NITRATE ATTENUATION DEVELOPMENT DENSITY EVALUATION
PART LOT 35, CON. 6, TWP UXBRIDGE - UDORA
REGION OF DURHAM

Prepared for:
2695867 Ontario Inc.

November 2024

File 22012.02

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November 26, 2024

2695867 Ontario Inc.
71 Shannon St.
Toronto, On.
M6J 2E6

Attention: Mr. Jeff Risi and John Cooper

Re: Nitrate Attenuation Development Density Evaluation
Part Lot 35, Con. 6, TWP Uxbridge (Udora), Durham Region
File 22012.02

GAMAN Consultants Inc. is pleased to submit this hydrogeological report documenting the results of a seasonal evaluation in nitrate and orthophosphate concentrations for this development density evaluation. The results of this year long monitoring program demonstrate the site can support up to nine (9) development lots.

Yours truly,
GAMAN Consultants Inc.

Gary R. Hendy, P.Eng.
Consulting Engineer

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1.0 INTRODUCTION

1.1 BACKGROUND

This report provides the results of a groundwater quality monitoring program carried out by GAMAN Consultants Inc. (GAMAN) in support of a Zoning Amendment application (for reduced lot sizes) and a Draft Plan of Subdivision application owned by 2695867 Ontario Inc. The report was initiated to assess the effects of existing individual sewage disposal systems on shallow groundwater and infer the potential effects from using similar systems proposed for this development on groundwater quality.

By way of background, 2695867 Ontario Inc. owns about 1.7055-ha of land situated on Part Lots 34 & 35, Concession 6, Township of Uxbridge within the Hamlet of Udora, as shown in Figure 1. Figure 2a illustrates the layout of the former proposal for nine (9) lots on about 1.96 ha that includes a proposal to purchase a vacant lot from the Township of Uxbridge. We understand that the proposed development plan has been reduced to seven (7) lots because the Developer has not entered into an agreement to acquire the additional land. Figure 2b illustrates the proposed seven lot layout.

1.2 STUDY OBJECTIVES & SCOPE

The study objective was to establish if up to nine lots could be serviced with septic systems by evaluating the effects of existing sewage systems on shallow groundwater quality. A groundwater quality monitoring program was initiated to observe and document existing nitrate concentrations in groundwater downgradient of existing dwellings to provide input into a suitable lot size for this site. The nitrate monitoring program was prepared and implemented to address MECP Guideline D-5-4, Method 5.6.1.a, Monitoring Based Assessments. Prior to undertaking this program, GAMAN Consultants prepared a work plan and submitted it to the Region of Durham for review and comment. The work program

reflects the content of the GAMAN Memorandum "Proposed Udora Predictive Nitrate Monitoring Program", dated January 31, 2024, comments from a conference call with the Region and its Peer Reviewer on February 5, 2024 and a revised monitoring program dated May 7th, 2024.

This updated monitoring program included the following tasks:

1) Installation of monitoring well MW24-1 at the northeast property boundary near the dwelling at 14900 Region Road 1 as shown in Figure 2a.
2) Groundwater sampling to include nitrates and orthophosphate. Orthophosphates are not intended for use in determining the development density of this site.
3) Groundwater sampling for 4 seasons of monitoring.
4) Review septic system locations from Durham Region Health Unit files for existing dwellings. The Region to assist in accessing these sewage systems.
5) GAMAN to find a copy of the borehole log for OW05-1 if possible.

The objective of this program is to evaluate nitrate concentrations downgradient of existing dwellings within the same hydrogeologic setting as the proposed development to determine suitable lot sizes for the currently proposed 7 lot development. MECP Guideline D-5-4 adopts a conservative approach to nitrate dilution evaluations commonly used for addressing lot densities; however, the Guideline also recognizes the value of using site specific data to support lot densities.

The methodology for this technical approach is as follows:

- This Udora site has several readily available shallow groundwater monitors that were incorporated into a monitoring program.
- Delineate the direction of shallow groundwater movement within and upgradient of the site to identify an area of Udora that contributes septic effluent (nitrates) beneath this proposed development site.
- Sample and document groundwater quality using nitrates as the indicator parameter downgradient of existing homes to establish variations in nitrate concentrations during the winter, spring, summer and fall of 2024.
- Calculate the nitrate contributing area of the existing homes upgradient of the site to evaluate the average lot area.

- If the nitrate concentrations in the monitors are below 10 mg/L, it is possible to infer a suitable density of development for this site or simply confirm up to 9 lots can be supported on the basis of groundwater quality impacts.
- Sample groundwater monitors for orthophosphates to assess the potential impact to surface water quality effects as part of other concerns unrelated to the development density of the site for this evaluation.

This report documents the study findings of these investigations.

2.0 PHYSICAL SETTING

2.1 PHYSIOGRAPHY, SURFICIAL GEOLOGY AND DRAINAGE

The physiography of the Site is illustrated in Figure 3. The study area is situated within the Peterborough Drumlin Physiographic Region as described by Chapman and Putnam (1984) as represented in the OGS Earth application accessible through the Ministry of Northern Development and Mines Web Page. A small portion of the northeast corner of the Site lies within the Simcoe Lowlands Physiographic Region. The Peterborough Drumlins are characterized by a rolling till plain that is dotted with oval-shaped hills known as drumlins. Although drumlins flank the site to the east, south and west, there are no drumlins noted within the Site boundary. The till plains and drumlins dominate the landscape at a regional scale. Organic deposits of peat and muck are present in the valleys.

Surficial geology is illustrated in Figure 4. The site is situated on dominantly till-like soils comprised of heterogeneous mixtures of sand and silt with some gravel and clay. The sandy overburden west and north of the site are distinct from the surficial soils east of the site and reflect the two physiographic settings described above.

The bedrock beneath the study area is mapped as limestone/dolostone/shale/arkose/sandstone of the Simcoe Group; Lindsay Formation (Ontario Geological Survey, 2011). The depth to

bedrock is estimated to be between 30 to 40 metres below ground surface (mbgs), based on overburden thickness mapping (Gao et al., 2006).

The Site is located within the Lake Simcoe Watershed. The local topography of the Site slopes from the south at an elevation of 250 metres above sea level (masl) to the north, at an elevation of approximately 240 masl. Runoff drains to the north into a drainage ditch along Ravenshoe Road and is inferred to flow into a tributary which connects to the Pefferlaw River, and subsequently Lake Simcoe (Figure 5).

2.2 HYDROGEOLOGY

The hydrogeologic setting was interpreted based on the local water well record database maintained by the MECP and plotted on Figure 6. The Oak Ridges Moraine Groundwater Program was also referenced to support the interpretation.

As noted in previous reports for this site that were submitted and reviewed by the Region of Durham, shallow overburden is comprised mostly of silty-sand to sandy-silt of varying thicknesses and fine sand, typically a minimum of 1.5 metres and up to more than 1.8 metres deep. One test pit documented silt. The borehole logs for MW17-1, MW17-2 and MW17-3 identify a silty-sand to sandy-silt layer extending to at least 6.7 mbgs. The water well record submitted for the on-site well TW1 also noted a sandy composition to a depth of 5.7 metres bgs. It is inferred, based on the drilling records, that the soil composition becomes finer grained with depth.

The regional hydrogeologic setting of the area is described below with the visual aid of hydrostratigraphic section ‘A-A’ in Figure 7 respectively. The hydrostratigraphy consists of the following types of units:

- Upper Unconfined Aquifer
- Upper Aquitard
- Lower Overburden Aquifer
- Bedrock Aquifer

The Upper Unconfined Aquifer is formed within the surficial sand plain. This unit is limited in both vertical and lateral extent, based on the physiographic setting. The unit could be a source of groundwater for shallow dug and bored wells that would extend through this unit and into the underlying till-based aquitard. Domestic wells that might extend through this unit could experience water shortages based on seasonal variations in the water table.

The Upper Aquitard is generally till-like at a depth of below 3 metres, and characteristic of Newmarket Till-aged deposits. This aquitard is comprised of mostly fine-grained sediments that behave as a protective layer above the water-bearing units. Portions of the aquitard described as clay, or as sand containing a significant component of clay, will have reduced permeability. The aquitard acts as a barrier to retard the vertical movement of groundwater from the ground surface to the underlying aquifers from which water supplies will be obtained by the development. This hydrostratigraphic unit should buffer groundwater quality in the supply aquifer from shallow sources of contaminants discharged near surface. Some portions of the aquitard may contain coarser fractions that allow wells to extract enough groundwater for domestic use.

The Lower Overburden Aquifer is comprised of granular sediments of limited lateral and vertical extent. The aquifer ranges from less than 1 metre to more than 17 metres thick, and in some areas on, and near, the site, this aquifer may be non-existent. Many of the wells on-site and off-site terminate within this aquifer. The Lower Overburden Aquifer is confined beneath the overlying Upper Aquitard. Where encountered this aquifer tends to yield sufficient water quantity for domestic use.

The fractured Limestone Bedrock Aquifer is also confined beneath the Upper Aquitard and the Lower Overburden Aquifer and it extends across the study area. The depth to limestone is generally greater than about 20 metres below grade. The physical evidence from previous reporting suggests that the upper portion of the bedrock aquifer and the lower overburden aquifer are hydraulically connected to one another. Either the Lower Overburden Aquifer (where encountered), or the fractured Limestone Bedrock Aquifer, is proposed as the source of groundwater for this development. The water quality in these aquifers are protected from activities at surface by the Upper Aquitard.

The focus of this evaluation is on impacts to shallow groundwater quality.

3.0 SITE INVESTIGATIONS

3.1 GROUNDWATER MONITORS

Shallow soil and groundwater investigations were completed by other firms for this site. Many of these hydrogeological reports were completed under the guidance of the author of this report previously employed with those firms. The borehole logs are included in Appendix A and include the installation of a new monitor designated MW24-1. This shallow monitor was installed at the east boundary of this site as shown in Figure 8 and was approved by the Region's Peer Reviewer.

The soils within the borehole log for MW24-1 are consistent with other boreholes.

3.2 SHALLOW GROUNDWATER MOVEMENT

Groundwater levels were monitored during the project with each water sampling event. Figure 8 shows the locations of monitor wells at the site and one off-site monitor (OW05-

1) that was used for the Udora Estates Groundwater Monitoring Program. The casing elevation for OW05-1 was updated with the elevation survey for MW24-1 as required for this project.

The groundwater elevations shown on the map are based on surveyed top of casing elevations. Groundwater levels were measured in April 2024. The groundwater flow system shows several monitors at the site are located downgradient of the nitrate contributing area. The monitors included:

- ✓ MW3
- ✓ MW2-22
- ✓ MW17-1
- ✓ MW17-2
- ✓ MW17-3
- ✓ MW24-1
- ✓ OW05-1 would be an upgradient monitor.

Monitor MW1 is a deeper groundwater monitor than MW17-3 and we are of the opinion that the lower groundwater elevation could possibly be due to its base terminating deep into the till. We have attached the borehole logs for available monitors at the site. Table B-1, Appendix B shows the groundwater levels and elevations on file from 2023 to 2024.

The direction of shallow groundwater movement from the shallow groundwater monitors for groundwater levels monitored in April 2024. Shallow groundwater flows in a northwest direction through this site towards a tributary of Pefferlaw River.

3.3 LOCAL SEPTIC SYSTEMS

The Region's Peer Reviewer requested information regarding the use of on-site sewage disposal systems within the nitrate contribution area shown in Figure 6. The Developer under the freedom of information, applied to the Durham Region Health Unit for this information. The Region provided four records of installed sewage disposal systems (See Appendix C).

Three of the systems are shown to exist on the smaller lots east of the site. Notably, the dwelling at 14900 Concession Rd. 7 shows the sewage disposal system to be situated on the southwest side of the lot, upgradient from newly installed monitor MW24-1. There is one sewage system record for a dwelling on Birdie Court and GAMAN can confirm the presence of a sewage disposal bed on the other Birdie Court dwelling by OW05-1. The records show local dwellings to be equipped with on-site sewage disposal systems.

3.4 GROUNDWATER QUALITY

Groundwater samples were collected from the monitoring wells illustrated in Figure 8 and noted in Section 3.2. Samples of groundwater were collected from these monitors to address four seasons of groundwater monitoring as documented below.

March 16, 2024 (Winter)
April 10, 2024 (Spring)
May 6, 2024 – (Spring)
July 27, 2024 (Summer)
September 30, 2024 (Autumn)
November 9, 2024 (Autumn)

The groundwater samples were analyzed for nitrates and orthophosphates to address the requirements of the monitoring program. The results are documented in Table B-2, Appendix B. Orthophosphates were mostly not detected in groundwater. This parameter can be an indicator of wastewater from septic systems for example. Nitrates at deep groundwater monitor MW3 ranged from <0.005 to 0.21 mg/L and reflect very low background concentrations in groundwater. The results at MW3 provide evidence that nitrates from septic systems and fertilizer use remain at low concentrations in deeper groundwater.

Nitrate concentrations at shallow groundwater monitors are higher than those observed at MW3, but all reported concentrations were below the drinking water criterion and site boundary criterion of 10 mg/L. The following is a summary of comments regarding nitrates.

- The north boundary property monitors MW17-1, MW17-2 and MW17-3 had nitrate concentrations ranging from <0.05 to 2.33 mg/L with an average concentration of 0.49 mg/L.
- MW2-22 located in the southeast side of the property had nitrates ranging from <0.05 to 0.27 with an average concentration of 0.14 mg/L.
- East property boundary monitor MW24-1 had nitrate concentrations ranging from 0.46 to 1.76 mg/L with an average concentration of about 0.9 mg/L.
- Upgradient monitor OW05-1 had nitrate concentrations ranging from <0.05 to 5.35 mg/L with an average concentration of about 3.48 mg/L.

4.0 DISCUSSION

Four seasons of groundwater monitoring at the site reveal shallow groundwater flow direction is northwest through the property. Existing dwellings upgradient of the property are serviced with individual sewage disposal systems. It is inferred from the interpreted direction of shallow groundwater movement that these upgradient dwellings contribute nitrates from the sewage systems and nitrates from fertilizer use beneath the proposed development lands.

Six rounds of water quality monitoring show low levels of orthophosphate in shallow and deeper groundwater. Nitrates are commonly detected at low background concentrations below 2 mg/L. There are exceptions to this, notably upgradient OW05-1 where the highest concentration of 5.35 mg/L was detected on one occasion with an average concentration of

3.48 mg/L. This monitor was drilled in 2005 and is located between two existing dwellings that could receive nitrates from sewage systems and fertilizers.

There are many scenarios that could be presented to analyze and predict future nitrate concentrations; however, to be conservative, we focussed on the highest reported concentration of 5.35 mg/L on one occasion from 35 other lower nitrate concentrations. The average lot size for the ten (10) existing dwellings on 2.5 ha of land was estimated at 0.25 ha/lot.

The current proposal for development is seven (7) lots on 1.7005 ha of land and this equates to 0.24 ha/lot. If the Township sells its parcel of land to the developer, the property could be up to nine (9) lots on 1.96 ha of land and equates to 0.21 ha/lot. Groundwater quality monitoring data provided a maximum observed concentration of 5.35 mg/L at OW05-1 and an average concentration of 3.48 mg/L. Extrapolation of these concentrations to a nine-lot development of 0.21 ha per lot could result in predicted site boundary concentrations ranging from 4.1 to 6.4 mg/L. Extrapolation of these concentrations for the current seven-lot development of 0.24 ha per lot could result in predicted site boundary concentrations ranging from 3.6 to 5.5 mg/L. These predicted concentrations are well below the site boundary concentration of 10 mg/L.

In summary, the results of this monitoring program reveal nitrates from the use of on-site sewage disposal systems could support up to nine lots. The current proposal for seven lots would have less impact on shallow groundwater.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations presented below are premised on the data collected and reviewed as part of these investigations:

- The site is predominantly located within the Peterborough Drumlin Field Physiographic Region while a small portion lies within the Simcoe Lowlands Physiographic Region.

- Local topography of the Site slopes from the south at an elevation of 250 metres above sea level (masl) to the north, at an elevation of approximately 240 masl. Drainage is to the north towards a drainage ditch along Ravenshoe Road and is expected to discharge into a tributary of Pefferlaw River.
- The interpreted direction of shallow groundwater movement is northwest beneath the site.
- Groundwater quality data from six (6) monitoring events over 4 seasons shows orthophosphate concentrations to be below or close to method detection limits. There is little to no evidence of sewage effluent based on orthophosphate.
- Nitrate concentrations deep within the till are below method detection limits and provide evidence showing sewage effluent is unlikely to impact groundwater quality in deeper groundwater supplies.
- Nitrate concentrations across the site vary and are mostly below 2 mg/L. Upgradient monitor OW05-1 had the highest concentration of 5.35 mg/L and this is well below the drinking water standard of 10 mg/L.
- The predicted nitrate concentrations for up to nine lots (4.1-6.4 mg/L) are acceptable and remain below the site boundary criteria of 10 mg/L.
- The proposed development of 7 lots is expected to have an acceptable effect on shallow groundwater quality.
- In our opinion, the reduced lot sizes of a minimum of 2,000 m^2 in area are appropriate and should not have an adverse impact on shallow groundwater quality.

Respectfully Submitted,
GAMAN CONSULTANTS INC.

Gary R. Hendy, P.Eng.
Consulting Engineer

6.0 LIMITATIONS AND USE

This report has been prepared for the exclusive use of 2695867 Ontario Inc. for their exclusive use in the evaluation of the area for the proposed development. GAMAN Consultants Inc. accepts no responsibility for any damages incurred by any third party as a result of decisions made, or actions taken based upon the information contained within this report.

All background information used in the preparation of this report has been relied upon in good faith, and GAMAN does not accept any responsibility for any misstatements, inaccuracies, or deficiencies contained in those documents or records. The information contained in this report should be evaluated, interpreted and implemented only in the context of the assignment.

The findings and conclusions included in this report reflect our best judgement in light of the information available at the time of report preparation and site inspection and are valid only at the date of issuance. If additional information is provided in the future, such as the results of additional site-specific assessments or monitoring, GAMAN will be pleased to re-evaluate our conclusions contained within this report, and issue amendments, as required.

7.0 REFERENCES

Chapman L.J. and Putnam, D.F., 1984

The Physiography of Southern Ontario, 3rd edition.

Ontario Geological Survey Special Volume 2; Ministry of Natural Resources.

Lake Simcoe Region Conservation Authority, April 2017

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Hydrogeological Assessment Submissions, Conservation Authority Guidelines for Development Applications.

Ministry of Environment Conservation & Parks

Water Well Records

Ministry of Environment Conservation & Parks

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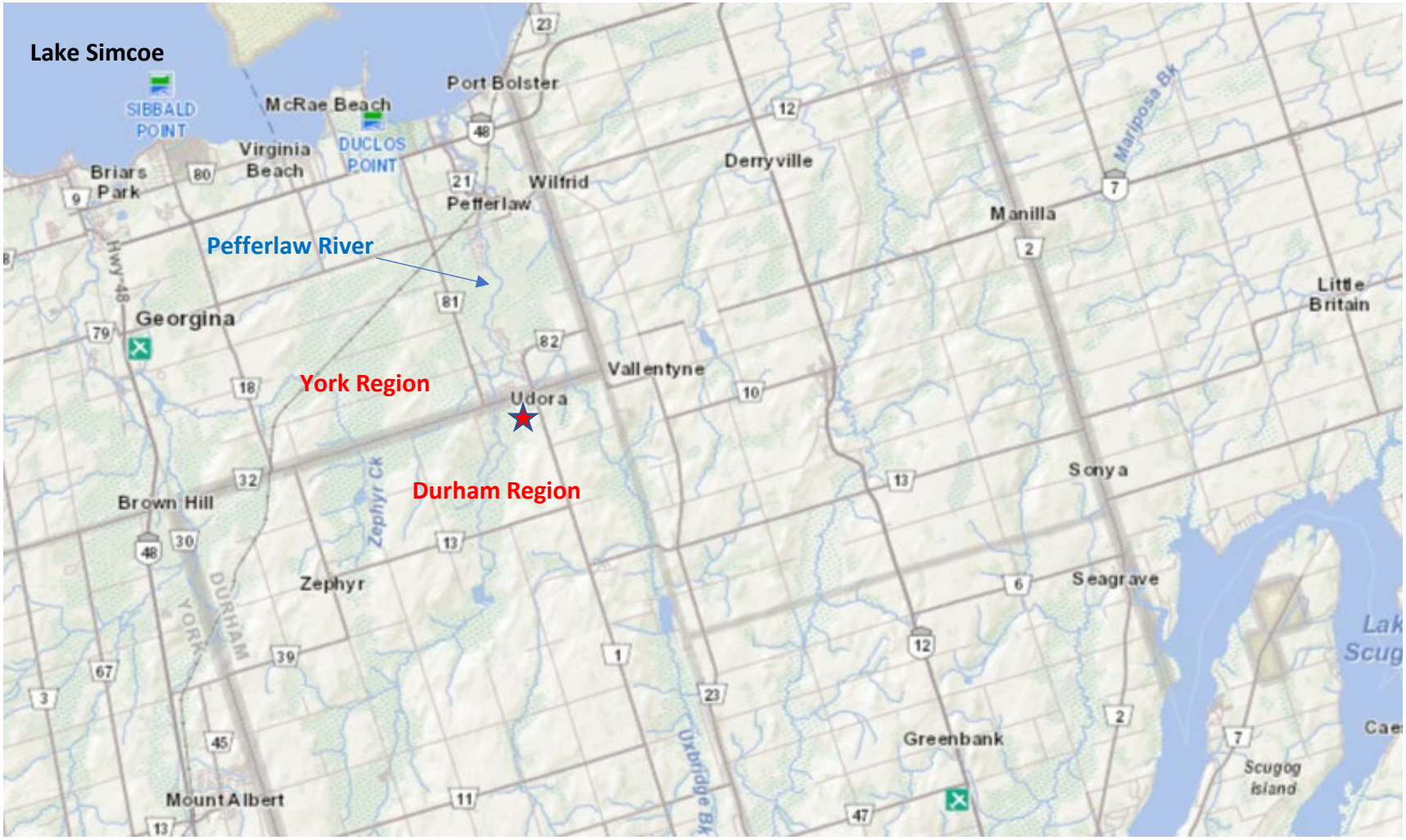
Ministry of Environment Conservation & Parks, 1995

MOEE Hydrogeological Technical Information Requirements for Land Development Applications, ISBN 0-7778-4340-4, April, Queen's Printer.

Oak Ridges Moraine Groundwater Program, (Web-based).

FIGURES



NOTES

★ Site Location

Site Location

Nitrate Dilution Development Density Evaluation, Part Lots 34 & 35, Con. 6, TWP Uxbridge (Udora), Region of Durham

For 2695867 Ontario Inc.

Date:	Nov-24	Scale:	AS SHOWN
Project:	22012.02	Ref No:	

GAMAN Consultants Inc.

Figure 1

NOTES

Source : Envision Consultants Ltd.

9 Lot Conceptual Site Plan

Nitrate Dilution Development Density Evaluation, Part Lots 34 & 35, Con. 6, TWP Uxbridge (Udora), Region of Durham

For 2695867 Ontario Inc.

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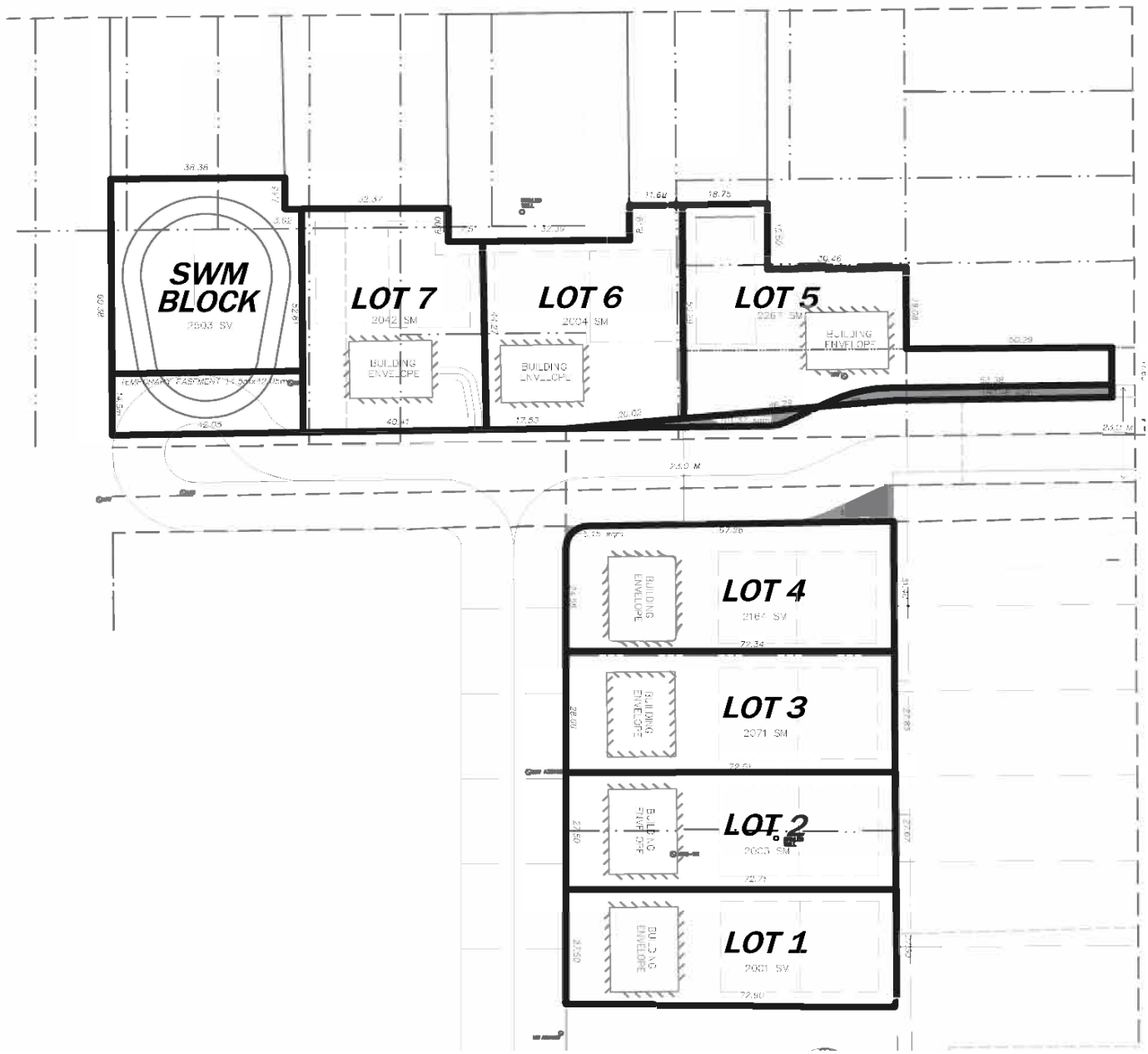
Figure 2-A



NOTES

Source : Envision Consultants Ltd.

7 Lot Conceptual Site Plan

Nitrate Dilution Development Density Evaluation, Part Lots 34 & 35, Con. 6, TWP Uxbridge (Udora), Region of Durham

For 2695867 Ontario Inc.

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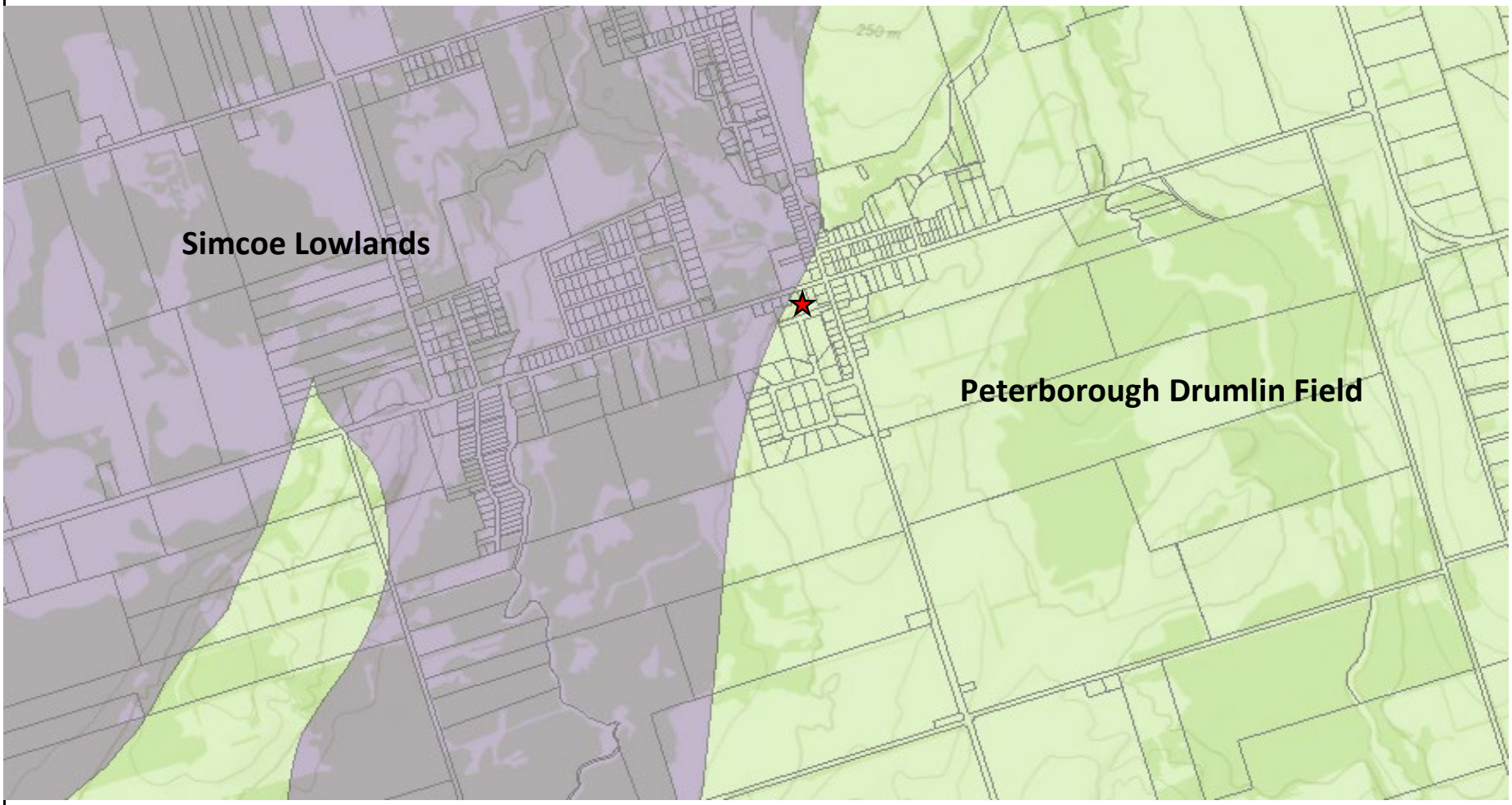
Figure 2-B



NOTES

★ Site Location

Physiography

Nitrate Dilution Development Density Evaluation, Part Lots 34 & 35, Con. 6, TWP Uxbridge (Udora), Region of Durham
For 2695867 Ontario Inc.

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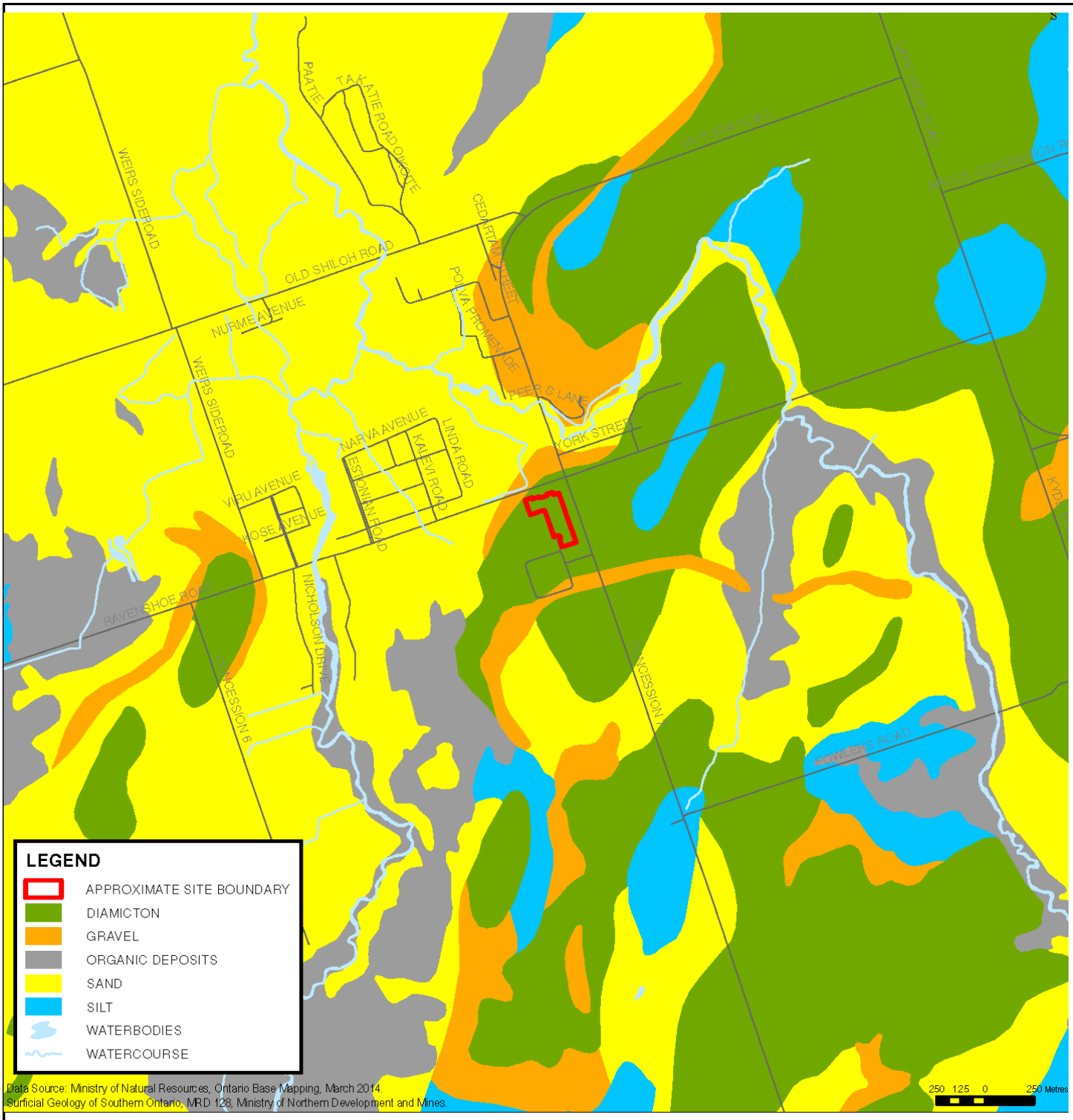
Figure 3



NOTES

SURFICIAL GEOLOGY

Nitrate Dilution Development Density Evaluation, Part Lots 34 & 35, Con. 6, TWP Uxbridge (Udora), Region of Durham
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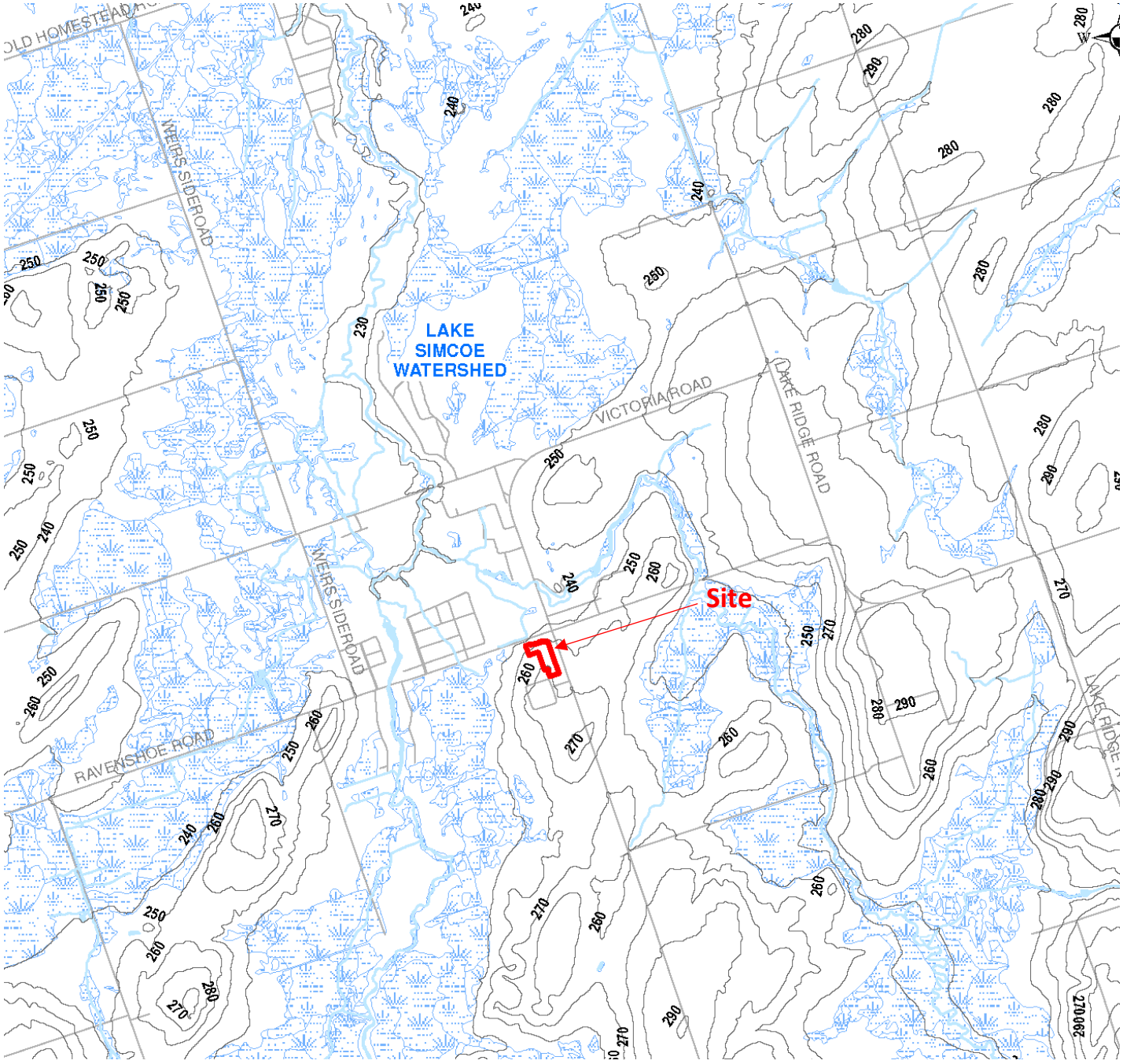
Figure 4



NOTES

Drainage

Nitrate Dilution Development Density Evaluation, Part Lots 34 & 35, Con. 6, TWP Uxbridge (Udora), Region of Durham

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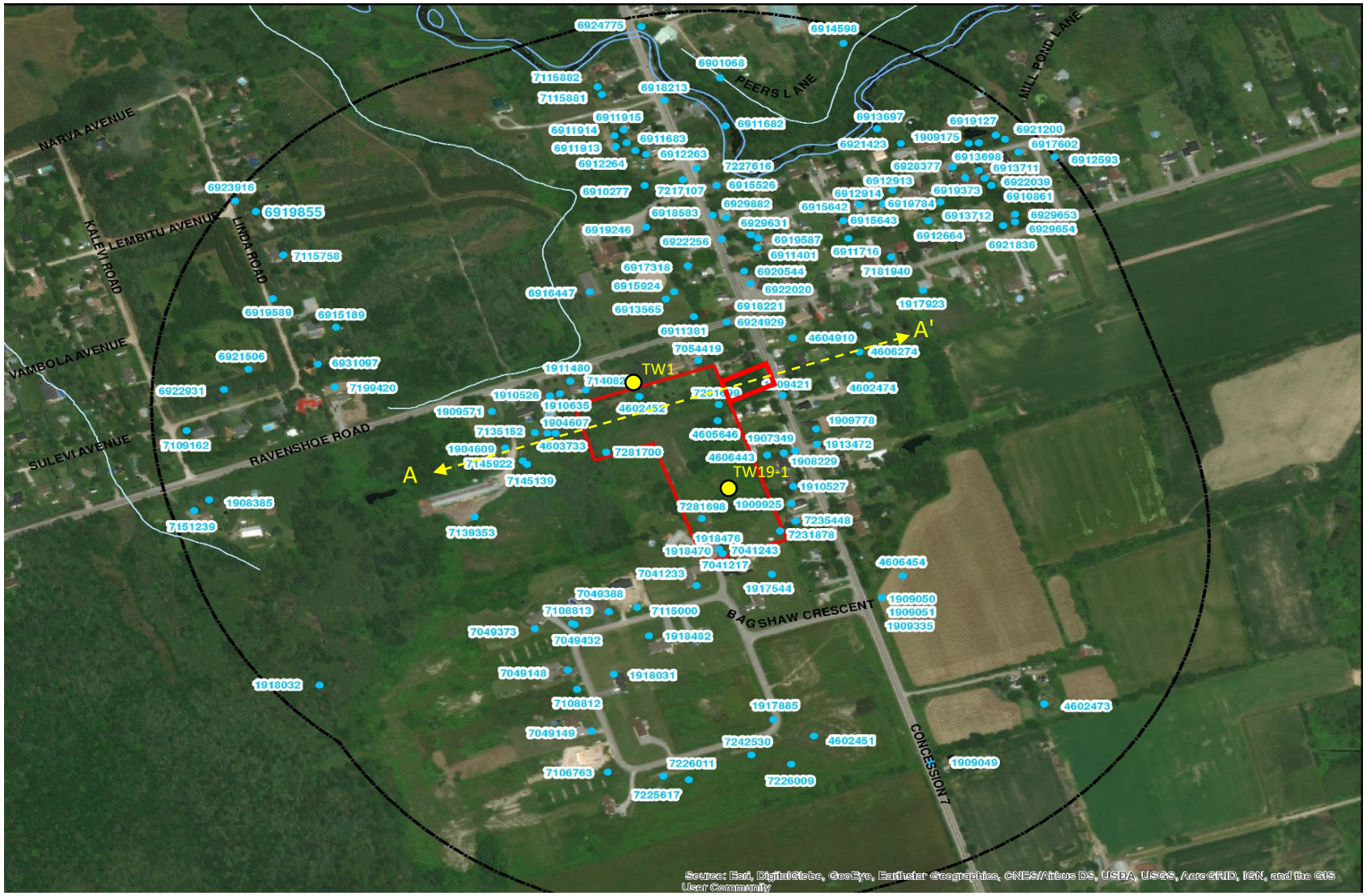
Figure 5



NOTES

Site Location

A ◄- - - - - - - ► A' Line of Cross Section

Water Well Location Map

Nitrate Dilution Development Density Evaluation, Part Lots 34 & 35, Con. 6, TWP Uxbridge (Udora), Region of Durham

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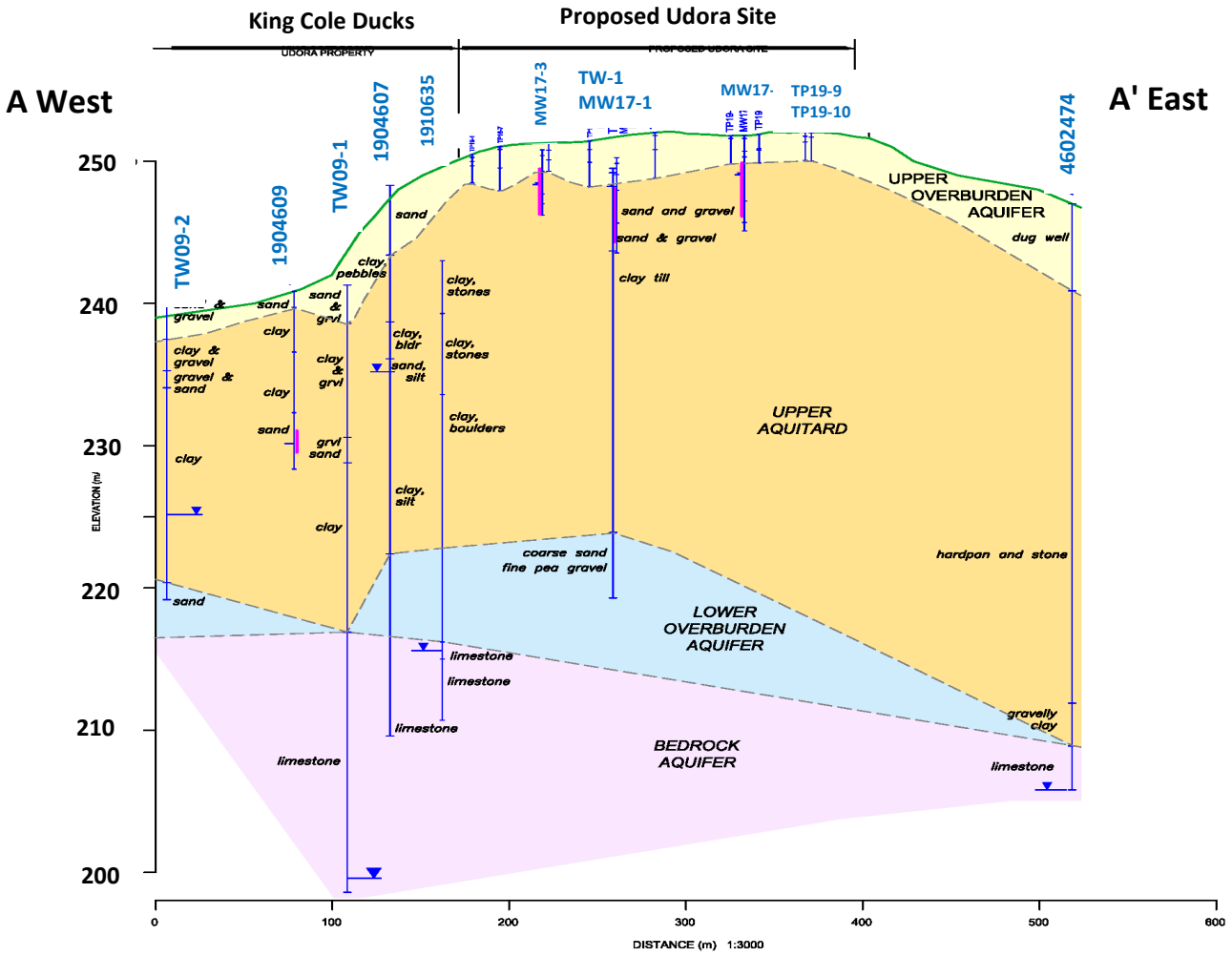
Figure 6



NOTE:
THE ACTUAL SOIL STRATIFICATION HAS BEEN VERIFIED FROM DATA OBTAINED AT THE BOREHOLE AND TEST PIT LOCATIONS ONLY. THE INFERRED CONTACTS SHOWN ARE BASED ON GEOLOGICAL EVIDENCE AND THESE MAY VARY FROM THOSE SHOWN BETWEEN BORINGS

NOTES

Cross Section A-A'

Nitrate Dilution Development Density Evaluation, Part Lots 34 & 35, Con. 6, TWP Uxbridge (Udora), Region of Durham
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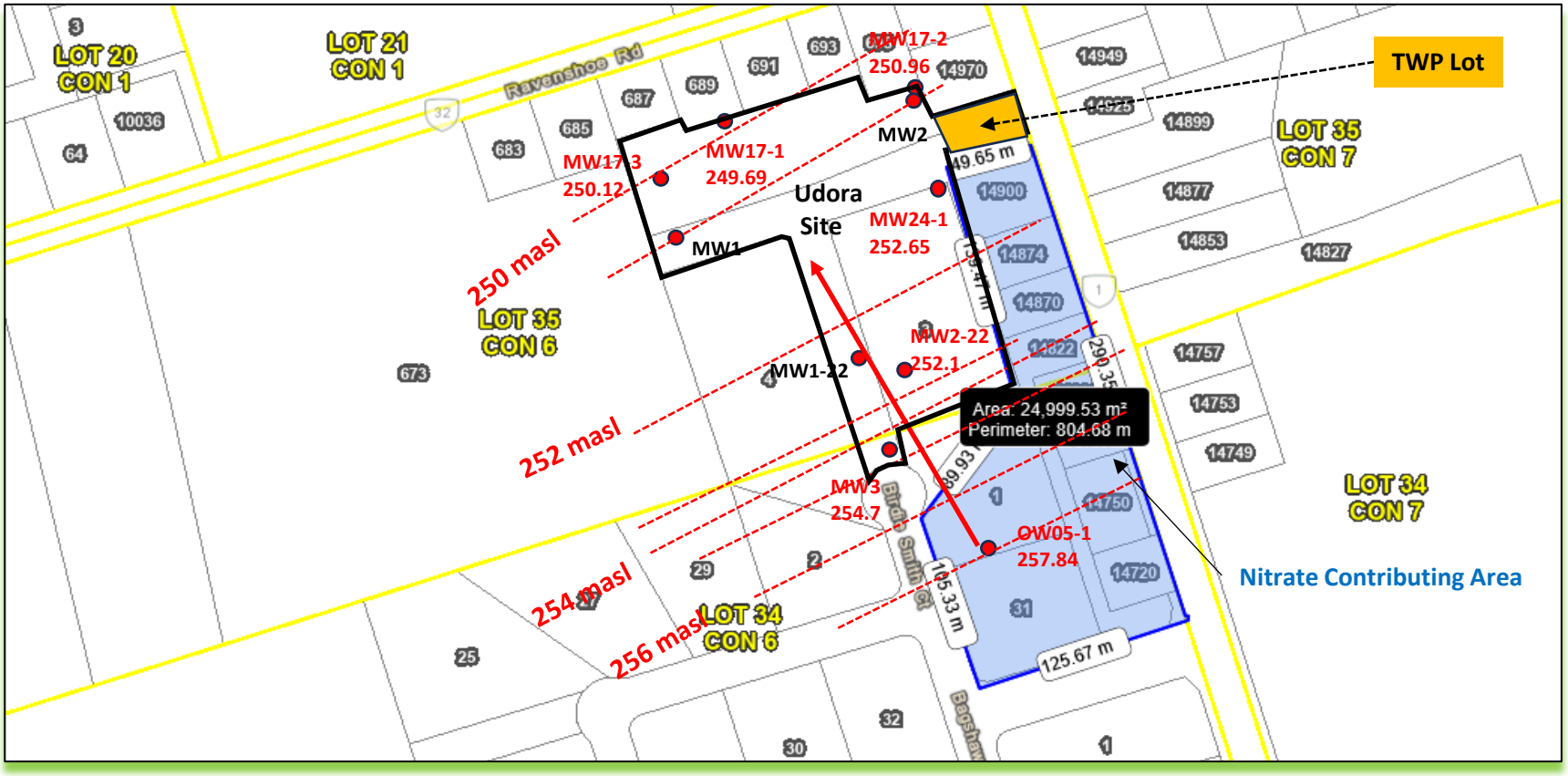
Figure 7



NOTES

Interpreted direction shallow groundwater

255.1 Groundwaterm monitor location, designation, and water level

MW3 elevation on April 9, 2024.

--------- Interpreted Groundwater Contour

MW1 & MW2 & MW1-22 Deep Monitors

Interpreted Shallow Groundwater Table (April 9, 2024)

Nitrate Dilution Development Density Evaluation, Part Lots 34 & 35, Con. 6, TWP Uxbridge (Udora), Region of Durham
For 2695867 Ontario Inc.

Date:	Nov-24	Scale:	AS SHOWN
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Figure 8

APPENDICES

APPENDIX A

BOREHOLE LOGS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two Environmental Site Assessment
PROJECT NUMBER: 12585643
CLIENT: 2695867 Ontario Inc.
LOCATION: Part of Lot 35, Conc. 6, Udora, Ontario

HOLE DESIGNATION: BH3-22
DATE COMPLETED: 31 October 2022
DRILLING METHOD: HSA
FIELD PERSONNEL: D. Blair

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' Value	PID (ppm)
	TOPSOIL, organic, brown, wet	0.06		1		60	8	0
	SAND, brown, wet	0.23						
	SANDY SILT, trace gravel, brown, moist							
0.5								
1.0				2		60	9	0
1.5								
2.0				3		100	10	0
	- dry at 2.29m BGS		Bentonite					
2.5				4		55	23	0
3.0								
3.5				5		100	34	0
	- grey/brown at 3.81m BGS							
4.0				6		100	69	0
	- boulder at 4.27m BGS							
4.5								
	END OF BOREHOLE @ 4.57m BGS	4.57						
5.0								
5.5								
6.0								
6.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (oval)

File: \\GHDNET\GHD\CA\TORONTO\PROJECTS\66211\25585643\TECH\GINT\12585643-MI.GPJ Library File: GHD_ENVIRO_V07.GLB Report: OVERBURDEN LOG Date: 16/11/22

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two Environmental Site Assessment
PROJECT NUMBER: 12585643
CLIENT: 2695867 Ontario Inc.
LOCATION: Part of Lot 35, Conc. 6, Udora, Ontario

HOLE DESIGNATION: BH4-22
DATE COMPLETED: 1 November 2022
DRILLING METHOD: HSA
FIELD PERSONNEL: D. Blair

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' Value	PID (ppm)
0	TOPSOIL, organic	0.12						
	SANDY SILT, trace gravel, brown, dry			1		45	15	0
0.5								
1.0				2		100	15	0.2
1.5				3		20	21	0
2.0								
	- wet at 2.29m BGS		Bentonite					
2.5				4		80	8	0.2
3.0								
	- dry at 3.35m BGS			5		80	17	0
3.5								
4.0				6		100	19	0
	- sand lens, dry at 4.27m BGS							
4.5		4.57						
	END OF BOREHOLE @ 4.57m BGS							
5.0								
5.5								
6.0								
6.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (1)

File: \\GHDNET\GHD\CA\TORONTO\PROJECTS\66\12585643\TECH\GINT\12585643-MI.GPJ Library File: GHD_ENVIRO_V07.GLB Report: OVERBURDEN LOG Date: 16/11/22

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two Environmental Site Assessment
PROJECT NUMBER: 12585643
CLIENT: 2695867 Ontario Inc.
LOCATION: Part of Lot 35, Conc. 6, Udora, Ontario

HOLE DESIGNATION: BH5-22
DATE COMPLETED: 31 October 2022
DRILLING METHOD: HSA
FIELD PERSONNEL: D. Blair

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' Value	PID (ppm)
0	TOPSOIL, organic, brown, dry	0.06						
	SANDY SILT, trace gravel, brown, dry			1		55	12	0
0.5								
1.0				2		100	17	0
1.5				3		95	10	0
2.0			Bentonite					
2.5	- boulder at 2.44m BGS			4		80	21	0
3.0	- grey/brown at 3.05m BGS							
3.5				5		100	13	0
4.0				6		70	19	0
	SAND, trace silt, grey, wet	4.27						
4.5	END OF BOREHOLE @ 4.57m BGS	4.57						
5.0								
5.5								
6.0								
6.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (1)

File: \\GHDNET\GHD\CA\TORONTO\PROJECTS\66211\25585643\TECH\GINT\12585643-MI.GPJ Library File: GHD_ENVIRO_V07.GLB Report: OVERBURDEN LOG Date: 16/11/22

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two Environmental Site Assessment
PROJECT NUMBER: 12585643
CLIENT: 2695867 Ontario Inc.
LOCATION: Part of Lot 35, Conc. 6, Udora, Ontario

HOLE DESIGNATION: BH6-22
DATE COMPLETED: 1 November 2022
DRILLING METHOD: SSA
FIELD PERSONNEL: D. Blair

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' Value	PID (ppm)
0.5	TOPSOIL, organic			1		55	2	0.2
		0.67						
1.0	SANDY SILT, trace gravel, brown, dry			2		75	14	0.1
1.5				3		25	24	0.1
2.0								
		2.29	Bentonite					
2.5	SAND, trace silt, brown, wet			4		55	34	0.2
3.0	- boulder at 2.90m BGS							
3.5				5		75	27	0.4
4.0	- boulder at 3.96m BGS			6		95	64	0.1
4.5		4.57						
	END OF BOREHOLE @ 4.57m BGS							
5.0								
5.5								
6.0								
6.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (1)

File: \\GHDNET\GHD\CA\TORONTO\PROJECTS\66211\2585643\TECH\GINT\12585643-MI.GPJ Library File: GHD_ENVIRO_V07.GLB Report: OVERBURDEN LOG Date: 16/11/22

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two Environmental Site Assessment
PROJECT NUMBER: 12585643
CLIENT: 2695867 Ontario Inc.
LOCATION: Part of Lot 35, Conc. 6, Udora, Ontario

HOLE DESIGNATION: MW1-22
DATE COMPLETED: 31 October 2022
DRILLING METHOD: HSA
FIELD PERSONNEL: D. Blair

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' Value	PID (ppm)
0.5	TOPSOIL, organic	0.06	Concrete					
	SANDY SILT, trace organics, brown, dry			1		45	2	0.4
	SANDY SILT, trace gravel, brown, dry	0.30						
1.0				2		75	14	0.3
1.5				3		100	24	0.2
2.0								
2.5				4		100	21	0.9
3.0								
3.5				5		100	50	0.7
4.0			Bentonite					
4.5								
5.0				6		100	57	0.8
5.5								
6.0								
6.5				7		100	81	0.6

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (oval)

File: \\GHDNET\GHD\CA\TORONTO\PROJECTS\66211258643\TECH\GINT\12585643-MI.GPJ Library File: GHD_ENVIRO_V07.GLB Report: OVERBURDEN LOG Date: 16/11/22

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two Environmental Site Assessment
PROJECT NUMBER: 12585643
CLIENT: 2695867 Ontario Inc.
LOCATION: Part of Lot 35, Conc. 6, Udora, Ontario

HOLE DESIGNATION: MW1-22
DATE COMPLETED: 31 October 2022
DRILLING METHOD: HSA
FIELD PERSONNEL: D. Blair

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
7.5								
8.0				8		100	58	0.6
8.5								
9.0								
9.5				9		100	85	0.6
10.0			Sand Pack					
10.5			Well Screen					
11.0	SAND, trace silt, grey, wet	10.97		10		100	70	0.9
11.5								
12.0								
	END OF BOREHOLE @ 12.19m BGS	12.19						
12.5								
13.0								
13.5								

WELL DETAILS
Screened interval:
9.14 to 12.19m BGS
Length: 3.05m
Diameter: 51mm
Slot Size: #10
Material: PVC
Sand Pack:
7.62 to 12.19m BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (10)

File: \\GHDNET\GHD\CA\TORONTO\PROJECTS\66211\2585643\TECH\GINT\12585643-MI.GPJ Library File: GHD_ENVIRO_V07.GLB Report: OVERBURDEN LOG Date: 16/11/22

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two Environmental Site Assessment
PROJECT NUMBER: 12585643
CLIENT: 2695867 Ontario Inc.
LOCATION: Part of Lot 35, Conc. 6, Udora, Ontario

HOLE DESIGNATION: MW2-22
DATE COMPLETED: 24 October 2022
DRILLING METHOD: HSA
FIELD PERSONNEL: D. Blair

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' Value	PID (ppm)
0	TOPSOIL, organic	0.06	Concrete					
	SILTY SAND, trace gravel, brown, dry, trace organics			1		45	10	0.3
0.5	SAND, brown, dry	0.46						
	SILTY SAND, trace gravel, trace organics, brown, dry	0.53		2		75	17	0.4
1.0								
1.5	SAND, trace gravel, brown, dry	1.52		3		100	40	0.4
2.0	SILTY SAND, trace gravel, brown, dry	1.98						
2.5				4		100	24	
3.0								
3.5				5		100	50	0.7
4.0			Bentonite					
4.5								
5.0				6		100	50/5	0.7
5.5								
6.0	SILT, trace sand, trace gravel, brown, dry	6.10						
6.5				7		100	50/5	0.4

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (oval)

File: \\GHDNET\GHD\CA\TORONTO\PROJECTS\66211\2585643\TECH\GINT\12585643-MI.GPJ Library File: GHD_ENVIRO_V07.GLB Report: OVERBURDEN LOG Date: 16/11/22

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two Environmental Site Assessment
PROJECT NUMBER: 12585643
CLIENT: 2695867 Ontario Inc.
LOCATION: Part of Lot 35, Conc. 6, Udora, Ontario

HOLE DESIGNATION: MW2-22
DATE COMPLETED: 24 October 2022
DRILLING METHOD: HSA
FIELD PERSONNEL: D. Blair

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
7.5	- grey at 7.62m BGS							
8.0				8		100	50/5	0.9
8.5								
9.0								
9.5				9		100	50/5	0.8
10.0			Sand Pack					
10.5	SAND, trace silt, brown, wet	10.67	Well Screen					
11.0				10		100	50/5	1.0
11.5								
12.0								
12.5	END OF BOREHOLE @ 12.19m BGS	12.19						
13.0								
13.5								

WELL DETAILS
Screened interval:
9.14 to 12.19m BGS
Length: 3.05m
Diameter: 51mm
Slot Size: #10
Material: PVC
Sand Pack:
7.62 to 12.19m BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (10)

File: \\GHDNET\GHD\CA\TORONTO\PROJECTS\66211\25856643\TECH\GINT\12585643-MI.GPJ Library File: GHD_ENVIRO_V07.GLB Report: OVERBURDEN LOG Date: 16/11/22

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two Environmental Site Assessment
PROJECT NUMBER: 12585643
CLIENT: 2695867 Ontario Inc.
LOCATION: Part of Lot 35, Conc. 6, Udora, Ontario

HOLE DESIGNATION: MW1-22
DATE COMPLETED: 31 October 2022
DRILLING METHOD: HSA
FIELD PERSONNEL: D. Blair

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
0	TOPSOIL, organic	0.06	Concrete					
	SANDY SILT, trace organics, brown, dry			1		45	2	0.4
	SANDY SILT, trace gravel, brown, dry	0.30						
0.5								
1.0				2		75	14	0.3
1.5				3		100	24	0.2
2.0								
2.5				4		100	21	0.9
3.0								
3.5				5		100	50	0.7
4.0			Bentonite					
4.5								
5.0				6		100	57	0.8
5.5								
6.0								
6.5				7		100	81	0.6

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (oval)

File: \\GHDNET\GHD\CA\TORONTO\PROJECTS\66211\25856431\TECH\GINT\12585643-MI.GPJ Library File: GHD_ENVIRO_V07.GLB Report: OVERBURDEN LOG Date: 16/11/22

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two Environmental Site Assessment
PROJECT NUMBER: 12585643
CLIENT: 2695867 Ontario Inc.
LOCATION: Part of Lot 35, Conc. 6, Udora, Ontario

HOLE DESIGNATION: MW1-22
DATE COMPLETED: 31 October 2022
DRILLING METHOD: HSA
FIELD PERSONNEL: D. Blair

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
7.5								
8.0				8		100	58	0.6
8.5								
9.0								
9.5				9		100	85	0.6
10.0			Sand Pack					
10.5			Well Screen					
11.0	SAND, trace silt, grey, wet	10.97		(10)		100	70	0.9
11.5								
12.0								
12.5	END OF BOREHOLE @ 12.19m BGS	12.19						
13.0								
13.5								

WELL DETAILS
Screened interval:
9.14 to 12.19m BGS
Length: 3.05m
Diameter: 51mm
Slot Size: #10
Material: PVC
Sand Pack:
7.62 to 12.19m BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (10)

File: \\GHDNET\GHD\CA\TORONTO\PROJECTS\66211258643\TECH\GINT\12585643-MI.GPJ Library File: GHD_ENVIRO_V07.GLB Report: OVERBURDEN LOG Date: 16/11/22

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two Environmental Site Assessment
PROJECT NUMBER: 12585643
CLIENT: 2695867 Ontario Inc.
LOCATION: Part of Lot 35, Conc. 6, Udora, Ontario

HOLE DESIGNATION: MW2-22
DATE COMPLETED: 24 October 2022
DRILLING METHOD: HSA
FIELD PERSONNEL: D. Blair

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' Value	PID (ppm)
0	TOPSOIL, organic	0.06	Concrete	1		45	10	0.3
	SILTY SAND, trace gravel, brown, dry, trace organics	0.46						
0.5	SAND, brown, dry	0.53						
	SILTY SAND, trace gravel, trace organics, brown, dry			2		75	17	0.4
1.0								
1.5	SAND, trace gravel, brown, dry	1.52		3		100	40	0.4
2.0	SILTY SAND, trace gravel, brown, dry	1.98						
2.5				4		100	24	
3.0								
3.5				5		100	50	0.7
4.0			Bentonite					
4.5								
5.0				6		100	50/5	0.7
5.5								
6.0	SILT, trace sand, trace gravel, brown, dry	6.10						
6.5				7		100	50/5	0.4

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (oval)

File: \\GHDNET\GHD\CA\TORONTO\PROJECTS\66211\2585643\TECH\GINT\12585643-MI.GPJ Library File: GHD_ENVIRO_V07.GLB Report: OVERBURDEN LOG Date: 16/11/22

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two Environmental Site Assessment
PROJECT NUMBER: 12585643
CLIENT: 2695867 Ontario Inc.
LOCATION: Part of Lot 35, Conc. 6, Udora, Ontario

HOLE DESIGNATION: MW2-22
DATE COMPLETED: 24 October 2022
DRILLING METHOD: HSA
FIELD PERSONNEL: D. Blair

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
7.5	- grey at 7.62m BGS							
8.0				8		100	50/5	0.9
8.5								
9.0								
9.5				9		100	50/5	0.8
10.0			Sand Pack					
10.5	SAND, trace silt, brown, wet	10.67	Well Screen					
11.0				10		100	50/5	1.0
11.5								
12.0		12.19						
12.5	END OF BOREHOLE @ 12.19m BGS							
13.0								
13.5								

WELL DETAILS
Screened interval:
9.14 to 12.19m BGS
Length: 3.05m
Diameter: 51mm
Slot Size: #10
Material: PVC
Sand Pack:
7.62 to 12.19m BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (10)

File: \\GHDNET\GHD\CA\TORONTO\PROJECTS\66211\25856431\TECH\GINT\12585643-MI.GPJ Library File: GHD_ENVIRO_V07.GLB Report: OVERBURDEN LOG Date: 16/11/22

ENVISION
CONSULTANTS LTD

LOG OF BOREHOLE BH/MW24-1

PROJECT: Capris Subdivision Udora
REF. NO.: 22-0223a
CLIENT: J&J Development Group
ENCL NO.:
PROJECT LOCATION: Udora, ON
Method: Hollow Stem Auger
ORIGINATED BY SH
DATUM: Geodetic
Diameter: 152 mm
COMPILED BY PD
BH LOCATION: N 4901797.173 E 644983.609
Date: Mar-08-2024 to Mar-08-2024
CHECKED BY RB
Equipment: Pontil Drilling CME

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	Soil Head Space Vapors PID (ppm) 10 20 30 40	CGD (ppm) 10 20 30 40	PLASTIC LIMIT W_P / NATURAL MOISTURE CONTENT W / LIQUID LIMIT W_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
256.2	Ground Surface												
256.0	**TOPSOIL:** 76 mm												
0.1	**SANDY SILT:** trace gravel, brown, moist, loose		1	SS			256						
							255						
			2	SS			254						
253.2													
3.0	**SANDY SILT TILL:** trace gravel, light brown, moist		3	SS	40		253						
							Bentonite						
							252						
251.7													
4.6	**SILTY SAND TILL:** some gravel, light brown, moist		4	SS	59	▽	W. L. 251.1 m Mar 08, 2024						
250.1													
6.1	**SANDY SILT TILL:** trace gravel, brown, moist		5	SS	99/ 275mm		250						
							249						
248.6													
7.6	**SILTY SAND:** brown, wet		6	SS	100/ 225mm		248						
							Sand						
247.1							Screen						
9.1	**SILTY SAND:** trace clay, grey, wet		7	SS	76		247						

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ 3=3% Strain at Failure

ENVISION-SOIL-ROCK-APRIL 5-2022.GLB
ENVIRO PID(PPM) AND CGD(PPM) - 2016-R02 22-0223A - BHMW24-1 - MARCH 2024.GPJ 24-4-4

LOG OF BOREHOLE BH/MW24-1

PROJECT: Capris Subdivision Udora
REF. NO.: 22-0223a
CLIENT: J&J Development Group
Method: Hollow Stem Auger
ENCL NO.:
PROJECT LOCATION: Udora, ON
Diameter: 152 mm
ORIGINATED BY SH
DATUM: Geodetic
Date: Mar-08-2024 to Mar-08-2024
COMPILED BY PD
BH LOCATION: N 4901797.173 E 644983.609
Equipment: Pontil Drilling CME
CHECKED BY RB

SOIL PROFILE			SAMPLES						Soil Head Space Vapors						
(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS / 0.3 m	GROUND WATER CONDITIONS	ELEVATION	PID (ppm) 10 20 30 40	CGD (ppm) 10 20 30 40	PLASTIC LIMIT W_P / NATURAL MOISTURE CONTENT W / LIQUID LIMIT W_L — WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	Continued												
245.6	**SILTY SAND:** trace clay, grey, wet(Continued)						246						
10.7	**END OF BOREHOLE** Notes: 1) 50 mm dia. monitoring well was installed upon completion of drilling, screened from 7.62 m to 10.67 m. Water Level Readings: Date W.L. Depth (mbgs) March 8, 2024 5.15												

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

ENVISION-SOIL-ROCK-APRIL 5-2022.GLB
ENVIRO PID(PPM) AND CGD(PPM) 2016-802 22-0223A - BHMW24-1 - MARCH 2024.GPJ 24-4-4

LOG OF BOREHOLE MW1

WSP

project |	PART OF LOT 35 CONCESSION 6, UDORA, ONTARIO			**project no. |**	161-09454-00
client |	TONI RISI, CAPRIS INVESTMENT LTD.	**rig type |**	CME 75, track-mounted	**date started |**	2016/07/25
location |	UDORA, ONTARIO	**method |**	Hollow stem augers, 215 mm dia.	**supervisor |**	EJP
position |	E: 644831 N: 4901800 (17T, Geodetic)	**coring |**	*n/a*	**reviewer |**	DAO

Depth Scale (m)	Elev / Depth (m)	STRATIGRAPHY	Graphic Plot	Sample Number	Sample Type	SPT N-Value / Core Recovery	Elevation Scale (mASL)
		(continued)					
8		SANDY SILT TILL: BROWN SANDY SILT TILL, SOME TO TRACE GRAVEL, SOME TO TRACE CLAY, TRACE COBBLES, MOIST TO WET, COMPACT *(continued)*		9	SS	96 / 200mm	245
9				10	SS	87 / 225mm	244
10							243
11		...at 10.7 m, light brown sandy silt till, some to trace gravel, some to trace clay, trace cobbles, compact, moist to wet to 15.3 m		11	SS	50 / 50mm	242
12				12	SS	50 / 50mm	241
13				13	SS	50 / 100mm	240
14							239
							238

Penetration Test Values (Blows / 0.3m): × Dynamic Cone; 10 20 30 40

Undrained Shear Strength (kPa): ○ Unconfined ● Pocket Penetrometer + Field Vane ■ Lab Vane; 40 80 120 160

Water Content (%) & Plasticity: PL MC LL; 10 20 30

PID Readings: 0 ppm

Well Details

Lab Data and Comments: GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

(continued next page)

library: genivar - library.glb report: gen log v1 file: 161-09454-00_gint logs_sept.gpj

LOG OF BOREHOLE MW1

project |	PART OF LOT 35 CONCESSION 6, UDORA, ONTARIO			**project no. |**	161-09454-00
client |	TONI RISI, CAPRIS INVESTMENT LTD.	**rig type |**	CME 75, track-mounted	**date started |**	2016/07/25
location |	UDORA, ONTARIO	**method |**	Hollow stem augers, 215 mm dia.	**supervisor |**	EJP
position |	E: 644831 N: 4901800 (17T, Geodetic)	**coring |**	*n/a*	**reviewer |**	DAO

Depth Scale (m)	Elev / Depth (m)	STRATIGRAPHY	Graphic Plot	Sample Number	Sample Type	SPT N-Value / Core Recovery	Elevation Scale (mASL)	Penetration Test Values (Blows / 0.3m) / Undrained Shear Strength (kPa)	Water Content (%) & Plasticity	PID Readings	Well Details	Lab Data and Comments
15		*(continued)*						Dynamic Cone: 10 20 30 40 Unconfined / Pocket Penetrometer / Field Vane / Lab Vane: 40 80 120 160	PL MC LL: 10 20 30			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	237.4											
	15.3	BOREHOLE TERMINATED AT 15.3m BELOW GROUND SURFACE IN SANDY SILT TILL.		14	SS	50 / 50mm				0 ppm		
		END OF BOREHOLE										

Borehole was dry and open upon completion.

50 mm monitoring well installed.
No. 10 screen installed.

WATER LEVEL MONITORING

Date	Depth (m)	Elevation (m)
Aug 3, 2016	10.3	242.4

library: genivar - library.glb report: gen log v1 file: 161-09454-00_gint logs_sept.gpj

LOG OF BOREHOLE MW2

WSP

project |	PART OF LOT 35 CONCESSION 6, UDORA, ONTARIO			**project no. |**	161-09454-00
client |	TONI RISI, CAPRIS INVESTMENT LTD.	**rig type |**	CME 75, track-mounted	**date started |**	2016/07/26
location |	UDORA, ONTARIO	**method |**	Hollow stem augers, 215 mm dia.	**supervisor |**	EJP
position |	E: 644966 N: 4901867 (17T, Geodetic)	**coring |**	*n/a*	**reviewer |**	DAO

Depth (m)	Elev (m)	STRATIGRAPHY	Graphic	Sample No.	Type	SPT N-Value / Core Recovery	Elevation (mASL)	PID (ppm)	Lab Data and Comments
0	253.5	**GROUND SURFACE**							
0	253.3	TOPSOIL: 600mm OF DARK BROWN TOPSOIL, SOME ORGANICS, MOIST		1	SS	7	253	0	
0.2		SANDY SILT TILL: BROWN SANDY SILT TILL, SOME TO TRACE GRAVEL, SOME TO TRACE CLAY, TRACE COBBLES, MOIST TO WET, LOOSE TO COMPACT		2	SS	10		0	
1				3	SS	11	252	0	*SS3 chemistry:* M&I
2	251.2								
2.3		CLAYEY SILT: BROWN CLAYEY SILT, SOME SAND, TRACE GRAVEL, MOIST, LOOSE TO COMPACT, WET		4	SS	9	251	0	2 21 56 21 *SS4 chemistry:* PAHs
2	250.6								
2.9		SANDY SILT TILL: BROWN SANDY SILT TILL, SOME TO TRACE GRAVEL, SOME TO TRACE CLAY, TRACE COBBLES, MOIST TO WET, LOOSE TO COMPACT		5	SS	21	250	0	*SS5 chemistry:* CCME(F1-F4), BTEX, VOCs, PHCs
3				6	SS	54	249	0	*SS6 chemistry:* PCBs
4				7	SS	83	248	0	
5				8	SS	50 / 75mm	247	0	
6									
7									

Penetration Test Values (Blows / 0.3m): × Dynamic Cone 10 20 30 40

Undrained Shear Strength (kPa): ○ Unconfined ✚ Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160

Water Content (%) & Plasticity: PL MC LL 10 20 30

Well Details

GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

(continued next page)

library: genivar - library.glb report: gen log v1 file: 161-09454-00_gint logs_sept.gpj

LOG OF BOREHOLE MW2

WSP

project |	PART OF LOT 35 CONCESSION 6, UDORA, ONTARIO			**project no. |**	161-09454-00
client |	TONI RISI, CAPRIS INVESTMENT LTD.	**rig type |**	CME 75, track-mounted	**date started |**	2016/07/26
location |	UDORA, ONTARIO	**method |**	Hollow stem augers, 215 mm dia.	**supervisor |**	EJP
position |	E: 644966 N: 4901867 (17T, Geodetic)	**coring |**	*n/a*	**reviewer |**	DAO

Depth Scale (m)	Elev / Depth (m)	STRATIGRAPHY	Graphic Plot	Sample Number	Sample Type	SPT N-Value / Core Recovery	Elevation Scale (mASL)
8		SANDY SILT TILL: BROWN SANDY SILT TILL, SOME TO TRACE GRAVEL, SOME TO TRACE CLAY, TRACE COBBLES, MOIST TO WET, LOOSE TO COMPACT *(continued)*		9	SS	50 / 25mm	246
9				10	SS	50 / 25mm	245
10							244
11				11	SS	50 / 75mm	243
12				12	SS	50 / 50mm	242
13		...at 12.7 m, brown medium to coarse grained sand, some gravel, very dense, wet to 12.8 m					241
14	239.2 / 14.3	SAND: BROWN MEDIUM TO COARSE GRAINED SAND, SOME GRAVEL,VERY DENSE, WET		13	SS	50 / 25mm	240
							239

Penetration Test Values (Blows / 0.3m) — Dynamic Cone: 10, 20, 30, 40

Undrained Shear Strength (kPa) — Unconfined, Pocket Penetrometer, Field Vane, Lab Vane: 40, 80, 120, 160

Water Content (%) & Plasticity — PL, MC, LL: 10, 20, 30

PID Readings: 0 ppm

Well Details

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) — GR SA SI CL

...at 14.3m, slight odour in soil sample to 16.9m

(continued next page)

library: genivar - library.glb **report:** gen log v1 **file:** 161-09454-00_gint logs_sept.gpj

LOG OF BOREHOLE MW2

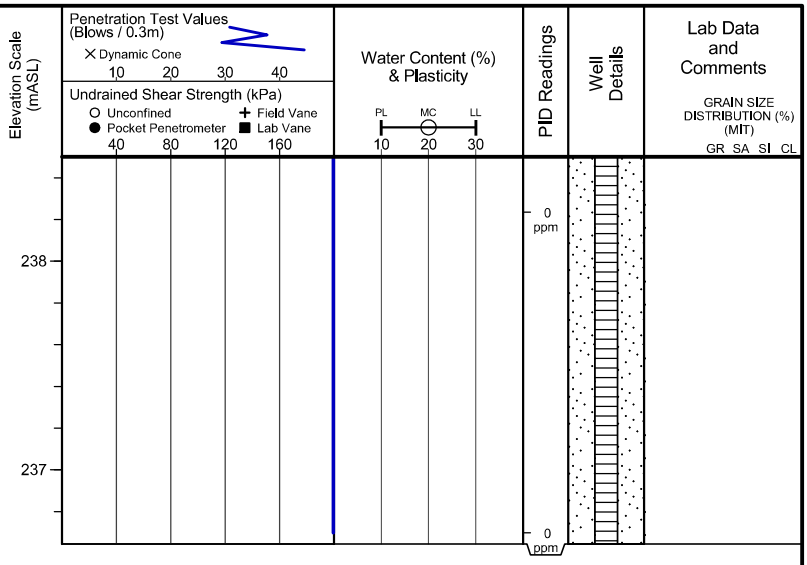
project |	PART OF LOT 35 CONCESSION 6, UDORA, ONTARIO			**project no. |**	161-09454-00
client |	TONI RISI, CAPRIS INVESTMENT LTD.	**rig type |**	CME 75, track-mounted	**date started |**	2016/07/26
location |	UDORA, ONTARIO	**method |**	Hollow stem augers, 215 mm dia.	**supervisor |**	EJP
position |	E: 644966 N: 4901867 (17T, Geodetic)	**coring |**	*n/a*	**reviewer |**	DAO

Depth Scale (m)	Elev / Depth (m)	STRATIGRAPHY	Graphic Plot	SAMPLE Number	SAMPLE Type	SPT N-Value / Core Recovery
15		*(continued)*				
		SAND: BROWN MEDIUM TO COARSE GRAINED SAND, SOME GRAVEL,VERY DENSE, WET *(continued)*		14	SS	50 / 50mm
16	236.6 / 16.9	BOREHOLE TERMINATED AT 16.9m BELOW GROUND SURFACE IN SAND.		15	SS	50 / 75mm

END OF BOREHOLE

Borehole was dry and open upon completion.

50 mm monitoring well installed.
No. 10 screen installed.



WATER LEVEL MONITORING

Date	Depth (m)	Elevation (m)
Aug 3, 2016	13.2	240.3
Aug 10, 2016	13.6	239.9

library: genivar - library.glb report: gen log v1 file: 161-09454-00_gint logs_sept.gpj

LOG OF BOREHOLE MW3

WSP

project |	PART OF LOT 35 CONCESSION 6, UDORA, ONTARIO			**project no. |**	161-09454-00
client |	TONI RISI, CAPRIS INVESTMENT LTD.	**rig type |**	CME 75, track-mounted	**date started |**	2016/07/25
location |	UDORA, ONTARIO	**method |**	Hollow stem augers, 215 mm dia.	**supervisor |**	EJP
position |	E: 644953 N: 4901706 (17T, Geodetic)	**coring |**	*n/a*	**reviewer |**	DAO

Depth (m)	Elev (m)	STRATIGRAPHY	Graphic	Sample No.	Type	SPT N-Value / Core Recovery
0	259.8	**GROUND SURFACE**				
	259.6	TOPSOIL: 100mm OF DARK BROWN TOPSOIL, SOME ORGANICS, MOIST		1	SS	35
	0.2	SAND: BROWN MEDIUM GRAINED SAND, SOME TO TRACE ORGANICS, SOME TO TRACE CLAY, GRAVEL, DRY, LOOSE TO COMPACT				
1	259.0	SAND AND GRAVEL: BROWN SAND AND GRAVEL FILL, DRY, COMPACT		2	SS	22
	0.8	SANDY SILT TILL: BROWN SANDY SILT TILL, SOME TO TRACE GRAVEL, SOME TO TRACE CLAY, TRACE COBBLES, MOIST TO WET, LOOSE TO COMPACT				
2	258.3	SAND: BROWN MEDIUM TO COARSE GRAINED SAND, SOME GRAVEL, LOOSE TO COMPACT, DRY		3	SS	13
	1.5					
	257.5	SANDY SILT TILL: BROWN SANDY SILT TILL, SOME TO TRACE GRAVEL, SOME TO TRACE CLAY, TRACE COBBLES, MOIST TO WET, LOOSE TO COMPACT		4	SS	19
3	2.3			5	SS	65
4				6	SS	58
5				7	SS	62
6		...at 6.1 m, brown medium to coarse grained sand lens, trace gravel, wet to saturated to 6.3 m		8	SS	50 / 75mm
7						

Elevation Scale (mASL): 259, 258, 257, 256, 255, 254, 253

Penetration Test Values (Blows / 0.3m) — Dynamic Cone: 10, 20, 30, 40

Undrained Shear Strength (kPa) — Unconfined, Pocket Penetrometer, Field Vane, Lab Vane: 40, 80, 120, 160

Water Content (%) & Plasticity — PL, MC, LL: 10, 20, 30; Water level on completion

PID Readings: 0 ppm

Well Details

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT)

GR SA SI CL

SS3 chemistry: M&I

14 40 34 12

(continued next page)

library: genivar - library.glb report: gen log v1 file: 161-09454-00_gint logs_sept.gpj

LOG OF BOREHOLE MW3

WSP

project |	PART OF LOT 35 CONCESSION 6, UDORA, ONTARIO			**project no. |**	161-09454-00
client |	TONI RISI, CAPRIS INVESTMENT LTD.	**rig type |**	CME 75, track-mounted	**date started |**	2016/07/25
location |	UDORA, ONTARIO	**method |**	Hollow stem augers, 215 mm dia.	**supervisor |**	EJP
position |	E: 644953 N: 4901706 (17T, Geodetic)	**coring |**	*n/a*	**reviewer |**	DAO

Depth Scale (m)	Elev / Depth (m)	STRATIGRAPHY	Graphic Plot	Sample Number	Sample Type	SPT N-Value / Core Recovery	Elevation Scale (mASL)
		(continued)					
8		SANDY SILT TILL: BROWN SANDY SILT TILL, SOME TO TRACE GRAVEL, SOME TO TRACE CLAY, TRACE COBBLES, MOIST TO WET, LOOSE TO COMPACT *(continued)* ...at 7.7 m, brown medium to coarse grained sand lens, trace silt, trace clay, saturated to 8.0 m		9	SS	58	252
9		...at 9.1 m, brown medium to coarse grained sand lens, trace silt, trace clay, saturated to 9.4 m		10	SS	80 / 250mm	251
10							250
11		...at 10.7 m, greyish brown medium to coarse grained sand lens, trace silt, trace clay, saturated to 10.8 m		11	SS	100 / 225mm	249
12				12	SS	70	248
13							247
14				13	SS	90 / 175mm	246
							245

Penetration Test Values (Blows / 0.3m): × Dynamic Cone; 10 20 30 40

Undrained Shear Strength (kPa): ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane; 40 80 120 160

Water Content (%) & Plasticity: PL MC LL; 10 20 30; Water level on completion

PID Readings: 0 ppm

Well Details

Lab Data and Comments: GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

(continued next page)

library: genivar - library.glb report: gen log v1 file: 161-09454-00_gint logs_sept.gpj

LOG OF BOREHOLE MW3

project |	PART OF LOT 35 CONCESSION 6, UDORA, ONTARIO			**project no. |**	161-09454-00
client |	TONI RISI, CAPRIS INVESTMENT LTD.	**rig type |**	CME 75, track-mounted	**date started |**	2016/07/25
location |	UDORA, ONTARIO	**method |**	Hollow stem augers, 215 mm dia.	**supervisor |**	EJP
position |	E: 644953 N: 4901706 (17T, Geodetic)	**coring |**	*n/a*	**reviewer |**	DAO

Depth Scale (m)	Elev / Depth (m)	STRATIGRAPHY	Graphic Plot	SAMPLE Number	SAMPLE Type	SPT N-Value / Core Recovery	Elevation Scale (mASL)	Penetration Test Values (Blows / 0.3m) / Undrained Shear Strength (kPa)	Water Content (%) & Plasticity	PID Readings	Well Details	Lab Data and Comments
15		*(continued)*										
		SANDY SILT TILL: BROWN SANDY SILT TILL, SOME TO TRACE GRAVEL, SOME TO TRACE CLAY, TRACE COBBLES, MOIST TO WET, LOOSE TO COMPACT *(continued)*		14	SS	74				0 ppm		
	244.0						244					
	15.9	BOREHOLE TERMINATED AT 15.8m BELOW GROUND SURFACE IN SANDY SILT TILL.										
		END OF BOREHOLE										

Penetration Test Values (Blows / 0.3m): Dynamic Cone — 10, 20, 30, 40

Undrained Shear Strength (kPa): Unconfined, Field Vane, Pocket Penetrometer, Lab Vane — 40, 80, 120, 160

Water Content (%) & Plasticity: PL, MC, LL — 10, 20, 30; Water level on completion

Lab Data and Comments: GRAIN SIZE DISTRIBUTION (%) (MIT) — GR SA SI CL

Unstabilized water level at 15.5 m below ground surface; borehole was open upon completion.

50 mm monitoring well installed.
No. 10 screen installed.

WATER LEVEL MONITORING

Date	Depth (m)	Elevation (m)
Aug 3, 2016	7.0	252.8
Aug 10, 2016	7.2	252.6

library: genivar - library.glb report: gen log v1 file: 161-09454-00_gint logs_sept.gpj

BOREHOLE NO. MW17-1

PROJECT NAME: UDORA PHASE TWO ESA
PROJECT NO.: 161-09454-00
CLIENT: CAPRIS INV. INC.
DATE COMPLETED: Sep 20, 2017
BOREHOLE TYPE: SPLIT SPOON / HOLLOW STEM AUGER
SUPERVISOR: DAO / JW
GROUND ELEVATION: 250.2 mASL
REVIEWER: SJD

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE PID/TOV (ppm)	CONE PENETRATION "N" VALUE / SHEAR STRENGTH (Intact (MaX) Cu, Remoulded Cu)	WATER CONTENT % (W_P, W_L)	REMARKS
0.0											
0.4	SAND TOPSOIL:DARK BROWN SAND TOPSOIL, TRACE TO SOME SILT, TRACE ROOTLETS / ORCANICS, MOIST.			SS1	4		0	0.0			
	SAND FILL: ORANGY BROWN, SAND FILL, TRACE TO NO SILT, TRACE ROOTLETS, MOIST, LOOSE.										
1.0				SS2	13		1	0.0			WATER LEVEL AT 0.82 mBGS ON SEPT. 20, 2017
1.2	SILTY SAND TILL: GREYISH BROWN SILTY SAND TILL, TRACE GRAVEL, TRACE CLAY, MOIST TO WET, LOOSE.										
2.0				SS3	8		0	0.0			WATER LEVEL AT 2.04 mBGS ON SEPT. 22, 2017
2.3	SILTY SAND TILL: GREYISH BROWN SILTY SAND TILL, SOME COBBLES, TRACE TO SOME CLAY, MOIST TO WET, LOOSE TO DENSE. - 0.1 m OF COBBLES FROM 2.63 m TO 2.74 m			SS4	17		1	0.0			
3.0				SS5	26		1	0.0			
4.0											
4.6	SAND AND GRAVEL: BROWN, SAND AND FINE GRAVEL, SOME COBBLES, VERY DENSE, SATURATED.			SS6	50 for 3"		0	0.0			
5.0											
6.0				SS7	50 for 2"		0	0.0			
6.7	BOREHOLE TERMINATED AT 6.7 m IN SAND AND GRAVEL.										
7.0											
8.0											
9.0											
10.0											

BOREHOLE NO. MW17-2

PROJECT NAME: UDORA PHASE TWO ESA
PROJECT NO.: 161-09454-00
CLIENT: CAPRIS INV. INC.
DATE COMPLETED: Sep 21, 2017
BOREHOLE TYPE: SPLIT SPOON / HOLLOW STEM AUGER
SUPERVISOR: DAO / JW
GROUND ELEVATION: 251.8 mASL
REVIEWER: SJD

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE PID/TOV (ppm)	CONE PENETRATION "N" VALUE / SHEAR STRENGTH (Intact (MaX) Cu, Remoulded Cu)	WATER CONTENT % (W_P, W_L)	REMARKS
0.0											
0.2	SAND TOPSOIL: SOME SILT, TRACE ORGANICS.										
	SAND: DARK BROWN, SAND, SOME SILT, TRACE TO SOME ORGANICS, MOIST, LOOSE.			SS1	5		0	0.0			
1.0				SS2	9		0	0.0			
1.1	SILTY SAND TILL: BROWN, SILTY SAND TILL, TRACE CLAY, TRACE GRAVEL, TRACE ORGANICS, MOIST, LOOSE.										
1.5	SILTY SAND / SANDY SILT TILL: BROWN TO GREYISH BROWN, SILTY SAND TO SANDY SILT TILL, TRACE CLAY, TRACE GRAVEL, TRACE COBBLES, MOIST TO WET, LOOSE TO COMPACT.			SS3	12		0	0.0			
2.0											
				SS4	12		1	0.0			WATER LEVEL AT 5.67 mBGS ON SEPT. 21, 2017
3.0				SS5	11		1	0.0			
4.0				SS6	20		1	0.0			
4.6	SANDY SILT TILL: SANDY SILT TILL, VARVED CLAY LAYERS, SOME CLAY, TRACE COBBLES, TRACE GRAVEL, VERY DENSE			SS7	59		1	0.0	84		
5.0											
6.0											WATER LEVEL AT 2.75 mBGS ON SEPT. 22, 2017
6.1	SANDY SILT TILL: LIGHT BROWN TO GREY SANDY SILT TILL, TRACE TO SOME GRAVEL, TRACE COBBLES, MOIST, VERY DENSE.			SS8	60 for 3"		0				
6.7	BOREHOLE TERMINATED AT 6.7 m IN SANDY SILT TILL.										
7.0											
8.0											
9.0											
10.0											

WSP GEOTECH (METRIC) 161-09454-00 MW LOGS.GPJ WSP_ENV_V1.GDT 10/31/17

BOREHOLE NO. MW17-3

PROJECT NAME: UDORA PHASE TWO ESA
PROJECT NO.: 161-09454-00
CLIENT: CAPRIS INV. INC.
DATE COMPLETED: Sep 20, 2017
BOREHOLE TYPE: SPLIT SPOON / HOLLOW STEM AUGER
SUPERVISOR: DAO / JW
GROUND ELEVATION: 250.8 mASL
REVIEWER: SJD

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	N VALUE	% WATER	% RECOVERY	PID/TOV (ppm)	CONE PENETRATION "N" VALUE / SHEAR STRENGTH (Intact (MaX) Cu, Remoulded Cu)	WATER CONTENT % (W_P, W_L)	REMARKS
0.0	SAND TOPSOIL: BROWN, TRACE ROOTLETS, MOIST.			SS1	8		0	0.0			
0.4	SAND FILL: BROWN TO ORANGEY BROWN, SAND FILL, MOIST, LOOSE TO COMPACT.			SS2	23		0	0.0			
1.5	SILTY SAND TO SANDY SILT TILL: GREYISH BROWN, SILTY SAND TO SANDY SILT TILL, TRACE CLAY, TRACE COBBLES, TRACE GRAVEL, MOIST TO SATURATED, COMPACT.			SS3	34		0	0.0			
				SS4	19		1	0.0			WATER LEVEL AT 2.44 mBGS ON SEPT. 22, 2017 WATER LEVEL AT 2.7 mBGS ON SEPT. 20, 2017
3.1	SANDY SILT TILL: GREYISH BROWN, SANDY SILT TILL, SOME COBBLES, TRACE CLAY, TRACE GRAVEL, VERY SATURATED.			SS5	10		0	0.0			
3.8	SILTY SAND TO SANDY SILT TILL: SILTY SAND TO SANDY SILT TILL, FINE GRAVEL, COMPACT TO DENSE, VERY SATURATED.			SS6	18		1	0.0			
4.6	BOREHOLE TERMINATED AT 4.6 m IN SILTY SAND TO SANDY SILT TILL.										

APPENDIX B

GROUNDWATER RESULTS

TABLE B-1 GROUNDWATER LEVELS

Project: Nitrate Attenuation Development Density Evaluation -Udora (22012.02)

	MW17-1 (A -235172)*			MW17-2			MW17-3			MW1 (A-206394)			MW2			MW3		
Date	Water level (mbtoc)	Water level (mbgl)	Water level Elev. (masl)	Water level (mbtoc)	Water level (mbgl)	level Elev. (masl)	Water level (mbtoc)	Water level (mbgl)	level Elev. (masl)	Water level (mbtoc)	Water level (mbgl)	level Elev. (masl)	Water level (mbtoc)	Water level (mbgl)	level Elev. (masl)	Water level (mbtoc)	Water level (mbgl)	level Elev. (masl)
10-Dec-22	2.65	1.84	248.10	3.71	2.85	248.91	2.81	1.99	249.11	10.32	9.37	243.1	12.39	11.48	240.3	8.06	7.17	252.1
20-Mar-23	1.20	0.39	249.54	1.63	0.81	250.99	1.82	1.00	250.10	10.61	9.66	242.8	11.40	10.49	241.3	5.49	4.60	254.6
20-Apr-23	1.08	0.27	249.66	1.65	0.70	250.97	2.15	1.33	249.77	10.52	9.57	242.9	11.16	10.25	241.6	5.10	4.21	255.0
19-May-23	1.83	1.02	248.91	2.13	1.22	250.49	2.52	1.70	249.40	10.89	9.94	242.6	11.54	10.63	241.2	5.58	4.69	254.5
20-Jul-23	2.62	1.81	248.12	na	na	na	3.04	2.22	248.88	dry	na	na	na	na	na	6.89	6.00	253.2
4-Nov-23	4.13	3.32	246.61	5.27	4.51	247.35	4	3.18	247.92	12.42	11.47	241.0	12.75	11.84	240.0	8.50	7.61	251.6
16-Mar-24	1.05	0.24	249.69	1.72	0.72	250.90	1.67	0.85	250.25	11.09	10.14	242.4	11.52	10.61	241.2	6.14	5.25	254.0
9-Apr-24	1.06	0.25	249.69	1.66	1.66	250.96	1.8	0.98	250.12	10.94	9.99	242.5	11.26	10.35	241.5	5.39	4.50	254.7
6-May-24	1.10	0.29	249.64	0.69	0.69	251.93	2	1.18	249.92	11.73	10.78	241.7	11.02	10.11	241.7	5.05	4.16	255.1
27-Jul-24	2.09	1.28	248.65	2.39	2.39	250.23	2.63	1.81	249.29	11.25	10.30	242.2	11.44	10.53	241.3	6.70	5.81	253.4
30-Sep-24	3.32	2.51	247.42	4.03	4.03	248.59	3.36	2.54	248.56	12.14	11.19	241.3	12.28	11.37	240.4	7.54	6.65	252.6
9-Nov-24	3.72	2.91	247.02	4.77	4.77	247.85	3.71	2.89	248.21	7.23	6.28	246.2	12.56	11.65	240.2	8.13	7.24	252.0

TABLE B-1 GROUNDWATER LEVELS

Project: Nitrate Attenuation Development Density Evaluation -Udora (22012.02)

	MW1-22 (A-351957)			MW2-22			MW24-1			OW5-1		
Date	Water level (mbtoc)	Water level (mbgl)	level Elev. (masl)	Water level (mbtoc)	Water level (mbgl)	Water level Elev. (masl)	Water level (mbtoc)	Water level (mbgl)	Water level Elev. (masl)	Water level (mbtoc)	Water level (mbgl)	Water level Elev. (masl)
10-Dec-22	6.51	5.75	248.88	9.56	8.56	249.31						
20-Mar-23	4.74	3.98	250.65	6.93	5.93	251.94						
20-Apr-23	4.57	3.81	250.82	6.08	5.08	252.80						
19-May-23	4.80	4.04	250.59	6.54	5.54	252.33						
20-Jul-23	5.84	5.08	249.55	9.04	8.04	249.83						
4-Nov-23	7.05	6.29	248.34	9.57	8.57	249.30						
16-Mar-24	5.67	4.91	249.72	7.43	6.43	251.44	6.11	5.22	251.91	1.33	0.63	257.91
9-Apr-24	5.44	4.68	249.95	6.78	5.78	252.09	5.37	4.48	252.65	1.40	0.70	257.84
6-May-24	5.03	4.27	250.36	6.05	5.05	252.82	4.71	3.82	253.31	1.50	0.80	257.74
27-Jul-24	5.87	5.11	249.52	7.06	6.06	251.81	5.90	5.01	252.12	1.96	1.26	257.28
30-Sep-24	7.88	7.12	247.51	8.56	7.56	250.31	7.42	6.53	250.60	2.85	2.15	256.39
9-Nov-24	7.23	6.47	248.16	9.35	8.35	249.52	8.10	7.21	249.92	3.30	2.60	255.94

Table B-2: Groundwater Quality
Project: Nitrate Attenuation Development Density Evaluation (22012.02)

Nitrate Concentrations (mg/L)

Date	MW17-1 (A-235172)	MW17-2	MW17-3	MW3	MW2-22	MW24-1	OW05-1
16-Mar-24	<0.05	2.33	0.06	<0.05	<0.05	0.46	<0.05
10-Apr-24	0.07	1.5	0.09	<0.05	<0.05	0.53	1.87
6-May-24	0.11	0.63	0.11	0.07	0.06	0.64	2.3
27-Jul-24	0.14	0.12	0.11	<0.05	<0.05	0.54	3.97
30-Sep-24	0.66	<0.05	0.45	<0.05	0.27	1.76	5.35
30-Nov-24	0.6	0.25	0.62	0.21	0.1	1.46	3.89
Average	**0.32**	**0.97**	**0.24**	**0.14**	**0.14**	**0.90**	**3.48**

Orthophosphate Concentrations (mg/L)

Date	MW17-1 (A-235172)	MW17-2	MW17-3	MW3	MW2-22	MW24-1	OW05-1
16-Mar-24	0.006	0.005	0.004	0.004	0.004	0.002	<0.002
10-Apr-24	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
6-May-24	0.003	0.005	0.002	0.004	<0.002	0.002	0.002
27-Jul-24	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
30-Sep-24	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
30-Nov-24	0.018	0.012	0.01	0.012	0.01	0.008	0.006
Average	**0.009**	**0.007**	**0.005**	**0.007**	**0.007**	**0.004**	**0.004**

Table B-3 Monitor Well Details

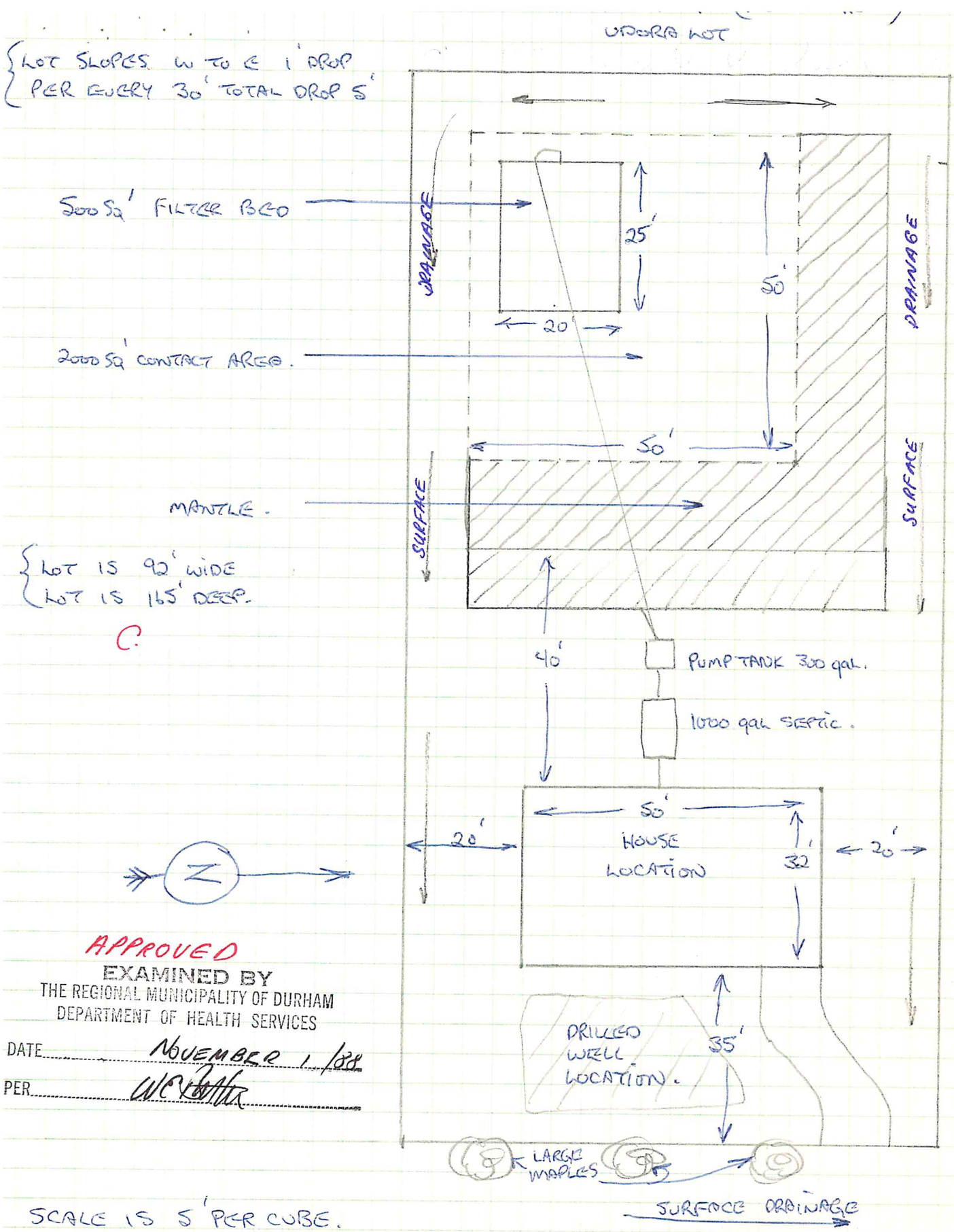
Project: Nitrate Attenuation Development Density Evaluation -Udora

Monitor Details				
Monitor	**Well Depth (mbgl)**	**Casing Stickup (magl)**	**PVC Casing Elev.**	**Ground Elev.**
MW17-1 (A-235172)	6.10	0.81	250.74	249.93
MW17-2	6.10	0.86	252.62	251.76
MW17-3	4.60	0.82	251.92	251.10
MW1	15.30	0.95	253.45	252.50
MW2	16.90	0.91	252.71	251.80
MW3	15.90	0.89	260.12	259.23
MW1-22 (A-351957)	12.19	0.76	255.39	254.63
MW2-22	12.19	1.17	258.87	257.70
OW05-1	8.62	0.7	259.24	258.54
MW24-1	10.67	0.89	257.13	256.24

GPS Survey 2024 (Envision Consultants)

APPENDIX C

CORRESPONDENCES


UPPER LOT
LOT SLOPES W TO E 1' DROP PER EVERY 30' TOTAL DROP 5'
500 Sq' FILTER BED
2000 Sq' CONTRACT AREA.
MANTLE.
SURFACE
DRAINAGE
25'
20'
50'
50'
40'
PUMP TANK 300 gal.
1000 gal SEPTIC.
20'
50'
HOUSE LOCATION
32'
20'
DRILLED WELL LOCATION.
35'
LARGE MAPLES
SURFACE DRAINAGE
LOT IS 92' WIDE
LOT IS 165' DEEP.
C.
N
APPROVED
EXAMINED BY
THE REGIONAL MUNICIPALITY OF DURHAM
DEPARTMENT OF HEALTH SERVICES
DATE NOVEMBER 1/88
PER
SCALE IS 5' PER CUBE.

DURHAM REGION HEALTH DEPARTMENT

DATE: June 14/96 FILE NO. 44X96-21

OWNER: 14(1) [redacted] INSTALLER: BURNS BROS.

TWP. LOT NO. 35 CONC. NO. 6 REG. PLAN NO. 64 LOT NO. 97898

SEPTIC/HOLDING TANK: MANUFACTURER: EXISTING SIZE APP 4500L

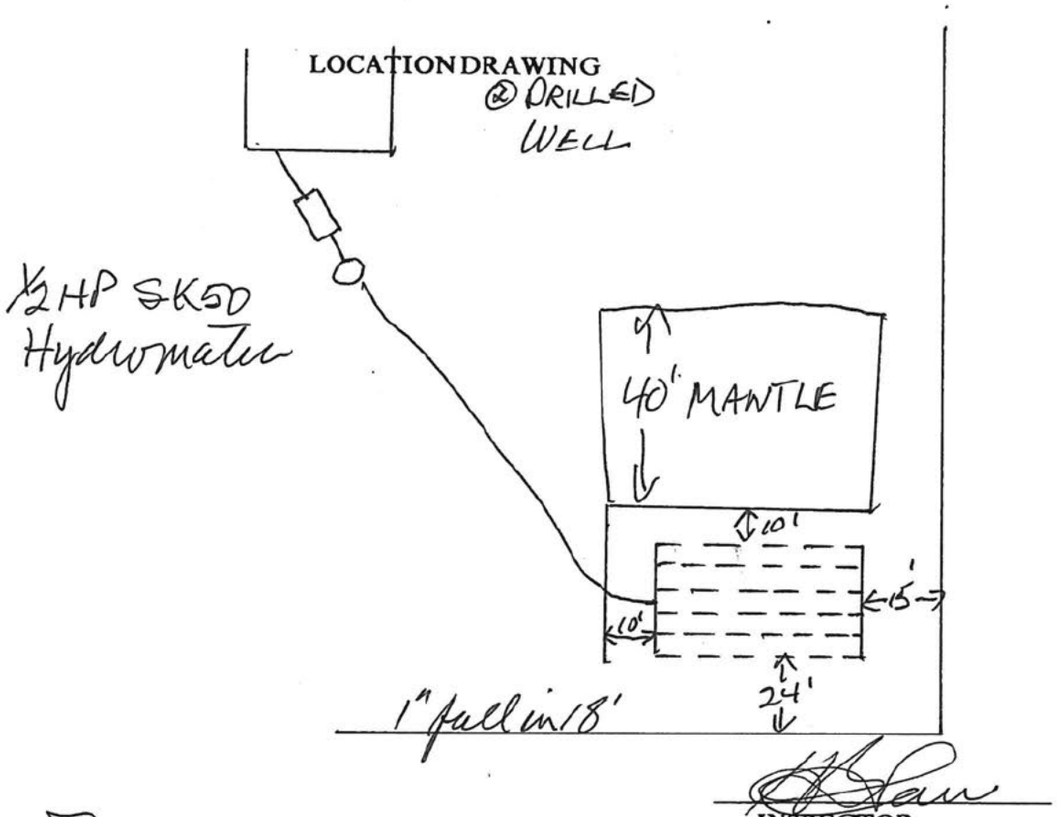
DISTRIBUTION BED: CONVENTIONAL: ____ FILTER BED: ✓ OTHER: ____

LENGTH: 32.9m RAISED: 2.5' EFFECTIVE AREA: 20'x20'
CONTACT AREA: 30'x30'
MANTLE AREA: 40'x30'

OUTSTANDING WORK: BACKFILL [X] SEED OR SOD [X] ESTABLISH DRAINAGE [ ]
ENGINEER'S REPORT [ ]

COMMENTS: Dug well must be filled.

LOCATION DRAWING



INSPECTOR

DURHAM REGION HEALTH DEPARTMENT

DATE: Sept 18/97 FILE NO. 44X97-33

OWNER 14(1) [redacted] INSTALLER: BOB McGUGGAN

TWP LOT NO. 34 CONC NO. 6 REG PLAN NO. 64 LOT NO. 106

SEPTIC/HOLDING TANK: MANUFACTURER: NPCP SIZE: 3600L

DISTRIBUTION BED: CONVENTIONAL ✓ FILTER BED _____ OTHER _____

LENGTH: _____ RAISED: 2.5' EFFECTIVE AREA: _____

CONTACT AREA: _____

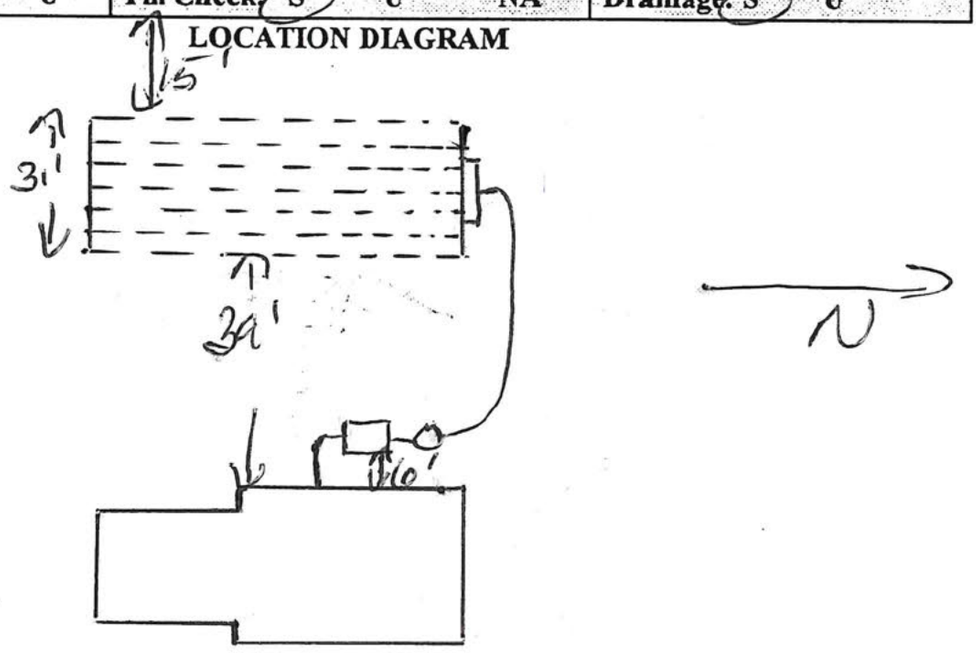
MANTLE AREA: _____

OUTSTANDING WORK: BACKFILL (N) SEED OR SOD (Y) DRAINAGE ( ) ENGINEER'S REPORT ( )

COMMENTS: _____

Final Inspection Checklist		
Clearances: (S) U	Tile run grades: (S) U	Mantle: S U (NA)
Water Supply: (S) U	Fill Check: (S) U NA	Drainage: (S) U

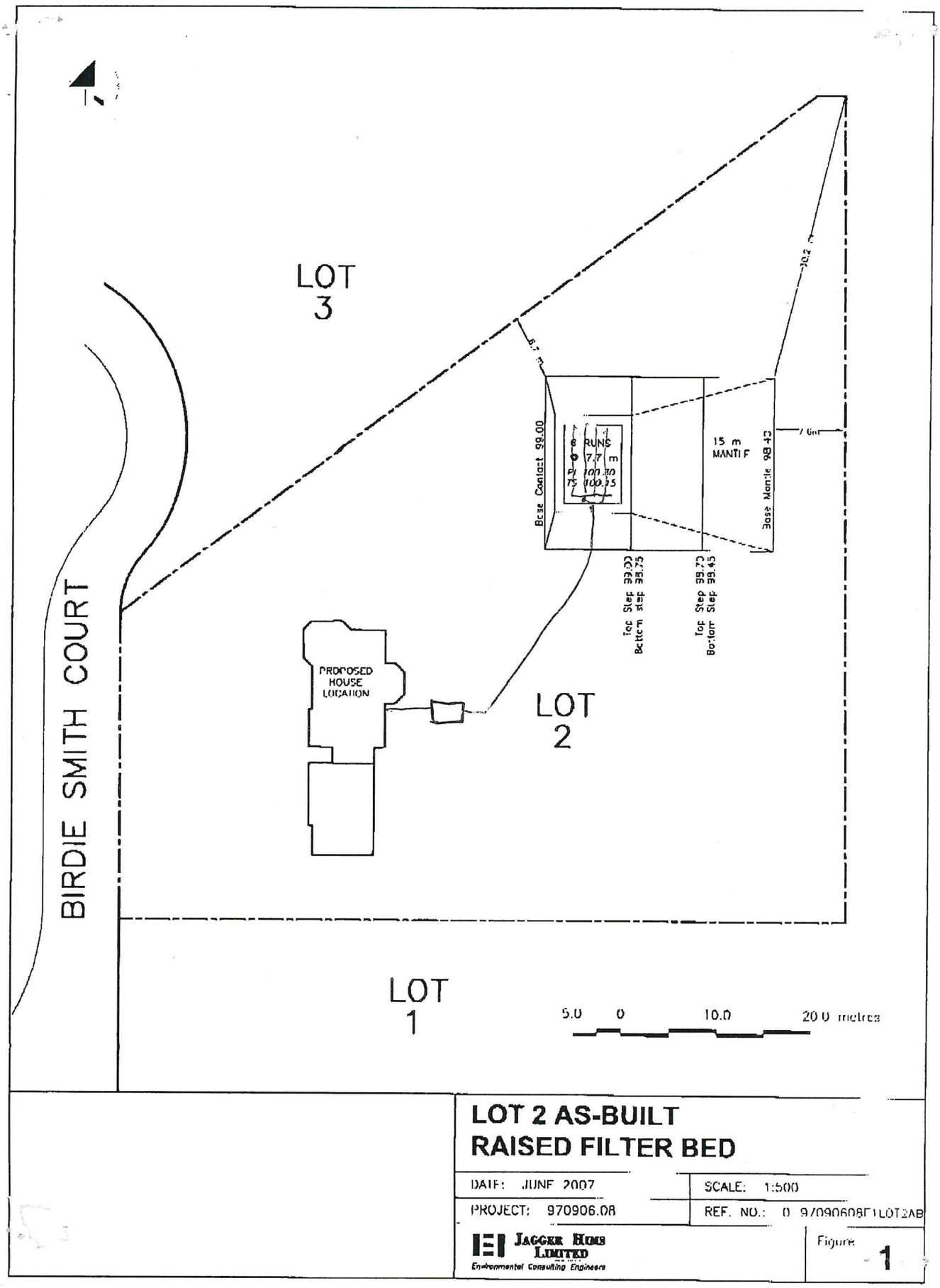
LOCATION DIAGRAM



(x) DRILLED WELL

DURHAM #1

INSPECTOR



LOT 2 AS-BUILT RAISED FILTER BED

DATE: JUNE 2007	SCALE: 1:500
PROJECT: 970906.08	REF. NO.: D 970906081 LOT2AB

JAGGER HIMS LIMITED
Environmental Consulting Engineers

Figure 1