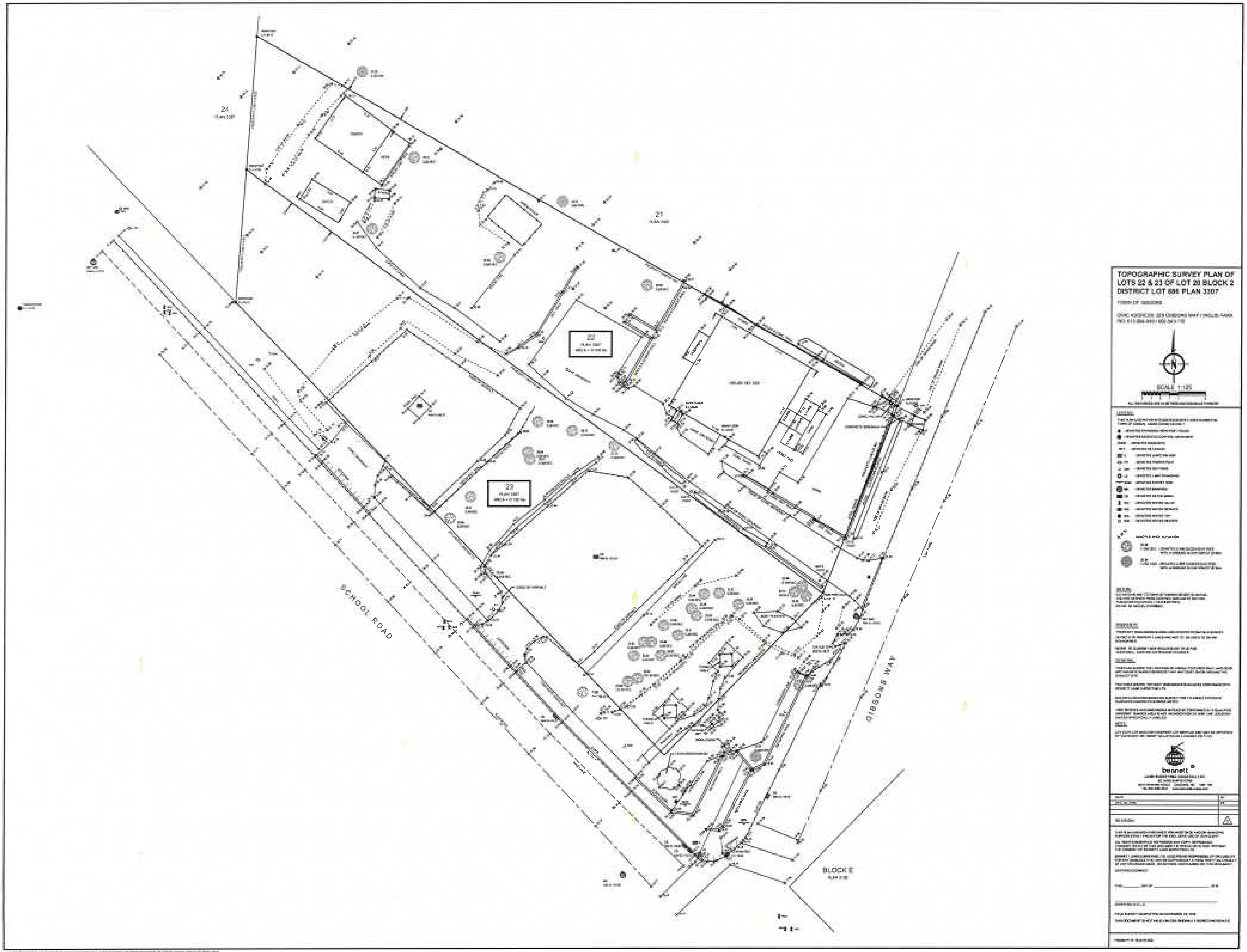
4 KEY PLAN
N.T.S.

KEY	
RESIDENTIAL	BLUE
PUBLIC AND PRIVATE PARKING	YELLOW
CIRCULATION AND GARAGE / ROOF	GRAY

SITE SECTIONS - PROPOSED

STONEHURST

Scale: 1/16" = 1'-0"
Drawn By: ED
Revision #: 2
Drawing #: A0.3



TOPOGRAPHIC SURVEY PLAN OF
LOTS 22 & 23 OF LOT 20 BLOCK 2
DISTRICT LOT 686 PLAN 3307
SCALE 1:125
N
24
21
22
23
SCHOOL ROAD
GIBSONS WAY
BLOCK E
bennett