December 4, 2025 CA-GLD-21471757

**Craig Bellinger, CET**
R.W. Tomlinson Limited
100 Citigate Drive
Ottawa, ON K2J 6K7

**MAXIMUM PREDICTED WATER TABLE REPORT**
**PROPOSED EAST OXFORD PIT**
**MUNICIPALITY OF NORTH GRENVILLE, ONTARIO**

Dear Mr. Bellinger:

R.W. Tomlinson Limited (Tomlinson) is applying for a Class 'A' licence for a Pit Below the Groundwater Table under the *Aggregate Resources Act* (ARA) for the proposed East Oxford Pit located on Part of Lots 13 and 14, Concession 8, Municipality of North Grenville, in the United Counties of Leeds and Grenville, Ontario (site). The area proposed to be licensed under the ARA is 44.1 hectares (ha) and the proposed extraction area is 37.2 ha. The proposed boundaries of the licensed area and limit of extraction are shown on Figure 1. Based on the nature of the subsurface materials, the approximate pit base elevation will be at 98.5 metres above sea level (asl).

This report summarizes the results of the groundwater level monitoring completed on the site to fulfill the requirements of the Maximum Predicted Water Table Report as described in the Aggregate Resources Ontario: Technical Reports and Information Standards dated August 2020.

The reader is referred to the "Important Information and Limitations of This Report" included in Attachment 1 which follows the text but forms an integral part of this document. The qualifications and experience of the report authors are presented in Attachment 2.

The site is topographically generally flat but there is a drop in topography along the southwestern boundary of the site. The area to the southwest of the licenced boundary is generally a topographically lower wet area. The site surface and subsurface is generally comprised of a thin layer of topsoil underlain by sand deposits ranging from fine to fine-to coarse sand followed by silty sand and in turn by glacial till and/or clayey silt or silty clay.

## 1.0 GROUNDWATER ELEVATIONS

Eight monitoring wells were installed between July 9 and 16, 2021 to measure groundwater levels on, and adjacent to the site. Groundwater levels were measured on a monthly basis between July 20, 2021 and September 5, 2025. The top of the piezometer at each monitoring well location was surveyed to a Geodetic datum in order to allow for calculation of the groundwater elevation based on the measured depth to groundwater.

The available groundwater elevation data measured as part of the ongoing groundwater level monitoring program for the site are described in Section 1.1 below. The locations of the monitoring wells included in the groundwater monitoring program are shown on Figure 1. Figure 2 shows the groundwater elevations plotted versus time at 21-01, 21-02, 21-03, 21-04, 21-05, 21-06, 21-07 and 21-08. The groundwater elevation data used to generate Figure 2 is provided in Attachment 3.

## 1.1 Discussion

Figure 2 presents groundwater elevation data measured at monitoring wells 21-01, 21-02, 21-03, 21-04, 21-05, 21-06, 21-07 and 21-08 between July 20, 2021 and September 5, 2025. As shown on Figure 2, the groundwater elevations at all the monitoring well locations are subject to seasonal fluctuations and varied between 0.7 and 1.5 metres over the monitoring period. Table 2 provides a summary of the maximum, minimum and total variation in groundwater elevations at each monitoring well.

**Table 1: Groundwater Elevation Summary**

| Monitoring Well | Maximum Groundwater Elevation (metres asl) | Minimum Groundwater Elevation (metres asl) | Variation in Groundwater Elevations (metres) |
|---|---|---|---|
| 21-01 | 107.29 | 105.81 | 1.48 |
| 21-02 | 106.99 | 105.74 | 1.25 |
| 21-03 | 106.04 | 104.85 | 1.19 |
| 21-04 | 101.16 | 99.83 | 1.33 |
| 21-05 | 105.74 | 104.59 | 1.15 |
| 21-06 | 106.42 | 105.11 | 1.31 |
| 21-07 | 101.13 | 99.89 | 1.24 |
| 21-08 | 104.95 | 104.28 | 0.67 |

The changes in groundwater elevations at all of the monitoring locations are considered to represent seasonal variations. Water levels are highest in the spring and generally lower during the summer and winter months.

# 2.0 HORIZONTAL GROUNDWATER FLOW DIRECTION

Based on the results of the groundwater elevations collected at the site, the direction of groundwater flow is from northeast to southwest within the sand unit. Based on a review of the available groundwater elevation data, the highest groundwater elevation occurred at most locations on April 12, 2023. The groundwater elevations within the shallow overburden measured on April 12, 2023 are shown schematically on Figure 1 along with groundwater elevation contours and arrows showing the interpreted shallow groundwater flow direction. The table in Attachment 3 provides the available groundwater elevations for all monitoring wells. The highest groundwater elevations are found in monitoring well installed on the northern corner of the site (i.e., 21-01) and the lowest

groundwater elevations within the proposed licensed area are found in the monitoring well installed near the southern corner of the extraction area (i.e., 21-08).

## 3.0 MAXIMUM PREDICTED WATER TABLE

Based on the available groundwater elevation data, the maximum predicted water table on the site is 107.3 metres asl on the northern corner (as measured at 21-01). Based on the groundwater elevation data measured at 21-03, 21-05 and 21-08 located along the western boundary of the Site, the water table slopes downwards from the northeast to the southwest within the sand unit, and the maximum predicted water table on the western side of the Site is approximately 105.5 metres asl.

## 4.0 CLOSURE

If you have any questions, please contact the undersigned.

Yours truly,

**WSP Canada Inc.**


Gopesh Sharma, B.Sc., GIT
*Environmental Consultant*

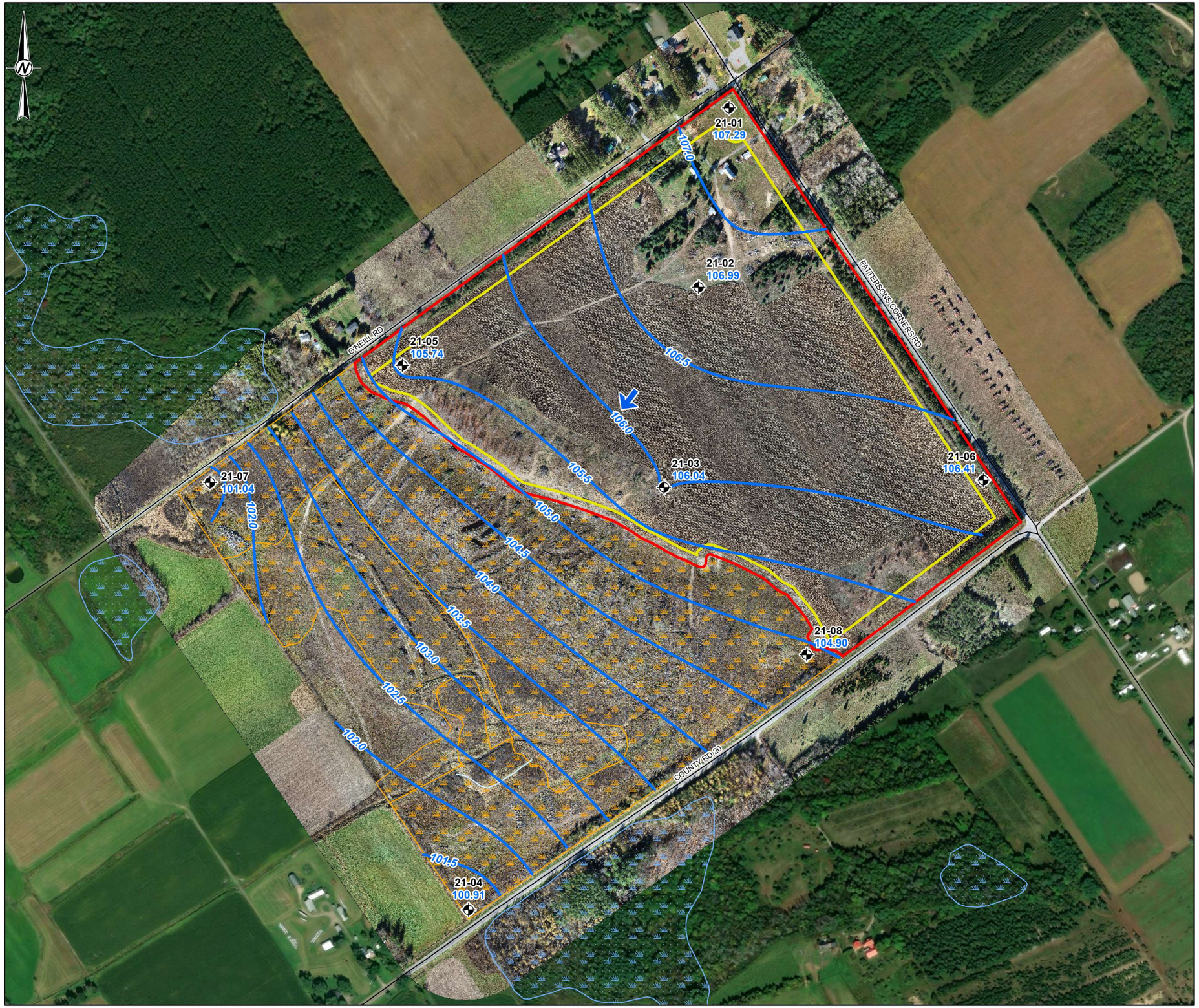
Brian Henderson M.A.Sc., P.Eng.
*Senior Environmental Engineer*

GS/CAMC/BJH/rk

CC: Neal DeRuyter, MHBC

Attachments: Figures 1 and 2
Attachment 1: Important Information and Limitations of Report
Attachment 2: Qualifications and Experience of Report Authors
Attachment 3: Groundwater Elevations

https://wsponline.sharepoint.com/sites/gld-148378/project files/6 deliverables/max water table report/final/21471757-l-rev0-east oxford mwt report_04dec2025.docx




KEY MAP


SCALE: 1:200,000

LEGEND

- APPROXIMATE BOREHOLE LOCATION
- 99.99 GROUNDWATER ELEVATION, MASL (APRIL 12, 2023)
- INTERPRETED GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION CONTOUR, MASL
- PROPOSED LICENCED BOUNDARY
- PROPOSED LIMIT OF EXTRACTION
- ROADWAY
- WATERCOURSE
- 2025 WSP EVALUATED - NOT SIGNIFICANT WETLANDS
- UNEVALUATED WETLANDS

0 50 100 200

1:6,000 METRES

**NOTE(S)**

1. ALL LOCATIONS ARE APPROXIMATE

**REFERENCE(S)**

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. BASE MAP: VANTOR, ESRI, NASA, NGA, USGS, SOURCES: ESRI, TOMTOM, GARMIN, FAO, NOAA, USGS, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
3. COORDINATE SYSTEM: NAD 1983 CSRS UTM ZONE 18N

CLIENT
R.W. TOMLINSON LIMITED

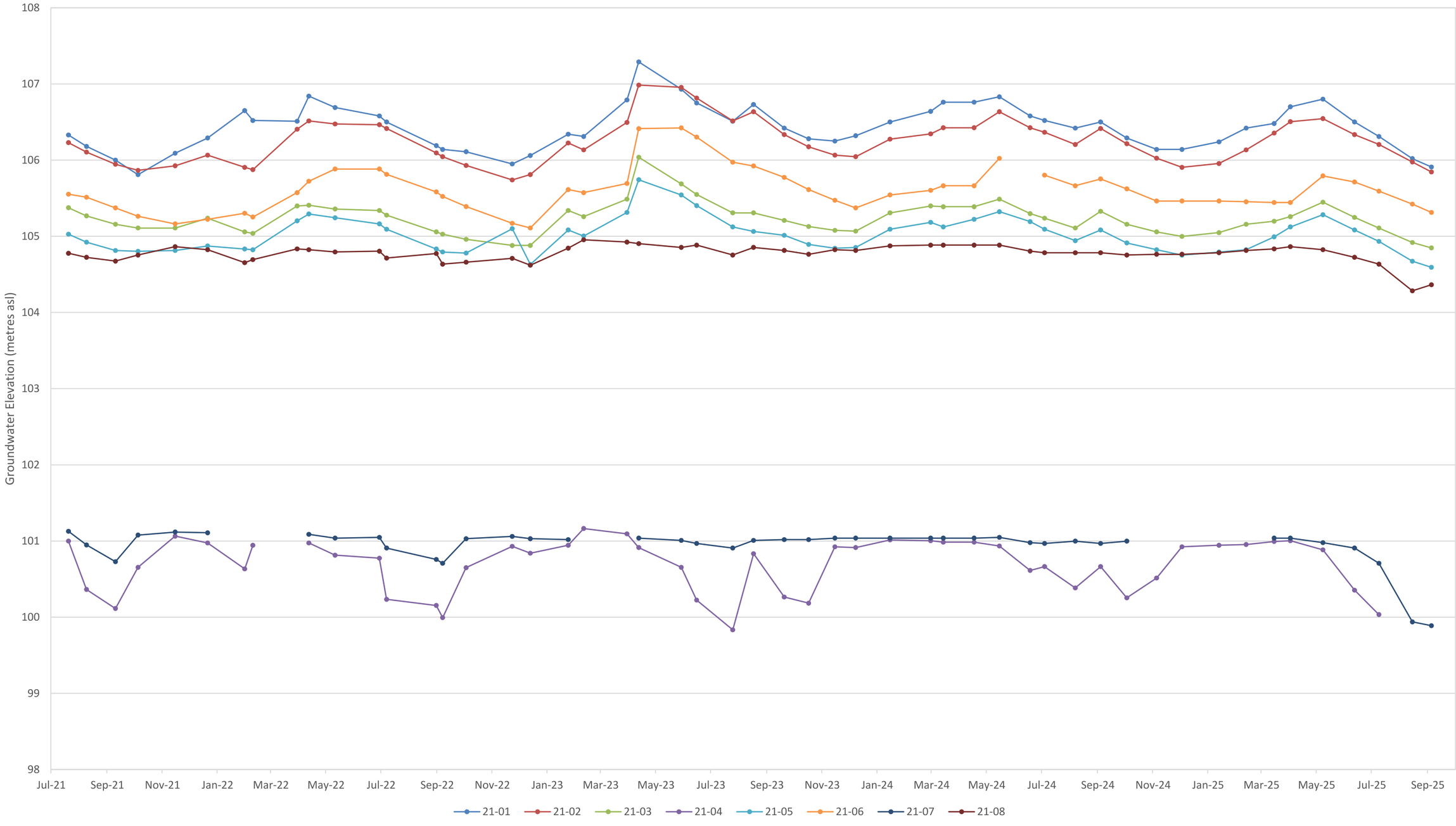
PROJECT
MAXIMUM WATER TABLE REPORT
PROPOSED EAST OXFORD PIT

TITLE
**SITE PLAN**

CONSULTANT

| | |
|---|---|
| YYYY-MM-DD | 2025-12-02 |
| DESIGNED | GS |
| PREPARED | BR |
| REVIEWED | CAMC |
| APPROVED | BH |

| PROJECT NO. | CONTROL | REV. | FIGURE |
|---|---|---|---|
| 21471757 | 0004 | 0 | 1 |




CLIENT
R.W. TOMLINSON LIMITED

PROJECT
PROPOSED EAST OXFORD PIT
MAXIMUM WATER TABLE REPORT

CONSULTANT
wsp

| | |
|---|---|
| YYYY-MM-DD | 2024-11-12 |
| PREPARED | GS |
| DESIGN | GS |
| REVIEW | CAMC |
| APPROVED | BH |

TITLE
GROUNDWATER ELEVATIONS AT MONITORING WELLS 21-01, 21-02, 21-03, 21-04, 21-05, 21-06, 21-07 AND 21-08

| PROJECT No. | PHASE | Rev. | FIGURE |
|---|---|---|---|
| 21471757 | | 0 | 2 |

**ATTACHMENT 1**

# Important Information and Limitations of Report

## Important Information and Limitations of Report

WSP Canada Inc. ("WSP") prepared this report solely for the use of the intended recipient, R.W. Tomlinson Limited, in accordance with the professional services agreement between the parties. In the event a contract has not been executed, the parties agree that the WSP General Terms for Consultant shall govern their business relationship which was provided to you prior to the preparation of this report.

The report is intended to be used in its entirety. No excerpts may be taken to be representative of the findings in the assessment.

The conclusions presented in this report are based on work performed by trained, professional and technical staff, in accordance with their reasonable interpretation of current and accepted engineering and scientific practices at the time the work was performed.

The content and opinions contained in the present report are based on the observations and/or information available to WSP at the time of preparation, using investigation techniques and engineering analysis methods consistent with those ordinarily exercised by WSP and other engineering/scientific practitioners working under similar conditions, and subject to the same time, financial and physical constraints applicable to this project.

WSP disclaims any obligation to update this report if, after the date of this report, any conditions appear to differ significantly from those presented in this report; however, WSP reserves the right to amend or supplement this report based on additional information, documentation or evidence.

WSP makes no other representations whatsoever concerning the legal significance of its findings.

The intended recipient is solely responsible for the disclosure of any information contained in this report. If a third party makes use of, relies on, or makes decisions in accordance with this report, said third party is solely responsible for such use, reliance or decisions. WSP does not accept responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken by said third party based on this report.

WSP has provided services to the intended recipient in accordance with the professional services agreement between the parties and in a manner consistent with that degree of care, skill and diligence normally provided by members of the same profession performing the same or comparable services in respect of projects of a similar nature in similar circumstances. It is understood and agreed by WSP and the recipient of this report that WSP provides no warranty, express or implied, of any kind. Without limiting the generality of the foregoing, it is agreed and understood by WSP and the recipient of this report that WSP makes no representation or warranty whatsoever as to the sufficiency of its scope of work for the purpose sought by the recipient of this report.

In preparing this report, WSP has relied in good faith on information provided by others, as noted in the report. WSP has reasonably assumed that the information provided is correct and WSP is not responsible for the accuracy or completeness of such information.

Benchmark and elevations used in this report are primarily to establish relative elevation differences between the specific testing and/or sampling locations and should not be used for other purposes, such as grading, excavating, construction, planning, development, etc.

Overall conditions can only be extrapolated to an undefined limited area around these testing and sampling locations. The conditions that WSP interprets to exist between testing and sampling points may differ from those that actually exist. The accuracy of any extrapolation and interpretation beyond the sampling locations will depend on natural conditions, the history of Site development and changes through construction and other activities. In addition, analysis has been carried out for the identified chemical and physical parameters only, and it should not be inferred that other chemical species or physical conditions are not present. WSP cannot warrant against undiscovered environmental liabilities or adverse impacts off-Site.

The original of this digital file will be kept by WSP for a period of not less than 10 years. As the digital file transmitted to the intended recipient is no longer under the control of WSP, its integrity cannot be assured. As such, WSP does not guarantee any modifications made to this digital file subsequent to its transmission to the intended recipient.

This limitations statement is considered an integral part of this report.

**ATTACHMENT 2**

# Qualifications and Experience of Report Authors

## Golder Associates Ltd. – Ottawa

### Education

*Master's of Applied Science Environmental Engineering, Carleton University, Ottawa, Ontario, 2006*

*Bachelor Environmental Engineering, Carleton University, Ottawa, Ontario, 2003*

*Bachelor of Arts Psychology, University of Guelph, Guelph, Ontario, 1996*

### Certifications

*Registered Professional Engineer, Professional Engineers of Ontario, March 2009*

### *Career Summary*

Brian Henderson, P.Eng., is an Environmental Engineer with Golder Associates in Ottawa. He holds B.Eng. and M.A.Sc. degrees, both from the department of Civil and Environmental Engineering at Carleton University. He manages a wide variety of hydrogeological and environmental projects including borehole drilling, groundwater and surface water analysis and groundwater monitoring well installation. He has experience with the construction of numerical groundwater flow models used to assess the potential hydrogeological impacts of quarry and construction de-watering and larger scale models for regional studies.

## Employment History

***Golder Associates Ltd. – Ottawa, Ontario***
*Environmental Engineer (2006 to Present)*

Brian is responsible for project management, technical analysis, data management and reporting for a variety of hydrogeological and environmental projects. In this role he leads the planning, management and execution of permitting applications, groundwater resource protection studies and other environmental/hydrogeological projects. Brian carries out groundwater sampling, field investigations (including soil and groundwater investigations and monitoring); residential groundwater sampling; data management, analysis and interpretation. In addition, he monitors and reports on the compliance of quarry sites and landfills in accordance with their Certificates of Approval and Permits to Take Water. Brian performs groundwater modelling for wellhead protection studies, construction-related groundwater control and quarry hydrogeological studies.

***Carleton University – Ottawa, Ontario***
*Teaching Assistant (2003 to 2005)*

Conducted problem analysis sessions for several environmental engineering courses; prepared and coordinated seminars; and helped students one on one. Courses included third year contaminant transport, third year water resources engineering and a fourth year risk assessment course.

***City of Ottawa – Ottawa, Ontario***
*Engineering Assistant (2003)*

Working under supervision of City of Ottawa standards engineer, helped to write the City of Ottawa's Sewer Use Guidelines, attended meetings from other departments about the guidelines, researched current acceptable products to determine if they would meet future standards and reviewed new products to establish if they meet with the City's standards.

***Carleton University – Ottawa, Ontario***
*Research Assistant – NSERC Undergraduate Research Award (2002)*

Conducted research on the separation of cellulose from sugarcane bagasse plant residue; applied laboratory procedures and analytical techniques to investigate the effectiveness of the separation for a series of individual experimental trials; and designed a bench-scale model for the continuous separation of cellulose based on the experimental trials.

***City of Ottawa – Ottawa, Ontario***
*Laboratory Assistant (2001 to 2002)*

Laboratory tested asphalt, aggregates and concrete used in road construction. Laboratory tests included particle size distribution and proctor values for aggregates, the compressive strength of concrete, and particle distribution, volume of voids, percent asphalt cement, and marshal properties for asphalt. In the field, core samples were taken and densities of asphalt were measured using a nuclear density gauge.

## PROJECT EXPERIENCE – HYDROGEOLOGY

**Rehabilitation of the West Block**
Ottawa, Ontario

Undertook the hydrogeological components associated with the rehabilitation of the West Block prior to occupation by the House of Commons. Brian prepared a Category 3 Permit to Take Water (PTTW) application and supporting documentation for water taking for construction dewatering from the proposed excavations inside and outside of the building.

**Retrofit, Historical Restoration and Seismic Upgrade of the Wellington Building**
Ottawa, Ontario

Undertook the hydrogeological components associated with the assessment, and development of a treatment system for contaminated groundwater which was encountered under the floor slab. Brian undertook the modelling required to estimate potential groundwater inflow to the treatment system.

**Major Rehabilitation of the Government Conference Centre**
Ottawa, Ontario

Undertook the hydrogeological components associated with the rehabilitation of the Government Conference Center prior to occupation by the Senate of Canada. Brian designed the field testing components of the hydrogeological program and prepared a Category 3 Permit to Take Water (PTTW) application and supporting documentation for water taking for construction dewatering from the proposed excavations inside and outside of the building.

**Integrated Road, Sewer and Watermain Replacement/ Rehabilitation**
Ontario

Conducted background review, technical hydrogeological analysis and reporting related to infrastructure installation/replacement throughout the City of Ottawa. Analysis included predictions of the rate of groundwater inflow, water quality testing and the identification of hydrogeological risks.

**Permit to Take Water Applications/ Environmental Activity and Sector Registry Documentation**
Ontario

Conducted background review, technical hydrogeological analysis and reporting related to Category 1, 2 and 3 Permit to Take Water (PTTW) applications as well as dewatering and discharge plans to support Environmental Activity and Sector Registry (EASR) registrations for construction dewatering projects, quarry dewatering and pumping tests.

**Groundwater Numerical Modelling**
Ontario

Conducted hydrogeological investigations for proposed and existing quarry sites and construction dewatering projects. Developed detailed conceptual and numerical models for groundwater flow, and demonstrated impacts to local environment.

**Groundwater and Surface Water Monitoring Programs**
Ontario

Managed groundwater and surface water monitoring programs; conducted data checks, technical review and analysis; and, prepared a comprehensive annual report for various landfill and quarry sites.

**Potable Water and Wastewater Expansion**
Village of Limoges, Ontario

In response to a hydraulic review of the potable water and wastewater systems for the Village of Limoges, Golder completed the necessary studies to inform a Master Plan for the two systems in accordance with the requirements of a Municipal Class Environmental Assessment. The Master Plan addressed the growth potential and the capacity constraints to develop a long-term outlook for the community. Brian served as Project Manager and Hydrogeologist for this project. As Project Manager he was responsible for budget/schedule maintenance and control, QA/QC of deliverables, development of a health & safety plan, communication with client and stakeholders, contractor guidance and supervision as well as team organization and communication. Brian also carried out data analysis, report preparation, field program design and water level/sample collection to complete a hydrogeological study to evaluate possible well locations.

**Hydrogeological and Hydrological Assessments for Quarry Licensing**
Ottawa (Goulbourn Twp.), Ontario

Golder carried out the necessary hydrogeological, hydrological and ecological studies to support applications under the Aggregate Resource Act and the Planning Act for a site plan license for a new quarry. Brian developed detailed conceptual and numerical models of groundwater flow, demonstrated potential impacts to local environment and proposed mitigative measures.

**Hydrogeological Assessment for Quarry Licensing**
Ottawa (Gloucester Twp.), Ontario

Golder carried out a hydrogeological studies to support an application under the Aggregate Resource Act and the Planning Act for a site plan license for a new quarry. Brian developed detailed conceptual and numerical models of groundwater flow, demonstrated potential impacts to local environment and proposed mitigative measures. He carried out on-site hydraulic conductivity testing and groundwater/surface water interaction studies. He was responsible for designing the field program and health & safety plan and preparing the report.

**Hydrogeological Assessment for Quarry Licensing**
Canaan Quarry Expansion, Ottawa, Ontario

Golder carried out a hydrogeological study to support an application under the Aggregate Resource Act and the Planning Act for a site plan license for a quarry expansion. Brian developed detailed conceptual and numerical models of groundwater flow, demonstrated potential impacts to local environment and proposed mitigative measures. He carried analysis of on-site hydraulic conductivity testing data. He was responsible for designing the field program and health & safety plan and preparing the report.

**Conceptual Design for the Remediation of a Closed Landfill**
County of Northumberland, Ontario

Golder presented a number of remediation alternatives to the County to address surface water compliance issues arising from leachate derived impacts identified in a nearby creek caused by a closed landfill. After a review and analysis of existing data, Brian developed the conceptual groundwater flow model, carried out numerical modelling of the remediation options, and prepared reports.

**Options Evaluation and Preliminary Design for Tailings Management Option**
Nunavut

Golder completed a tailings and waste rock management options evaluation and preliminary design of selected tailings management options at a mine site in Nunavut. Brian completed monitoring well development and sampling for groundwater quality of a deep monitoring well below permafrost using the WestbayTM monitoring well system.

**Groundwater Vulnerability Study**
Kingston, Ontario

Golder completed a Groundwater Vulnerability Study for the municipal water supply well servicing a subdivision in the northeast part of Kingston, Ontario. The groundwater vulnerability study included the delineation of the wellhead protection area (WHPA) around the well and the determination of vulnerability scores for the different zones within the WHPA. Brian was responsible for field program design, compilation, interpretation and analysis of data and report preparation. He also carried out the QA/QC of deliverables, conceptual model development and numerical modelling.

**Phase III ESA at the Ottawa International Airport**
Ottawa, Ontario

Golder completed a Phase III Environmental Site Assessment at the MacDonald-Cartier Ottawa International Airport which attempted to define the extent of groundwater and soil impacts based on the data gap analysis and the water quality results from the available monitoring wells installed during previous investigations. Brian was responsible for the collection of soil and groundwater samples, field program development, data analysis and report preparation. He also carried out compilation and interpretation of data, conceptual model development and contractor guidance and supervision.

**Wellhead Protection Study**
Deloro, Ontario

Golder carried out a Wellhead Protection Study for the Village of Deloro municipal well. The study included a groundwater vulnerability analysis, a threats inventory and a water quality risk assessment. Brian carried out groundwater flow modelling for the delineation of wellhead protection areas for the municipal well in Deloro. He conducted groundwater vulnerability mapping using ISI methods within the delineated areas.

## PROJECT EXPERIENCE – HYDROGEOLOGY - INFRASTRUCTURE

**Combined Sewage Storage Tunnel**
Ottawa, Ontario

Golder carried out geotechnical and hydrogeological investigations for a new 6 km combined sewer storage tunnel system in Ottawa. A field investigation and reporting program was completed through the downtown core to support the preliminary and detail design team. Brian assisted with the design and implementation of the hydrogeological field program, carried out the packer test data analysis, compiled and interpreted data and completed pumping tests which were challenging due to the location on the streets of downtown Ottawa. Results of the hydrogeological assessment were included in a report used as a supporting document for a Permit to Take Water application for construction dewatering for the project. Brian also provided technical review and guidance to the team and the guidance and supervision of contractors.

**South Nepean Collector Sewer Phase Two**
Ottawa, Ontario

Undertook hydrogeological investigation for 2.5 kilometers of new deep trunk sewer in Barrhaven just north of the Jock River through sensitive clays, bouldery glacial till with permeable sand seams, and limestone bedrock. Providing hydrogeological input to design, tender documents and construction, including a PTTW application with supporting documentation. Key issues included assessment of the potential for basal heave, basal instability and general excavation conditions for the 6 to 10 metre deep excavations.

**Ottawa Light Rail Transit Preliminary Design**
Ottawa, Ontario

From 2010 to 2012, Golder carried out geotechnical, environmental and hydrogeological investigations for a new 12.5 km light rail transit system in Ottawa. A field investigation and reporting program was completed through the downtown core to support the preliminary design team. Brian assisted with the design and implementation of the hydrogeological field program, carried out the packer test data analysis, compiled and interpreted data and completed pumping tests which were challenging due to the location on the streets of downtown Ottawa. Brian also provided technical review and guidance to the team and the guidance and supervision of contractors.

**West Transitway Extension (Bayshore Station to Moodie Drive)**
Ottawa, Ontario

Undertook the hydrogeological components of the functional and detailed design for the West Transitway extension from Bayshore Station to Moodie drive. Subsurface conditions were determined using pre-existing information and a limited number of new test pits and boreholes/monitoring wells. A pumping test was carried out in the vicinity of Moodie Drive, due to the high hydraulic conductivity of the shallow bedrock, and numerical modelling analyses were undertaken to evaluate the issues related to construction dewatering. Golder obtained draft PTTW's for construction dewatering associated with construction of Phases 1 and 2.

**Manotick Watermain Link**
Ottawa, Ontario

Undertook hydrogeological investigations for detailed design of a watermain through the Village of Manotick, including two crossings under the Rideau River. Completed a Permit to Take Water application with supporting documentation.

**Spencer Avenue Integrated Road, Sewer and Watermain Construction**
Ottawa, Ontario

Undertook the, hydrogeological investigation for the integrated replacement of the roadway, watermain and sewer along Spencer Avenue from Western Avenue to Holland Avenue. Providing hydrogeological input to design and construction, and a Permit to Take Water application with supporting documentation.

**Gilmour Trunk Sewer Reconstruction**
Ottawa, Ontario

Undertook the hydrogeological investigation for the integrated replacement of the roadway, watermain and a deep trunk sewer along Gilmour Street, Waverley Street, Cartier Street and Elgin Street, with deep shaft connection to the Rideau Canal Interceptor trunk sewer. Providing hydrogeological input to design, tender documents and construction, including a Permit to Take Water application with supporting documentation.

**Lavergne Street Integrated Road Sewer and Watermain Reconstruction**
Ottawa, Ontario

undertook the hydrogeological component of the design and construction for the integrated replacement of the roadway, watermain and sewer along Lavergne Street, Jolliet Avenue, Ste Monique Street, et al. in Vanier. Project included deep excavations in peats, highly permeability sands below the water table, and shallow shale bedrock. Non-standard construction measures were considered and assessed as a means of limiting the potential for impacts to adjacent structures resulting from compression of the underlying peat soils due to groundwater level lowering. A Permit to Take Water application with supporting documentation was prepared.

**Holland Avenue Watermain Replacement**
Ottawa, Ontario

Geotechnical, hydrogeological and environmental subsurface investigations in support of design and tender of watermain replacement. Mr. Henderson undertook the hydrogeological components of the project, completed a Permit to Take Water application for the City of Ottawa, and assisted in developing construction specifications for soil and groundwater management.

**Jockvale Road Jock River Bridge Replacement**
Ottawa, Ontario

Undertook the hydrogeological components associated with the detailed design of the Jock River bridge replacement and the widening and reconstruction of Jockvale Road and associated subsurface utilities in Barrhaven. Golder obtained a Category 3 Permit to Take Water (PTTW) for water taking from the excavation for the Jockvale roadway/sewer service trenches, the bridge caissons and the North and South shafts for the construction of the horizontal utility bore below the Jock River. Analytical and numerical modelling was carried out to evaluate rates of water taking and impacts to the sensitive clay deposit and two dozen private water supply wells located within 500 metres of the site. Golder developed a monitoring program to support the water taking activities.

# GOPESH SHARMA, P.Geo.

*Hydrogeologist, Ontario – Ground Engineering and Water*

**Areas of practice**

*Hydrogeology*

*Contaminated Lands*

**Languages**

*English*

*Hindi*

## PROFILE

Gopesh Sharma is a Professional Hydrogeologist with WSP in Ottawa with over 5 years of experience in K-testing, well water testing, pump testing, step testing, hydrogeological data analysis, well water surveying and sampling and drilling. In addition to the hydrogeological experience Gopesh Sharma has experience in investigation, assessment, monitoring, and remediation of contaminated sites. He is responsible for the planning, management, and execution of a variety of hydrogeological and environmental projects under provincial and federal jurisdiction including Phase I, II and III Environmental Site Assessments (ESAs). Gopesh develops and coordinates field investigations for identifying and delineating the extent of contaminants, petroleum hydrocarbons (PHC), volatile organic substances (VOCs), polyaromatic hydrocarbons (PAH), persistent organic pollutants (POPs), metals and others), in various media (groundwater, surface water, sediment, soil, indoor air and soil vapour).

His responsibilities include reviewing and interpreting regulatory information, historical records, and remote imagery; conducting soil, groundwater, sediment and soil vapour sampling; supervising field programs including test pitting, drilling and monitoring well installations for groundwater, soil and soil vapour investigations and site remediation; data management, analysis and interpretation; proposal and report writing for Phase I, II and III ESAs, Risk Assessment and Remediation projects.

## EDUCATION

| | |
|---|---|
| Bachelor of Science, Geology, University of Calgary, Alberta, Canada | 2019 |
| Engineering Design and Drafting Technology, Piping, Southern Alberta Institute of Technology, Calgary, Alberta, Canada | 2013 |

## PROFESSIONAL ASSOCIATIONS

| | |
|---|---|
| The Association of Professional Engineers and Geoscientists of Alberta, since 2019 | APEGA |
| Professional Geoscientist Ontario, since 2025 | PGO |

## CAREER

| | |
|---|---|
| Hydrogeologist, Ontario – Ground Engineering and Water, Hydrogeology, WSP, Ottawa, Ontario, Canada | 2022 – Present |
| Environmental Consultant, Contaminated Lands, Golder Associates Ltd. (WSP Acquisition), Ottawa, Ontario, Canada | 2021 – 2022 |
| Environmental Scientist, ARRM, Matrix Solutions Inc., Calgary, Alberta, Canada | 2019 – 2021 |
| Environmental Consultant, Environmental Air Emissions, Target Emissions Services Inc., Calgary, Alberta, Canada | 2019 |

## *PROFESSIONAL EXPERIENCE*

### *Environmental Consulting*

- Historical Review Report (Phase I ESA) (22525707), Petawawa, Ontario, Canada (2023): Reviewed and compiled historical analytical data provided by the client into WSP templates in order to assess relevance to each area within the client's property. Completed a Phase I Environmental Site Assessment for multiple areas within the client's property. Insured that all proper regulations were applied, and all relevant information was utilized to provide the client with a complete report. Identified potentially contaminating activities within the client's property and determined if further investigation was required. Addressed client feedback when provided in a professional manner. Client: Defence Construction Canada (DCC).
- K-Test Analysis, Inflow Calculations and Technical Memo (CA0007086.9792), Serpent River, Ontario, Canada (2023): Completed K-Test analysis for eight wells using the Bouwer and Hroslev methods in order to derive a K (Hydraulic Conductivity) value for inflow calculations. Provided inflow calculations determining the maximum amount of water that would infiltrate the proposed dig sites for remediation. Summarized all the data and results into a technical memo that was provided. Client: Public Works and Government Services Canada (PWGSC) – Ontario Region.
- Private Well Water Survey (20144864), Ottawa, Ontario, Canada (2022): Project Coordinator and Field Technician. Executed a well water sampling program for the client at the request of the City of Ottawa to determine baseline water quality prior to construction approval for a new community. Completed letter drops to all the residents within the well water testing program (over 80 homes) and talked with the residents to schedule a date to get their well water tested. Tested over 50 homes untreated well water, stored and delivered samples to a credited laboratory for testing. Reviewed and compiled laboratory results for each resident in a letter format discussing any exceedances found within their water. Client: Cavian.
- Pump Test (19124906), Ottawa, Ontario, Canada (2022): Completed a 6-hour pump test to determine the hydraulic conductivity of the formation at the Site. Set up and installed level loggers within the pumping well and three surrounding wells to determine changes in water level and to determine the cone of influence from the test. Installed a pump into the well and determined a flow rate that would be used for the test based on the recovery of the well. Monitored and recorded manual water level measurements from the pumping well and surrounding wells during the test. Retrieved the level loggers at the end of the test, downloaded the data and assisted with data analysis. Client: Canada Lands Company CLC Limited.
- Pump Test, Step Test and Drilling (22523159), Thunder Bay, Ontario, Canada (2022): Drilled and installed a pumping well within an aquifer that required a step test and pump test to be conducted at the Site. Set up and installed level loggers within the pumping well and three surrounding wells to determine changes in water level and to determine the cone of influence from the test. Installed a pump into the well and determined a flow rate that would be used for the test by conducting a step test. After determining the best flowrate, a 24-hour pump test was conducted. Monitored and recorded manual water level measurements from the pumping well and surrounding wells during both tests. Retrieved the level loggers at the end of the test, downloaded the data and assisted with data analysis. Provided a hydraulic conductivity to the client based on the test results. Client: Public Services and Procurement Canada (PSPC)/Transport Canada (TC).

**ATTACHMENT 3**

# Groundwater Elevations

| Date | Groundwater Elevations (metres above sea level) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 21-01 | 21-02 | 21-03 | 21-04 | 21-05 | 21-06 | 21-07 | 21-08 |
| 20-Jul-21 | 106.33 | 106.23 | 105.38 | 101.00 | 105.03 | 105.55 | 101.13 | 104.78 |
| 09-Aug-21 | 106.18 | 106.11 | 105.27 | 100.36 | 104.92 | 105.51 | 100.95 | 104.72 |
| 10-Sep-21 | 106.00 | 105.95 | 105.16 | 100.11 | 104.81 | 105.37 | 100.73 | 104.67 |
| 5-Oct-21 | 105.81 | 105.87 | 105.11 | 100.65 | 104.80 | 105.26 | 101.08 | 104.75 |
| 15-Nov-21 | 106.09 | 105.93 | 105.11 | 101.06 | 104.81 | 105.16 | 101.12 | 104.86 |
| 21-Dec-21 | 106.29 | 106.07 | 105.24 | 100.97 | 104.87 | 105.22 | 101.11 | 104.82 |
| 31-Jan-22 | 106.65 | 105.91 | 105.06 | 100.63 | 104.83 | 105.30 | Frozen | 104.65 |
| 09-Feb-22 | 106.52 | 105.88 | 105.04 | 100.94 | 104.82 | 105.25 | Frozen | 104.69 |
| 30-Mar-22 | 106.51 | 106.41 | 105.40 | Dry | 105.20 | 105.57 | Frozen | 104.83 |
| 12-Apr-22 | 106.84 | 106.52 | 105.41 | 100.97 | 105.29 | 105.72 | 101.09 | 104.82 |
| 11-May-22 | 106.69 | 106.48 | 105.36 | 100.81 | 105.24 | 105.88 | 101.04 | 104.79 |
| 29-Jun-22 | 106.58 | 106.47 | 105.34 | 100.77 | 105.16 | 105.88 | 101.05 | 104.80 |
| 07-Jul-22 | 106.50 | 106.42 | 105.28 | 100.23 | 105.09 | 105.81 | 100.91 | 104.71 |
| 31-Aug-22 | 106.19 | 106.10 | 105.06 | 100.15 | 104.83 | 105.58 | 100.76 | 104.77 |
| 07-Sep-22 | 106.14 | 106.05 | 105.03 | 99.99 | 104.79 | 105.52 | 100.71 | 104.63 |
| 03-Oct-22 | 106.11 | 105.93 | 104.96 | 100.65 | 104.78 | 105.39 | 101.03 | 104.66 |
| 23-Nov-22 | 105.95 | 105.74 | 104.88 | 100.93 | 105.10 | 105.17 | 101.06 | 104.71 |
| 13-Dec-22 | 106.06 | 105.81 | 104.88 | 100.84 | 104.63 | 105.11 | 101.03 | 104.62 |
| 24-Jan-23 | 106.34 | 106.23 | 105.34 | 100.94 | 105.08 | 105.61 | 101.02 | 104.84 |
| 10-Feb-23 | 106.31 | 106.14 | 105.26 | 101.16 | 105.00 | 105.57 | Frozen | 104.95 |
| 30-Mar-23 | 106.79 | 106.50 | 105.49 | 101.09 | 105.31 | 105.69 | Frozen | 104.92 |
| 12-Apr-23 | 107.29 | 106.99 | 106.04 | 100.91 | 105.74 | 106.41 | 101.04 | 104.90 |
| 29-May-23 | 106.93 | 106.96 | 105.69 | 100.65 | 105.54 | 106.42 | 101.01 | 104.85 |
| 15-Jun-23 | 106.75 | 106.82 | 105.55 | 100.22 | 105.40 | 106.30 | 100.97 | 104.88 |
| 25-Jul-23 | 106.51 | 106.52 | 105.31 | 99.83 | 105.12 | 105.97 | 100.91 | 104.75 |

| Date | Groundwater Elevations (metres above sea level) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 21-01 | 21-02 | 21-03 | 21-04 | 21-05 | 21-06 | 21-07 | 21-08 |
| 17-Aug-23 | 106.73 | 106.64 | 105.31 | 100.83 | 105.06 | 105.92 | 101.01 | 104.85 |
| 20-Sep-23 | 106.42 | 106.34 | 105.21 | 100.26 | 105.01 | 105.77 | 101.02 | 104.81 |
| 17-Oct-23 | 106.28 | 106.18 | 105.13 | 100.18 | 104.89 | 105.61 | 101.02 | 104.76 |
| 15-Nov-23 | 106.25 | 106.07 | 105.08 | 100.92 | 104.84 | 105.47 | 101.04 | 104.82 |
| 08-Dec-23 | 106.32 | 106.05 | 105.07 | 100.91 | 104.85 | 105.37 | 101.04 | 104.81 |
| 15-Jan-24 | 106.50 | 106.28 | 105.31 | 101.01 | 105.09 | 105.54 | 101.04 | 104.87 |
| 29-Feb-24 | 106.64 | 106.35 | 105.40 | 101.00 | 105.18 | 105.60 | 101.04 | 104.88 |
| 14-Mar-24 | 106.76 | 106.43 | 105.39 | 100.98 | 105.12 | 105.66 | 101.04 | 104.88 |
| 17-Apr-24 | 106.76 | 106.43 | 105.39 | 100.98 | 105.22 | 105.66 | 101.04 | 104.88 |
| 15-May-24 | 106.83 | 106.64 | 105.49 | 100.93 | 105.32 | 106.02 | 101.05 | 104.88 |
| 18-Jun-24 | 106.58 | 106.43 | 105.30 | 100.61 | 105.19 | Not Measured | 100.98 | 104.80 |
| 04-Jul-24 | 106.52 | 106.37 | 105.24 | 100.66 | 105.09 | 105.80 | 100.97 | 104.78 |
| 7-Aug-24 | 106.42 | 106.21 | 105.11 | 100.38 | 104.94 | 105.66 | 101.00 | 104.78 |
| 4-Sep-24 | 106.50 | 106.42 | 105.33 | 100.66 | 105.08 | 105.75 | 100.97 | 104.78 |
| 3-Oct-24 | 106.29 | 106.22 | 105.16 | 100.25 | 104.91 | 105.62 | 101.00 | 104.75 |
| 5-Nov-24 | 106.14 | 106.03 | 105.06 | 100.51 | 104.82 | 105.46 | Frozen | 104.76 |
| 3-Dec-24 | 106.14 | 105.91 | 105.00 | 100.92 | 104.75 | 105.46 | Frozen | 104.76 |
| 13-Jan-25 | 106.24 | 105.96 | 105.05 | 100.94 | 104.79 | 105.46 | Frozen | 104.78 |
| 12-Feb-25 | 106.42 | 106.14 | 105.16 | 100.95 | 104.82 | 105.45 | Frozen | 104.81 |
| 15-Mar-25 | 106.48 | 106.36 | 105.20 | 100.99 | 104.99 | 105.44 | 101.04 | 104.83 |
| 2-Apr-25 | 106.70 | 106.51 | 105.26 | 101.00 | 105.12 | 105.44 | 101.04 | 104.86 |
| 8-May-25 | 106.80 | 106.55 | 105.45 | 100.88 | 105.28 | 105.79 | 100.98 | 104.82 |
| 12-Jun-25 | 106.50 | 106.34 | 105.25 | 100.35 | 105.08 | 105.71 | 100.91 | 104.72 |
| 9-Jul-25 | 106.31 | 106.21 | 105.11 | 100.03 | 104.93 | 105.59 | 100.71 | 104.63 |

| Date | Groundwater Elevations (metres above sea level) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 21-01 | 21-02 | 21-03 | 21-04 | 21-05 | 21-06 | 21-07 | 21-08 |
| 15-Aug-25 | 106.02 | 105.98 | 104.92 | Dry | 104.67 | 105.42 | 99.94 | 104.28 |
| 5-Sep-25 | 105.91 | 105.85 | 104.85 | Dry | 104.59 | 105.31 | 99.89 | 104.36 |

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