September 19, 2025

PH4650-LET.01-REV.03

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Geotechnical Engineering
Environmental Engineering
Hydrogeology
Materials Testing
Building Science
Rural Development Design
Retaining Wall Design
Noise and Vibration Studies

patersongroup.ca

Attention: **Phil Klugman**

Subject: **Septic Impact Assessment (Terrain Analysis)**
Proposed Commercial Development
6165 Thunder Road, Ottawa, Ontario

Dear Phil Klugman,

Further to your request, Paterson Group (Paterson) has conducted a review of the area to determine the extent of system isolation based on geological conditions for the proposed development at the aforementioned site. The argument of reasonable use in this case is based on system isolation due to municipal water servicing and aquifer isolation of possible nearby potable supply wells.

Introduction

Paterson was retained by Brofort Investments Inc. to conduct a site-specific reasonable use assessment in support of a proposed commercial development to be located at 6165 Thunder Road in Ottawa. Please refer to the Key Plan attached for the approximate Site location. Paterson determined that an acceptable approach for the Terrain Analysis would be using the basis of system isolation, as the area surrounding the subject site is serviced by municipal water supply (Carlsbad Trickle Feed System), private septic systems, is underlain by a large clay deposit and any potentially impacted nearby potable supply wells are either upgradient or cross-gradient. Subject Site refers to the parcel at 6165 Thunder Road.

Hydrogeological Pre-consultation

A Hydrogeological Pre-consultation was completed with a City of Ottawa Hydrogeologist on December 2, 2022. Additional discussions were completed up to the time of writing this report. As per the discussions, the bedrock groundwater aquifer in the area is known for its poor quality, which is why the Carlsbad Trickle System was installed. As per the

results of a door-to-door survey, two dug wells were identified across a mapped watercourse from the subject site. As a massive clay layer is noted to extend from approximately 1.5 m below ground surface (bgs) to greater than 10 m bgs, any drilled wells are considered to be hydrogeologically isolated from a surficial receiving aquifer. Dug wells are required by O.Reg 903 to be constructed with a suitable sealant from 2.5 m bgs to the ground surface. The two existing nearby dug wells are on the opposite side of a mapped watercourse from the subject site, which was observed to flow southwest. As the surficial drainage direction of the properties with the dug wells and the subject site is towards the mapped watercourse, but on opposite sides of the watercourse, septic impacts due to an onsite sewage system are not anticipated to affect the dug wells.

Site Conditions

Property Description

The subject site is situated between Boundary Road and Thunder Road, with the highway 417 on/off-ramp to the north. It is proposed that a commercial development consisting of one warehouse building with two units, each with two loading bays and associated parking lot be constructed on the existing parcel. The municipal address is 6165 Thunder Road, and the lot is approximately 1.65 hectares (ha) in area. Currently, the property is undeveloped.

Surface Conditions

Based on Paterson's review of the available topographic survey information, ground surface at the subject site is generally flat and is at grade with the surrounding roadways and properties. On-site drainage is gravity controlled and will be designed to be directed toward the municipal right-of-way through surficial swales. Onsite overburden flows are anticipated to be in the northwestern direction towards a mapped watercourse which then travels southwest offsite. The subject site is surrounded by ditches which are all mapped to drain into the mapped watercourse. Groundwater flow direction in the mapped watercourse was observed to flow southwest. General groundwater flow direction is anticipated to be west towards the various unnamed tributaries of the Bear Brook Municipal Drain.

Surrounding Land Uses

The subject site is situated in a rural area which is serviced by a municipal water supply or private water supplies and private on-site septic. The Site is bordered to the north by the Highway 417, to the east by Boundary Road followed a commercial warehouse, to the south by Thunder Road followed by a gas station and residential and commercial buildings, and to the west by Thunder Road followed by undeveloped and forested lands with residential dwellings to the north-west.

Carlsbad Trickle System

The Carlsbad Trickle system is a network of small diameter pipes which supplies drinking water from the City of Ottawa's central distribution system. It was needed to address widespread well-water quality and quantity problems in a specific area. As the Carlsbad Trickle System supplies water to this area, it is a strong indicator that there is poor well water quality and/or quantity. As such, there is a reduced potential that dwellings are supplied by a private water supply. Based on the City of Ottawa Water Service Locations Plan (attached), most of the properties in the area are serviced by the Carlsbad Trickle System.

Door-to-Door Survey

A door-to-door survey was completed in an attempt to determine the nature of the private water servicing of the properties mapped to be on private services. The door-to-door survey was completed on December 9, 2022 where it was observed that 6120 and 6130 Thunder Road are privately serviced by surficial (dug) wells. 5336 Boundary Road is occupied by a gas station and was observed to be privately serviced by a drilled well with significant treatment requirements. 5348 Boundary Road was an unoccupied lot with no visible private servicing, and 6000 Thunder Road did not have any visible wells nor did they respond to outreach.

Geology

Surficial and Bedrock Geology

Paterson reviewed the available geological mapping provided by the Ontario Geological Survey (OGS MRD128) and found it to be generally consistent with the available historical surrounding Water Well Records (WWR). The mapping indicates that a coarse-textured glaciomarine deposit consisting of a sand, gravel, minor silt and clay occupies the entirety of the subject site. The surrounding WWR's indicate a deep clay deposit underlies the shallow coarse-grained layer.

Paterson drilled four (4) boreholes at 6165 Thunder Road on October 25, 2022, spaced in such a way as to provide general coverage, as part of a Geotechnical field program. The boreholes were extended to depths between 5.9 and 7.6 m below ground surface (bgs). The subsurface profile was consistent across all of the boreholes and consisted of a fill layer, underlain by a silty sand layer, and further underlain by a thick clay layer. The fill layer was observed in all boreholes and extended to depths between 0.8 and 1.2 m bgs. The underlying sand layer was observed to extend to a depth of 1.2 to 1.5 m bgs. The clay layer onsite extended from 1.2 m bgs to more than 7.6 m bgs. The results from the boreholes are consistent with the information available from surrounding WWR's. Please refer to the attached Paterson borehole logs and Paterson's Drawing PG6430-1-Test Hole Location Plan attached to this report for additional details.

A drilled water supply well was installed onsite on March 2, 2023. The drilled water supply well with WWR ID A342424 was recorded to encounter water at a depth of 53 m bgs, with the clay extending to a depth of 23.2 m bgs. The onsite WWR demonstrates a sufficient thickness (>10 m) to be used in support of system isolation in accordance with the City of Ottawa Hydrogeological Assessment and Terrain Analysis Guidelines (HTAG).

A cross section of the available WWR's was completed to demonstrate the continuity of the underlying deep clay deposit. Paterson drawing PH4650-2-Cross Section A-B-C and PH4650-3 Cross Section C-D can be found attached to this report. Clay thicknesses on available WWR's have been identified where able and presented on Paterson drawing PH4650-1- Site Plan, attached. The cross-sections show that the clay layer is 21 to 29 m thick across an approximately 1,825 m wide cross-section, which demonstrates sufficient clay thickness and lateral extent for isolation purposes.

Available bedrock geological mapping provided by the Ontario Geological Survey (MRD 219) indicates that the bedrock underlying the subject site consists of shale and limestone of the Carlsbad Formation. Available overburden thickness mapping shows a drift thickness of 25 to 50 m across the subject site.

Hydrogeology

Based on the topographic relief of the area and available groundwater flow direction mapping, the onsite overburden groundwater flow direction is expected to trend towards the northwest of the property. The general overburden flow direction is anticipated to be towards the west towards the various unnamed tributaries of the Bear Brook Municipal Drain. As the overburden deposit is mapped to consist of a thin layer of sand underlain by a thick layer of clay, the surficial overburden aquifer is anticipated to be shallow. The underlying thick clay layer is anticipated to isolate the shallow receiving layer from the aquifers accessed by local wells.

A mapped watercourse runs along the northernmost portion of the subject site. Paterson completed site visits to observe the watercourse, which was confirmed to be flowing towards the southwest. A mapped ditch along the northern part of thunder road, which is located in front of the residences on dugs wells (6140 and 6130 Thunder Road), was observed to flow from the northwest towards the southeast along Thunder Road, where it joins the mapped watercourse heading southwest. Any local surficial flows are anticipated to flow into the mapped watercourse which travels southwest from the subject site.

With respect to existing aquifers in the area, as the shallow overburden aquifer (receiving aquifer) was identified to be very shallow (in the sand layer above the clay, with a maximum depth of 1.5 m bgs according to onsite boreholes). The overburden, consisting of sand, gravel, and silt acts as the receiving aquifer, and is hydrologically isolated from the clay and bedrock aquifers due to the low permeability of the clay layer.

Hydrogeological Sensitivity

As the proposed site does not have bedrock within 2 m of the ground surface, the site is not considered hydrogeologically sensitive. Any new sewage systems shall be designed in accordance with Part 8 of the Ontario Building Code.

Surrounding Water Well Records

A search of the Ministry of the Environment, Conservation and Parks water well records (WWR) resulted in 2 WWR's within a 500 m radius of the subject site. Both WWR's are for drilled potable supply wells. The most recent WWR for a potable supply well was completed in 2018. The historical well depths for the domestic wells ranged from 30.5 m bgs to 61 m bgs. All WWR's can be found attached to this report. Only one of the available WWR's is currently believed to be in use in the area due to municipal water servicing and potential water quality issues within the underlying bedrock aquifer. Two properties approximately 350 m to the northwest of the subject site are not serviced by municipal supply, according to water service location mapping supplied by the City of Ottawa. As per Paterson's door-to-door survey, those two properties use shallow dug wells as supply wells.

Based on the measurements on the drawing on the WWR, it is believed that the WWR with WWR ID 1525164 is associated with the well located on 5336 Boundary Road, which is a gas station. The soil descriptions on the WWR shows that the top 21.3 m of overburden consists of silty clay, which is impermeable compared to other materials. Furthermore, the well casing goes down to 23.5 m bgs, which extends to the bedrock. The thick layer of clay and long well casing suggest that, even though the property is not municipally serviced, it can be considered an isolated system.

Karst Features

The term "karst" refers to a geologic formation characterized by the dissolution of carbonate bedrock, such as limestone or dolostone. In order for karstification to occur, precipitation must be allowed to infiltrate the top of the bedrock to dissolutionally enlarge previously existing joints and bedding planes. Based on available mapping by the Ontario Geological Survey, there is no inferred, potential or known karstification in the subject area.

System Isolation

A review of available information was undertaken to assess if there were any sensitive receptors in proximity to the subject site and if there were the appropriate geological conditions in the area to meet isolation of the proposed sewage system from the underlying water supply aquifer.

Based on the topographic relief of the area and available groundwater flow direction mapping, the general onsite overburden groundwater flow direction is expected to trend

in a northwesterly direction towards the mapped watercourse, which then flows west towards the various unnamed tributaries of the Bear Brook Municipal Drain. As the overburden deposit is recorded to consist of sand, silt, and gravel overlying clay, the overburden (receiving) aquifer is anticipated to be shallow while the overburden supply aquifer in the clay layer is not anticipated to be shallow.

Paterson completed a site visit to determine the subsoil within the mapped watercourse to confirm hydrogeological isolation of the adjacent residential properties to the north. The base of the watercourse contained a thin layer of silty sand overlying a deep deposit of silty clay. A test hole was completed on the north side of the watercourse which noted 0.45 m of silty sand overlying 0.32 m of silty clay where the hole was terminated. The clay layer in the test hole was encountered at 76.02 m above sea level. Another test hole was completed in the watercourse. A small layer of organics mixed with sediments directly overlaid a silty clay layer at the base of the watercourse. The clay layer underlying the watercourse was encountered at 76.04 m asl. The thick silty clay layer is noted to extend at a consistent elevation beneath the watercourse and the surrounding silty sand layer, and the sand layer was noted to be absent in the watercourse. The information indicates the overburden groundwater at the subject site is hydrogeologically separated from the residential lots to the northwest.

The only adjacent or downgradient residential properties within 500 m of the subject site are 6116, 6120, 6130, and 6140 Thunder Road to the northwest, and 5368 and 5376 Boundary Road to the south. Commercial properties in the surrounding area include 6150 Thunder Road, and 5336 Boundary Road, and a number of upgradient / cross gradient commercial buildings located to the south. Of the aforementioned residential properties, 6116 and 6140 Thunder Road are mapped to be on municipal services.

It is known that many of the surrounding properties have been serviced by municipal water connections, and those that are not municipally serviced, should have access to a municipal water connection. The onsite overburden flow direction is expected in a northwesterly direction towards the mapped watercourse, and the general overburden flow direction is anticipated be west towards the various unnamed tributaries of the Bear Brook Municipal Drain. The only potential downgradient receptor from the subject site is 6150 Thunder Road, which is anticipated to be municipally serviced.

The residences located at 6116, 6120, 6130, and 6140 Thunder Road are all considered cross gradient as both the residences and the subject site have an overburden flow direction towards the mapped watercourse, but on opposite sides from each other.

All properties to the south and east are anticipated to be upgradient or cross gradient of the subject site and, therefore, potential septic impacts from the subject site are expected to be negligible.

A door-to-door survey was performed on December 9, 2022 to attempt to identify dug wells on properties that were not municipally serviced. Based on available aerial imaging, google street view, and a door-to-door survey, two dug wells and a drilled well exists in

the vicinity of the subject site. The dug wells were located at 6120, and 6130 Thunder Road, and the drilled well is located at 5336 Boundary Road. The two dug wells and the drilled well are considered either upgradient or cross gradient from the subject site.

5336 Boundary Road

A WWR (No. 1525164) for 5336 Boundary Road was found using the MECP WWR mapping tool. 5336 Boundary Road is occupied by a gas station and is located across Thunder Road from the subject site. According to available mapping and field observations, 5336 Boundary Road is anticipated to be upgradient from the subject site. From on-site investigations, a drilled well casing was found which matched the location on the WWR. According to the WWR, a thick layer of clay extends to 21.3 m bgs followed by a 2.2 m layer of packed gravel, and effectively isolates the supply aquifer from the receiving aquifer. From the WWR, the drilled well has a depth of 30.5 m bgs with a 23.5 m steel casing which further isolates the well from the overburden receiving aquifer.

6120 and 6130 Thunder Road

WWRs for 6120 and 6130 were not available on the MECP online WWR mapping tool. The properties are located approximately 300-350 m to the northwest of the subject site. According to the door-to-door survey results, the properties are serviced by shallow or dug wells. There is a mapped water course that flows northeast to southwest located between 6120 and 6130 Thunder Road and the subject site. The ditches located in front of 6120 and 6130 Thunder Road were observed to flow from northwest to southeast towards the mapped watercourse. Therefore, 6120 and 6130 Thunder Road are considered cross-gradient from the subject site rather than downgradient.

As there is a thick clay layer underlying the shallow sand layer on the subject site, it is anticipated that the surficial receiving aquifer is isolated from the supply aquifer. Therefore, due to the distance from the subject site, the surficial geology, the O.Reg 903 dug well requirements, and the watercourse between the aforementioned properties and the subject site, the aforementioned properties can be considered as isolated systems from the subject site.

City of Ottawa Three-Step Assessment Process

The City of Ottawa stipulates the use of a three-step assessment process which is outlined in the Hydrogeological and Terrain Analysis Guidelines (HTAG) dated March 2021. The three-step assessment process looks at Lot Size Considerations, System Isolation Characteristics, and Contaminant Attenuation Considerations.

Lot Size Considerations

As the subject site is approximately 1.65 ha in size, it is greater than the minimum lot size of 1 ha. However, as the subject site will be used for commercial purposes rather than residential, the lot size consideration is not applicable.

System Isolation Characteristics

Should a System Isolation approach be considered, the City asks that the consultant demonstrate system isolation using multiple lines of evidence.

In the case of the proposed commercial development, potential septic impacts would occur downgradient from the subject site. The onsite overburden flow direction is expected to trend in a northwesterly direction towards a mapped watercourse which then flows from the northeast to the southwest. General groundwater flow direction is anticipated to be west towards the various unnamed tributaries of the Bear Brook Municipal Drain.

The only lot which is considered downgradient is 6150 Thunder Road. There are a number of cross gradient and upgradient lots from the subject site including: 6166, 6120, 6130, and 6140 Thunder Road. Of the cross gradient sites, 6166, 6140, and 6150 Thunder Road are mapped to be on municipal servicing from the Carlsbad Trickle System.

The onsite surficial flow from 6120 and 6130 Thunder Road is anticipated to be in a southeasterly direction towards the surficial water course, which then flows to the southwest. The general groundwater flow direction is anticipated to be west towards the various unnamed tributaries of the Bear Brook Municipal Drain.

The mapped watercourse which flows from the northeast to the southwest separates 6120 and 6130 Thunder Road from the subject site. The watercourse effectively makes the downgradient sites cross gradient from the subject site, therefore, making them isolated systems. Furthermore, due to the shallow silty sand layer underlain by the thick silty clay layer beneath the watercourse, it is not anticipated that any flows from the subject site would cross the watercourse, further supporting the cross gradient flows and system isolation.

Surficial geology mapping from the OGS notes that a coarse-textured glaciomarine deposit consisting of a sand, gravel, minor silt and clay occupies the entirety of the subject site. The surrounding WWR's indicate a deep clay deposit that underlies the shallow coarse-grained layer, which is corroborated by the onsite WWR. The deep clay deposit effectively separates the shallow receiving aquifer from the deeper supply aquifer, resulting in an isolated system. Due to the low hydraulic conductivity of clay, the outflow from the subject site is anticipated to remain in the sand and gravel receiving aquifer and is unlikely to pass through the clay layer. Therefore, the proposed site would act as an isolated system with respect to the neighbouring properties regardless of whether the neighbouring properties were supplied by municipal or private potable water sources as the receiving aquifer is isolated from the supply aquifer.

Furthermore, as the local water course runs southwest between the subject site and the residential properties to the northwest, the water course would intercept any surficial

septic discharge moving downgradient. This would cause the north-western properties to effectively be cross gradient from the subject site, and, therefore, act as isolated systems.

As the Carlsbad Trickle System services the area, and the purpose of the Carlsbad trickle system is to provide potable water to areas which have known poor water quality, it is unlikely that any new wells will be installed in the future.

As the proposed commercial development meets the requirements for system isolation, the third step of the City of Ottawa's Reasonable Use Assessment (Contaminant Attenuation Considerations) was not completed.

Development Considerations

The onsite sewage disposal needs can be accommodated by a conventional Class 4 Sewage System or a sewage system utilizing tertiary treatment technologies, as per OBC criteria. Standard Class 4 systems with tertiary treatment typically include a treatment unit between the septic tank and the leaching bed. Tertiary sewage treatment technologies are accepted in the OBC. It should be noted that tertiary treatment systems require a contract to perform annual maintenance.

Conclusions

The following statements and conclusions are based upon a review of the available information and analysis contained within this letter report:

- The subject site is generally suitable for development based upon its location, topography, and surrounding land uses from a system isolation perspective.
- The Carlsbad Trickle System provides a municipal water supply to the surrounding area due to the generally poor water quality encountered in the underlying bedrock aquifer. The surrounding lots in the area have the ability to be serviced by municipal water supply.
- A review of adjacent WWRs indicate that a thick clay layer underlies the subject site and surrounding lots.
- Two shallow potable water supply wells, 6120 and 6130 Thunder Road, were confirmed by a door-to-door survey in proximity to the site
- While 6120 and 6130 Thunder Road are serviced by dug wells, due to the watercourse between the subject site and the aforementioned properties resulting in the site's cross gradient location, the significant distance from the subject site, the requirements for the sealing of dug wells, and deep clay overburden with low hydraulic conductivity, 6120 and 6130 Thunder Road present a low potential for related impacts.
- Onsite sewage disposal needs can be accommodated with a Class 4 Sewer System utilizing tertiary treatment technologies or a conventional sewage system.
- The construction of an onsite sewage system is not anticipated to affect the performance or water quality associated with any nearby drilled or dug wells, contingent upon the onsite sewage system being designed in accordance with Part 8 of the Ontario Building Code (i.e properly sized sewage system and conforming to all separation distances).
- The subject site is sufficient in size to accommodate a new sewage system and meet all the regulatory separation criteria.
- A Sewage System permit and Building Permit need to be issued prior to the commencement of construction on any future building(s) or any new septic system(s).
- Based on the review of the system isolation of the adjacent properties, the only potential downgradient receptor (6150 Thunder Road) was determined to be in a municipally serviced by the Carlsbad Trickle System. As such, the subject site located at 6165 Thunder Road presents a low potential for related septic impacts.

Based on the results of the review, it is our opinion that the proposed property meets the standard from a site-specific system isolation assessment. There are no sensitive receptors nearby or in the downgradient direction within the same aquifer. The subject site can adequately support the proposed lot without having a negative impact on the groundwater supply aquifer with the use of a sewage system designed in accordance with OBC.

We trust that the current submission satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Alexander Schopf, PhD, EIT

Erik Ardley, P.Geo

Attachments:

- ❑ Paterson Key Plan
- ❑ Paterson Test Hole Logs
- ❑ MECP Water Well Records (Surrounding 500 m radius)
- ❑ City of Ottawa Water Service Locations Plan
- ❑ PG6430-1-Test Hole Location Plan
- ❑ PH4650-1- Site Plan
- ❑ PH4650-2- Cross Section A-B-C
- ❑ PH4650-3- Cross Section C-D
- ❑ Stewart + Tsai Architects Inc Proposed Site Plan

FIGURE 1

KEY PLAN

PATERSON GROUP

patersongroup Consulting Engineers

9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Proposed Warehouse Complex - 6165 Thunder Road
Ottawa, Ontario

DATUM Geodetic

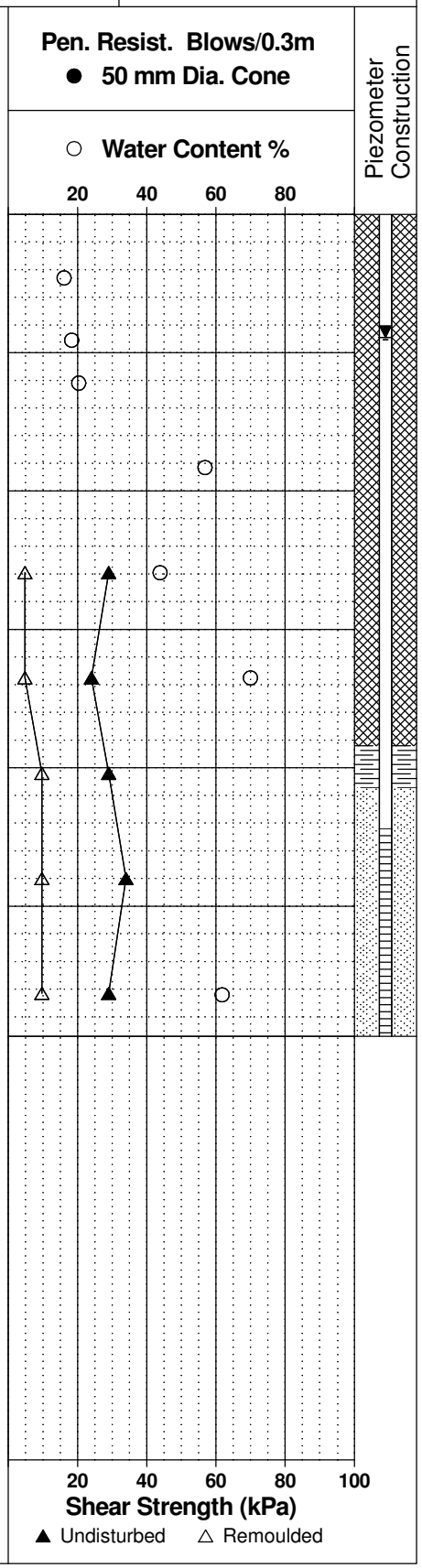
REMARKS

BORINGS BY Track-Mount Power Auger **DATE** October 25, 2022

FILE NO. PG6430

HOLE NO. BH 1-22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	77.05
FILL: Brown silty sand with gravel, cobbles, trace clay and organics		AU	1				
		SS	2	67	6	1	76.05
1.17							
Loose, dark brown **SILTY SAND,** trace clay and gravel							
1.45		SS	3	83	3	2	75.05
Firm, reddish brown **SILTY CLAY**		SS	4	83	P		
						3	74.05
- grey by 3.0m depth		SS	5	75	P		
						4	73.05
						5	72.05
		SS	6	100	P		
5.94							
End of Borehole							
(GWL @ 0.89m - Nov. 2, 2022)							



patersongroup Consulting Engineers

9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Proposed Warehouse Complex - 6165 Thunder Road
Ottawa, Ontario

DATUM Geodetic

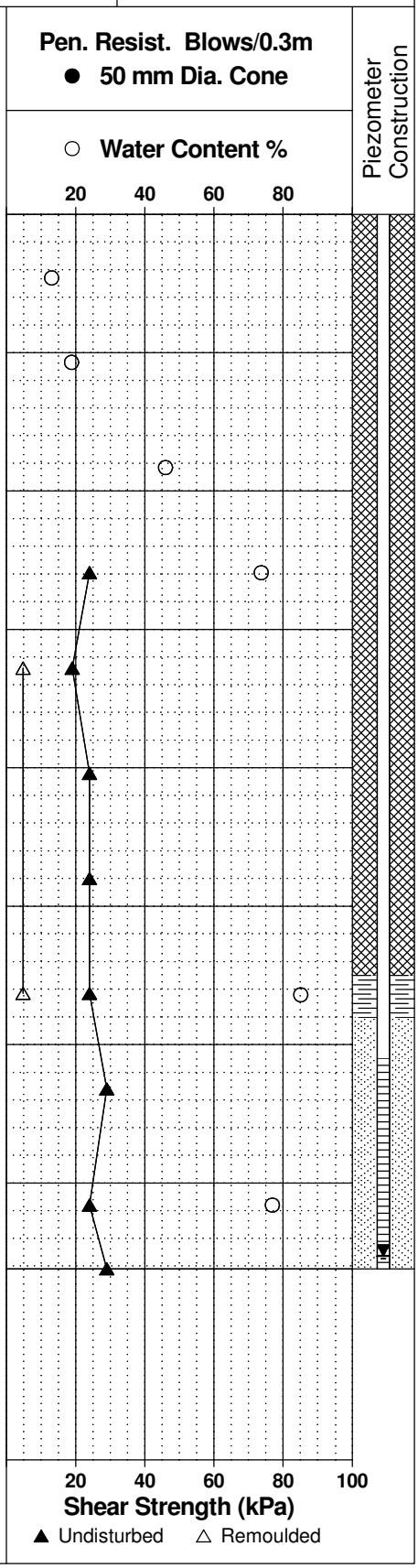
REMARKS

BORINGS BY Track-Mount Power Auger **DATE** October 25, 2022

FILE NO. PG6430

HOLE NO. BH 2-22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	77.01
FILL: Brown silty sand with gravel, trace clay and organics		AU	1				
0.69							
Compact, brown **SILTY SAND,** trace clay, gravel, organics		SS	2	50	12	1	76.01
1.45							
		SS	3	100	2	2	75.01
Soft to firm, brown **SILTY CLAY**		SS	4	100	P	3	74.01
- grey by 3.0m depth						4	73.01
						5	72.01
		SS	5	100	P	6	71.01
		SS	6	100	P	7	70.01
7.62							
End of Borehole							
(GWL @ 7.53m - Nov. 2, 2022)							



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Proposed Warehouse Complex - 6165 Thunder Road
Ottawa, Ontario

DATUM Geodetic

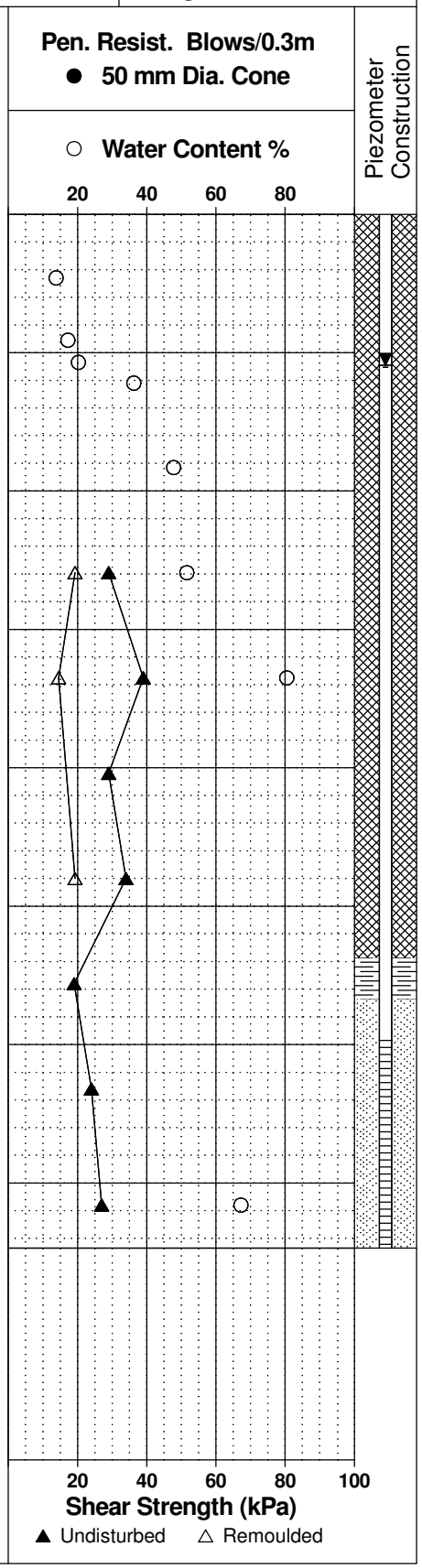
REMARKS

BORINGS BY Track-Mount Power Auger **DATE** October 25, 2022

FILE NO. PG6430

HOLE NO. BH 3-22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	76.89
FILL: Brown silty sand with gravel, some clay, organics and concrete		AU	1				
1.07		SS	2	75	14	1	75.89
Compact, brown **SILTY SAND** 1.27							
		SS	3	100	4	2	74.89
		SS	4	100	P		
Firm, brown **SILTY CLAY**						3	73.89
		SS	5	100	P		
- grey by 3.7m depth						4	72.89
						5	71.89
- soft to firm by 5.3m depth							
						6	70.89
		SS	6	8	P	7	69.89
7.47							
End of Borehole							
(GWL @ 1.09m - Nov. 2, 2022)							



patersongroup Consulting Engineers

9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Proposed Warehouse Complex - 6165 Thunder Road
Ottawa, Ontario

DATUM Geodetic

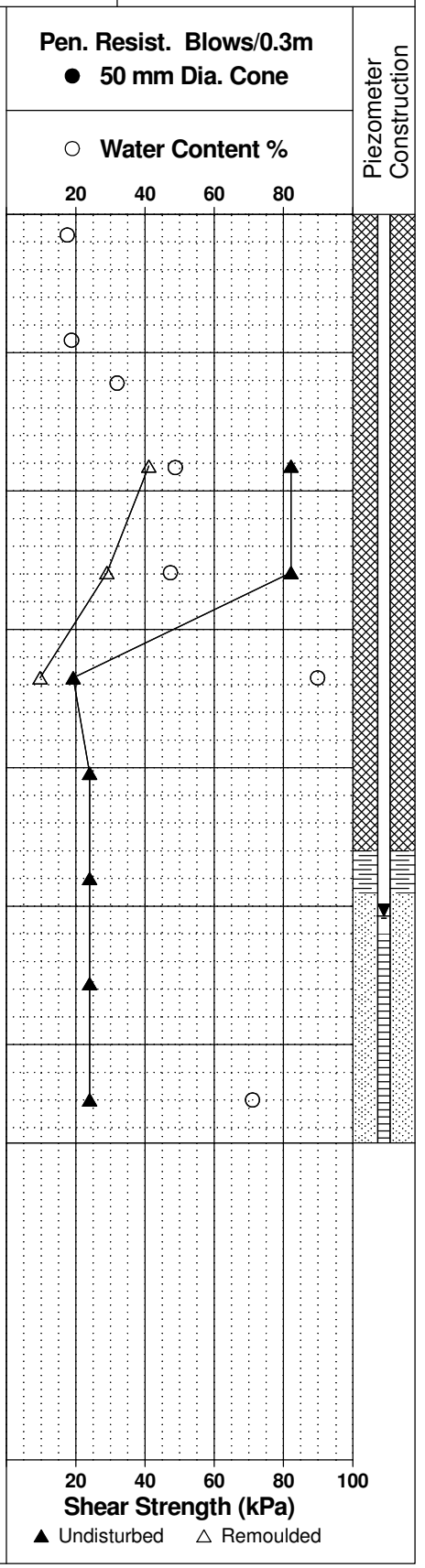
REMARKS

BORINGS BY Track-Mount Power Auger **DATE** October 25, 2022

FILE NO. PG6430

HOLE NO. BH 4-22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	76.71
FILL: Brown silty sand with gravel, some clay, organics, cobbles, trace concrete		AU	1				
0.69							
Loose, brown **SILTY SAND to SANDY SILT**		SS	2	75	5	1	75.71
1.17							
		SS	3	17	P	2	74.71
Stiff to firm, brown **SILTY CLAY**		SS	4	17	P	3	73.71
- soft and grey by 3.0m depth		SS	5	100	P	4	72.71
						5	71.71
						6	70.71
		SS	6	100	P		
6.71							
End of Borehole							
(GWL @ 5.07m - Nov. 2, 2022)							



1512885

The Ontario Water Resources Commission Act

WATER WELL RECORD

31G6dd

Water management in Ontario

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 5601307 MUNICIP. 56.00.3 CON. GON 11

COUNTY OR DISTRICT: RUSSELL
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: CUMBERLAND
CON., BLOCK, TRACT, SURVEY, ETC.: ELEVEN
LOT: 020
OWNER (SURNAME FIRST): DEPT. of Hwys
ADDRESS: DOWNS VIEW AVE DOWNSVIEW
DATE COMPLETED: DAY 01 MO 03 YR 71

21 ONT UTM ZONE 18 EASTING 464920 NORTHING 5022140 RC. 4 ELEVATION 02600 RC. 4 BASIN CODE 125

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	DEPTH – FEET TO
BROWN	LOAM	SAND	LOOSE	0	2
RUST	SAND			2	35
GREY	CLAY		HARD.	35	106
BLUE			SOFT.	106	
	GREY	LIMESTONE	LAYERED.		255

1512885

31 0002600228 0035 28 0106205 0255215

32

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0186	1 ☐ FRESH 3 ☐ SULPHUR 2 ☒ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	DEPTH – FEET TO
06	2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE	188	0	61
06	2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	18861	127	255
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE		127	255

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT – FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
0000	0255	
0	160	SAND.
160	220	CEMENT.
220	255	SAND.

71 PUMPING TEST

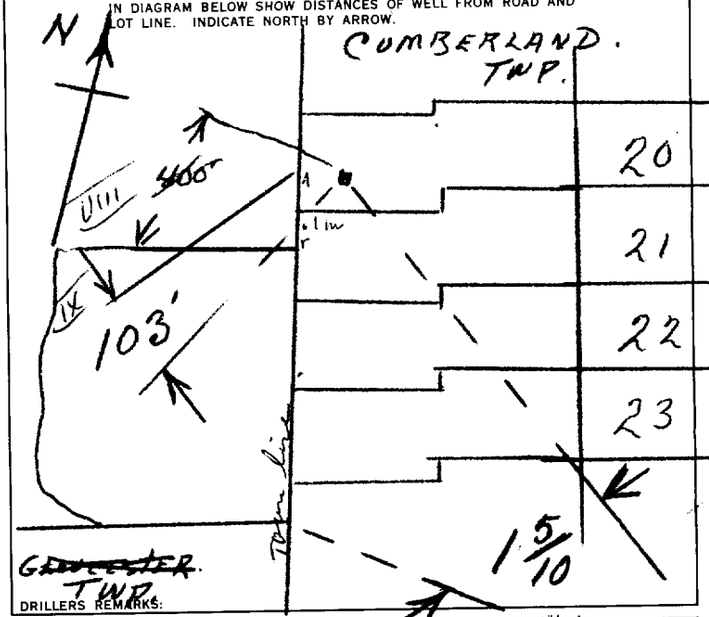
PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER
PUMPING RATE: 0010 GPM
DURATION OF PUMPING: 01 HOURS 00 MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
022 FEET	190 FEET		045 FEET	090 FEET	135 FEET	190 FEET

IF FLOWING, GIVE RATE: GPM.
PUMP INTAKE SET AT: 190 FEET
WATER AT END OF TEST: 1 ☐ CLEAR 2 ☒ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP
RECOMMENDED PUMP SETTING: FEET
RECOMMENDED PUMPING RATE: GPM.
0000.1 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL

54
1 ☒ WATER SUPPLY
2 ☐ OBSERVATION WELL
3 ☐ TEST HOLE
4 ☐ RECHARGE WELL
5 ☒ ABANDONED, INSUFFICIENT SUPPLY
6 ☒ ABANDONED, POOR QUALITY
7 ☒ UNFINISHED
SALT

WATER USE 09

55-56
1 ☐ DOMESTIC
2 ☐ STOCK
3 ☐ IRRIGATION
4 ☐ INDUSTRIAL
☐ OTHER
5 ☐ COMMERCIAL
6 ☐ MUNICIPAL
7 ☒ PUBLIC SUPPLY
8 ☐ COOLING OR AIR CONDITIONING
9 ☒ NOT USED

METHOD OF DRILLING

57
1 ☒ CABLE TOOL
2 ☐ ROTARY (CONVENTIONAL)
3 ☐ ROTARY (REVERSE)
4 ☐ ROTARY (AIR)
5 ☐ AIR PERCUSSION
6 ☐ BORING
7 ☐ DIAMOND
8 ☐ JETTING
9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: John Giroux — LICENCE NUMBER: 2333
ADDRESS: RR 2 MALLORYTOWN
NAME OF DRILLER OR BORER: Ross Willis — LICENCE NUMBER: 2333
SIGNATURE OF CONTRACTOR: John Giroux — SUBMISSION DATE: DAY 1 MO 3 YR 71

YRC COPY

OFFICE USE ONLY

DATA SOURCE: 1 — 58 — CONTRACTOR: 2333 — 59-62 — DATE RECEIVED: 08 03 71 — 63-68
DATE OF INSPECTION — INSPECTOR
REMARKS: PK WI

Ministry of the Environment
Ontario
OTTAWA - CARLETON

1525164

The Ontario Water Resources Act

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 1525164 MUNICIP 15002 CON. CON 09

COUNTY OR DISTRICT [redacted] | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE [redacted]cester | CON. BLOCK, TRACT, SURVEY, ETC. 9 | LOT 1

[redacted]lesbad Springs | DATE COMPLETED DAY 3 MO 5 YR 90

RC ELEVATION RC BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Yellow	Sand	Loam	Loose	0	2
Blue	Clay		Dense	2	70
Grey	Till		Packed	70	77
Grey	Limestone		Layered	77	100

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
95	1 ☐ FRESH 2 ☐ SALTY 3 ☒ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6¼	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	188	0	77
6	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC		77	100
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)
2	77	Clay

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	25 GPM	1 HOURS 0 MINS

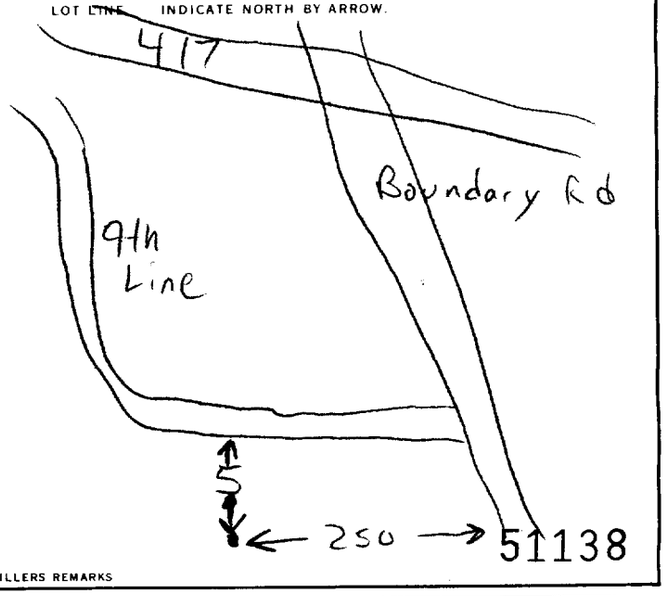
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
6 FEET	40 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	16 FEET	26 FEET	36 FEET	40 FEET

IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	40 FEET	1 ☐ CLEAR 2 ☒ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	40 FEET	25 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED ☐ DEWATERING

WATER USE

1 ☐ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☒ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF CONSTRUCTION

1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☒ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING ☐ DIGGING ☐ OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: Roy's LBR Ltd | WELL CONTRACTOR'S LICENCE NUMBER: 4609

ADDRESS: Cornwall

NAME OF WELL TECHNICIAN: Roger Rox | WELL TECHNICIAN'S LICENCE NUMBER: T-0330

SIGNATURE OF TECHNICIAN/CONTRACTOR | SUBMISSION DATE DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR 4609 | DATE RECEIVED DEC 04 1990

DATE OF INSPECTION | INSPECTOR

REMARKS

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Ontario Ministry of the Environment

Well Tag Number (Place sticker and print number below): A012415

A012415

1534876

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN 1K 00 2 CON OF LOT 02

Well Owner's Information and Location of Well Information

[redacted]

Plan 50M-136 Pt BLK1 | Cumberland (Ottawa) | RR2-3 | RPS 0R6V2 0

RR#/Street Number/Name: 145 Orleans Rd. Carlsbad Springs

City/Town/Village: Carlsbad Spring

Site/Compartment/Block/Tract etc.

GPS Reading: NAD 83 | Zone 18 | Easting 465247 | Northing 5020692

Unit Make/Model: Magellan

Mode of Operation: ☐ Undifferentiated ☑ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From (feet)	Depth To (feet)
Brown	Sandy soil	clay		0	5
grey	clay			5	15
blue	clay			15	95
grey	hard pan	gravel		95	109
grey	rock			109	110

Hole Diameter

Depth From	Depth To (Metres)	Diameter (Centimetres)
0	110	6"

Water Record

Water found at Metres	Kind of Water		
110' m	☐ Fresh	☐ Sulphur	
☐ Gas	☑ Salty	☐ Minerals	
☐ Other:			
___ m	☐ Fresh	☐ Sulphur	
☐ Gas	☐ Salty	☐ Minerals	
☐ Other:			
___ m	☐ Fresh	☐ Sulphur	
☐ Gas	☐ Salty	☐ Minerals	
☐ Other:			

After test of well yield, water was
☐ Clear and sediment free
☐ Other, specify

Chlorinated ☑ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
6 5/4	☑ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	188"	0	109'
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		

No Casing or Screen

☐ Open hole

Test of Well Yield

Pumping test method: Sub.

	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres) 52'	Static Level	2.60		2.77
Pumping rate - (litres/min) 40	1	2.70	1	2.65
Duration of pumping ___ hrs + ___ min	2	2.70	2	2.64
Final water level end of pumping ___ metres	3	2.70	3	2.63
Recommended pump type. ☐ Shallow ☑ Deep	4	2.72	4	2.62
Recommended pump depth. 50' metres	5	2.72	5	2.61
Recommended pump rate. 50 (litres/min)	10	2.72	10	2.60
If flowing give rate - C (litres/min)	15	2.74	15	2.60
If pumping discontinued, give reason. C	20	2.74	20	2.60
	25	2.75	25	2.60
	30	2.75	30	2.60
	40	2.75	40	2.60
	50	2.76	50	2.60
	60	2.77	60	2.60

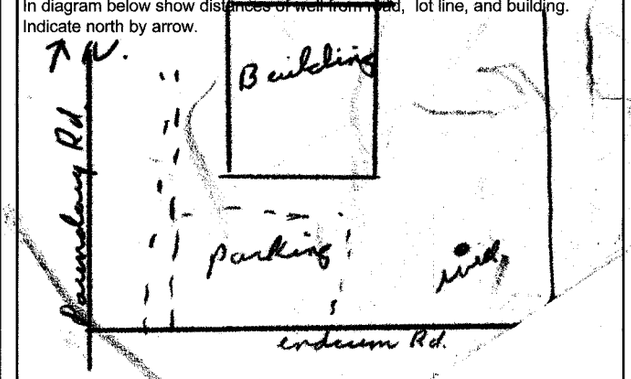
Plugging and Sealing Record

☑ Annular space ☐ Abandonment

Depth set at - Metres From	Metres To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	30'	grout.	3 bag.

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Method of Construction

☑ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☑ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☑ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Audit No. Z 12477

Date Well Completed: YYYY 2004 MM 05 DD 27

Was the well owner's information package delivered? ☑ Yes ☐ No

Date Delivered: YYYY 2004 MM 05 DD 27

Well Contractor/Technician Information

Name of Well Contractor: Maurice Cayer ltd

Well Contractor's Licence No.: 1517

Business Address (street name, number, city etc.): Casselman ont

Name of Well Technician (last name, first name)

Well Technician's Licence No.

Signature of Technician/Contractor: X Maurice Cayer

Date Submitted: YYYY 2004 MM DD

Ministry Use Only

Data Source

Contractor: 1517

Date Received: YYYY AUG MM 18 DD 2004

Date of Inspection: YYYY MM DD

Remarks

Well Record Number: 1534876

0506E (09/03)

Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐

Cette formule est disponible en français

Ontario — Ministry of the Environment and Climate Change

Well Tag No. (A) Tag#: A 236242 — A 236242

7310678

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☒ Metric ☐ Imperial

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Boundry Road Development Inc.	N/A	

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
16766 Transcanadienne Suite 500	Kirland	Qc.	H9H4M7	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
5371 Boundry Road	Cumberland	21	11

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa	Cumberland Spring	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	465300	5021483		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Brown	Fill	clay, Stone	Hard	0	1.8
Brown	clay	Silt	Hard	1.8	3.9
Grey	clay		Soft	3.9	21.0
Grey	gravel	Silt, Sand	packed	21.0	60.96
					22.25
Grey	shale		layered	22.25	60.96

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	24.99	cinent grout	1.5 m³

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☒ Air percussion ☐ Other, specify

Well Use

☐ Public ☐ Commercial ☐ Not used ☐ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☐ Test Hole ☒ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ Industrial ☐ Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
15.55	Steel	.48	1.6	24.99
15.32	Open Hole		24.99	60.96

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To

Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☒ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, specify ☐ Other, specify

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
27	☐ Fresh ☒ Untested	☐	
52	☐ Fresh ☒ Untested	☐	
	☐ Fresh ☐ Untested	☐	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	24.99	24.9
24.99	60.9	

Results of Well Yield Testing

After test of well yield, water was: ☒ Clear and sand free ☒ Other, specify cloud

If pumping discontinued, give reason:

Pump intake set at (m/ft): 60

Pumping rate (l/min / GPM): 42

Duration of pumping: 1 hrs + ____ min

Final water level end of pumping (m/ft): 5.75

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft): 58

Recommended pump rate (l/min / GPM): 66

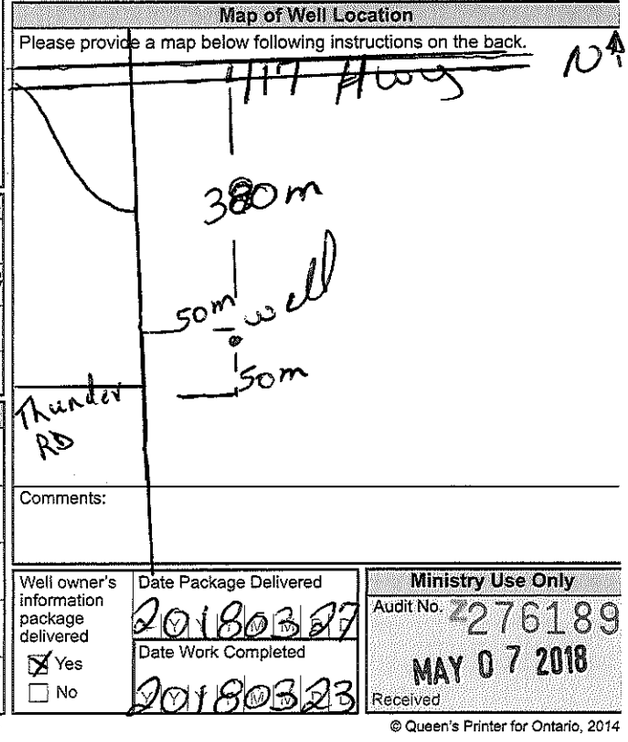
Well production (l/min / GPM): 75

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	3.83		5.75
1	4.42	1	4.64
2	4.61	2	4.36
3	4.75	3	4.26
4	4.78	4	4.23
5	4.79	5	4.18
10	4.96	10	4.10
15	5.16	15	4.03
20	5.24	20	3.95
25	5.31	25	3.89
30	5.32	30	3.85
40	5.62	40	3.83
50	5.70	50	3.83
60	5.75	60	3.83

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Bourgeois Well Drilling Ltd.	7417

Business Address (Street Number/Name)	Municipality
14245 Conc. 10-11	Cryslar

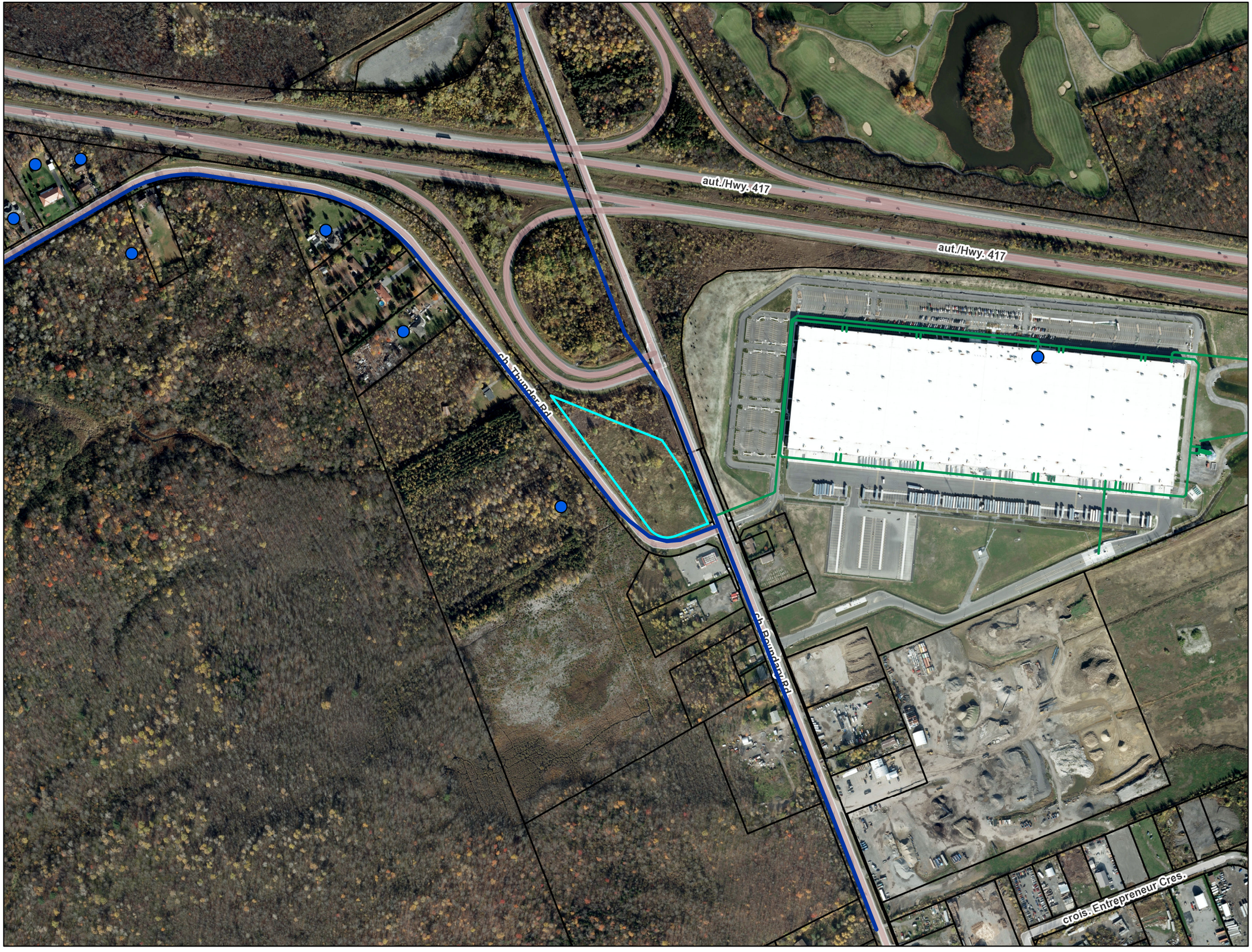
Province	Postal Code	Business E-mail Address
On	K0A1R0	N/A

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6139875291	GENIER, MICHAEL

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3493		2018 03 26

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
☒ Yes ☐ No	2018 03 27	Audit No. Z276189
	Date Work Completed: 2018 03 23	MAY 07 2018 Received

0506E (2014/11) Ministry's Copy



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Legend

- w_Service_Location

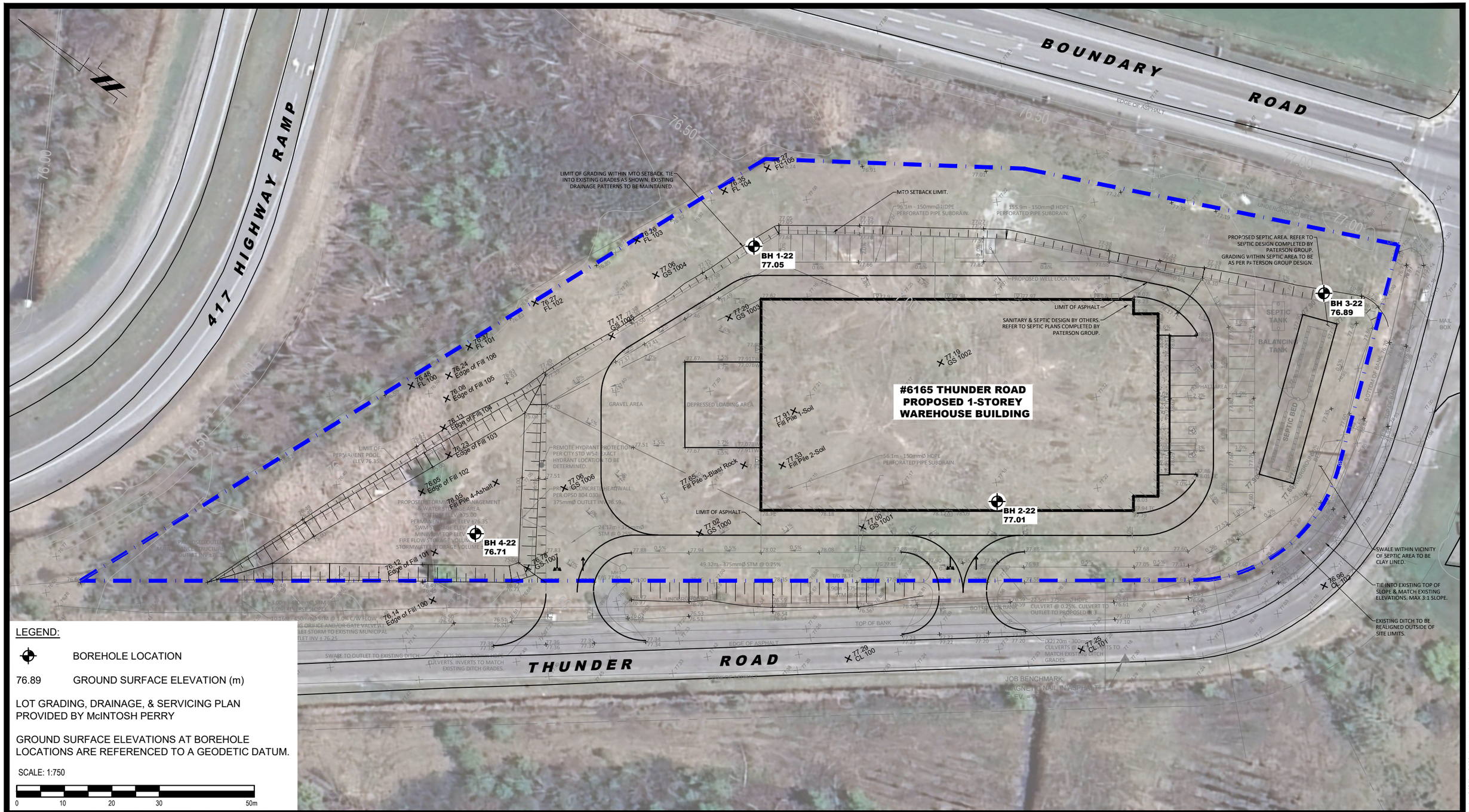
w_Pipe

- Service Pipe
- Water Pipe

1:5,000

0 50 100 200 Meters

Date: 2022-Dec-02



LEGEND:

BOREHOLE LOCATION

76.89 GROUND SURFACE ELEVATION (m)

LOT GRADING, DRAINAGE, & SERVICING PLAN PROVIDED BY McINTOSH PERRY

GROUND SURFACE ELEVATIONS AT BOREHOLE LOCATIONS ARE REFERENCED TO A GEODETIC DATUM.

SCALE: 1:750

0 10 20 30 50m

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED SITE PLAN	24/04/2024	GJ

BROFORT INVESTMENTS INC.

GEOTECHNICAL INVESTIGATION
PROPOSED WAREHOUSE BUILDING
6165 THUNDER ROAD

OTTAWA, ONTARIO

Title:

TEST HOLE LOCATION PLAN

Scale: 1:750	Date: 12/2022
Drawn by: GK	Report No.: PG6430-1
Checked by: NP	Dwg. No.: PG6430-1
Approved by: FA	Revision No.: 1

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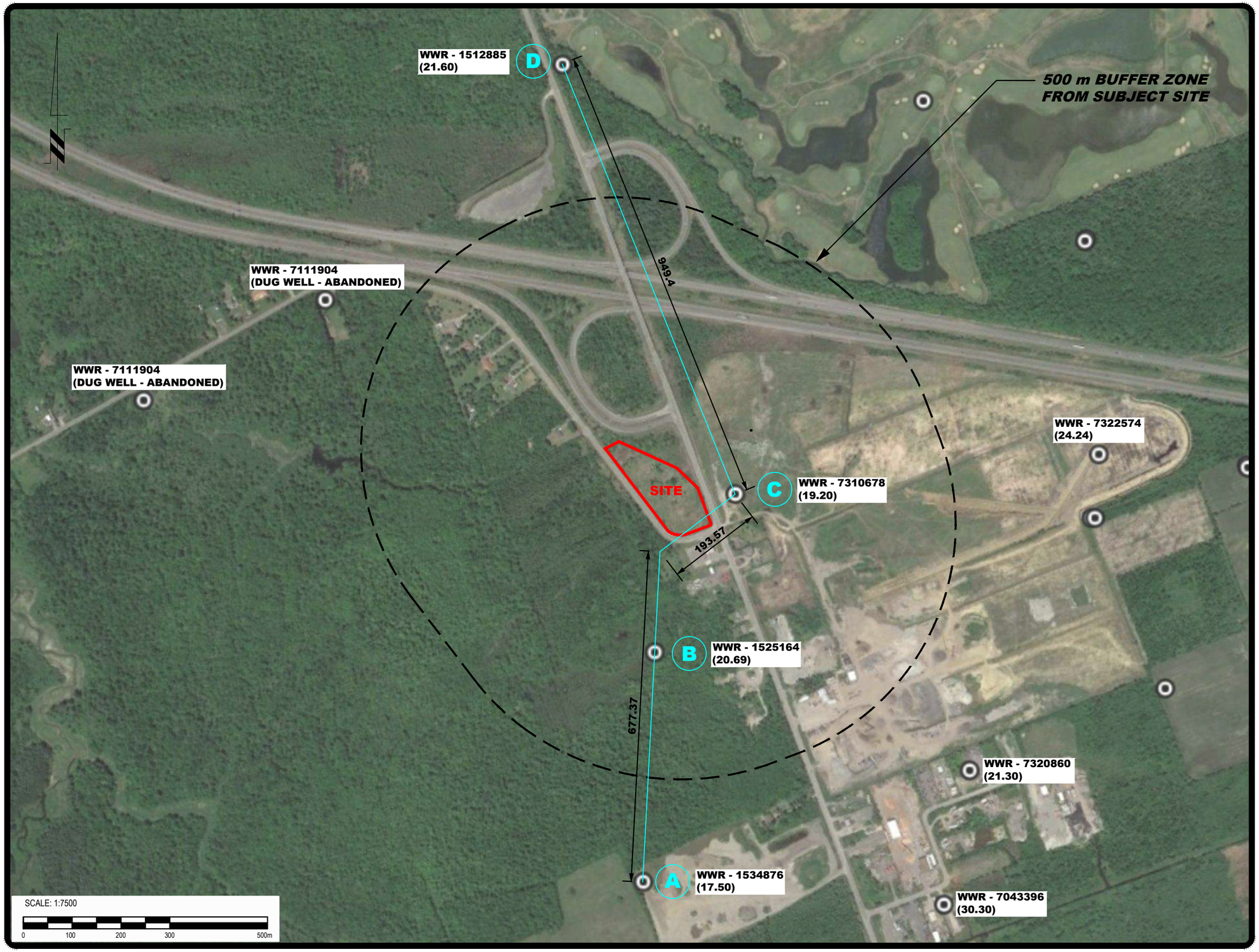

LEGEND:

- WATER WELL LOCATION
- (24.24) CLAY THICKNESS (m)
- A—B CROSS SECTION

Date	Description	Rev.

Client:

BROFORT INVESTMENTS INC.

Consultant:

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

Address:

**6165 THUNDER ROAD
CARLSBAD SPRINGS, ONTARIO**

Drawing:

SITE PLAN

Scale:	Date:
1:7500	12/2022
Drawn by: NK	Checked by: AS
Report No.: PG4650-LET.01	Approved by: EA

Drawing No.:

PH4650-1

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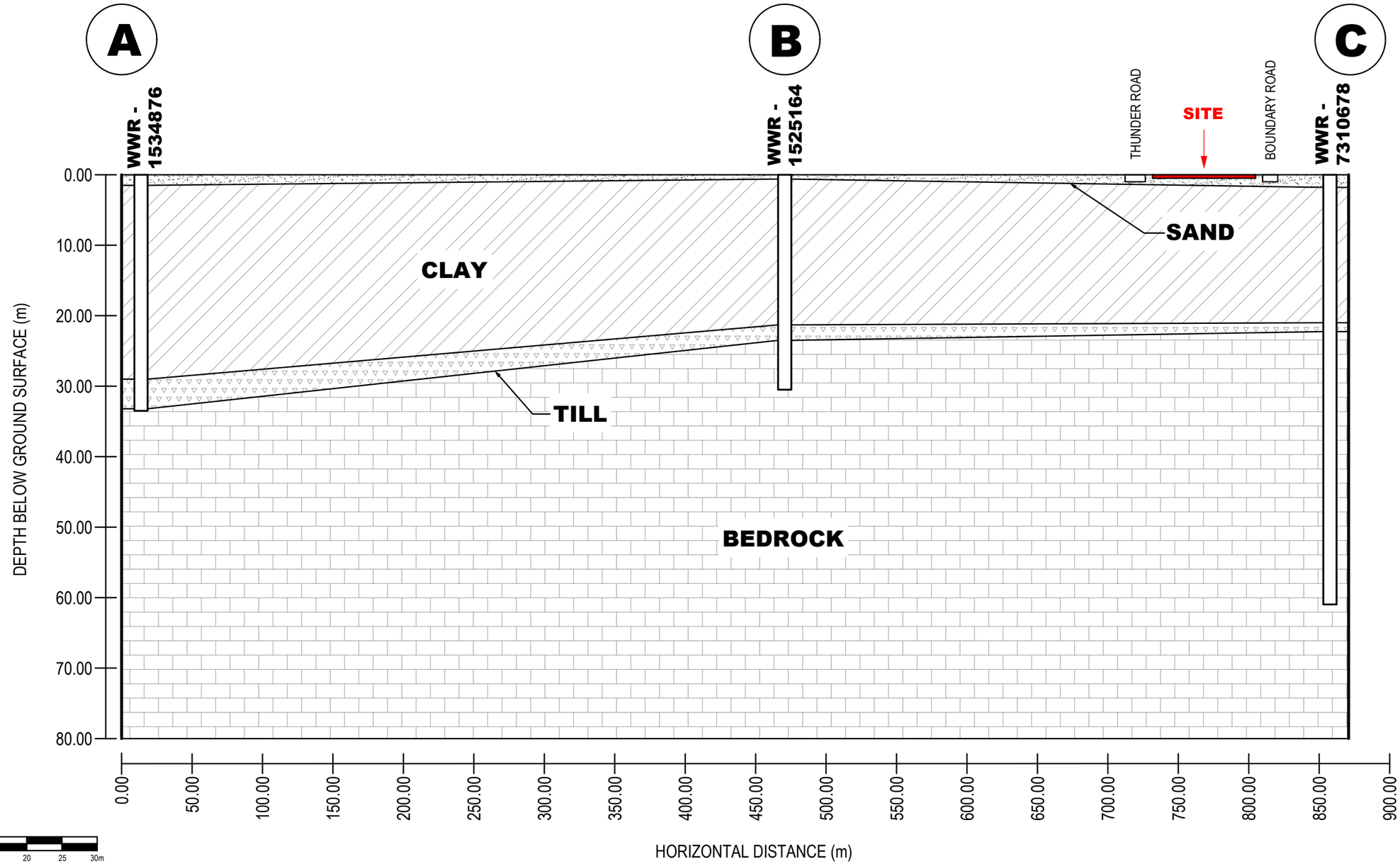

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL

BROFORT INVESTMENTS INC.

HYDROGEOLOGICAL ASSESSMENT
6165 THUNDER ROAD

CARLSBAD SPRINGS, ONTARIO

Title:

CROSS SECTION A-B-C

Scale: AS SHOWN	Date: 01/2023
Drawn by: NK	Report No.: PH4650-1
Checked by: AS	Dwg. No.: PH4650-2
Approved by: EA	Revision No.:

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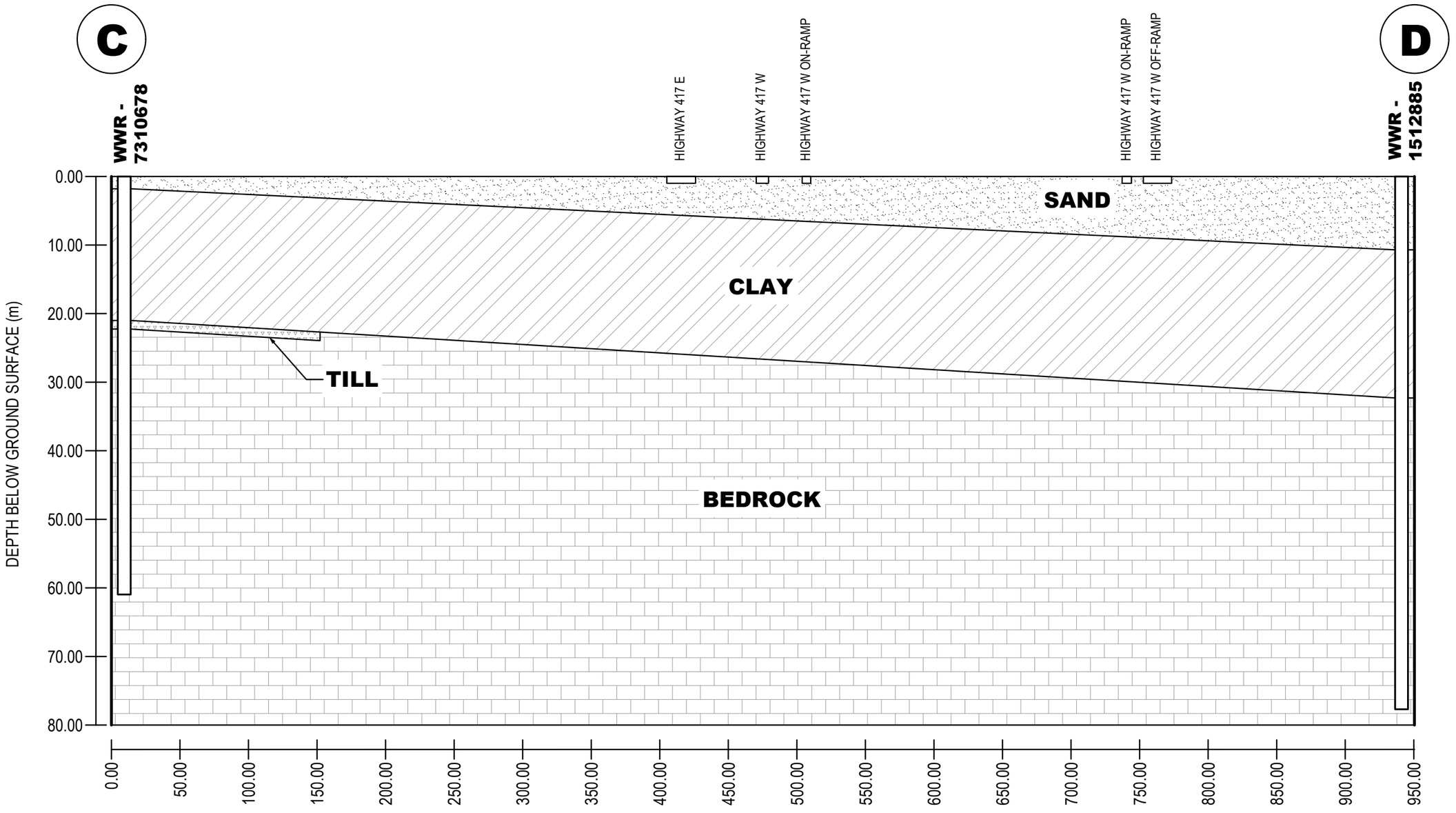

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL

BROFORT INVESTMENTS INC.

HYDROGEOLOGICAL ASSESSMENT
6165 THUNDER ROAD

CARLSBAD SPRINGS, ONTARIO

Title:

CROSS SECTION C-D

Scale: AS SHOWN	Date: 01/2023
Drawn by: NK	Report No.: PH4650-1
Checked by: AS	Dwg. No.: PH4650-3
Approved by: EA	Revision No.:

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11x17

SITE INFORMATION

ADDRESS
6165 THUNDER ROAD

LEGAL DESCRIPTION
PART OF LOT 1 CONCESSION 9 (OTTAWA FRONT) PART 1 PLAN 5R-11663
PIN 04324-0163

TOTAL SITE AREA* 16,480.59 sq m
*based on GeoOttawa property report

ZONING
RC RURAL COMMERICAL

SETBACKS
Front Yard
Minimum Required: 10.00 m
Proposed: *22.18 m
*Approximate minumum distance as shown on Site Plan (property line is curved)
Interior Side Yard
Minimum Required: 3.00 m
Proposed: *21.32 m
*Approximate minumum distance as shown on Site Plan
Corner Side Yard
Minimum Required: 6.00 m
Proposed: 15.00 m
Rear Yard
Minimum Required: 10.00 m
Proposed: *25.36 m
*Approximate minumum distance as shown on Site Plan
Proposed Building meets all setback requirements.

BUILDING HEIGHT
Maximum Height 11.00 m
Proposed Height 11.00 m

GROSS FLOOR AREA

Building	Proposed	3,686 sq m
Future Mezzanine	Proposed	368 sq m
TOTAL		4,054 sq m

Gross Floor Area Uses (including future mezzanine)
Light Industrial/Warehouse 3,851 sq m
Office 203 sq m

LOT COVERAGE
Proposed 22.4%
Maximum Allowed 25.0%

LANDSCAPED AREA
Landscaping of yards: Required front and corner side yards to be landscaped, except for driveways crossing the front or corner side yard leading to a parking area.

PARKING/LOADING CALCULATIONS

PARKING REQUIRED	Rate	Required Spaces
Building 95% Light Industrial/Warehouse	0.8	28
Building 05% Office	2.4	4
Accessible Parking (20-99 spaces in parking lot)		1

PARKING PROVIDED
Spaces 38
Accessible Spaces 2
Total 40

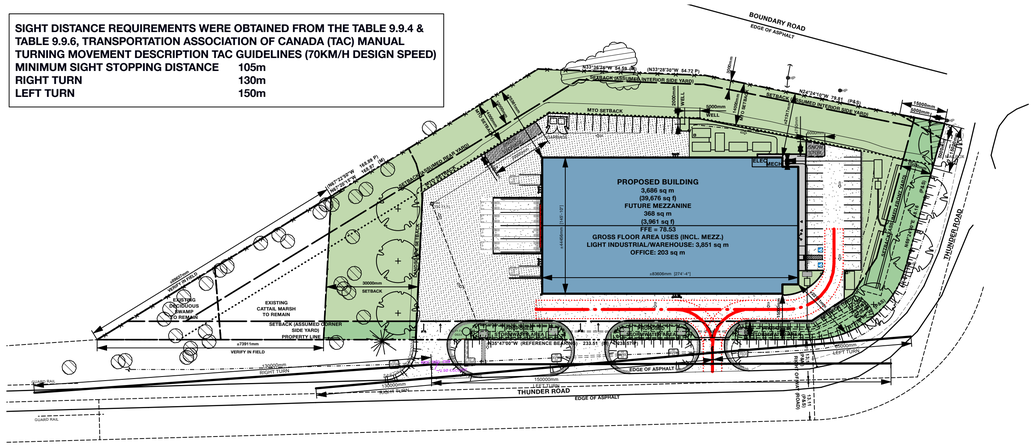
LOADING
Required Spaces (GFA = 2,000-4,999 sq m) 1
Provided Spaces (oversized spaces not required) 6

PARKING LANDSCAPED AREA

15% of area of parking lot must be provided as perimeter or interior landscaped areas

Parking Area 'A'		730 sq m
Required Landscape Area	15.0%	
Proposed Landscape Area	15.1%	110 sq m
Parking Area 'B'		457 sq m
Required Landscape Area	15.0%	
Proposed Landscape Area	15.1%	69 sq m

SIGHT DISTANCE REQUIREMENTS WERE OBTAINED FROM THE TABLE 9.9.4 & TABLE 9.9.6, TRANSPORTATION ASSOCIATION OF CANADA (TAC) MANUAL TURNING MOVEMENT DESCRIPTION TAC GUIDELINES (70KM/H DESIGN SPEED)
MINIMUM SIGHT STOPPING DISTANCE 105m
RIGHT TURN 130m
LEFT TURN 150m



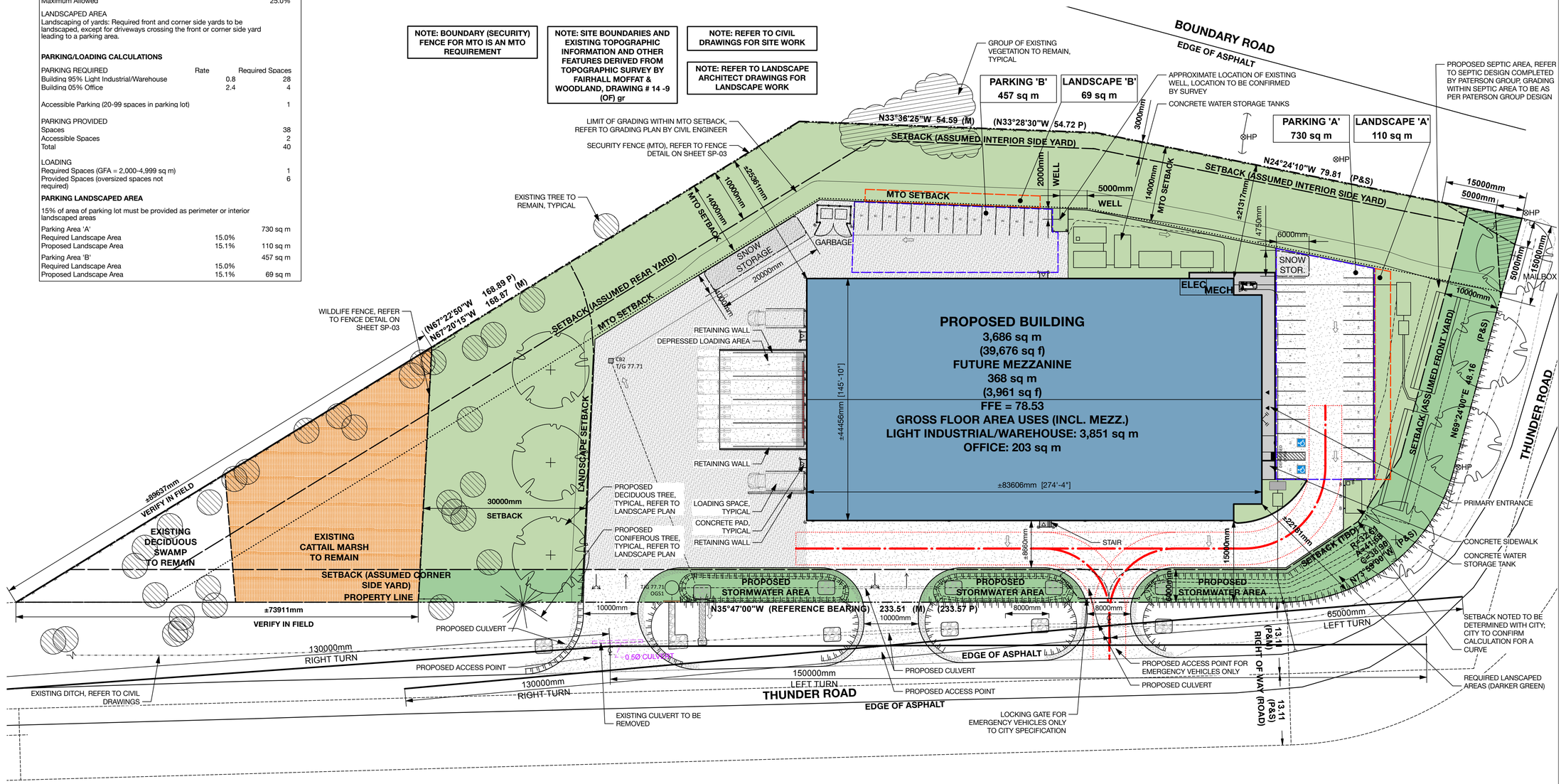
2 SP-01 SITE PLAN - TURN LINES REFERENCE
Scale: 1:1000
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 M

NOTE: BOUNDARY (SECURITY) FENCE FOR MTO IS AN MTO REQUIREMENT

NOTE: SITE BOUNDARIES AND EXISTING TOPOGRAPHIC INFORMATION AND OTHER FEATURES DERIVED FROM TOPOGRAPHIC SURVEY BY FAIRHALL MOFFAT & WOODLAND, DRAWING # 14 -9 (OF) gr

NOTE: REFER TO CIVIL DRAWINGS FOR SITE WORK

NOTE: REFER TO LANDSCAPE ARCHITECT DRAWINGS FOR LANDSCAPE WORK



1 SP-01 SITE PLAN
Scale: 1:400
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 M

DEVELOPER/OWNER INFORMATION
BROFORT DEVELOPMENTS INC.
2161 THURSTON DRIVE
OTTAWA, ONTARIO K1G 6C9

LEGEND
- PROPERTY LINE
- SETBACK LINE
- MTO SETBACK
- LANDSCAPE SETBACK (WETLAND)
- SECURITY FENCE
- WILDLIFE FENCE
- FIRE ROUTE
- TO BE REMOVED OR DEMOLISHED AS NOTED
- HYDRO POLE
- SIAMESE CONNECTION
- MAIN/PRIMARY ENTRANCE
- SECONDARY ENTRANCE/EXIT
- EXISTING CATTAIL MARSH
- EXISTING DECIDUOUS SWAMP
- LANDSCAPED AREA
- REQUIRED LANDSCAPED SETBACK
- CONCRETE
- ASPHALT
- GRANULAR/GRAVEL

STEWART + TSAI ARCHITECTS INC.
t: 613.686.5910
f: 613.686.6216
e: info@stewarttsai.com

SEAL

ONTARIO ASSOCIATION OF ARCHITECTS — GRANT STEWART LICENCE 5900

CONSULTANTS

KEY PLAN

ISSUE / REVISION		*DATE*
01	REVIEW & COORDINATION	FEB 23, 2023
02	REVIEW & COORDINATION	MAR 01, 2023
03	REVIEW & COORDINATION	JUN 28, 2023
04	REVIEW & COORDINATION	SEP 28, 2023
05	REVIEW	JAN 17, 2024
06	REVIEW & COORDINATION	APR 8, 2024
07	REVIEW & COORDINATION	MAY 7, 2024
08	SITE PLAN CONTROL	MAY 17, 2024
09	REVIEW & COORDINATION	SEP 04, 2024
10	REV. SITE PLAN CONTROL	OCT 18, 2024
11	REV. SITE PLAN CONTROL	OCT 29, 2024
12	REV. SITE PLAN CONTROL	MAR 03, 2025
13	REV. SITE PLAN CONTROL	JUN 17, 2025
14	REV. SITE PLAN CONTROL	SEP 11, 2025

PROJECT NAME

THUNDER ROAD DEVELOPMENT
6165 THUNDER ROAD
OTTAWA, ON

SHEET TITLE

PROPOSED SITE PLAN

PROJECT NO: 22003
DRAWN BY GS
CHECKED BY GS

SHEET

SP-01

2025 Sep 11
22003 6165Thunder.vwx