

December 17, 2025

Rob Stovel
Stovel and Associates Inc.
651 Orangeville Road
Fergus, Ontario
N1M 1T9

sent via email to: stovel.associates@outlook.com

Dear Mr. Stovel:

**RE: Ospringe Pit Residential Development Proposal
Preliminary Nitrate Impact and Water Supply Feasibility Study**

As requested, we are providing a preliminary feasibility study regarding potential nitrate impacts and water supply for the proposed 43 lot residential development within Part Lots 11 and 12, Concession 2, Town of Erin, Wellington County. The proposed development is shown on **Figure 1** (attached).

The proposal represents a redevelopment of areas within the (current and former) Ospringe Pit (ARA licence #5472) and Ospringe Pit Expansion (ARA licence #15473). Final extraction and pit rehabilitation has occurred, and the ARA licence surrendered, within a portion of the original Ospringe Pit. The proposed development envelope extends from this rehabilitated area to the remaining Ospringe Pit licence and within a portion of the Ospringe Pit Expansion licence. Pit resources are largely depleted within the remaining licenced area proposed for development.

This report was prepared on behalf of Cox Construction Ltd. in support of an Official Plan Amendment (OPA) application that will be filed with the County of Wellington. The OPA is needed to support a change in land use from Secondary Agriculture to Country Residential. Subject to the approval of this OPA the lands would undergo final rehabilitation to an estate residential subdivision.

Surrounding lands include the operational pit area to the south/southwest, the Eramosa River and river valley to the southeast, and, agricultural lands with rural residences to the north and northeast.

As part of the ARA licence application a hydrogeological assessment was completed for the site by Dames and Moore, Canada (*Hydrogeological Study, Proposed Gravel Extraction Operation, West Half Part Lot 11 and East Half Part Lot 12, Concession II, Erin Township, July 9, 1992*). In addition, a groundwater monitoring program is ongoing at the site. This current study incorporates information from the original assessment and the ongoing monitoring program results. Excerpts from the July 1992 hydrogeological assessment is included in **Appendix A** (attached). A copy of the available monitoring result summary is included in **Appendix B** (attached).

The development area is approximately 22.68 hectares (ha) in size. Under the current development concept approximately 19.85 ha would be developed as 43 residential lots. The remaining area (2.83 ha) would consist of the internal roadway. The minimum and maximum lot sizes would be approximately 0.41 ha and 0.8 ha respectively. Each lot would be serviced by a private well and individual (expected tertiary treatment level) septic system

This feasibility study is based on a desktop review of available information to provide an initial assessment of the potential nitrate impacts related to the proposal, and, examine water supply potential in this area. Specific recommendations are made for future more detailed groundwater assessments that are expected to be required for planning approvals, including the Ministry of Environment Conservation and Parks (MECP) Procedure D-5-4 (*Technical Guideline For Individual On-Site Sewage Systems: Water Quality Impact Risk Assessment*, August 1996), and, MECP Procedure D-5-5 (*Technical Guideline for Private Wells: Water Supply Assessment*, August 1996).

In addition, it is also our expectation that development design and control studies are to be undertaken as part of the planning application process, including characterize of final surficial soils and shallow groundwater conditions, ensuring vertical separation distances are maintained (e.g. between the water table and septic systems or building foundations), and, site specific stormwater management studies/planning. Further, in response to a pre-consultation submission, the Grand River Conservation Authority (GRCA) has identified the need to address the Everton Water Management Protection Area review process. Therefore, appropriate regulatory floodplain analysis, and identification of any related development design implications, is also expected as part of future application submissions.

Hydrogeologic Conditions

The current summary is based on a review of available data, including published geological mapping, publicly available water well record information, previous site assessments and the ongoing monitoring program.

Geologic Setting

Surficial geology mapping, as available from the Ontario Geological Survey OGSEarth mapping (viewed on Google Earth), for the area is shown on **Figure 2**. The Ospringle Pit is situated within a Glaciofluvial (outwash) deposits of sand and gravel. The Eramosa River follows the outwash deposit, and Organic Deposits (peat, muck and marl) are mapped along the river valley, set generally within the outwash deposit. Surficial soils to the north and south of the outwash deposit site are described as (Wentworth) Till, consisting of stone-poor, sandy silt to silty sand-textured till. The outwash deposit likely overlies the Wentworth Till (and/or other till units at depth).

The July 1992 hydrogeological investigation included drilling 7 boreholes within the overall licenced area, of which 3 (OW5-10, OW6-10 and OW7-9) are within the proposed development area. The borehole locations are shown on **Figure 1** and borehole logs are included in **Appendix A**. We note that monitoring wells at these 3 locations have all been removed through extraxtion.

At OW5-10, OW6-10 and OW7-9 the reported overburden consisted of sand/gravel over silt till, with till elevations of 376.1, 375.6 and 377.5 metres above sea level (mASL) respectively. The boreholes at all 3 of these locations extended approximately 2 m into (but not through) the till unit. The till was shown to extend to a lowest elevation of 373.7 mASL within the development area.

Within the development area most of the surficial sand/gravel has been extracted, and within a portion of the development area fill importation and site rehabilitation works have occurred. As noted later in this report, we expect future geotechnical assessment related to site fill works and/or development design and construction to confirm final soil conditions at the site.

A review of water well records (further discussed below) indicates that near the eastern site boundary bedrock is reported to be approximately 12 to 16 m below ground surface. One observation well drilled near the northwest corner of the site (OW1-3) encountered bedrock at a depth of 2.3 m.

Bedrock in the area of the site is reported to consist of Goat Island - Gasport (former Amabel) Formation dolostone. However, some local water well records report accounting a sequence of “brown rock” over “shale”, which suggests the Guelph Formation and/or Eramosa Formation may also subcrop in the area.

Topography, Drainage and Natural Heritage

For this review the Ontario Lidar Derived Digital Terrain Model, as available from Land Information Ontario, was examined in combination with topographic information shown on development plan.

The existing elevations of the development area represent both the pit floor (extraction) levels, at approximately 377 to 379 metres above sea level (mASL) along the west and northern boundary, and, rehabilitated area rising up from the pit floor to approximately 386 mASL near Wellington Road 125.

The Ospringe Pit Expansion licence extends to the southwest of the proposed development area, with excavated to (dry) pit floor elevations of approximately of 375 to 376 mASL. Below water extraction is permitted through the ARA Licence, to an elevation of approximately 371 mASL, to form a large pit pond covering most of the licenced area. The projected pond elevation is approximately 374.6 mASL.

Based on the topography of the site all internal runoff would move west to the pit floor and/or southwest to the pit pond, and is expected to infiltrate. No significant volume of runoff is expected exit the site under current conditions.

Although lands northwest of the site are higher in elevation and are sloped toward the site, the pit edge (berm) appears to form a small ridge which in combination with a natural shallow draw feature north of the site appears to direct runoff westward. This combination of factors suggests that significant runoff volumes from lands north of the site into the development area are not expected. This off-site runoff appears to support the wetland that occurs northwest of the site and extends southwestward.

The expected future stormwater management study and plan will provide a more detailed analysis of overland flow at the site and provide recommendations as needed to maintain on-site recharge. We note that the maintenance of site recharge is an expected stormwater management plan target, which may be achieved using LID techniques.

Natural Heritage feature mapping in the area of the site, as available from the Ministry of Natural Resource (MNR) and Grand River Conservation Authority (GRCA) online mapping applications, is shown on **Figure 3** and **Figure 4** respectively.

As shown, the Eramosa River and associated Eramosa River Blue Springs Creek Wetland Complex Provincially Significant Wetland (PSW) occurs southeast of the Ospringe Pit. The river elevation is shown to be approximately 374 mASL on the Ospringe Pit Site Plan. The wetland appears to occur below an elevation of approximately 376 mASL.

A portion of the PSW and wetland complex also extends up into the shallow draw feature that is mapped northwest of the pit and development area. Here the wetland elevations range from approximately 379 to over 383 mASL (and potentially up to 389 mASL). Based on the elevations this wetland is “perched” above the water table within the Ospringe Pit, and likely relies on a combination of (potential) groundwater and surface water inputs from up-slope to the north and northwest.

The mapping also shows the Eramosa River Valley Area of Natural Scientific Interest (ANSI), associated with the river and wetland complex.

Well Record Review

Reported water well records within 500 m of the site, as available through the MECP online mapping application and database (available at: <https://www.ontario.ca/page/map-well-records>), were reviewed to examine overburden conditions and local water supply potential. A map illustrating reported water well locations and well record summary table is included in **Appendix B** (attached).

As shown a total of 19 well records are mapped within, and just beyond, 500 m of the site. According to the well record information 3 of those records are associated with well decommissioning, and 1 record has no information yet posted.

The remaining 15 wells are reported to be used for water supply, primarily for domestic (single household) purposes, but also including some stock (farm) use. Most of the reported pumping rates for the water supply wells range from 23 to 68 litres per minute (L/min), however rates up to 114 L/min are reported. One (1) record reported a moderate capacity (15 L/min), the remaining wells reported production capacities at or exceeding typical residential demand (19 L/min).

Reported water supply wells in the area of the site are completed primarily in the bedrock aquifer, at depths ranging from 15 to 78 m. Only 1 overburden (bored) well was reported within 500 m of the site, completed at depths less than 5 m.

The well record review clearly indicates that domestic water supplies are available within the bedrock aquifer in the area of, and therefore likely at, the site. Given that on-site drilling indicates that a fine-grained (till) unit occurs below the surficial sand and gravel deposit, and therefore above bedrock, water wells completed in the bedrock would be “protected” from surficial or shallow groundwater influences (e.g. due to the wetlands occurring in the area or aggregate extraction). Therefore, we recommend that any water supply well constructed for the proposed development be completed in the bedrock aquifer.

As noted previously, we recommend water supply potential be investigated further at the site through the MECP Procedure D-5-5, which would include on-site water well installation, capacity testing, interference assessments, and, water quality sampling.

Hydrogeologic Setting

For this assessment groundwater elevation and flow direction mapping was developed based on recent measurements (August 2023) taken as part of the routine pit monitoring program in addition to surface water elevations (Eramosa River) and previous interpretations (Dames and Moore, 1992). Although this water level data does not illustrate the current seasonal water table fluctuation, and does not include measurements at the northeast site boundary, the mapping is useful on a preliminary basis to help establish conditions at the site. The derived water table mapping is shown on **Figure 5**. We note that expected future geotechnical assessments at the site would update and refine this understanding as part of any additional planning application process to be undertaken.

As shown, the shallow groundwater flow direction is generally northwest to southeast across the site, and toward the Eramosa River and associated wetland. Based on the available data shallow groundwater elevations within the proposed development area are interpreted to range from approximately 377 to 375.5 mASL. Groundwater discharge is expected at the river valley.

Based on the site characteristics the development area will have a groundwater recharge function, supporting the southwest shallow groundwater flow system that can contribute the PSW and river system. It is expected that recharge maintenance would be a development design target in order to continue to support this flow system.

GRCA online mapping indicates the average annual recharge rate within the pit area ranges from 294 to 344 mm/yr and surface water runoff rate ranges from 24 to 0 mm/yr, which is considered reasonable given the surficial soils, vegetative cover and topography. In addition, an upward gradient potential is mapped at the site, with potentiometric (bedrock aquifer) head values of between approximately 375 to 385 mASL reported.

While the (GRCA) bedrock potentiometric levels are approximate (projected), the potentiometric elevations as compared to both water table and ground surface elevations indicate that care should be taken by the water well contractor and drilling supervisor when installing bedrock wells to ensure potential flowing conditions are anticipated and dealt with appropriately.

Source Protection

The site is not located within any identified Well Head Protection Area (WHPA). Municipal wells are distant from the site (Acton and Rockwood). The site is located within a mapped Significant Groundwater Recharge area. Regarding Source Protection considerations, it will likely be important to maintain groundwater recharge during site development.

Nitrate Impact Analysis

MECP Procedure D-5-4 (*Technical Guideline For Individual On-Site Sewage Systems: Water Quality Impact Risk Assessment*, August 1996) indicates that for the proposed site development a 3-step process is appropriate, consisting generally of:

1. Determination of lot size.
2. System isolation identification.
3. Contaminant attenuation (risk) assessment.

We note that this procedure is a risk assessment, and not a predictor of actual nitrate concentrations in the groundwater system. This type of methodology acknowledges that it does not account for all dilution and denitrification processes, and therefore we can consider the method as an approximation that allows for relative risk to be determined. If the nitrate loading calculation has a result of 10 mg/L (drinking water limit) or less, the “risk” of associated environmental impact to groundwater systems associated with the proposed development is considered relatively low.

Lot Size

The proposed 43 residential lots range in size from 0.41 hectares (ha) to 0.8 ha. The total proposed development area is approximately 22.68 ha.

A summary is provided in **Table 1**.

Lot #	Size (ha)	Lot #	Size (ha)	Lot #	Size (ha)
1	0.42	14	0.47	26	0.63
2	0.73	15	0.49	27	0.51
3-10	0.41	16	0.70	28	0.41
11	0.43	17	0.46	29-42	0.44
12	0.80	18-24	0.41	43	0.47
13	0.44	25	0.44	Total:	19.85

Table 1: Proposed Lot Areas

Based on the proposed lot sizes system isolation and/or contaminant attenuation should be considered.

System Isolation

System isolation can be considered in the context of the hydrogeologic setting.

The shallow water table system is the primary “receiver” for septic system impacts. The water table system flows northwest to southwest, and is expected to discharge to the wetland and river system.

Overall vertical flow through the fine-grained deposits to the bedrock system will be limited due to the geologic setting. The till deposit will promote horizontal flow within the shallow (water table) flow system. Based on an initial review, the primary water source in this area is the bedrock system. This should be confirmed through a door-to-door survey in the area, as per MECP Procedure D-5-5. The bedrock aquifer is generally protected by the overlying till sequence. In addition, upward gradients from the bedrock to the river/wetland system is expected. Therefore, the water supply aquifer in use in the area, and proposed to be used at the site, is relatively isolated from on-site septic system impacts.

Water quality sampling of the bedrock aquifer should be completed to assess existing conditions and confirm system isolation, this would be expected through the implementation of MECP Procedure D-5-5 for the proposed development.

Based on system isolation considerations, and assuming well construction meets applicable provincial regulations and standards, local bedrock water supplies are interpreted to be at relatively low “risk” from septic loading impacts within the overburden system due to the proposed development. However, for completeness a contaminant attenuation assessment is also provided.

Contaminant Attenuation Assessment

The following nitrate loading calculation (predictive assessment) is provided as part of an initial preliminary risk assessment. It is our understanding that tertiary treatment septic systems are proposed as part of this development. As noted above, the shallow water table system is the primary receptor of potential septic loading impacts.

Based on the proposed 43 residential lot subdivision, each with individual tertiary treatment septic systems (1,000 L/day) achieving 10 mg/L nitrate concentration at the septic bed, the daily nitrate loading would be expected to be 430,000 mg/day. Assuming 0.344 m/yr recharge (to be maintained post development) over 22.68 ha, and incorporating septic volumes, total site recharge would be 256,751.2 L/day. Therefore, expected nitrate loading due to the proposed development would result in nitrate concentrations of 1.67 mg/L at the water table.

Based on the shallow groundwater sampling program undertaken at the Ospringe Pit, nitrate levels since 2012 have remained 2.5 mg/L or less at the upgradient monitor and less than 1 mg/L at the downgradient monitor. Given background nitrate levels the nitrate concentration related to the proposed septic systems would be well below 10 mg/L within the shallow water table system. We recommend additional shallow groundwater nitrate sampling occur within the proposed development area, and, within the bedrock aquifer to further define baseline conditions.

The results indicate that according to an initial predictive assessment the proposal would be expected to satisfy the MECP Procedure D-5-4 septic loading risk assessment criteria. In addition, given the predicted nitrate loading, at this time no significant impact would be expected at the Eramosa River or associated wetland complex.

Water Supply Assessment

Available well records show that the existing wells within the overall area of the site have a typical capacity of 20 L/min (or more). Similar well capacities can be expected within the development site, and a minimum capacity of 20 L/min can be set as a water supply target for residential wells at the site. Assuming a peak demand rate of 3.75 L/min for each person (as per D-5-5), each well would then theoretically support a 5+ person household.

The local bedrock aquifer in this area is well known source of good quality water capable of providing adequate water quantity to residences. As far as we are aware, mutual interference is not a current issue in the area and is not expected to be an issue in the future based on typical household demand.

We recommend that the bedrock aquifer be used for residential water supply at the proposed development. Future water wells at the site should be constructed by licenced water well contractors and the construction should meet all applicable standards. Further, MECP Procedure D-5-5 should be followed at the site, which specifies that for development areas between 15 and 25 ha at least 4 water wells should be constructed and tested. As noted previously, any water well contractor retained to drill and construct water wells or monitoring wells into the bedrock at the site should be informed of the potential for flowing conditions to be encountered, and appropriate measures should be taken to ensure flowing conditions are adequately controlled if encountered.

Conclusions and Recommendations

Based on this review and: the expected implementation of standard development controls; use of tertiary treatment septic systems; water well construction within the bedrock aquifer by licenced water well contractors according to all applicable standards (including standard separation distances); and, the recommended implementation of MECP Procedure D-5-4 and D-5-5, at this time the potential for groundwater system impacts is considered low.

We recommend the following:

1. Final shallow soils and groundwater conditions be confirmed through the expected filling operations and future development related geotechnical assessment.
2. The expected stormwater management assessment and planning at the site include recharge maintenance as a target to minimize potential groundwater impacts.
3. All residential water supply wells to be constructed at the site be completed by MECP licenced water well contractors according to all applicable regulations and standards and be drilled into the bedrock. Target water supply rates should be 20 L/min or more. Any contractor retained to install bedrock wells at the site should be informed that flowing conditions may be encountered.
4. MECP Procedure D-5-5 be followed to confirm private water supplies can be provided using the bedrock aquifer system, and to assess potential mutual inference, or interference with existing water wells and/or Natural Heritage features.
5. MECP Procedure D-5-4 be followed to confirm individual septic system use at the site would not result in unacceptable groundwater impacts.
6. An updated hydrogeologic assessment be completed, incorporating the findings of the recommended study components.

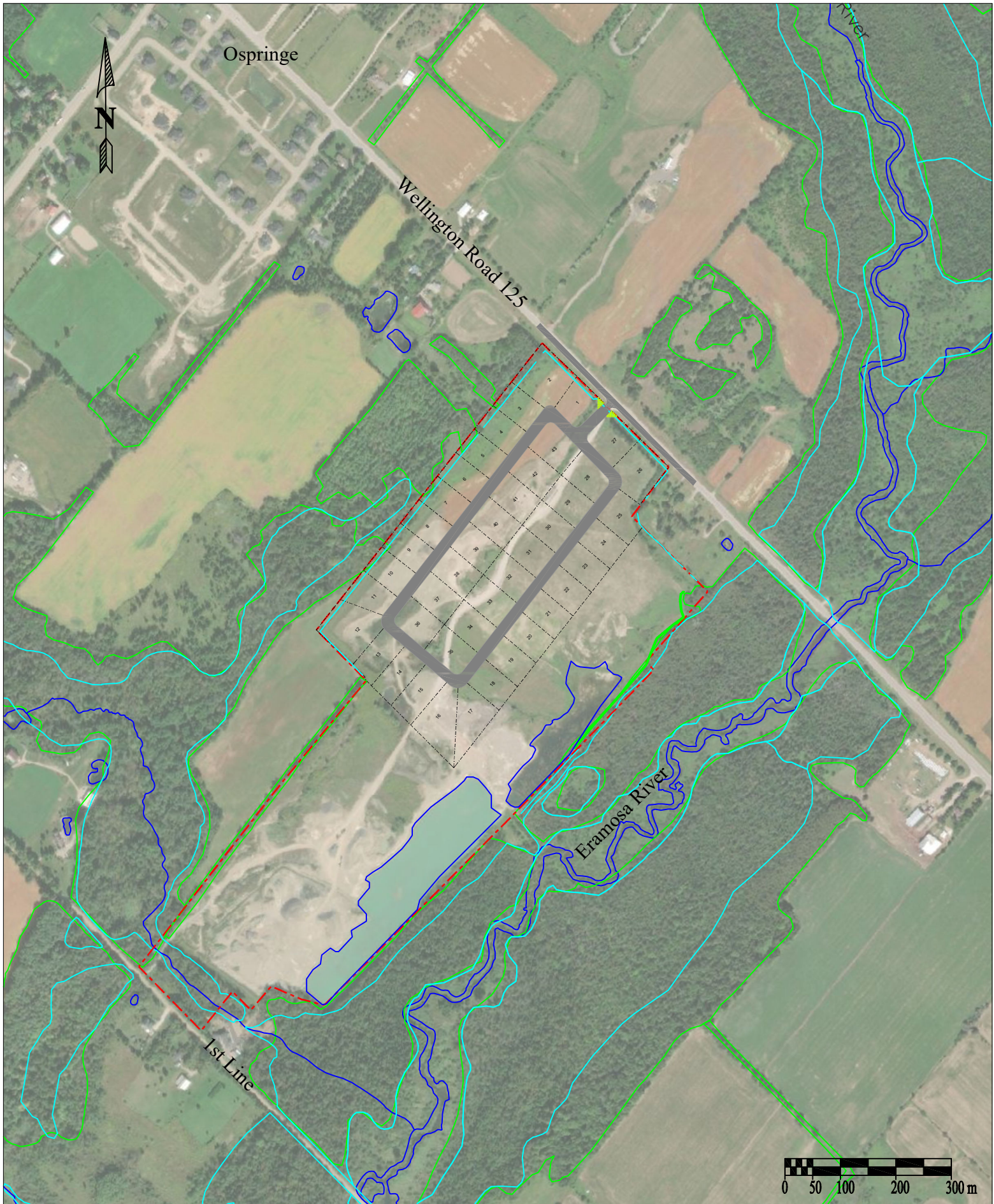
If you have any questions, or require further information, please do not hesitate to contact us.

Sincerely,

A handwritten signature in black ink, appearing to read "Andrew Pentney". The signature is fluid and cursive, with the first name "Andrew" written in a larger, more prominent script than the last name "Pentney".

Andrew Pentney, P.Ge.
Hydrogeologist

- Attached:
- Figure 1: Site Location
 - Figure 2: Surficial Geology
 - Figure 3: MNR Natural Heritage Mapping
 - Figure 4: GRCA Natural Heritage Mapping
 - Figure 5: Water Table Conditions
 - Appendix A: Ospringe Pit 2024 Monitoring Summary
 - Appendix B: Water Well Record Review



- - - - - Pit Licence (approx.)
- - - - - Proposed Development (approx.)

vegetation lines, wetlands, water bodies & watercourses, roads, etc. as shown

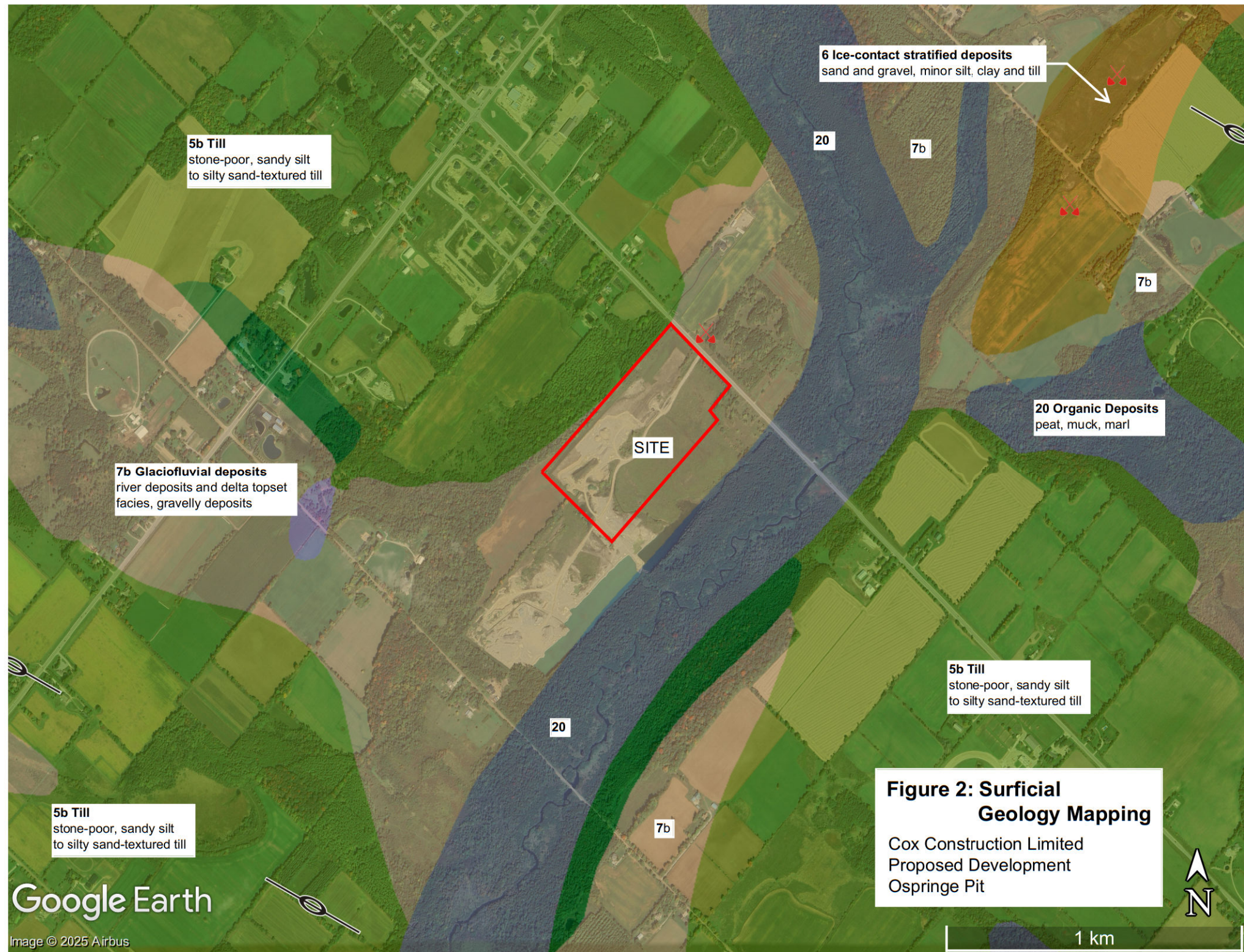
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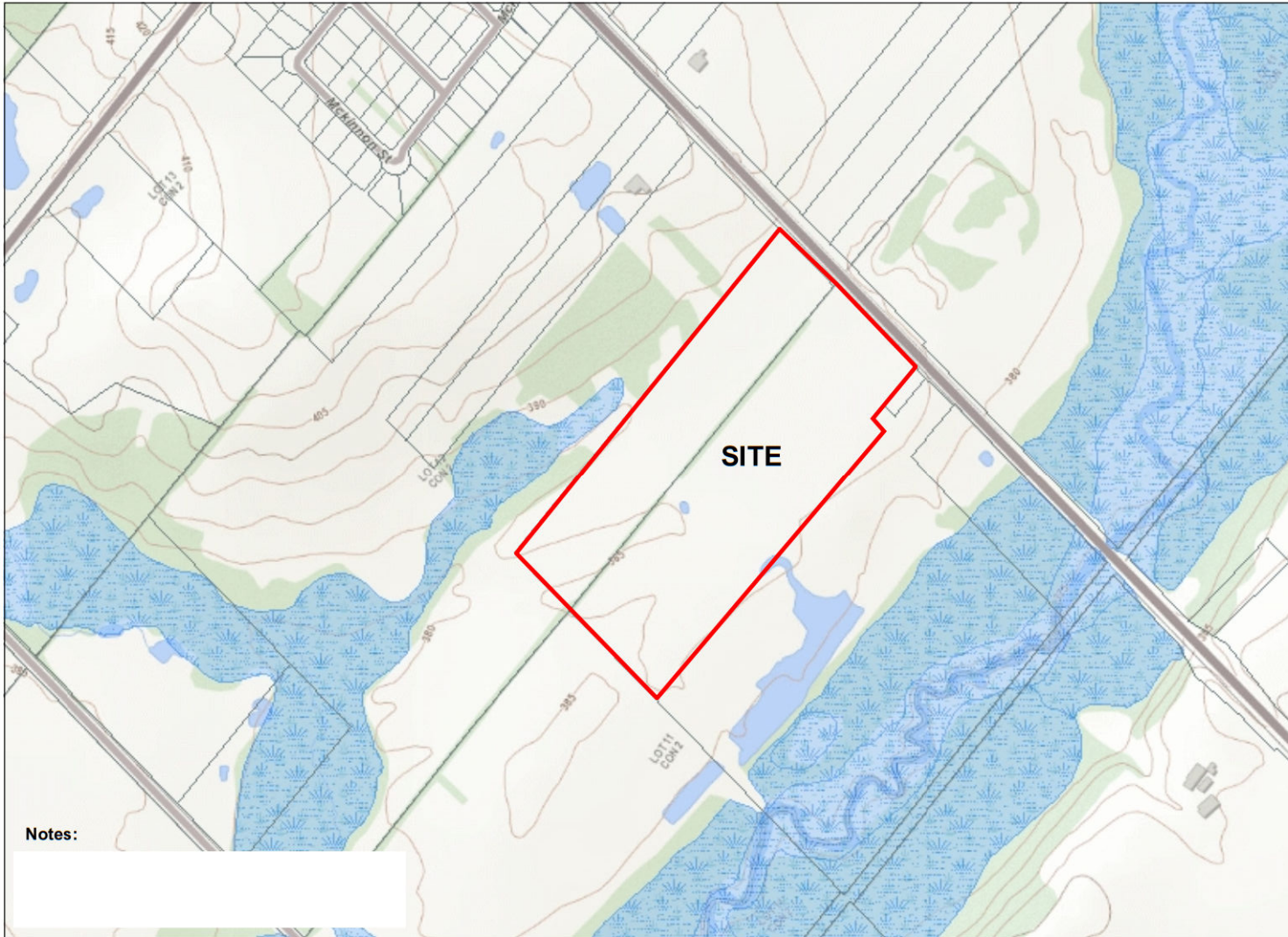
Figure 1: Site Location

Ospringe Pit Development
 Cox Construction Limited



Legend

-  Assessment Parcel
-  Evaluated Wetland
-  Provincially Significant/considérée d'importance provinciale
-  Non-Provincially Significant/non considérée d'importance provinciale
-  Unevaluated Wetland



Notes:

[Redacted notes area]

Figure 3: MNR Natural Heritage Mapping

Cox Construction Limited
Proposed Development
Ospringe Pit

0.5 0 0.24 0.5 Kilometres Absence of a feature in the map does not mean they do not exist in this area.

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources(OMNR) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

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Legend

-  Municipal Boundary (GRCA)
-  Parcel - Assessment(MPAC /MNRF)
-  Wetland (GRCA)
-  ANSI (ON)
-  Watercourse(GRCA)
-  Waterbody (GRCA)

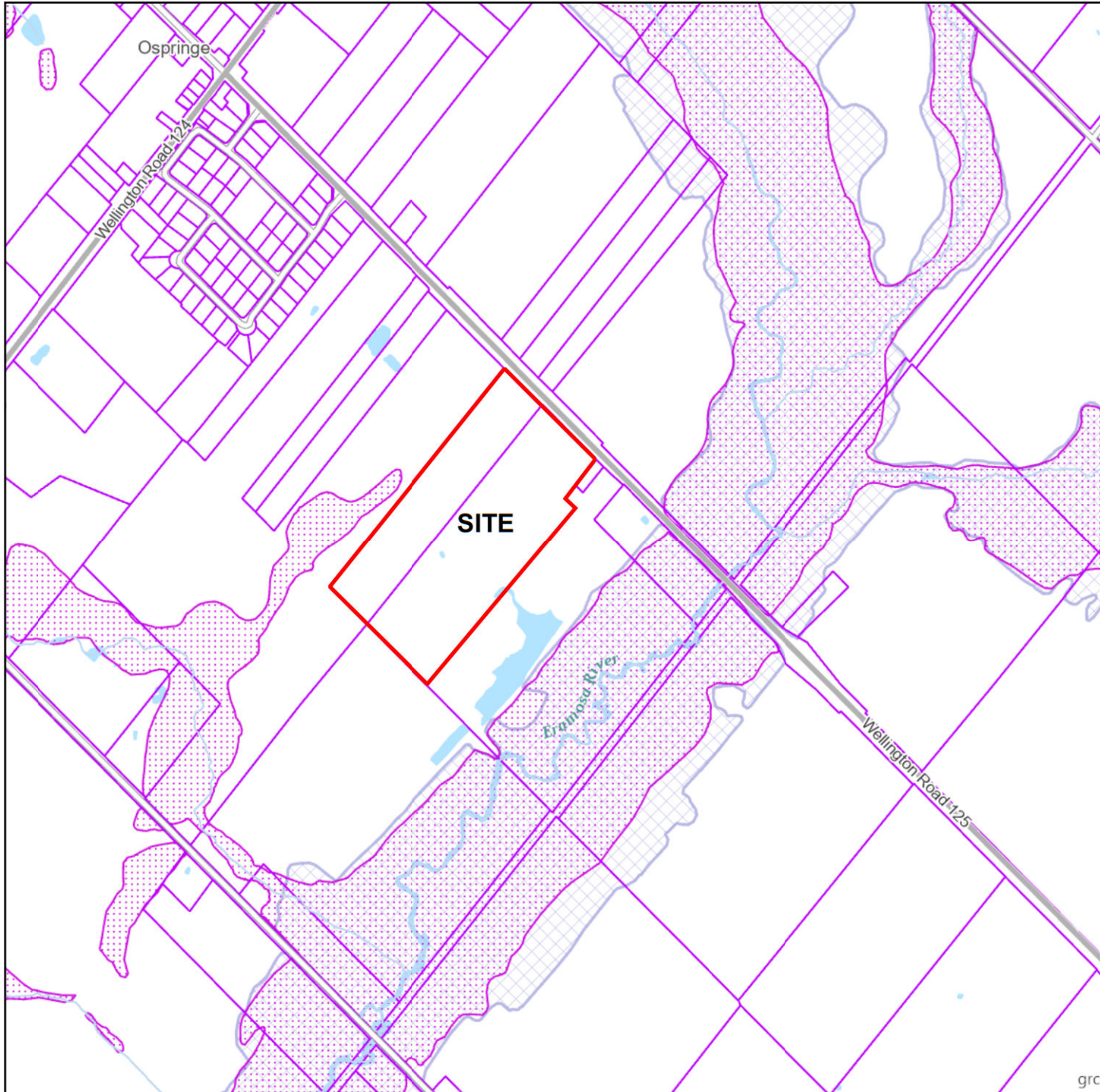


Figure 4: GRCA Natural Heritage Mapping

Cox Construction Limited
Proposed Development
Ospringe Pit

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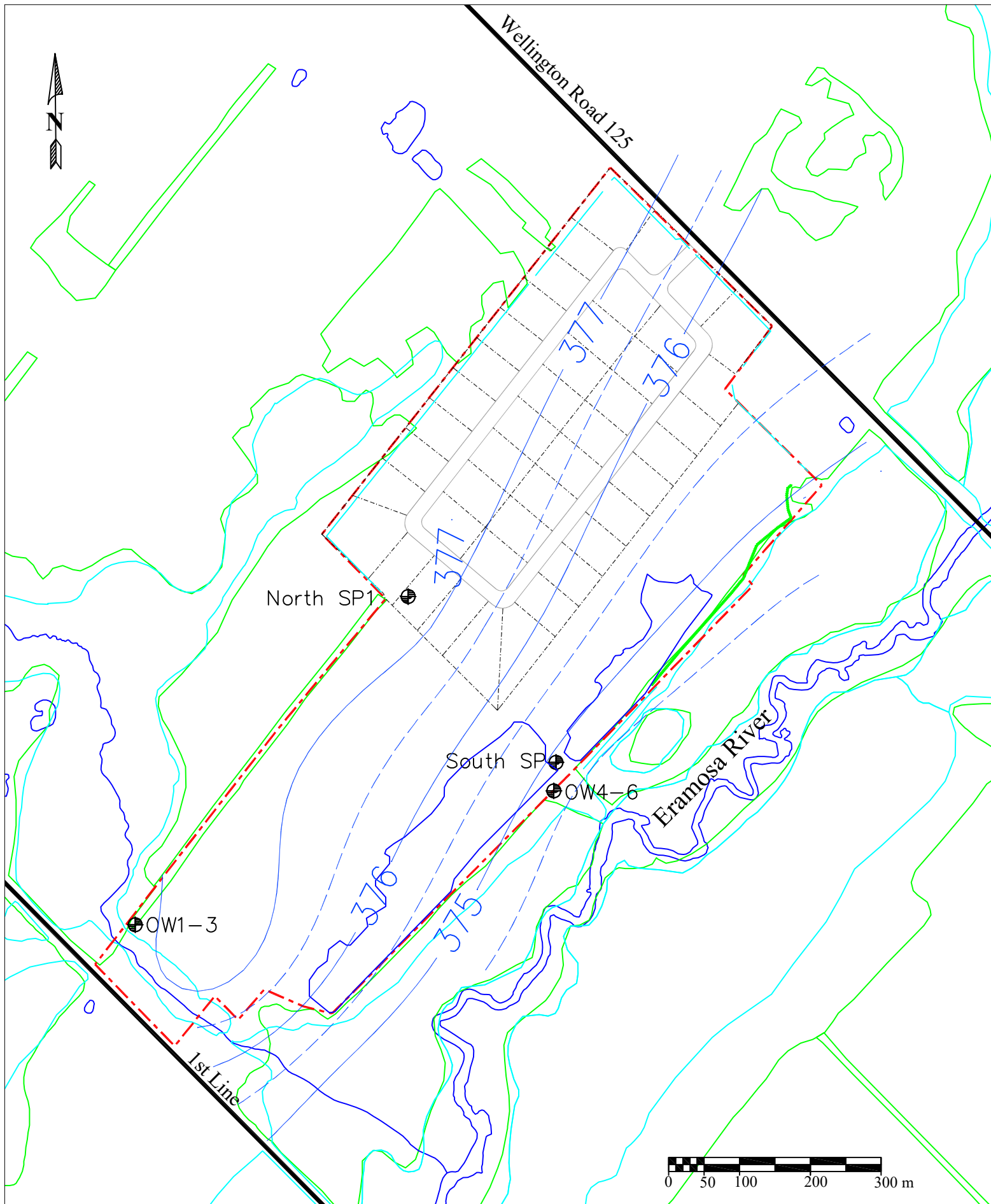
Disclaimer: This map is for illustrative purposes only. Information contained herein is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user. The source for each data layer is shown in parentheses in the map legend. See [Sources and Citations](#) for details.



Scale 1:13,124

NAD83 UTM zone 17 (EPSG:26917)





monitors and projected water table contours as shown (mASL)

vegetation lines, wetlands, water bodies & watercourses, roads, etc. as shown

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Figure 5: Water Table Conditions

Ospringe Pit Development
 Cox Construction Limited

November 24, 2025

**Appendix A: Ospringe Pit 2024
Groundwater Monitoring Summary**

March 2, 2025

Bill Hartung
General Manager,
Cox Construction Limited
P.O. Box 427
687 Eramosa Rd.
Guelph, Ontario
N1H 6K5

Dear Mr. Hartung:

RE: Ospringe Pit Expansion (Licence No. 15473) Monitoring Program

As requested, we are providing the 2024 Annual Report for the above referenced monitoring program. The pit is located on Part of Lots 11 and 12, Concession 2, Township of Erin, County of Wellington and is operated by Mulmur Aggregates Inc. The adjacent pit (Ospringe Pit, Licence No. 5472) is operated in an integrated manner. Extraction and rehabilitation in the Ospringe Pit is now largely complete.

The current monitoring program Site Plan conditions for the Ospringe Pit Expansion area include the following:

24. *One upgradient observation well and two downgradient observation wells will be monitored. Two sampling events will be conducted in the first year. Samples will be taken once per each additional year of operation. Analysis will include depth to water table and an ICAP scan for each well. A copy of the results of this sampling program will be forwarded to MOEE annually.*

In addition monthly water table samples will be taken once Stage 2B is initiated. An hydrogeologist will review these data to determine whether potential impacts on the upgradient wetland are evident. Appropriate remediation measures will be implemented to ensure that the upgradient wetland is not affected. A report from an hydrogeologist shall be submitted to the MNR/MOEE annually during the course of Stage 2B extraction which addresses this issue.

As historically established, the upgradient observation well monitored consists of the “North SP” and the downgradient observation wells consist of the “South SP” and “OW4-6”. The “SP” locations were installed as standpipes within test pits completed on the pit floor by Mulmur aggregates in order to establish monitors to meet the conditions of the program. Sampling locations are shown on the attached **Figure 1**. Note that downgradient monitors, including OW4-6, represent the quality of groundwater flowing off-site. Monitor OW1-3 is located near the wetland and represents conditions in that area.

Water level measurement and quality sampling has occurred annually since 2012. The last monitoring event occurred on August 23, 2024. We note that during the 2024 monitoring event access to OW1-3 was not available due to access road construction.

Manual water level monitoring results for all locations are attached in hydrograph format. As illustrated long term water levels at the site are stable, remaining within historically established ranges.

The sampling results to date are summarized on the attached table. No significant change in water quality is evident over the monitoring program or across the site. A slight increase in chloride concentration occurs as would be expected at any site with appreciable winter truck traffic. The water quality at the SP locations is likely affected by the well construction (e.g. elevated zinc concentrations due to galvanized metal shielding on the exterior of the standpipes). The downgradient well results (OW4-6 over most years) indicated that all parameters are within the water quality guidelines specified by Table 1 criteria for groundwater in all conditions.

Stage 2B consists of below water extraction (to form a pond) in the southwestern portion of the expansion area. This extraction has been initiated, as shown on **Figure 1**.

Water level monitoring using a datalogger set to hourly readings has occurred at monitor OW1-3. This monitoring frequency exceeds the Site Plan requirements. This location represents the best monitoring location to assess potential water level impacts on the wetland “upgradient” (northwest) of this area. A graph illustrating the datalogger monitoring results, as compared to historically available data, is attached for reference. As shown, available water levels to date at OW1-3 are within the historical range and no discernable impact to any local wetlands was noted. Once access is again available to OW1-3 water level data will be reviewed to confirm conditions in this area.

We recommend ongoing monitoring at the Ospringe Pit Expansion site as per Licence conditions.

Sincerely,

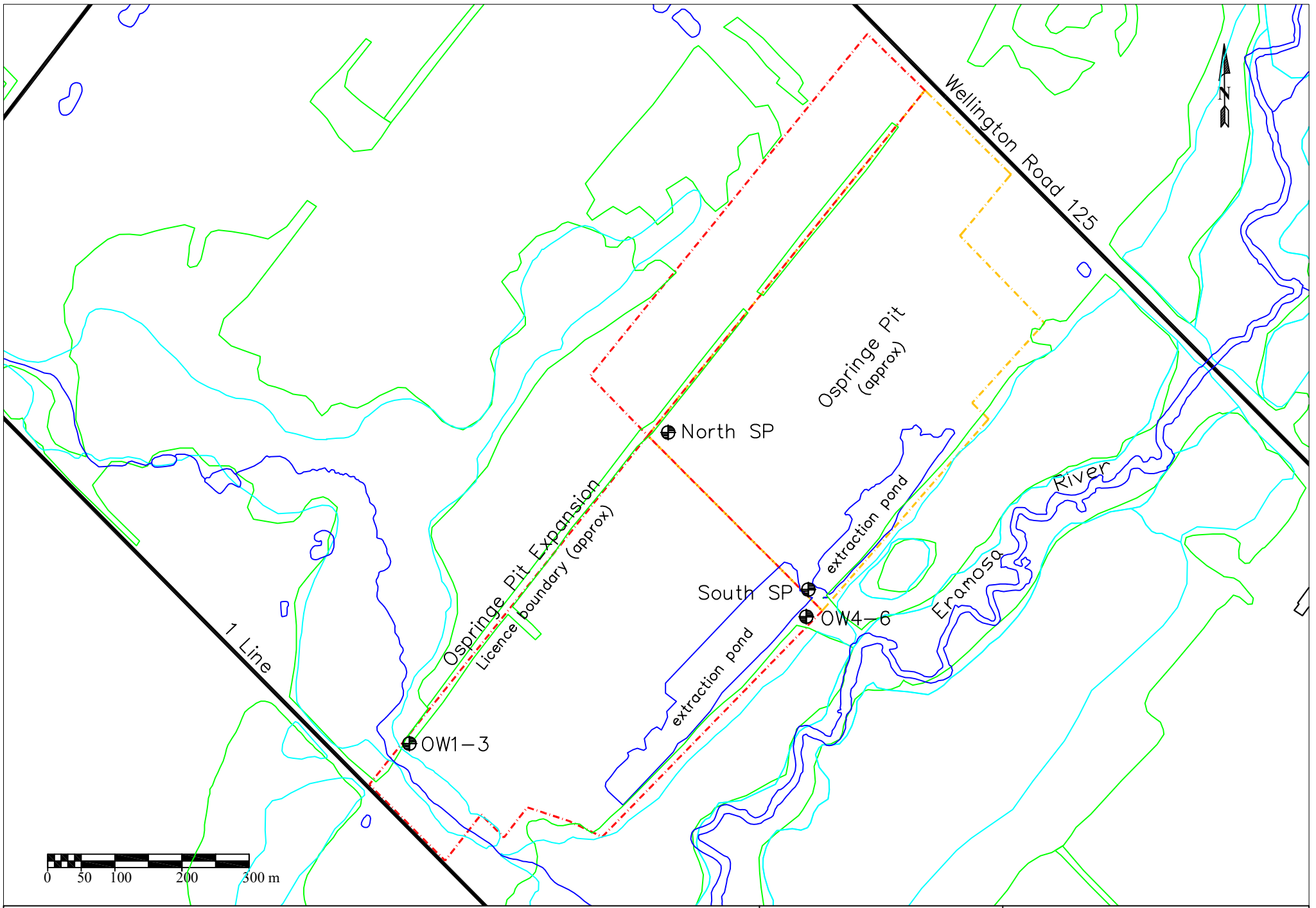


Andrew Pentney, P.Geo.
Hydrogeologist



CC: Rob Stovel

Attached: Figure 1
Ospringe Pit Water Level Hydrograph
Ospringe Pit Compiled Water Quality Results
Monitor OW1-3 Historical Water Level Monitoring Summary



--- Licence boundaries (approximate)



monitoring locations

wetlands, treelines, water bodies & watercourses, roads, etc. as shown

extraction pond outlines approximate, based on Google Earth air photo dated October 2021

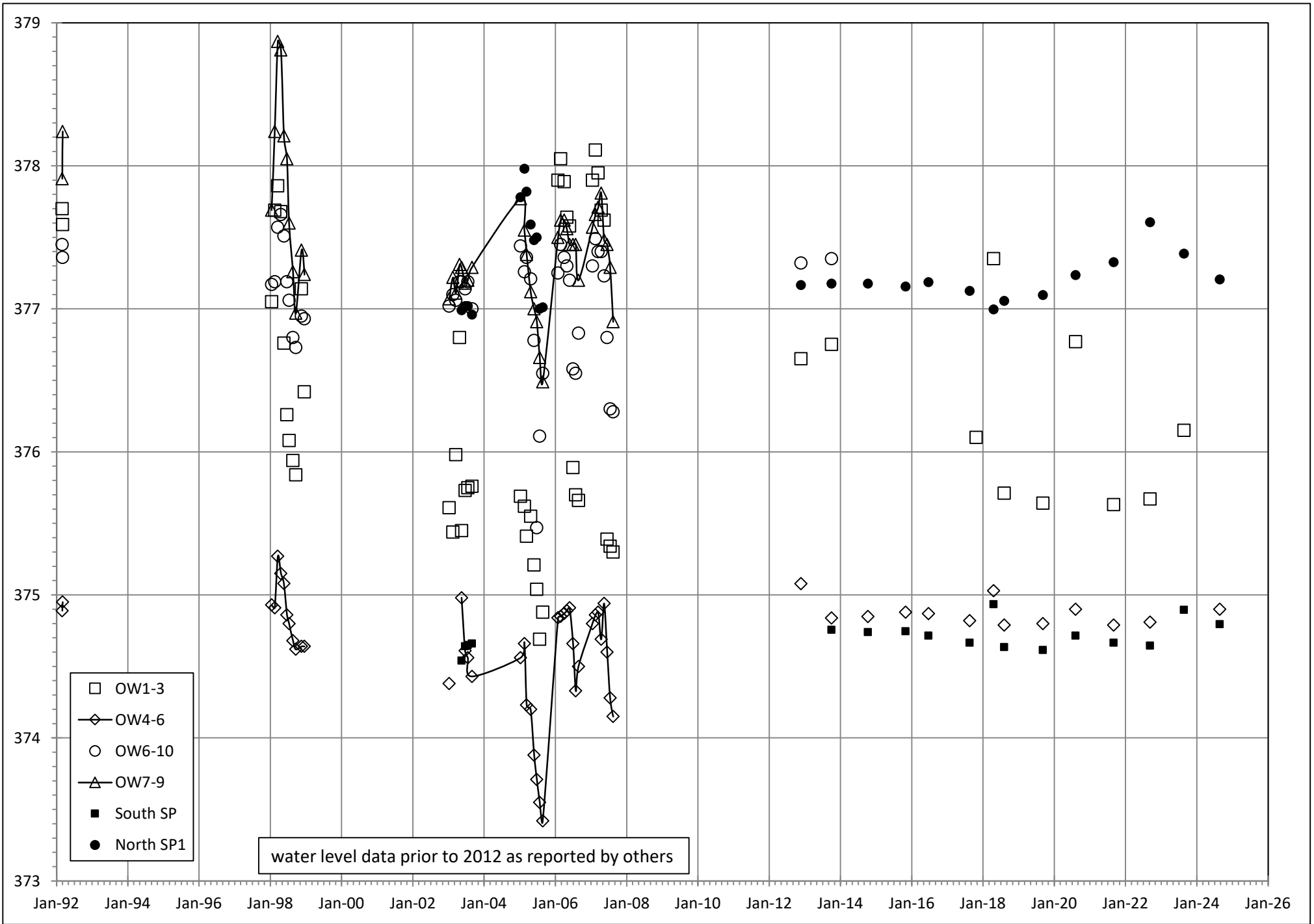
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Figure 1: Monitor Locations

Mulmur Aggregates Inc. Ospringe Pit (Licence #15473) Monitoring Program



Analyte	Units	Guideline	NORTH SP												
		T1-GW-All	22-Nov-12	1-Oct-13	9-Oct-14	30-Oct-15	20-Jun-16	17-Aug-17	7-Aug-18	6-Sep-19	6-Aug-20	31-Aug-21	8-Sep-22	22-Aug-23	23-Aug-24
Bromide	mg/L	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chloride	mg/L	790	-	5.4	5.5	5.57	7.67	5.83	37.8	38.3	25.5	6.95	10.1	7.27	6.96
Fluoride	mg/L	-	-	<0.10	<0.10	0.057	0.035	0.067	0.071	0.069	0.076	0.064	0.06	0.047	0.061
Nitrate-N	mg/L	-	-	1.99	1.74	1.32	2.46	2.32	0.686	1.07	<0.020	0.504	0.942	0.29	0.492
Nitrite-N	mg/L	-	-	<0.10	<0.10	<0.010	<0.010	<0.010	<0.010	0.018	<0.010	<0.010	<0.010	<0.010	<0.010
Sulphate	mg/L	-	-	7.8	5.1	11.3	8.85	7.46	11.3	11.8	7.43	3.72	12.1	3.94	7.88
Aluminum (Al)-Dissolved	mg/L	-	<0.010	<0.010	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	0.0102	<0.0050	<0.0050	0.0067	0.0011	0.0029
Antimony (Sb)-Dissolved	mg/L	0.0015	<0.0050	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	0.00014	<0.00010	<0.00010	<0.00010	0.00017	0.0001
Arsenic (As)-Dissolved	mg/L	0.013	<0.0010	<0.0010	<0.0010	0.00013	0.00012	0.00017	0.00021	0.00017	0.00209	0.00115	0.00054	0.00023	0.00019
Barium (Ba)-Dissolved	mg/L	0.61	0.018	0.0167	0.0176	0.0214	0.028	0.0201	0.0242	0.0211	0.0392	0.0303	0.0307	0.0293	0.0196
Beryllium (Be)-Dissolved	mg/L	0.0005	<0.0010	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Dissolved	mg/L	-	<0.0010	<0.0010	<0.0010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	mg/L	1.7	<0.050	0.011	<0.010	<0.010	0.011	0.013	0.016	0.013	0.017	0.019	0.017	0.014	0.011
Cadmium (Cd)-Dissolved	mg/L	0.0005	<0.000090	<0.000090	<0.000090	0.000013	0.000018	0.000025	0.0000308	0.0000279	0.0000055	0.000006	<0.0000050	0.0000121	0.0000054
Calcium (Ca)-Dissolved	mg/L	-	61.9	68.5	70.8	70.6	68.3	57.3	60.1	56.9	67.3	75.4	79.6	74.5	68.4
Cesium (Cs)-Dissolved	mg/L	-	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Dissolved	mg/L	0.011	<0.00050	0.00062	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00124	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Dissolved	mg/L	0.0038	<0.00050	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	0.00016	<0.00010	0.00258	0.00121	0.0006	0.00034	<0.00010
Copper (Cu)-Dissolved	mg/L	0.005	0.0028	<0.0010	<0.0010	0.00115	0.00123	0.00086	0.00425	0.0012	0.00178	0.00082	0.00137	0.00077	0.0006
Iron (Fe)-Dissolved	mg/L	-	<0.050	<0.050	<0.050	0.015	<0.010	<0.010	0.02	0.013	1.23	0.682	0.222	0.013	0.024
Lead (Pb)-Dissolved	mg/L	0.0019	0.0019	0.00139	0.00164	0.000646	0.000501	0.00101	0.00101	0.00161	0.0045	0.00138	0.00198	0.00109	0.000892
Lithium (Li)-Dissolved	mg/L	-	-	<0.10	<0.10	<0.0010	<0.0010	0.001	<0.0010	<0.0010	0.0013	0.0014	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved	mg/L	-	14.3	13.9	16.5	14.9	13.9	13	12.8	12.6	15.1	16.7	16.6	15.6	14
Manganese (Mn)-Dissolved	mg/L	-	0.0059	0.0037	0.0021	0.0573	0.0145	0.0202	0.195	0.0571	0.927	0.557	0.408	0.668	0.0396
Molybdenum (Mo)-Dissolved	mg/L	0.023	<0.0010	<0.00050	<0.00050	0.000204	0.000162	0.000185	0.000285	0.000171	0.000581	0.000236	0.000713	0.00017	0.000123
Nickel (Ni)-Dissolved	mg/L	0.014	<0.0020	<0.0010	<0.0010	0.00062	0.0006	0.00056	0.00066	0.0006	0.00219	0.00167	0.00147	0.00115	0.00109
Phosphorus (P)-Dissolved	mg/L	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.123	0.088	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Dissolved	mg/L	-	<1.0	<1.0	<1.0	0.593	0.503	0.403	0.547	1.03	0.606	0.43	0.404	0.428	0.208
Rubidium (Rb)-Dissolved	mg/L	-	-	-	-	0.00054	0.00039	0.00029	0.00047	0.00063	0.0004	0.00042	0.0003	0.00036	<0.00020
Selenium (Se)-Dissolved	mg/L	0.005	<0.00040	<0.00040	<0.00040	0.000092	0.000158	0.000142	0.000099	0.000085	0.000146	0.00013	0.000286	0.000072	0.000102
Silicon (Si)-Dissolved	mg/L	-	3.3	3.7	3.5	3.12	3.02	2.87	2.91	2.66	3.17	3.63	3.24	2.69	2.48
Silver (Ag)-Dissolved	mg/L	0.0003	<0.00010	<0.00010	<0.00010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	mg/L	490	1.99	2.07	2.58	2.67	2.25	2.02	27.5	34.4	41.5	16.7	16.3	11.9	6.02
Strontium (Sr)-Dissolved	mg/L	-	0.11	0.116	0.129	0.14	0.133	0.108	0.117	0.114	0.135	0.157	0.16	0.158	0.129
Sulfur (S)-Dissolved	mg/L	-	-	-	-	3.81	2.67	2.68	4.09	4.03	3.27	1.39	5.24	1.59	2.86
Tellurium (Te)-Dissolved	mg/L	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Dissolved	mg/L	0.0005	<0.00030	<0.00030	<0.00030	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.00001	<0.000010	<0.000010
Thorium (Th)-Dissolved	mg/L	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved	mg/L	-	<0.0010	<0.0010	<0.0010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00012	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	mg/L	-	<0.0020	<0.0020	<0.0020	<0.00030	<0.00030	<0.00030	<0.00030	0.00056	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten (W)-Dissolved	mg/L	-	<0.010	<0.010	<0.010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Dissolved	mg/L	0.0089	<0.0050	<0.0010	<0.0010	0.000191	0.000178	0.000133	0.00014	0.000131	0.000226	0.000135	0.000215	0.000144	0.000154
Vanadium (V)-Dissolved	mg/L	0.0039	<0.0010	<0.00050	<0.00050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Zinc (Zn)-Dissolved	mg/L	0.16	1.24	0.988	1.09	2.31	1.81	2.3	2.68	3.19	2.62	3.73	4.46	4.15	4.34
Zirconium (Zr)-Dissolved	mg/L	-	<0.0040	<0.0040	<0.0040	<0.00030	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00030	<0.00030	<0.00030

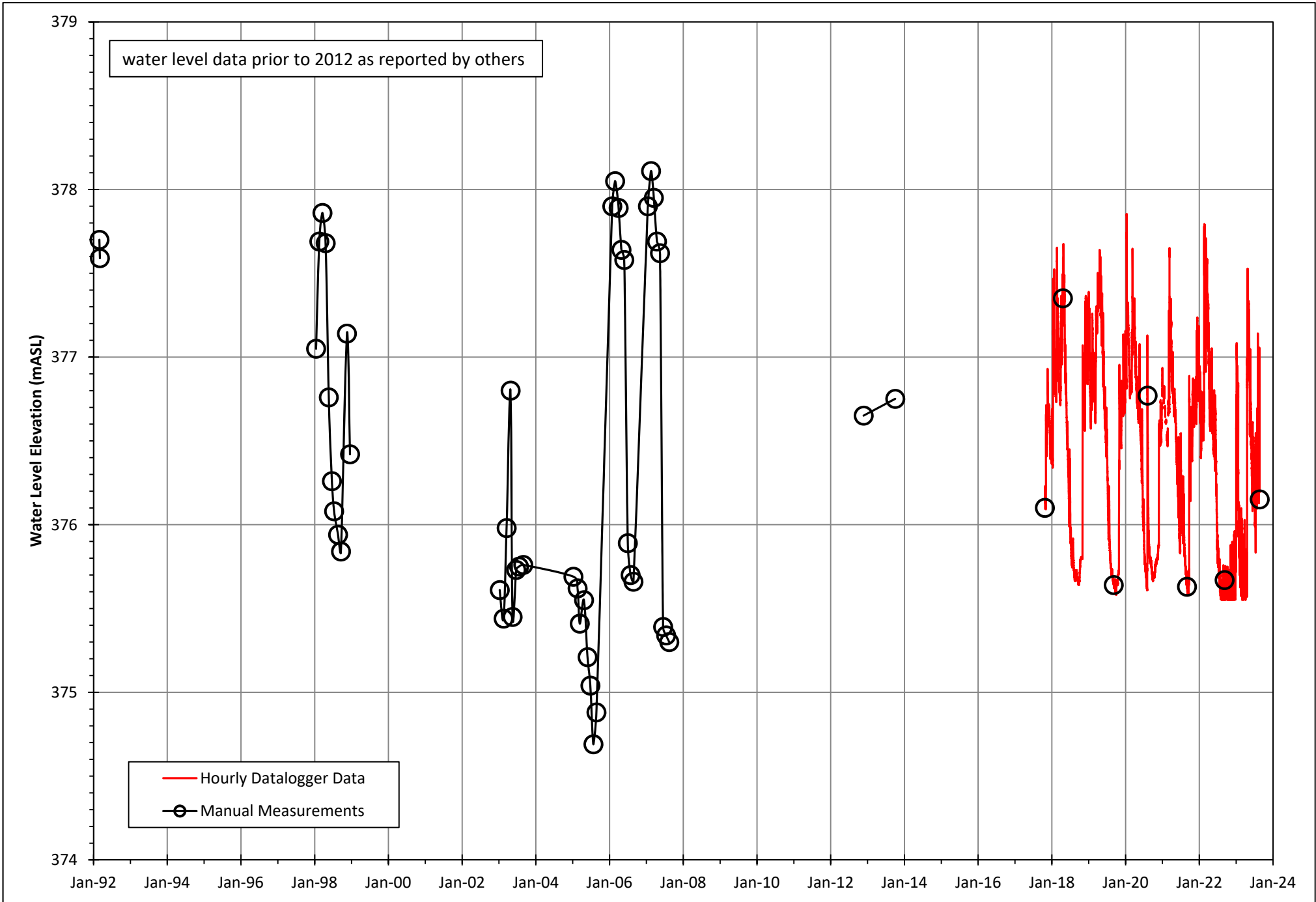
Applied Guideline: Ontario Regulation 153/04 - April 15, 2011 Standards - T1-Full Depth Background Ground Water-All Types of Property Uses

Analyte	Units	Guideline	SOUTH SP												
		T1-GW-All	22-Nov-12	1-Oct-13	9-Oct-14	30-Oct-15	20-Jun-16	17-Aug-17	7-Aug-18	6-Sep-19	6-Aug-20	31-Aug-21	8-Sep-22	22-Aug-23	23-Aug-24
Bromide	mg/L	-	-	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.14	0.11
Chloride	mg/L	790	-	54.1	49.8	63.9	65.8	58	64.7	61.7	61.6	65.7	63.6	60.8	63.3
Fluoride	mg/L	-	-	<0.10	<0.10	0.041	0.03	0.064	0.061	0.071	0.075	0.057	0.055	0.057	0.059
Nitrate-N	mg/L	-	-	0.45	0.26	0.237	0.077	<0.020	0.14	<0.020	<0.020	0.114	0.058	<0.020	0.228
Nitrite-N	mg/L	-	-	<0.10	<0.10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sulphate	mg/L	-	-	18.9	19.9	22.4	11.9	5.49	2.6	8.5	2.56	0.86	1.36	10.2	1.52
Aluminum (Al)-Dissolved	mg/L	-	<0.010	<0.010	<0.010	<0.0050	0.0051	<0.0050	0.0055	0.0065	<0.0050	0.0073	0.0031	0.0049	0.0045
Antimony (Sb)-Dissolved	mg/L	0.0015	<0.0050	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved	mg/L	0.013	<0.0010	<0.0010	<0.0010	0.00025	0.00101	0.00043	0.0011	0.00043	0.00162	0.00066	0.00068	0.00021	0.00085
Barium (Ba)-Dissolved	mg/L	0.61	0.026	0.0469	0.0348	0.0393	0.0424	0.0316	0.0407	0.0272	0.0584	0.0403	0.0378	0.0253	0.048
Beryllium (Be)-Dissolved	mg/L	0.0005	<0.0010	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Dissolved	mg/L	-	<0.0010	<0.0010	<0.0010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	mg/L	1.7	<0.050	0.02	0.022	0.03	0.021	0.042	0.056	0.049	0.068	0.06	0.05	0.017	0.045
Cadmium (Cd)-Dissolved	mg/L	0.0005	<0.000090	<0.000090	<0.000090	<0.000010	<0.000010	<0.000010	0.0000177	0.0000055	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved	mg/L	-	54	66.7	62.9	72.9	58.9	54.5	60.5	51.9	62.9	65.2	62.8	43	59.2
Cesium (Cs)-Dissolved	mg/L	-	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Dissolved	mg/L	0.011	<0.00050	0.00059	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00141	<0.00050	<0.00050	0.00089	<0.00050	<0.00050
Cobalt (Co)-Dissolved	mg/L	0.0038	<0.00050	<0.00050	<0.00050	0.00035	0.00088	0.00034	0.00115	0.00061	0.00096	0.0008	0.00045	<0.00010	0.00089
Copper (Cu)-Dissolved	mg/L	0.005	0.0014	0.0012	<0.0010	0.00077	0.00069	0.00045	0.00039	0.0013	0.0007	0.00096	0.00166	0.00035	<0.00020
Iron (Fe)-Dissolved	mg/L	-	<0.050	<0.050	<0.050	0.096	0.058	0.127	0.42	0.104	0.896	0.284	0.458	<0.010	0.485
Lead (Pb)-Dissolved	mg/L	0.0019	<0.0010	0.00118	0.0007	0.000243	0.000331	0.00105	0.000605	0.000866	0.000682	0.000535	0.000307	0.000132	0.000404
Lithium (Li)-Dissolved	mg/L	-	-	<0.10	<0.10	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved	mg/L	-	11.1	15.2	16.4	19.6	17.9	17	16.7	13.6	16	17.6	17.4	18.7	21.6
Manganese (Mn)-Dissolved	mg/L	-	0.0049	0.122	0.177	0.748	1.13	0.392	0.918	0.312	0.7	0.483	0.762	0.0863	2.61
Molybdenum (Mo)-Dissolved	mg/L	0.023	<0.0010	0.00064	<0.00050	0.000268	0.000595	0.000443	0.000549	0.000578	0.000767	0.000409	0.00058	0.000685	0.00074
Nickel (Ni)-Dissolved	mg/L	0.014	<0.0020	<0.0010	<0.0010	0.00073	0.00088	0.00054	0.00066	0.00051	0.00068	0.00069	0.00069	<0.00050	0.00084
Phosphorus (P)-Dissolved	mg/L	-	<0.050	<0.050	<0.050	<0.050	0.061	<0.050	<0.050	<0.050	0.067	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Dissolved	mg/L	-	<1.0	1.4	1.4	1.93	2.48	2.53	2.64	2.71	5.87	2.83	3.43	2.71	2.97
Rubidium (Rb)-Dissolved	mg/L	-	-	-	-	0.00028	0.00076	0.00043	0.00066	0.00044	0.00126	0.00065	0.00035	<0.00020	0.00047
Selenium (Se)-Dissolved	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.000050	0.000089	0.000088	0.000052	0.000053	0.000082	0.000107	0.000074	0.000114	0.000156
Silicon (Si)-Dissolved	mg/L	-	1.6	2.8	2.1	2.52	2.02	2.63	3.02	2.66	3.56	3.27	2.86	1.05	2.91
Silver (Ag)-Dissolved	mg/L	0.0003	<0.00010	<0.00010	<0.00010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	mg/L	490	17.5	29.1	31.7	33.5	39.8	36.6	33.8	33.1	32	33.2	32	35.4	33.8
Strontium (Sr)-Dissolved	mg/L	-	0.0981	0.14	0.135	0.157	0.124	0.115	0.13	0.113	0.132	0.144	0.144	0.136	0.157
Sulfur (S)-Dissolved	mg/L	-	-	-	-	7.75	3.98	2.74	1.15	2.42	1.47	<0.50	<0.50	3.8	<0.50
Tellurium (Te)-Dissolved	mg/L	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Dissolved	mg/L	0.0005	<0.00030	<0.00030	<0.00030	<0.000010	0.000012	0.00001	0.000027	0.000012	0.000028	0.000011	0.000014	<0.000010	<0.000010
Thorium (Th)-Dissolved	mg/L	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved	mg/L	-	<0.0010	<0.0010	<0.0010	<0.00010	0.00014	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	mg/L	-	<0.0020	<0.0020	<0.0020	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten (W)-Dissolved	mg/L	-	<0.010	<0.010	<0.010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Dissolved	mg/L	0.0089	<0.0050	<0.0010	<0.0010	0.000251	0.000266	0.000183	0.000183	0.000196	0.000156	0.00014	0.000135	0.000232	0.000138
Vanadium (V)-Dissolved	mg/L	0.0039	<0.0010	<0.00050	<0.00050	<0.000050	<0.000050	<0.000050	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved	mg/L	0.16	0.418	0.868	0.781	1.11	0.406	1.33	0.687	0.93	1.03	0.828	0.613	0.029	0.46
Zirconium (Zr)-Dissolved	mg/L	-	<0.0040	<0.0040	<0.0040	<0.00030	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00030	<0.00030	<0.00030

Applied Guideline: Ontario Regulation 153/04 - A₁

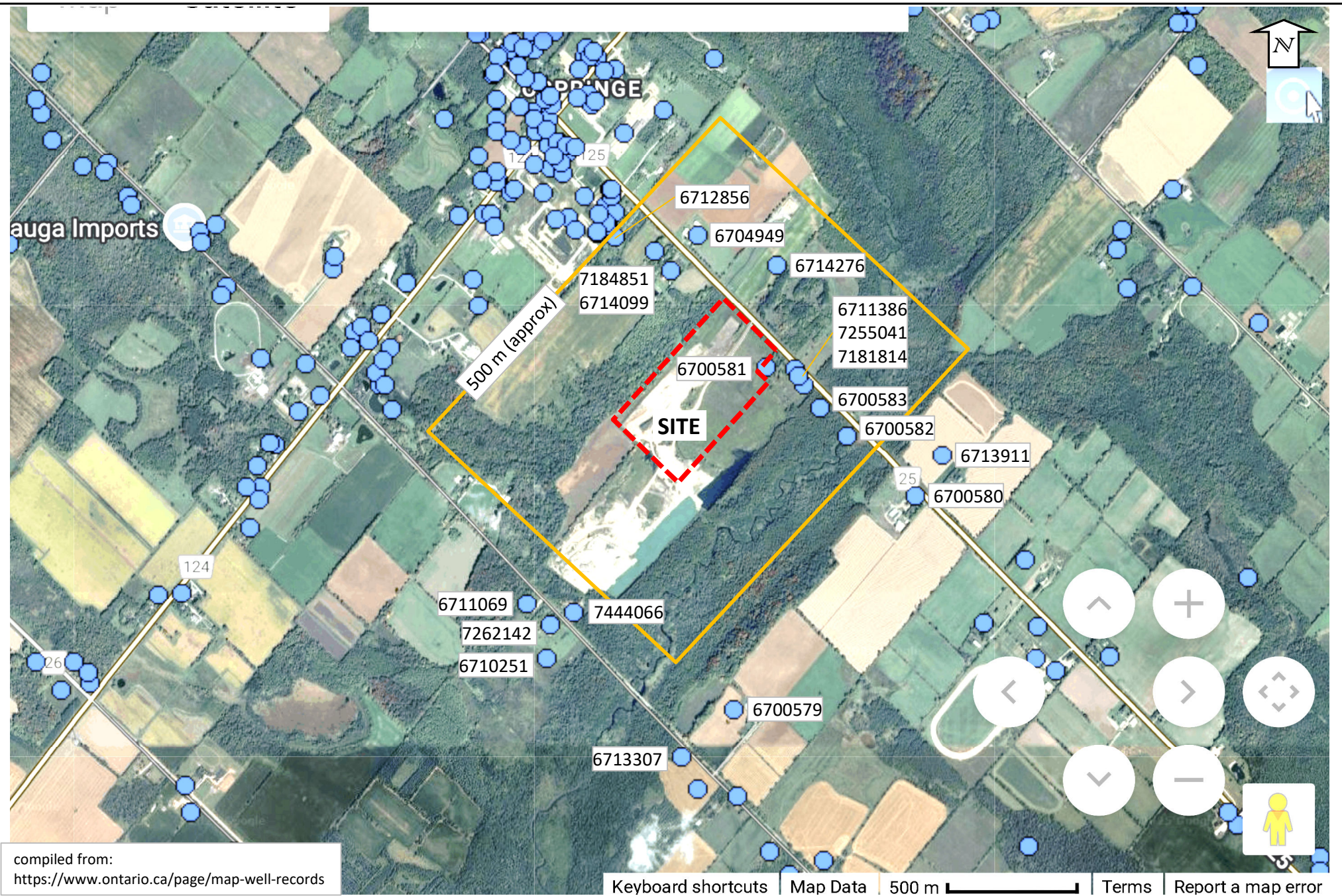
Analyte	Units	Guideline	OW4-6											
		T1-GW-All	22-Nov-12	1-Oct-13	9-Oct-14	30-Oct-15	20-Jun-16	17-Aug-17	7-Aug-18	6-Sep-19	6-Aug-20	31-Aug-21	8-Sep-22	23-Aug-24
Bromide	mg/L	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chloride	mg/L	790	-	46.9	51.3	59.6	42.8	46.6	62	40.2	37.9	54.6	59	62.7
Fluoride	mg/L	-	-	<0.10	<0.10	0.059	0.028	0.033	0.062	0.07	0.063	0.028	0.055	0.058
Nitrate-N	mg/L	-	-	0.16	0.18	0.074	0.957	0.386	0.241	0.564	0.405	0.167	0.173	<0.020
Nitrite-N	mg/L	-	-	<0.10	<0.10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sulphate	mg/L	-	-	17	19.6	19.5	17.1	11.7	11	9.68	9.26	12.5	9.82	4.8
Aluminum (Al)-Dissolved	mg/L	-	<0.010	<0.010	<0.010	0.0874	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0141	0.0022	0.0036
Antimony (Sb)-Dissolved	mg/L	0.0015	<0.0050	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00012	<0.00010	<0.00010
Arsenic (As)-Dissolved	mg/L	0.013	<0.0010	0.001	<0.0010	0.00044	0.00017	0.00015	0.00013	0.00012	0.00017	0.00016	0.00017	0.00026
Barium (Ba)-Dissolved	mg/L	0.61	0.064	0.0807	0.0554	0.058	0.0614	0.0718	0.0716	0.0661	0.0726	0.0745	0.0777	0.0769
Beryllium (Be)-Dissolved	mg/L	0.0005	<0.0010	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000020	<0.000020
Bismuth (Bi)-Dissolved	mg/L	-	<0.0010	<0.0010	<0.0010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	mg/L	1.7	<0.050	0.021	0.018	0.031	0.011	0.021	0.018	0.019	0.015	0.018	0.014	0.018
Cadmium (Cd)-Dissolved	mg/L	0.0005	<0.000090	<0.000090	<0.000090	0.000023	<0.000010	<0.000010	0.0000105	0.0000099	0.0000094	0.00001	0.0000074	0.0000091
Calcium (Ca)-Dissolved	mg/L	-	84.6	88.2	73	98	86.3	91.8	97.9	96.1	94.5	92.7	94.8	92.9
Cesium (Cs)-Dissolved	mg/L	-	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Dissolved	mg/L	0.011	0.00103	0.00091	<0.00050	0.0006	0.00102	0.00131	0.00098	0.00273	0.00192	0.00103	0.00194	<0.00050
Cobalt (Co)-Dissolved	mg/L	0.0038	<0.00050	0.00105	<0.00050	0.00058	0.00012	0.00015	0.00011	0.00015	0.00011	<0.00010	<0.00010	0.00055
Copper (Cu)-Dissolved	mg/L	0.005	0.0021	<0.0010	<0.0010	0.00218	0.00111	0.00113	0.00537	0.00234	0.00127	0.00141	0.00165	0.00088
Iron (Fe)-Dissolved	mg/L	-	<0.050	3.29	<0.050	0.2	<0.010	<0.010	<0.010	<0.010	0.101	0.015	<0.010	<0.010
Lead (Pb)-Dissolved	mg/L	0.0019	<0.0010	<0.00050	<0.00050	0.000448	<0.000050	<0.000050	0.000078	<0.000050	<0.000050	<0.000050	<0.000050	0.000193
Lithium (Li)-Dissolved	mg/L	-	-	<0.10	<0.10	0.0025	0.001	0.0017	0.0016	0.0018	0.0021	0.0019	0.0014	0.0011
Magnesium (Mg)-Dissolved	mg/L	-	17.3	17.8	15.4	19.3	17.5	18.1	18.4	19.7	20.3	22.1	18	19.5
Manganese (Mn)-Dissolved	mg/L	-	0.0189	1.19	0.0933	0.203	0.0376	0.065	0.0604	0.0607	0.0269	0.0122	0.0185	0.497
Molybdenum (Mo)-Dissolved	mg/L	0.023	<0.0010	0.0006	<0.00050	0.000438	0.000292	0.000317	0.000281	0.000318	0.00035	0.000417	0.000371	0.000408
Nickel (Ni)-Dissolved	mg/L	0.014	<0.0020	<0.0010	<0.0010	0.00057	0.00068	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00077	0.00092
Phosphorus (P)-Dissolved	mg/L	-	<0.050	<0.050	<0.050	0.101	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Dissolved	mg/L	-	1.5	1.9	1.9	2.13	1.46	1.71	1.53	1.61	1.53	1.81	1.69	1.54
Rubidium (Rb)-Dissolved	mg/L	-	-	-	-	0.00075	0.00041	0.00042	0.00046	0.0004	0.00047	0.00062	0.00048	0.00044
Selenium (Se)-Dissolved	mg/L	0.005	0.00041	<0.00040	<0.00040	<0.000050	0.000181	0.000075	0.000067	0.000123	0.000171	0.000099	0.000087	0.000086
Silicon (Si)-Dissolved	mg/L	-	4.1	4.8	3.3	3.77	3.03	3.69	3.3	3.62	3.5	3.82	3.74	3.5
Silver (Ag)-Dissolved	mg/L	0.0003	<0.00010	<0.00010	<0.00010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010
Sodium (Na)-Dissolved	mg/L	490	27.8	27.4	31.4	37.4	22.3	29	32.7	23.1	21.6	27.5	29	35.5
Strontium (Sr)-Dissolved	mg/L	-	0.157	0.164	0.14	0.239	0.151	0.157	0.164	0.164	0.161	0.181	0.173	0.178
Sulfur (S)-Dissolved	mg/L	-	-	-	-	9.42	5.63	4.14	3.89	3.68	3.78	4.91	4.07	1.99
Tellurium (Te)-Dissolved	mg/L	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Dissolved	mg/L	0.0005	<0.00030	<0.00030	<0.00030	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Dissolved	mg/L	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved	mg/L	-	<0.0010	<0.0010	<0.0010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	mg/L	-	<0.0020	<0.0020	<0.0020	0.00304	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00067	<0.00030	<0.00030
Tungsten (W)-Dissolved	mg/L	-	<0.010	<0.010	<0.010	0.00155	0.00185	0.00236	0.00181	0.00204	0.00194	0.00172	0.00169	0.00234
Uranium (U)-Dissolved	mg/L	0.0089	<0.0050	<0.0010	<0.0010	0.000468	0.000364	0.000354	0.000329	0.000324	0.000336	0.000372	0.000342	0.000376
Vanadium (V)-Dissolved	mg/L	0.0039	<0.0010	0.00065	<0.00050	0.00051	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved	mg/L	0.16	0.0106	0.0123	0.0365	0.0113	0.0019	0.0018	0.004	0.0024	0.0021	0.0029	0.0017	0.113
Zirconium (Zr)-Dissolved	mg/L	-	<0.0040	<0.0040	<0.0040	<0.00030	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00030	<0.00030


Applied Guideline: Ontario Regulation 153/04 - A₁


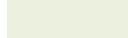


November 24, 2025

Appendix B: Water Well Record Review



 study site (approximate)

 reported water well record locations and references as shown
 reported overburden water supply well

Date: November 2025
 scale: approximate

GROUNDWATER
 SCIENCE CORP.

Figure B1: Reported Water Well Record Locations Near The Site

Ospringe Pit Development
 Cox Construction Ltd

Record No.	Date Constructed	Total Depth (m)	Type		Use	Static Level (m)	Bedrock Depth (m)	Recorded Rate (gpm)	Source Classification
			constr.	source unit					
6700579	25-Nov-60	51.8	drilled	limestone	domestic and stock	12.2	36.6	12	confined bedrock aquifer
6700580	4-Feb-64	67.1	drilled	limestone	domestic and stock	12.2	25.6	6	confined bedrock aquifer
6700581	11-Oct-65	21.3	drilled	limestone	domestic and stock	6.1	16.2	7	unconfined bedrock aquifer
6700582	17-Nov-53	14.9	drilled	limestone	domestic	3.7	7.3	12	confined bedrock aquifer
6700583	25-Mar-64	24.4	drilled	brown rock	domestic	2.4	8.2	10	confined bedrock aquifer
6704949	10-Jul-73	36.6	drilled	brown rock	domestic	5.2	6.1	8	confined bedrock aquifer
6710251	23-Feb-90	4.6	bored	sand, gravel	domestic	2.4	-	4	unconfined overburden aquifer
6711069	6-Jul-92	29.6	drilled	limestone	domestic	1.8	2.1	12	unconfined bedrock aquifer
6711386	2-Oct-93	45.7	drilled	brown rock	domestic	-	20.4	8	confined bedrock aquifer
6712856	30-Oct-98	44.2	drilled	limestone	domestic	16.8	31.1	10	confined bedrock aquifer
6713307	9-Feb-00	46.9	drilled	limestone	domestic	15.4	22.9	10	confined bedrock aquifer
6713911	10-Oct-01	36.6	drilled	brown rock	domestic	10.7	21.9	18	confined bedrock aquifer
6714099	4-Jun-02	43.3	drilled	limestone	domestic	9.4	23.2	30	confined bedrock aquifer
6714276	16-Oct-02	77.7	drilled	limestone	domestic	5.8	12.8	10	confined bedrock aquifer
7181814	7-May-12	23.9	record of well decommissioning (dug/drilled well combination)			1.4	-	-	-
7184851	27-Jul-12	-	record of well decommissioning (dug well)			-	-	-	-
7255041	7-Dec-15	-	record of well decommissioning (drilled well)			-	-	-	-
7262142	22-Jan-16	32.0	drilled	limestone	domestic	2.1	3.7	10	unconfined bedrock aquifer
7444066	12-Sep-22	no information available			-	-	-	-	-