ENGINEERING SERVICES AGREEMENT

dated as of the 3rd day of June 2021.

by and between:

TOWN OF FORT FRANCES
hereinafter called the "Client".

and:

KONTZAMANIS GRAUMANN SMITH MACMILLAN INC.,
carrying on business as KGS Group
hereinafter called "KGS Group".

AGREEMENT

The Client and KGS Group agree as follows:

A1 THE SERVICES

A1.1 KGS Group will provide the Services (as defined in Schedule "A") in connection with the Project (as defined in Schedule "A"). A short description of the Project is as follows:

21-000-0573 – Phase I / II ESA - Former Shevlin Wood Yard

A2 AGREEMENT AND AMENDMENTS

A2.1 This Agreement constitutes the entire agreement between the Client and KGS Group relating to the Project and the Services and supersedes and invalidates all prior representations, arrangements, negotiations, understandings and agreements between them, whether written or oral, respecting the Project and the Services. No other terms, conditions or warranties, whether express or implied, form a part of this Agreement.

A2.2 If the Client issues or has issued a purchase order relating to the Services, any terms and conditions on the purchase order do not apply to this Agreement.

A2.3 This Agreement may by amended only by a written document signed by both the Client and KGS Group. Any such document may be executed in counterpart form.

A3 AGREEMENT DOCUMENTS

A3.1 The documents listed below form part of and are incorporated into this Agreement. In the event of any inconsistency or conflict between those documents, the order of priority in resolving such conflict or inconsistency will be as follows:
(a) Engineering Services Agreement;
(b) Schedule "B" – General Terms and Conditions; and
(c) Schedule "A" – Scope of Services.

A4 COMPENSATION AND PAYMENT TERMS

A4.1 The Client will compensate KGS Group as set forth in Schedule "A".

A4.2 Unless otherwise stated in Schedule "A", KGS Group will issue monthly invoices to the Client. Invoices are due and payable within 30 days of receipt.

A4.3 The Client will be charged interest at the rate of 1.5% per month (18% per year) on all past-due accounts. Payments will first be credited to interest and then to principal.

IN WITNESS WHEREOF the parties have executed this Agreement by the hands of their duly authorized representatives.

Kontzamanis Graumann Smith MacMillan Inc. **(o/a KGS Group)** Per:	**TOWN OF FORT FRANCES** Per:
Signature	Signature
Bryan Skrabek, M.Sc., P.Eng. Print Name	Print Name
Regional Manager Title	Title

SCHEDULE "A"

SCOPE OF SERVICES

KGS Group Proposal 21-000-0573 – Phase I / II ESA - Former Shevlin Wood Yard, dated April 26, 2021.

(attached)

SCHEDULE B – GENERAL TERMS AND CONDITIONS

GC1. DEFINITIONS

GC1.1 "Agreement" or "this Agreement" means this Engineering Services Agreement between KGS Group and the Client, including all of the documents identified in **A-3** - AGREEMENT DOCUMENTS and any amendments thereto.

GC1.2 "Engineering Documents" means drawings, plans, models, designs, specifications, reports, photographs, computer software (if such computer software is proprietary to KGS Group), surveys, calculations and other data which are used in connection with the Project, and which were prepared by or on behalf of KGS Group and are instruments of service for the execution of the Work.

GC1.3 "Project" means the total endeavour contemplated in this Agreement of which the Services or the Work may be the whole or a part.

GC1.4 "Services" means those services that are identified in Schedule "A".

GC1.5 "Third Party Documents" means any shop drawings, as-built drawings, record drawings, other drawings, designs, reports or any other documents provided by the Client or third parties;

GC1.6 "Work" means any construction and/or related work performed by contractors, subcontractors or suppliers in connection with the Project.

GC2. TERM

GC2.1 This Agreement is effective as of the earlier of: (i) the date herein; or (ii) the date the Services are first performed by KGS Group and will continue in effect until KGS Group completes the Services, unless this Agreement is terminated earlier in accordance with the provisions hereof.

GC2.2 The provisions at **A4** (Compensation and Payment Terms), **GC5** (Ownership and Use of Documents and Intellectual Property) and **GC8** (Limitation of Liability) will survive the termination or expiry of this Agreement for any cause.

GC3. OBLIGATIONS OF KGS GROUP

GC3.1 KGS Group will provide the Services with that degree of care, skill and diligence normally provided by engineers in the performance of comparable services in respect of projects of a similar nature to that contemplated by this Agreement.

GC3.2 KGS Group will not be responsible for:

(a) the performance, acts or omissions of any contractors, subcontractors or suppliers;

(b) nor control, direct or supervise, the construction methods, means, techniques, sequences or procedures of contractors, subcontractors or suppliers; and

(c) safety precautions, programs, policies or procedures required in connection with the Work or for site safety at any location where Work is being performed.

GC3.3 KGS Group is entitled to rely upon the accuracy and completeness of records, information, data and specifications furnished by:

(a) government authorities and public utilities; and

(b) manufacturers and suppliers of equipment, material or supplies.

GC3.4 KGS Group will not be responsible for the failure of any manufactured product or any manufactured or factory assembled system of components to perform in accordance with the manufacturer's specifications, product literature or written documentation.

GC3.5 Unless otherwise specifically stated in Schedule "A", KGS Group will not make any on-site reviews.

GC3.6 If on-site reviews are specifically included in Schedule "A", KGS Group will attend the location where Work is being performed at such intervals as KGS Group considers to be appropriate or as otherwise specifically set out in Schedule "A". The presence of KGS Group's personnel at any location where Work is being performed is for the purpose of providing to the Client a greater degree of confidence that the Work will conform generally to any construction contracts or documents and that the integrity of the design concept as reflected in any construction contracts or documents has been implemented and preserved by the contractor(s) performing the Work. Only Work which KGS Group has reviewed during construction will be considered to have been assessed. Should KGS Group comment on parts of the Work which it has not reviewed during construction, KGS Group's comments must be construed as being assumptions only and must not be relied upon by the Client.

GC3.7 In soils, foundation, groundwater and other subsurface investigations, the actual characteristics may vary significantly between successive test points and sample intervals and at locations other than where observations, exploration and investigations have been made. Because of the inherent uncertainties in subsurface evaluations, changed or unanticipated underground conditions may occur that could affect the cost and/or schedule of the Project. Those conditions and/or the effect those conditions may have on the cost and/or schedule of the Project are not the responsibility of KGS Group.

GC3.8 Any estimates or opinions regarding probable construction costs or construction schedule provided by KGS Group represent KGS Group's professional judgment in light of its experience and the knowledge and information available to it at the time of preparation. KGS Group has no control over prices for construction labour, equipment or materials or bidding procedures, time or quality of performance of contractors, suppliers and manufacturers and other market or economic factors that may materially affect construction costs or schedule. Therefore, KGS Group does not make any representations, warranties or guarantees whatsoever, whether express or implied, with respect to such estimates or opinions, or their variance from actual construction costs or schedule, and accepts no responsibility for any loss or damage arising therefrom. If the Client wishes to secure an estimate or opinion regarding probable construction costs or schedule upon which it can rely, the Client is at liberty to retain a qualified quantity surveyor or an independent expert.

GC3.9 Third Party Documents will be reviewed by KGS Group only for the limited purpose of checking for general conformance with the information given and design concept expressed in any construction contracts or documents. KGS Group's review of Third-Party Documents is not for the purpose of:

(a) determining the feasibility or constructability of the information detailed within the Third-Party Documents; or

(b) verifying the accuracy or completeness of:

i. details such as dimensions and quantities; or

ii. instructions for installation or performance of equipment or systems;

and KGS Group will not be liable to the Client or any other party with respect to any inaccuracy or omission in any Third-Party Documents.

GC3.10 Unless otherwise specifically stated in Schedule "A", KGS Group is not responsible for the identification, reporting, analysis, evaluation, presence, handling, removal or disposal of asbestos or other hazardous substances, or for the exposure of persons, property or the environment to asbestos or other hazardous substances.

GC3.11 Unless otherwise specifically stated in Schedule "A", all samples obtained by KGS Group, including soil samples, may be discarded by KGS Group after 30 days from the date of submission of KGS Group's report to the Client.

GC3.12 Except as otherwise agreed in writing, all of the Services shall be for the Client's internal purposes and use. The Services are not intended for the express or implied benefit of any third party. No third party is entitled to rely, in any manner or for any purpose, on the advice, opinions, reports and/or other materials given or provided by KGS Group to the Client under this Agreement without the prior written consent of KGS Group. The Client further agrees that such advice, opinions, reports and/or materials shall not be distributed to any third party without the prior written consent of KGS Group.

GC4. OBLIGATIONS OF THE CLIENT

GC4.1 The Client will advise KGS Group of the Client's requirements in connection with the Project, including but not limited to, design objectives, time and other constraints, special equipment and systems and the budget for the Project.

GC4.2 The Client will, as soon as possible, make available to KGS Group all relevant data and information that KGS Group may need to perform the Services. KGS Group will, acting reasonably, be entitled to rely upon the accuracy and completeness of all such data and information furnished by or through the Client.

GC4.3 Unless otherwise specifically stated in Schedule "A", the Client will engage third parties directly to perform ancillary or specialized services that are necessary to enable KGS Group to carry out the Services. Such ancillary or specialized services may include, but are not limited to, legal or topographic surveys, mapping, quantity surveys and testing services. The Client will be entitled to determine which third parties to engage but will consult with KGS Group prior to doing so.

GC4.4 The Client is responsible for obtaining legal advice regarding tenders, requests for a proposal, quotation or information, bids, contract awards and the like, regarding the Project. The Client is responsible for decisions relating to the issuance, validity or award of tenders, proposals, bids or contracts and the like, and for the resulting consequences, even where the Services require KGS Group to review, evaluate or assist in the preparation of tenders, proposals, bids or contracts and the like or to make recommendations regarding them or regarding the qualification or selection of bidders.

GC4.5 The Client will designate in writing a representative who will have authority to transmit instructions to and receive information from KGS Group and to bind the Client.

GC4.6 The Client will promptly consider requests by KGS Group for directions or decisions and diligently inform KGS Group of the Client's direction or decision within a reasonable time so as not to delay the Services and/or the Work.

GC4.7 Unless otherwise specifically stated in Schedule "A", the Client will obtain required approvals, licenses and permits from municipal, governmental or other authorities having jurisdiction over the Project so as not to delay the Services and/or the Work.

GC4.8 If necessary, the Client will arrange access to any location that KGS Group must access to perform the Services.

GC4.9 The Client will promptly notify KGS Group whenever the Client or any of the Client's representatives becomes aware of any defects or deficiencies in the Services or the Engineering Documents.

GC5. OWNERSHIP AND USE OF DOCUMENTS AND INTELLECTUAL PROPERTY

GC5.1 The Engineering Documents are the property of KGS Group.

GC5.2 KGS Group retains ownership of all patents, trademarks, copyrights, industrial or other intellectual property rights resulting from the Engineering Documents, the Services or from concepts, products or processes which are developed or first reduced to practice by KGS Group in performing the Services. The Client will not use, infringe or appropriate such proprietary rights without the prior written consent of KGS Group.

GC5.3 Provided that the Services have been paid for in full, the Client will receive a royalty-free, non-transferable, non-exclusive license to use any proprietary concept, product or process of KGS Group which relates to or results from the Services for the life of the Project and solely for purposes of its maintenance and repair.

GC5.4 The Client will not, without notifying KGS Group and obtaining KGS Group's prior written consent:

(a) provide the Engineering Documents to third parties for purposes other than in connection with the Project;

(b) alter the Engineering Documents; or

(c) use the Engineering Documents on any other projects.

GC5.5 The Client will indemnify and hold harmless KGS Group from and against any and all demands, claims, actions, losses, expenses, causes of action, liabilities and costs (including legal costs on a solicitor and own client basis) incurred as a result of any breach of this Article **GC5**. In no event will KGS Group be responsible for the consequences of any such breach.

GC6. TERMINATION AND SUSPENSION

GC6.1 The Client may terminate this Agreement without cause on 30 days written notice to KGS Group. In such event, the Client will promptly pay to KGS Group:

(a) the fees and disbursements of KGS Group that are incurred and unpaid up to the date of termination; and

(b) the expenses reasonably and necessarily incurred by KGS Group in winding down the Services.

GC6.2 If KGS Group is in material default in the performance of its obligations under this Agreement, the Client may notify KGS Group in writing that the default must be corrected. If KGS Group does not correct the default within 30 days after receipt of such written notice or if KGS Group does not take reasonable steps to correct the default if the default is not susceptible of correction within 30 days, the Client may terminate this Agreement upon further written notice to KGS Group, without prejudice to any other rights or recourses of the Client. Such termination will not release the Client from its obligation to pay the fees and disbursements incurred by KGS Group up to the date of termination.

GC6.3 If the Client is in material default in the performance of any of the Client's obligations under this Agreement, including but not limited to the non-payment of fees and disbursements of KGS Group, KGS Group may notify the Client in writing that the default must be corrected. If the Client does not correct the default within 30 days after receipt of such written notice, KGS Group may terminate this Agreement upon further written notice to the Client, without prejudice to any other rights and recourses of KGS Group.

GC6.4 The Client may suspend the Services for the convenience of the Client. In such event, KGS Group's fees, disbursements and schedule will be equitably adjusted.

GC6.5 If the Client suspends performance of the Services at any time for more than 30 days, then KGS Group may choose to terminate this Agreement upon written notice to the Client. In this event, the Client will promptly pay the fees and disbursements of KGS Group that are incurred and unpaid as of the date of such termination, plus the expenses reasonably and necessarily incurred by KGS Group in winding down the Services.

GC7. FORCE MAJEURE

GC7.1 Neither party will be in default of this Agreement where the failure to perform an obligation is caused by or resulting from conditions or causes beyond its reasonable control. In such an event, each party will be allowed a reasonable period of time to fulfill its remaining obligations under this Agreement having regard to the applicable circumstances. Nothing herein will limit the obligation for any party to make any payment required by this Agreement.

GC8. LIMITATION OF LIABILITY

GC8.1 In this Section GC 8:

(a) "Client Claims" means any and all claims (which includes demands, losses, expenses, causes of action, liabilities and costs, including without limitation for all legal costs on a solicitor and own client basis) by the Client against any of the KGS Group Indemnified Parties, or third parties claiming contribution or indemnity from any of the KGS Group Indemnified Parties, that are related to or connected with this Agreement, including without limitation the performance of or failure to perform the Services, whether such claims arise in contract, tort (including without limitation negligence) or under any other cause of action, and "Client Claim" means any one of them;

(b) "KGS Claims" means any and all claims (which includes demands, losses, expenses, causes of action, liabilities and costs, including without limitation for all legal costs on a solicitor and own client basis) by KGS Group against the Client that are related to or connected with this Agreement, whether such claims arise in contract, tort (including without limitation negligence) or under any other cause of action, and "KGS Claim" means any one of them;

(c) "KGS Group Indemnified Parties" means KGS Group including, KGS Group's principals, officers, directors, employees, independent contractors, agents, representatives, subconsultants and/or subcontractors;

(d) "Liability Limit" means (i) the total fees paid by the Client to KGS Group under this Agreement, or (ii) $200,000, whichever is greater.

GC8.2 Notwithstanding any other provision of this Agreement, the liability of the KGS Group Indemnified Parties for Client Claims will not, in the aggregate, exceed the Liability Limit. Further, the Client agrees that it will indemnify and hold harmless the KGS Group Indemnified Parties from and against Client Claims which exceed the Liability Limit.

GC8.3 The Client agrees that KGS Group's principals, officers, directors, employees, independent contractors, agents, representatives, subconsultants and/or subcontractors will have no liability to the Client in respect of a Client Claim. Accordingly, the Client agrees that it will bring no proceedings and take no action in any court of law against any of KGS Group's principals, officers, directors, employees, independent contractors, agents, representatives, subconsultants or subcontractors.

GC8.4 The liability of each party with respect to a Client Claim or KGS Claim, as the case may be, is limited to direct damages only and neither party will have any liability whatsoever for indirect, incidental, economic or consequential loss or damage,

including and whether or not the following are determined in any proceeding to be direct damages: loss of profit, loss of revenue, loss of production, loss of business, loss of contracts or loss of opportunity and/or increased cost of capital, increased cost of financing or increased cost of overhead.

GC8.5 In any Client Claim, the Client agrees that KGS Group's liability will be several and not joint and several and that the Client will only be entitled to claim payment from KGS Group of KGS Group's proportionate share of the total liability based on the degree of fault of KGS Group as finally determined by a court of competent jurisdiction.

GC9. GENERAL LEGAL PROVISIONS

GC9.1 Neither party may assign this Agreement in whole or in part without the written consent of the other, which consent will not be unreasonably withheld.

GC9.2 No action or failure to act by the Client or KGS Group will constitute a waiver of a right or duty afforded or imposed under this Agreement, except as may be specified in writing.

GC9.3 This Agreement will be construed and governed by the laws of the province in which KGS Group has executed this Agreement. The parties attorn to the jurisdiction of the courts of that province.

GC9.4 If any provision of this Agreement is held by a court of competent jurisdiction to be invalid, illegal or unenforceable, such provision will be severed from this Agreement and the remaining terms and provisions in this Agreement will remain in full force and effect.

GC9.5 This Agreement, any amendment or other document delivered in connection herewith, may be executed and delivered in any number of counterparts, each of which when executed and delivered is an original but all of which taken together constitute one and the same instrument.

THE TOWN OF FORT FRANCES- RFP NO. 2021-PD-08

Phase One & Two Environmental Site Assessments for the Former Shevlin Wood Yard

Proposal for Environmental Services

KGS Group Proposal:
21-000-0593

Date:
April 26, 2021

KGS GROUP

PREPARED BY:

Leah Poliszczak
Senior Environmental Technologist

APPROVED BY:

Tony Gallo M.Sc. EP
Environmental Dept. Manager

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1.0 INTRODUCTION

Kontzamanis Graumann Smith MacMillan Inc. (KGS Group) is pleased to submit our Proposal in response to RFP No. 2021-PD-08 dated March 25, 2021 and Addendum No. 1 dated April 14, 2021 to complete Phase I and Phase II Environmental Site Assessments (ESA's) at the Former Shevlin Wood Yard located within the Town of Fort Frances.

KGS Group is excited at the prospect of working with the Town of Fort Frances again and assisting the Town in achieving their objective to submit Record of Site Conditions that will allow the Town to promote both commercial and residential development of the site. Our experience in completing the required tasks to successfully complete this project will ensure that the Towns' project goals are effectively achieved.

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2.0 UNDERSTANDING OF THE ASSIGNMENT

The former Shevlin Wood Yard is an approximately 22-acre brownfield site located in the Town of Fort Frances, Ontario. The site was formerly owned by a now closed Pulp and Paper mail and was used as a site for storing bulk wood prior to processing. The site was also utilized as part of a Sawmill operation in the early 1900s.

The Town of Fort Frances recently completed a land use and economic development feasibility study for the property, which has detailed a mix of residential and commercial development and divided the site into three (3) areas based on proposed land use. The Town intends to install municipal infrastructure and further subdivide the land prior to selling parcels to developers.

2.1 Project Objectives

The objective of the project will be to complete three (3) Phase I ESAs and up to three (3) Phase II ESAs (if required), for the subsequent filing of Record of Site Conditions for each of the three (3) sections of land on behalf of the Town of Fort Frances.

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3.0 PROJECT TEAM

3.1 Corporate Profile and Experience- KGS Group

KGS Group is an employee-owned multi-disciplinary engineering firm established in 1986 (33 years in business) with its head office based locally in Winnipeg, and regional branch offices located in Thunder Bay, Mississauga, Regina, Saskatoon, Vancouver, and Seattle. KGS Group has a permanent staff of over 400, including professional engineers, geoscientists, and technical support personnel, many with advanced degrees and considerable years of experience. Our services are broad reflecting our expertise in municipal/transportation, geotechnical, GIS/survey, environmental, hydraulics/hydrology, structural, mechanical, electrical and instrumentation disciplines. We have steadily grown and now average over $60 million in volume of work each year. The Firm provides services to government and private sector clients throughout Canada and has developed strong risk management practices through our experience with large scale projects. Our risk management practices are implements across all projects to assist our clients in identifying risks and opportunities in each stage of their projects. Services for this project will be provided through our Thunder Bay regional office and our Winnipeg office.

KGS Group has completed numerous Phase I, II, III Environmental Site Assessments, remedial and risk management action plans, site remediation projects and Record of Site Condition filings in Northwestern Ontario. These services have been provided to Federal, Provincial and Municipal Government as well as industrial, commercial, and private clients.

Description of some of our completed projects similar in scope and nature of tasks required for the completion of this assignment are included in Appendix A.

3.2 KGS Group Team Structure

In response to the project requirements, KGS Group will provide the Town of Fort Frances with an expert team of professionals and support staff to complete this assignment, specifically chosen for their proven skills to undertake this project. Our key staff have been selected based on their involvement with similar projects and our approach is based upon strong leadership and communication with our in-house quality assurance policies and management tools. As a multidisciplinary engineering firm, KGS Group provides an abundance of support with professional Engineers (registered in Ontario) and technical personnel specializing in environmental, structural, mechanical, geotechnical, geological, GIS, water resources, and urban infrastructure.

3.3 Proposed Project Team

The following is a list of the key personnel with extensive experience that KGS Group proposes to use on this project.

RESPONSIBILITY	TEAM MEMBER	Experience
KGS Project Manager	Tony Gallo M.Sc. EP	23 years
Contaminated Sites Specialist	Bonnie Hoffensetz, M.Sc.,	22years
Remediation Specialist	Ed Collins, P.Eng.	25 years
Hydrogeologist/QPEsa	Jason Mann, P.Geo.	22 years
Environmental Scientist	Gary Crewdson H.BSc. EP	16years
Environmental Technologist	Leah Poliszczak, C.E.T (pending)	22 years
Environmental Technician	Todd Williamson	14 years

3.4 Experience and Qualifications of Key Personnel

The following capsule resumes provide the role, responsibility and pertinent background information of each key team member selected for this assignment. Full curriculum vitae for these key team members is provided in Appendix B.

Tony Gallo, M.Sc., P.Biol. EP

Senior Environmental Scientist| Role: Project Manager

Mr. Gallo has 23 years of experience in the fields of contaminated site assessment and remediation.

Since 1997, Mr. Gallo has managed and completed numerous Phase I, II and III Environmental Site Assessments in accordance with Ontario Regulation 153/04, as well as hydrogeological assessments, remediation projects, including remedial design and remedial options analysis. Sites include fuel storage tank locations, fuelling (gas) stations, landfills, rail yards, various federal and industrial metal/, petroleum hydrocarbon/PAH and PCB contaminated sites, as well as train derailment sites in isolated areas.

DEGREES AND AFFLIATIONS	YEARS OF EXPERIENCE	Notable Related Experience:
Environmental Professional (EP) and Professional Biologist (P.Biol. – Alberta).	Current Position: 23 With KGS: 23	• **Phase II Environmental Site Assessment and Site Specific Risk Assessment- O.Reg 153/04 – Kingston Dry Dock, Kingston Ontario – Public Works Government Services Canada** • **Phase I/II Environmental Site Assessments – Six DFO/CCG Small Craft Harbour Sites – Public Works Government Services Canada** • **Phase I ESA's at 17 Rail Yards/Properties, Ontario – Canadian National Railway**

Bonnie Hoffensetz, M.Sc.

Senior Environmental Scientist| Role: Contaminated Sites Specialist

Ms. Hoffensetz has 22 years of experience in the fields of contaminated site assessment and remediation.

Since 1999, Ms. Hoffensetz has completed and managed numerous Phase I, II and III Environmental Site Assessments (ESA) throughout Manitoba, Saskatchewan, Ontario, NWT and Nunavut, hydrogeological assessments, remediation projects, waste audits and remedial action plans. Properties include residential, institutional, commercial, and industrial in rural, urban and First Nations communities.

DEGREES AND AFFLIATIONS	YEARS OF EXPERIENCE	Notable Related Experience:
Master of Science – Environment and Management.	Current Position: 22 With KGS: 22	• **EM Surveys, Phase I ESA Supplement and Phase II ESA Work Plan – Five Transport Canada Properties – Public Works Government Services Canada** • **Screening Level Reports (SLR) and Updated Enhanced Phase I ESAs – Various First Nations Properties in ON – Public Works Government Services Canada** • **Phase I/II ESAs – Department of Fisheries and Oceans Properties, Lake of the Woods, Ontario –Public Works Government Services Canada**

Ed Collins, P.Eng., FEC

Senior Environmental Engineer| Role: Remediation Specialist

Mr. Collins has over 35 years of experience as a Professional Engineer and over 20 years experience in the environmental engineering field.

Mr. Collins serves as Project Manager for various environmental projects including Environmental Site Assessments (ESAs) and site remediation projects for various federal provincial and industrial clients. Projects have been conducted at locations across Manitoba, Saskatchewan, Ontario, Northwest Territories and Nunavut.

DEGREES AND AFFLIATIONS	YEARS OF EXPERIENCE	Notable Related Experience:
Professional Engineer (P.Eng. – Northwest Territories, Nunavut, Alberta, Manitoba & Ontario).	Current Position: 25 With KGS: 16	• **Geotechnical Investigations, Assessment and Remediation of Ruttan Mine, Northern Manitoba – Province of Manitoba, Department of mineral Resources** • **Remediation of Hydrocarbon Impacted Soil at the Former School in Split Lake, Manitoba – Tataskweyak Cree Nation** • **Remediation of Hydrocarbon Impacted Soil at an RCMP facility in Regina, Saskatchewan - Public Works and Government Services Canada**

Jason Mann, M.Sc., P.Geo, QP_{ESA}

Associate Prinicple / Environmental Department Head| Role: Hydrogeologist, QP_{ESA}

Mr. Mann has over 22 years of experience in geology and geological science, with applications in the field of hydrogeology and environmental management, and is responsible for the management and technical design for all hydrogeological and environmental projects at KGS Group.

Since 1999, Mr. Mann has managed and completed numerous hydrogeological and geotechnical engineering projects, hydrogeological assessments, well and aquifer pumping test/dewatering designs, groundwater and geological modelling for environmental and geotechnical applications, and water quality assessments.

DEGREES AND AFFLIATIONS	YEARS OF EXPERIENCE	Notable Related Experience:
Professional Geoscientist (P. Geo. – MB and ON), Qualified Person (QP) for ESA (QP_{ESA}) under the O.Reg. 153/04.	Current Position: 22 With KGS: 21	• **Geotechnical Investigations, Assessment and Remediation of Ruttan Mine, Northern Manitoba – Province of Manitoba, Department of mineral Resources (formerly Mines Branch)** • **8 Mile Channel Remediation – Manitoba Hydro** • **Groundwater, Surfacewater, and Geotechnical Investigations and Preliminary Engineering for LMB Outlet Channels Options C&D – Manitoba Infrastructure**

Gary Crewdson, HBSc., EP

Environmental Scientist| Role: Environmental Scientist

Mr. Crewdson has 11 years experience in the field of contaminated site assessment and remediation.

Since 2010, Mr. Crewdson has been responsible for planning, coordinating and completing a variety of environmental field investigations ranging from landfill water quality assessment, Phase I, II and III Environmental Site Assessments, designated substances/hazardous materials surveys, environmental baseline studies, terrestrial and aquatic inventories to the remediation of soil and water. Sites include fuel storage tank locations and gas stations, landfills, rail yards, various federal and industrial contaminated sites, as well as train derailment sites in isolated areas.

DEGREES AND AFFLIATIONS	YEARS OF EXPERIENCE	Notable Related Experience:
Environmental Professional (EP)	Current Position: 11 With KGS: 11	• **Phase I/II III Environmental Site Assessment, Water Street – City of Thunder Bay** • **Phase I/II Environmental Site Assessments – Two DFO/CCG Small Craft Harbors – Public Works Government Services Canada** • **Phase II/III Environmental Site Assessments – Five Federal Properties – Public Works Government Services Canada**

Leah Poliszczak,

Senior Environmental Technologist| Role: Environmental Technologist CET (Pending)

Ms. Poliszczak has 22 years of experience in the fields of contaminated site assessment and remediation.

Since 1999, Ms. Poliszczak has completed numerous Phase I and II Environmental Site Assessments (ESA) in accordance with CSA Z768-01 / CSA Z769-00 and O.Reg 153/04 throughout Ontario, NWT and Nunavut, hydrogeological assessments, remediation projects and hazardous materials / designated substances surveys. Properties have included residential, institutional, commercial, and industrial in rural, urban and First Nations communities.

DEGREES AND AFFLIATIONS.	YEARS OF EXPERIENCE	Notable Related Experience:
Environmental Engineering Technology (Co-Op) Diploma. Certified Engineering Technologist (C.E.T Ontario – pending).	Current Position: 22 With KGS: 22	• **Phase I/II Environmental Site Assessments – Six DFO/CCG Small Craft Harbour Sites – Public Works Government Services Canada** • **Phase II/III Environmental Site Assessments – Two DFO Properties – Public Works Government Services Canada** • **Phase II Environmental Site Assessments at 8 Rail Yard/Properties, Ontario – Canadian National Railway**

Todd Williamsom Environmental Technician| Role: Environmental Technician		
	Mr. Williamson has 14 years experience in environmental site assessment and site remediation. Since 2007, Mr. Williamson has completed numerous Phase I, II and III Environment Site Assessment projects as well as site remediation projects. Mr. Williamson is responsible for contract administration, surveying, groundwater monitoring well installations, environmental instrumentation installation and calibration, surface water and groundwater monitor and sampling and soil sampling. Sites have including fuel storage sites and gas stations, landfills and various federal, provincial and industrial contaminated sites.	
DEGREES AND AFFLIATIONS Environmental Technology Diploma	YEARS OF EXPERIENCE Current Position: 14 With KGS: 14	Notable Related Experience: • **Phase II Environmental Site Assessment and Site Specific Risk Assessment- O.Reg 153/04 – Kingston Dry Dock, Kingston Ontario – Public Works Government Services Canada** • **Phase II/III Environmental Site Assessments – Five Federal Properties – Public Works Government Services Canada** • **Low Flow Groundwater Sampling and Monitoring, CN Sioux Lookout and Hornepayne Yards , Ontario – Canadian National Railway**

3.5 List of Sub Contractors

To complete our project team, we have included the following subcontractors:

- Ontario Land Surveyor -TBT Engineering – Thunder Bay
- Drilling Company – Maple Leaf Drilling – Winnipeg/Thunder Bay
- Environmental Laboratory - ALS Laboratory – Thunder Bay
- Private Utility Locator – Superior Locates - Thunder Bay
- GFL Environmental – Removal of contaminated soil cuttings and purged groundwater – Thunder Bay

4.0 METHODOLOGY

KGS Group has reviewed the Request for Proposal (RFP) for this project along with Addendum No 1. From this review and our experience with similar projects we have developed a Work Breakdown Structure (WBS) which clearly identifies the major tasks and deliverables to be completed as part of this project. Tasks and sub tasks are shown on the WBS as discrete events, however, in practice many of these tasks will be undertaken in concurrently.

TABLE 1 – WORK BREAKDOWN STRUCTURE

Number	Description
1000	**Project Management and Meetings**
1000.01	Project Management
1000.02	Project Initiation and Kick Off Meeting (Meeting No. 1)
1000.03	Meeting No. 2 - Phase I ESA Review Meeting
1000.04	Meeting No. 3 – Pre-Survey Meeting
1000.05	Meeting No. 3 - Phase 2 ESA Review Meeting
1000.06	Meeting No. 4 - Remedial Action Plan Review Meeting
1000.07	Meeting No. 4 - RSC Pre Submission Meeting
1100	**Phase I Environmental Site Assessment**
1100.01	Background Data Collection and Review
1100.02	Interviews
1100.03	Site Visit
1100.04	Phase I Environmental Site Assessment Report
1200	**Reference Plan Survey**
1200.01	Completion of Reference Plan Survey
1300	**Phase II Environmental Site Assessment**
1300.01	Develop and Finalize Sampling and Analysis Plan
1300.02	Field Investigation
1300.03	Data Review and QA/QC
1300.04	Phase II Environmental Site Assessment Report
1400	**Remedial Action Plan**
1400.01	Data Gap Analysis
1400.02	Remedial Options Analysis
1400.03	Cost Estimates
1400.04	Remedial Action Plan Report
1500	**Record of Site Condition**
1500.01	Preparation of Record of Site Condition Submissions
1500.02	Submission of Record of Site Conditions

4.1 Phase 1000 Project Management

4.1.1 TASK 1000.01 PROJECT MANAGEMENT

The project team will be managed by Mr. Tony Gallo M.Sc. EP, the Environmental Department Head at KGS Group-Thunder Bay. He will assume corporate responsibility for delivery of the project and provide leadership to the team. All communications will be directed between Mr. Gallo and the Town of Fort Frances's project manager to ensure clear and consistent communications.

Mr. Gallo brings over 23 years of experience in the environmental services field. His experience includes project management, budgeting, scheduling, investigation and reporting for a variety of contaminate site investigation/remediation projects. Mr. Gallo's knowledge of working on similar assignments coupled with his professional management style will guide the project.

> **Tony Gallo M.Sc. EP – Senior Environmental Scientist, Env. Department Head – Thunder Bay**
> P: (807) 628-3832
> E: tgallo@kgsgroup.com

Mr. Gallo will maintain regular communication with the Town of Fort Frances's project manager to ensure that they are up to date on any encountered issues and that deliverables are being provided promptly.

Weekly internal progress meetings will be held to monitor our overall project progress and facilitate cost and schedule controls. The meeting agendas will cover schedule review, percent complete of tasks, review of outstanding tasks and deliverables, and a review of our project risk matrix.

Through each part of the project, Mr. Gallo will prepare Monthly Status Reports to update the Town of Fort Frances on the progress of the project. These updates will include the engineering fees expended to date. Mr. Gallo will also provide forecasting for monthly accounts.

4.1.1.1 Management Tools

KGS Group has developed several project management tools to assist in completing the project scope requirements. The backbone to each of these tools is our Time-Task Matrix Chart (TTM) that defines each engineering activity for each phase of the project and is shown in Table 1. The tools are described below and include fee/cost monitoring, resource monitoring, schedule monitoring, deliverable/document monitoring and scope monitoring.

Resource Monitoring

Resource requirements will be monitored monthly using the preliminary Time-Task Matrix (TTM). The TTM illustrates our resource/responsibilities and level of effort required to perform each engineering activity and includes the total hours per staff for each of the project phases, and the project overall, are summarized at the bottom of the table. The Project Manager will monitor the progress weekly of each task and determine if additional resources are required. No staff will be added to the project without prior authorization from the Municipal Project Manager.

Schedule Monitoring

KGS Group has developed preliminary Time and Activity Schedules as shown in Table 2; indicating the duration of all activities shown. Our preliminary Time and Activity Schedules will be used as the baseline schedule for all activities indicated in our TTM and the Target Milestone dates are based on the project milestones listed in the TOR.

Mr. Gallo will manage our schedule using the tracking Gantt chart functions of Microsoft Project. The estimated completion level of each activity will be based on our internal design meetings and issued deliverables to date. The tracking Gantt chart illustrates the percent completion of each task and associated task precursors. Further, the tracking Gantt chart will automatically revise the critical path of the project based on the updated progress of engineering activities and the linkages between tasks. The KGS Group Project Manager will monitor the critical tasks as the project proceeds to ensure that resources are focused on meeting these deadlines and maintaining or improving the base project schedule.

Cost Monitoring and Invoicing

KGS Group's Project Manager will monitor cost performance monthly to identify any variations from the estimated budget breakdowns. Earned Value Analysis (EVA) reporting will be utilized to monitor work progress versus actual costs (refer to Appendix B for a sample EVA submission) and invoices will be prepared monthly based on scope completed within the monthly period. Invoices will be issued to the Town of Fort Frances with Monthly Status Reports on the progress of the project to date.

Deliverable Monitoring

A preliminary list of deliverables has been prepared based on our current understanding of the project requirements and is listed in Section **Error! Reference source not found.**.

This list will be used to monitor deliverable requirements for the project and to ensure the documents have been issued to the Town of Fort Frances. The table summarizes expected deliverables for each engineering activity listed in our TTM.

Scope Change Management

An Engineering Scope Change Authorization (ESCA) will be required for engineering work outside of the original scope of work identified in the TOR. The ESCA will be prepared by KGS Group and will include a description of the revised scope of work, the rationale for the change, and fee estimate breakdown. Our Project Manager will submit the ESCA to the Town of Fort Frances's Project Manager for review and approval.

4.1.1.2 Development of Health and safety Program

KGS Group will develop a Health and Safety program (HASP) in accordance with all applicable code/statues prior to conducting any site visits or fieldwork. The HASP will ensure the health and safety of all KGS Group employees, sub-contractors, and others at the site. KGS Group will be responsible for making all employees and others at the site aware of the potential contamination and for ensuring the health and safety of all personnel at the site. A copy of the plan will be kept with on-site personnel for the duration of the field program.

The HASP will outline potential hazardous incidents, the codes/statutes to be met, rules of behaviour, protective equipment, and clothing to be provided, security features to be established, responsible individuals, and all related matters.

For emergency purposes, as a minimum, the HASP for the site will include the following:

- Emergency numbers of the local fire, police, ambulance, hospital and poison control centre;
- Local regulatory reporting requirements in the event of personal injury;
- Spill response procedures; and
- Name and phone numbers of the KGS Group Project Manager and alternate KGS Group contacts (work, cell and home).

KGS Group site personnel will carry a cellular phone for use during travel and on-site. In addition, all KGS Group site personnel have current First Aid training.

4.1.1.3 Covid-19 Planning and Collaboration Tools

KGS Group is committed to protecting the health and safety of our staff and clients during the current COVID-19 pandemic. KGS Group has developed and implemented a Pandemic Response Plan and we have taken measures to ensure the safety of our work crews and office staff while on site and in the office or working remotely. These measures include, but are not limited to:

- Including COVID-19 safety measures on all JSAs;
- Adopting the Construction Safety Association of Manitoba COVID-19 Prevention Best Practices for Construction Sites;
- Development and implementation of contingency plans to ensure the steady flow of work products and deliverables when and if staff are unable to perform their duties;
- Providing additional hand washing supplies, hand sanitizers, disinfecting wipes and tissue for staff;
- Limiting occupancy of all company vehicles to one person per vehicle;
- Respecting the recommended 2 m separation between staff;
- Limiting number of staff working in offices and providing remote work capabilities;
- Requiring that all office and field staff self-assess and complete a Fit for Duty Questionnaire prior to entering a KGS Group or client job site or work place; and
- Monitoring this ever-evolving situation closely and taking advise from the experts.

We continue to update our health and safety procedures as new guidance and directives are provided by Federal and Provincial agencies.

KGS Group recognizes and acknowledges there are additional project risks as we navigate through the COVID-19 pandemic and its global impact on construction projects. KGS Group has prepared for the spread of the novel coronavirus (COVID-19) with the intent to maintain the high level of service our clients have come to expect through the uncertain times ahead.

While a number of our physical offices are closed to the public at present, the majority of our staff are effectively working remotely. We have implemented remote work protocols enabling our operations to continue uninterrupted while protecting the health of our employees, clients and communities. In addition, some jurisdictions have recognized engineering as an essential service. As a result, where possible, we intend to keep a core group of staff working in our offices to ensure services we provide our clients are maintained. Strict policies and procedures are in place to protect our staff in the office and on jobsites that are still in operation.

In addition, our firm has been using collaboration tools such as Microsoft Teams in advance of the current crisis and we continue to leverage these platforms for continuous communication between team members for effective design. During the project, the Project Team can expect we will provide a platform to meet regularly and safely with Project Team staff and the steering committee in an interactive manner.

While we cannot predict all of the broader effects of the current situation, we have positioned ourselves to adapt our operations as required to deliver on our commitments.

While the future impact of COVID-19 on project travel is not fully known at this time, it is understood that there may be impacts on travel schedules and staff, depending on the site requirements. While we cannot predict all of the effects of the COVID-19 pandemic, we will adapt as required to deliver on our commitments. At this time, we have/have not included some allowance within this proposal to account for these possible impacts. As with all COVID-19 related items we will work with our clients to determine the best safe course of action closer to performing the activities. As always, the safety of our staff, clients and the public is paramount and we will adapt to meet those needs.

4.1.2 TASK 1000.02 PROJECT INITIATION AND KICK OFF MEETING

Upon notification of award, KGS Group will commence several tasks. Internally we will set up billing information, project phase fees, directory folders, file templates and proposal links. Initial submissions will be provided for review including a draft invoice, our Safe Work Plan and other documents that may be required of the Town of Fort Frances. KGS Group will then schedule a Kick Off meeting (Meeting No. 1) with the Town of Fort Frances. The objectives of this meeting will include:

- Introduce KGS Group team members to the Town of Fort Frances,
- Review and project scope,
- Identify key issues and objectives,
- Review schedule and budgets,
- Gather all information and resources readily attainable and arrange for later assembly of all available Town of Fort Frances records and other information pertaining to the work,
- Establish administration procedures,
- Establish communication channels,
- Develop matrix of identified risks with potential mitigation strategies to provide structure of Project Management Plan
- Discuss any new information or requirements that the Town of Fort Frances may have

4.1.3 TASK 1000.03-1000.07 PROJECT MEETINGS

In addition to the Kick Off Meeting (Meeting No. 1), an additional five (5) formal review meetings are planned during the project. The meetings will be conducted at key deliver points including:

- Meeting No. 2 - Review of Draft Phase I ESA Reports
- Meeting No. 3 - Review of Survey Requirements
- Meeting No. 4 - Review of Draft Phase II ESA Reports
- Meeting No. 5 - Review of Draft Remedial Action Plan and Costing
- Meeting No. 6 - Pre Record of Site Condition Submission.

At these meetings, KGS Group will present corresponding results and information to the Town of Fort Frances and request feedback. All comments will be noted, and applicable documents will be revised appropriately.

Due to the current and anticipated Covid 19 protocol and restrictions, all meetings are expected to be conducted via video conferencing. If issues arise during the project that requires unplanned meetings with the Town of Fort Frances, these meetings will be scheduled promptly and are to be conducted via video conferencing.

4.2 Phase 1100 Phase I Environmental Site Assessment

The purpose of the Phase One Environmental Site Assessment (ESA) will be to investigate past and present activities conducted at the property and surrounding properties, in order to:

- Establish the current environmental condition of the property and identify actual areas of environmental concerns (AEC) or potential areas of environmental concern (APEC) at the subject property;
- To develop a preliminary determination of the likelihood that one or more contaminants have affected any land or water on, in or under the Phase One Property;
- Determine the need for additional investigations at the subject property (i.e. Phase Two ESA) to confirm or quantify any potential environmental issues identified in the Phase One ESA.
- Provide a basis for carrying out any Phase Two Environmental Site Assessment required; and,
- File a Record of Site Condition on behalf of the Town of Fort Frances with the Ontario Ministry of the Environment Conservation and Parks (MECP) for the above noted property following the completion of the required environmental and risk assessments.

As the Phase One ESA is being completed in support of filing a Record of Site Condition, the Phase One ESA will be completed in accordance with Ontario Regulation (O.Reg) 153/04 (as amended) "Records of Site Condition" under Part XV.1 of the Ontario Environmental Protection Act (EPA) and will including the **"Phase One Property"** (the property that is the subject of the phase one environmental site assessment), the **"Phase One Study Area"** (the area that includes a phase one property, any other property that is located, wholly, or partly, within 250 metres from the nearest point on a boundary of the phase one property and any property that the qualified person determines should be included as a part of the phase one study area).

4.2.1 TASK 1100.01 BACKGROUND INFORMATION COLLECTION AND REVIEW

This task will consist of obtaining and reviewing background information for the site and adjacent properties and should provide an in-depth understanding of the site history, knowledge of the range of contaminants of potential concern (if any), and documented facts with respect to the actual contamination. This will be accomplished through a thorough review of the Phase I and II Environmental Assessments completed for the site by the previous owner and the following records (where available) as per O.Reg 153/04 (as amended):

General:

- Fire Insurance Plans;
- Chain of Title documents; and,

- Environmental Site Assessment Reports and Other Reports.

Environmental Source Information:

- National Pollutant Release Inventory;
- PCB Information;
- Certificates of Approval, Permits to Take Water, Certificates of Property Use;
- Inventory of Coal Gasification Plants;
- Records concerning environmental incidents, order, offences, spills, discharges of contaminants or inspections;
- Waste management records;
- Reports submitted to the Ministry;
- Retail fuel storage tank information;
- Notices and instruments including RSCs;
- Areas of natural significance; and,
- Landfill information.

Physical Setting Sources:

- Aerial photographs;
- Topographic maps;
- Physiographic maps;
- Geological maps; and,
- Well records.

Site Operating Records:

- Regulatory permits and records relating to APECs;
- Material safety data sheets;
- Underground utility drawings;
- Inventories of chemical uses and chemical storage areas;
- Inventory of above ground and underground storage tanks;
- Environmental monitoring data;
- Waste management records;
- Process, production and maintenance documents related to APECs;
- Records of spills and discharges of contaminants;
- Emergency response and contingency plans;
- Environmental audit reports; and,
- Site plan of facility.

4.2.2 TASK 1100.02 SITE RECONNAISSANCE AND INTERVIEWS

KGS Group personnel will conduct interviews to corroborate or augment the information gathered during the Records Review. To effectively assess possible sources of contamination, KGS Group will complete this step prior to the site visit.

KGS Group personnel will conduct interviews with persons familiar with the property and complete questionnaires designed to document information on previous activities/occurrences. Questions may be asked in person, over the phone, or in writing, at the discretion of KGS Group or other pertinent individuals.

The site reconnaissance will be conducted with appropriate regard for the health and safety of KGS Group field personnel. The site visit will be completed after the records review has been conducted.

The specific objectives of the site reconnaissance will be to:

- Determine if APECs exist, through observations about current and past uses and PCAs on , in or under the Phase I Property and, as practicable, current and past uses and activities and PCAs in the Phase I Study Area; and
- Identify details or potential contaminant pathways on, in or under the Phase I Property as a result of APECs and contaminants of potential concern.

KGS Group personnel will note current uses and possible sources of environmental contamination both on and off-site. All unidentified substances will be recorded, and all (if any) appropriate indicators and sources of contamination will be inspected and recorded appropriately. All adjoining properties and properties located within the Phase I Study Area will be observed either from publicly accessible areas or from the boundaries of the subject property. Any limitations (physical obstructions, paved areas, etc.) and limiting conditions (inaccessible areas, safety concerns, etc.) will be recorded and included in the resulting report.

In conducting site visits, KGS Group uses prepared checklists to ensure all pertinent factors are documented and potential risks are identified. While on-site, KGS Group will take notes and photographs.

4.2.3 TASK 1100.03 REPORT PREPARATION

Three Phase I ESA reports conforming to O.Reg. 153/04 will be prepared corresponding to the three development areas proposed for the site. The reports will include results of the records review, site plan, copies of all checklists/questionnaires completed during the site visit, site photographs and air photos. Recommendations for further investigative work, if required, will also be included in the reports.

Two hard copies and one digital copy of each of the reports will be provided to the Town of Fort Frances

4.3 Phase 1200 Reference Plan Survey

To complete the reference plan survey of the site, KGS Group has teamed with TBT Engineering an Ontario Land Surveyor. KGS Group and TBT will consult with the Town of Fort Frances to ensure that the survey will reference the conceptual design and act as the primary survey of reference for all works.

Two hard copies and one digital copy of the survey work will be provided to the Town of Fort Frances.

4.4 1300 Phase II Environmental Site Assessment

Based on the results of the Phase I ESA, a Phase II ESA will be completed and will include:

- Review all previous environmental studies,
- Investigate and characterize the soil and groundwater from areas identified during the Phase I ESA to determine the absence or presence of impacted soil and/or groundwater, as well as the presence of any light non-aqueous phase liquids (LNAPL),
- Identify all underground infrastructures that could act as migration pathways,
- Determine the groundwater flow direction and rates. Evaluate the probability for the off-site migration of LNAPL or dissolved phase hydrocarbons, and
- Establish any interaction between groundwater and surface water systems.
- Determine the need for any further work (i.e. risk assessment / remediation) for filing of the RSC.

KGS Group has assumed the following scope, for budgeting purposes, for the Phase II ESA (as per O.Reg 153/04, as amended):

- Co-ordinate all underground utility locates with appropriate agencies prior to commencement of any drilling activities.
- Advance a total of eighteen (18) boreholes (6 at each Phase II property). Fifteen boreholes will be advanced to a maximum depth of 7.5 meters (m), and three boreholes will be advance to bedrock (assumed 20 m). Nine (9) boreholes will be converted to monitoring wells. These monitoring wells will be advanced to determine impacts to soil and/or groundwater at the three Phase II properties. The locations of the monitoring wells will be finalized upon completion of the Phase I ESA.
- Collect and submit two (2) soil samples from each borehole location for the laboratory analysis of pH, benzene, toluene, ethylbenzene and total xylenes (BTEX), volatile organic compounds (VOCs), PHC fractions F1 to F4, Polycyclic Aromatic Hydrocarbons (PAHs), metals, inorganic and phenols. This work will be completed in order to characterize impacts to soil, if any.
- Conduct one (1) groundwater monitoring and sampling event after the completion of the monitoring well installation program. Groundwater samples will be collected and submitted from all 9 monitoring wells for the laboratory analysis of pH, BTEX, VOCs, PHC fractions F1 to F4,PAHs, metals, organics, tannins and lignins and phenols. This work will be done to quantify PHC impacts to groundwater, if any.
- For quality assurance purposes, one (1) duplicate soil sample and one (1) duplicate groundwater sample from each Phase II Property will collected and submitted for the laboratory analysis.
- Prepare a report documenting the results of the investigation, complete with a site plan showing the locations of all boreholes / monitoring wells, borehole logs and laboratory certificates of analysis

4.4.1 TASK 1300.O1 DEVELOP AND FINALIZE SAMPLING AND ANALYSIS PLAN

Prior to the commencement of any fieldwork, KGS Group will review all pertinent environmental data from the previous Phase I and II ESA and the Phase I ESAs (prepared by KGS Group as part of this project). KGS Group will develop a finalize the sampling plan based on the review of background information.

4.4.2 TASK 1300.02 FIELD INVESTIGATION

KGS Group proposes that eighteen (18) boreholes be advanced on the subject property (six boreholes at each Phase II property). Nine (9) boreholes will be converted into monitoring wells (three at each Phase II property). The location of the boreholes will be finalized prior to the commencement of field work.

KGS Group will obtain all utility locates prior to commencing the drilling program. Utility locates will include underground electrical, phone, cable, water/sewer/storm, heating and cooling supply lines and any other utilities, as necessary. KGS Group proposes to use **Superior Locate Services of Thunder Bay**, Ontario to conduct the underground utility locates.

KGS Group proposes to utilize **Maple Leaf Drilling of Winnipeg, MB** to conduct the drilling program. Maple Leaf is a licensed well driller in the Province of Ontario. KGS Group personnel will be on-site to supervise all aspects of borehole drilling and monitoring well installations, as well as to log the subsurface stratigraphy encountered at each of the boreholes.

The water table throughout the Town of Fort Frances is likely encountered between 1.5 to 5 meters below ground surface (mbgs). For budgeting purposes, it is expected that boreholes will be advanced to a maximum depth of 7.5 meters (m) with three boreholes (one at each Phase II property) advanced to bedrock (assumed to be 20 m). Hollow stem auguring will be utilized to install the monitoring wells. Monitoring wells installed at the site will provide the required information to determine the hydrogeologic conditions at the site, the nature and extent of on-site impacts, if any, and the potential for off-site migration of impacted groundwater, if any.

All monitoring wells will be constructed from 50-millimeter (mm) diameter schedule 40 PVC riser and No. 10 slotted screen. The screen will be placed so as to straddle the interpreted water table. All wells will be fitted with a J-plug and friction fit end caps, and will be finished at grade with a protective steel casing (flush mount casing). The annulus of each well will be backfilled with silica sand to approximately 0.3 m above the screen zone, with the remainder of the annulus backfilled with bentonite chips to grade. All soil cuttings will be contained on-site in soil bins and properly disposed of at the end of the Phase II ESA. KGS Group proposes to use GFL Environmental of Thunder Bay, Ontario to provide the soil and groundwater drums prior to the project and to remove the drums at the completion of the drilling program. All aspects of the monitoring well construction and installation will be in accordance with Ontario Regulation (O.Reg.) 903 and ASTM Standard D 5092-90.

All monitoring wells will be developed by purging using a disposable bailer. Monitoring wells will be purged of three (3) well volumes or until dry, with all purged water being managed on-site (non-impacted) or properly disposed of under the applicable Provincial regulations (impacted). All soil cuttings and purged water requiring offsite disposal will be removed from the site in a timely manner. Monitoring wells will be allowed to equilibrate prior to sampling of groundwater.

KGS Group will obtain UTM co-ordinates for all boreholes and monitoring well locations using a hand-held GPS unit, as well as the location of relevant permanent structures, property boundaries and roadways. A local elevation survey will also be conducted at the site to determine ground and top of pipe reference elevations at each monitoring well. Standard survey techniques will be used at the site. The results of the survey will be presented in the form of a metric plan at a reasonable scale and included in the Phase II ESA report.

4.4.2.1 Sampling and Analytical Program

All selected soil samples and groundwater samples will be submitted to ALS Laboratories of Thunder Bay, Ontario, a CALA accredited laboratory. All sampling and analysis will be in accordance with the Ontario Ministry of Environment, Conservation and Parks (MECP) Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario (Dec. 1996) and O.Reg 153/04 (as amended).

Soil

Soil from each borehole will be sampled using a split spoon sampler. Samples will be obtained at 0.75 m intervals, stratigraphic changes or at the discretion of KGS Group field personnel. All soil samples will be placed in plastic soil bags and field tested for petroleum hydrocarbon (PHC) vapors using a Mini-Rae Photo-Ionization detector calibrated to an isobutylene standard prior to the start of the drilling program.

Two (2) soil sample from each borehole will be submitted for the laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), volatile organic compounds (VOCs), PHC fractions F1 to F4, polycyclic aromatic hydrocarbons (PAHs), metals, inorganics, and phenols. Two soil samples from the site will be submitted for grain size analysis.

All soil samples that are submitted for laboratory analysis will be “worst case”, determined by PHC vapour concentrations and field observations. Where no impacts are observed, the sample procured from the interpreted water table will be submitted. One (1) field duplicate of all parameters to be analyzed will be submitted for quality assurance (QA) purposes from each Phase II property. Duplicates will be run by the laboratory for quality control (QC) purposes.

Groundwater

Groundwater sampled from the nine (9) newly installed monitoring wells will be submitted for the laboratory analysis of BTEX, VOCs, PHC fractions F1 to F4, PAHs, metals, inorganic, tannins and lignins and phenols. All samples will be placed immediately into appropriate sample containers for analysis. Sample containers will be laboratory supplied and pre-charged with the appropriate preservative, where applicable.

One (1) field duplicate of all parameters will be submitted for QA purposes (from each Phase II property). One (1) field and one (1) travel blank will be submitted for volatile parameters (BTEX) from each Phase II property. Duplicates will be run by the laboratory for QC purposes. Duplicate groundwater samples will also be taken at each monitoring well for field measurements of dissolved oxygen, pH, temperature, electrical conductivity, and reduction oxidation potential. Groundwater samples will be collected utilizing low flow sampling methodology.

One rising head permeability test will be conducted at each Phase II ESA property to determine the bulk hydraulic conductivity. The rising head test involves inducing an “instantaneous” lowering of the water level and then measuring the rate of recovery. Groundwater within the well is displaced by bailing the well as fast as possible using a disposable polyethylene bailer. The rate of recovery is measured at regular intervals using a water level meter with an accuracy of 0.001 m until a minimum of 80% recovery is reached. The rising head test will be conducted using the basic equipment and procedures outlined in the ASTM Standard D 4044 – 91.

4.4.2.2 Site-Restoration

KGS Group will arrange to have all soil cuttings and purged groundwater collected during the investigation properly disposed of in accordance with applicable Provincial regulations and in a timely manner upon completion of the fieldwork.

4.4.3 TASK 1300.03DATA REVIEW AND QA/QC

Laboratory results for soil and groundwater will be compared to the applicable Provincial standards found in the MECP publication "Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act", dated April 15, 2011.

Laboratory data will be summarized in tables with the applicable comparison criteria.

A quality assurance/quality control review of field and laboratory data will be completed as part of this task.

4.4.4 TASK 1300.04REPORT PREPARATION

KGS Group will prepare a "stand alone" document that will not require the reader to refer to historical report(s) for additional information. All findings, including nil findings, shall be clearly presented in the reports.

The Phase II ESA report will include (but not be limited to) the project executive summary, introduction, background, methodology (including QA/QC), results, discussion of results, conclusions, recommendations, and references. All assumptions will be clearly stated as well. The appendices of the reports will include site maps, laboratory certificates, field logs (i.e. borehole logs) and site photos.

The results section will contain the laboratory data summarized in a table. The applicable environmental quality criteria and/or standards used for the numerical comparison will be identified and results exceeding the applicable criteria will be highlighted. The rationale for the selection of applicable guidelines/standards will be provided in the KGS Group report.

The site plan will show structures, boreholes, monitoring wells, significant topographical features, sample locations, the extent of contamination at the site (if applicable), etc. KGS Group will use the metric system for calculations and drawings, etc. The location of all contaminated sites will be identified in reference to fixed objects, if possible.

Based on the results of the Phase II ESA, KGS Group will prepare recommendations for further work, if required. Recommendations will include cost estimates for all environmental issues associated with the subject property and to undertake additional work should further assessment be required to delineate areas of contamination.

Cost estimates for any potential further work are not included in this proposal and cost estimate and will be provided at the completion of the Phase II ESA, if required.

4.5 Phase 1400 Remedial Action Plan

Based on the results of the Phase II ESAs completed for the site, a remedial action plan may be required if exceedances of applicable standards for proposed land use are exceeded.

Should this be the case KGS Group will focus on a risk based approach to remediation of the site that will look at synergies between proposed site development and remedial measures. This approach will look to minimize costs associated with conventional remedial approaches (i.e. dig and dump), and/or investigate the potential design features that would limit "risk" and would be acceptable to the MECP for Record of Site Condition purposes. These often take the form of hard barriers (i.e. asphalt) or soft barriers (ie. 1-2 m of fill over contamination, site berms) that would prevent exposure to contaminated media, or a combination of conventional remedial measures coupled with risk based measures.

The remedial action plan report will be provided to the Town of Fort Frances that will include remediation recommendations and requirements, material quantities, and include all field work and sampling/testing required for filing a Record of Site Condition. A Class C engineering cost estimate of all remedial works and associated tasks will be included in the remedial action Report.

Two hard copies and one digital copy of the Remedial Action Plan will be provided to the Town of Fort Frances.

4.6 Phase 1500 Record of Site Condition

Upon completion of the Phase I and II ESAs and any required remediation or risk assessment planning, KGS Group will prepare all documentation and file one Record of Site Condition for each of the three properties on behalf of the Town of Fort Frances.

5.0 PROJECT SCHEDULE

Our proposed Schedule for the work plan outlined in this proposal is provided in Appendix C. Each general task, milestone and review period is noted along with its anticipated duration and a one (1) week review period has been allocated for each Town of Fort Frances review stage of the project.

The critical path is clearly indicated and is based on the many successful Phase I/II ESAs that we have completed throughout Northern Ontario. KGS Group has the resources and experience to meet the schedule, and tasks will be performed concurrently where applicable, as required, to efficiently complete all tasks involved in this assignment.

6.0 QUALITY ASSURANCE

KGS Group Quality Policy

KGS Group is committed to providing services that demonstrate excellence in engineering and project management and is committed to consistently providing a high level of quality to our clients.

KGS Group has established a Quality Management System (QMS) designed to consistently provide a high level of quality engineering and project management services to our clients.

The QMS has been implemented throughout all KGS Group's offices, with Winnipeg, Mississauga, and Regina offices' QMS certified to ISO 9001:2015.

KGS Group's QMS promotes continual improvement in the quality of the deliverables and services we provide to meet our client's expectations and requirements. All management and staff of KGS Group work within the guidelines of the QMS to enable KGS Group to provide quality services to our clients.

KGS Group regularly performs internal organization audits to ensure the effectiveness of our management system and to improve our processes and services. As well, client feedback and performance metrics help us monitor and improve our processes and services.

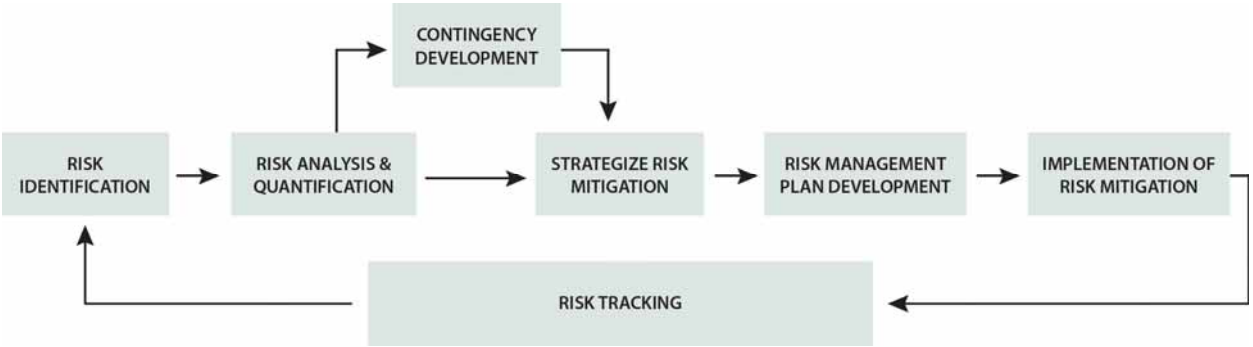
6.1 Risk Management

Systematic identification, analysis and effective management of the potential risks are critical to a successful outcome of this project.

Our team will work with the Town of Fort Frances to identify and mitigate risks throughout the project. Our firms' risk mitigation strategy is built on years of experience managing major planning, design, and construction projects across the Manitoba and throughout Canada. These include major drainage improvement projects; many hydro dam development, design, and construction projects; and the $600 million Manitoba floodway project.

Our risk management strategy (outlined in Figure 2 presents our risk strategy that includes Risk Identification, Quantification, Mitigation Planning, Mitigation Implementation and Monitoring and Tracking

FIGURE 2: RISK MANAGEMENT STRATEGY



7.0 PROJECT COSTS

The fixed fee costs to complete the project as described within this proposal are provided in Table 1 below and has been broken down in terms of fees and disbursements.

TABLE 2 FIXED FEE COSTS

Task	Fees	Disbursements	Sub Total	Taxes	Total Cost
Project Management and Meetings	$ 2,147.27	$ 0.00	$ 2,147.27	$ 279.15	$2,426.42
Phase I ESAs	$ 3,585.78	$ 800.00	$ 4,385.78	$ 570.15	$ 4,955.93
Reference Plan Survey	$ 571.20	$ 5,000.00	$ 5,571.20	724.26	$6,295.46
Phase II ESAs	$19,108.65	$ 54,074.15	$73,182.80	$9,513.76	$ 82,696.56
Remedial Action Plan	$ 4,790.3	$ 150.00	$ 4,940.00	$ 640.24	$5,580.54
Record of Site Condition	$ 1,983.45	$ 150.00	$ 2,133.45	$ 277.35	2,410.80
Total Estimated Project Cost	**$ 32,186.65**	**$ 60,174.15**	**$ 92, 306.50**	**$ 12,004.91**	**$ 104,365.71**

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8.0 PROPOSED AGREEMENT

KGS Group proposes that this work be completed under our standard engineering services agreement.

We have included this agreement in Appendix D.

APPENDIX A

Project Description Sheets

WILDON WIRING

Phase I & II Environmental Site Assessment

LOCATION

Thunder Bay

PROJECT DESCRIPTION

KGS Group was retained by Wildon Wiring Ltd. to complete a Phase I Environmental Site Assessment (ESA) at their property located in Thunder Bay. The purpose of the Phase One Environmental Site Assessment (ESA) was to investigate past and present activities conducted at the property and surrounding properties, in order to establish the environmental condition of the property and identify actual areas of environmental concerns (AEC) or potential areas of environmental concern (APEC) at the subject property.

A Phase II ESAwas subsequently completed as a result of the findings of the Phase I ESA. The purpose of the site assessment was to confirm the presence or absence of environmental impacts to soil and groundwater at the site as a result of historical on-site and off-site activities. Major aspects of the project included:

- Installation of seven (7) monitoring wells;
- Collection of soil samples for field screening for hydrocarbon vapours and laboratory analysis of target parameters including petroleum hydrocarbon fractions (PHC) F1 – F4, benzene, toluene, ethylbenzene, total xylenes (BTEX), polycyclic aromatic hydrocarbons (PAH) and metals;
- Collection of groundwater samples using low-flow sampling methodologies for field analysis of pH, temperature, conductivity

dissolved oxygen and oxidation reduction potential and laboratory analysis of various target parameters (PHC F1 – F4, BTEX, PAHs and metals;

- rising head permability tests to determine the bulk hydraulic conductivity of the site;
- A local elevation survey to determine ground and top of pipe reference elevations at each monitoring well using standard survey techniques;.
- Identification of soil, geological, hydrogeological and hydrological site conditions.

KGS Group completed comprehensive Phase I and II ESA reports and provided recommendations for further work.

CITY OF THUNDER BAY

Phase I ESA & Record of Site Condition

LOCATION

Thunder Bay

PROJECT DESCRIPTION

KGS Group was retained by the City of Thunder Bay to complete a Phase I Environmental Site Assessment at the former Westfort Community Centre property in support of filing a Record of Site Condition on the Ministry of Enviornment Conservation and Parks' Environmetal Site Registry as set out in Ontario Regulation (O.Reg.) 153/04 (as amended) made under Part XV.1 of the Environmental Protection Act.

The purpose of the Phase One Environmental Site Assessment (ESA) was to investigate past and present activities conducted at the property and surrounding properties, in order to establish the environmental condition of the property and identify actual areas of environmental concerns (AEC) or potential areas of environmental concern (APEC) at the subject property and to develop a preliminary determination of the likelihood that one or more contaminants had affected the Phase One Property.

The Phase I ESA was divided into three (3) stages: a review of the historical and current records, a site reconnaissance and interview stage and data assessment and report preparation. Information was gathered from all available Federal, Provincial and private databases.

PUBLIC SERVICES AND PROCUREMENT CANADA

Phase II Environmental Site Assessment

BUDGET

$48,500

PROJECT DESCRIPTION

KGS Group was retained by Public Works and Government Services Canada to conduct a Phase II ESA at their office building located at 201 May Street in Thunder Bay, Ontario. The purpose of the site assessment was to confirm the presence or absence of environmental impacts to soil and groundwater at the site as a result of historical on-site and off-site activities. Major aspects of the project included:

- Installation of six (6) monitoring wells;
- Collection of soil samples for field screening for hydrocarbon vapours and laboratory analysis of target parameters including petroleum hydrocarbon fractions (PHC) F1 – F4, benzene, toluene, ethylbenzene, total xylenes (BTEX), polycyclic aromatic hydrocarbons (PAH) and metals;
- Collection of groundwater samples using low-flow sampling methodologies for field analysis of pH, temperature, conductivity dissolved oxygen and oxidation reduction potential and laboratory analysis of various target parameters (PHC F1 – F4, BTEX, PAHs and metals;
- Identification of soil, geological, hydrogeological and hydrological site conditions, development of a Conceptual Site Model for the site and classification of the site based on the National Classification System for Contaminated Sites (NSCSC).

KGS Group provided recommendations for further work, preliminary remediation/risk management alternatives and associated cost estimates. In 2013/2014, KGS Group completed a Preliminary Qualitative Risk Assessment for the site.

APPENDIX B

Curriculum Vieta

Tony Gallo, P.Eng., M.Sc., P.Bio, EP

DEPARTMENT MANAGER - ENVIRONMENTAL

PROFILE	Mr. Gallo has 23 years of experience in the fields of environmental assessment and remediation and is the Environmental Department Manager for KGS Groups Thunder Bay Office responsible for the management and supervision of environmental projects. Since 1997, Mr. Gallo has managed and completed numerous hydrogeologic assessments and Phase I, II and III Environmental Site Assessments in accordance with O. Reg 153/04 and CSA Z769-00 and remediation projects, including remedial design, remedial options analysis and cost estimates, preparation of tender specifications and contract administration. Sites include landfills, rail yards, various federal and industrial metal/, hydrocarbon/PAH and PCB contaminated sites, and derailment sites in isolated areas.
EDUCATION	• **Masters of Science, Biology**, Lakehead University (1997) • **Bachelor of Science, Honors, Biology**, Lakehead University (1993)
PROFESSIONAL ASSOCIATIONS	• Association of Professional Biologists Alberta • Canadian Environmental Certification Approvals Board (CECAB)
EMPLOYMENT HISTORY	• **Environmental Department Head**, KGS Group (2010 – Present) • **Senior Environmental Scientist / Project Manager**, KGS Group (1997 - Present)

PROJECT EXPERIENCE

Contaminated Site Assessments (Phase I/II/III ESA, Hydrogeologic Assessments)

- **Phase I ESA's Various Rail Yards, Ontario – Canadian National Railway**
  Project Manager and lead environmental scientist for Phase I ESAs following CSA Standard Z768-01 and Ontario Regulation 153/04 for seventeen (17) sites. Work included review of historical information, assessment to potential chemicals of concern and affected media (soil/ groundwater/surface water/sediment) and recommendations for further investigation and contaminant delineation if applicable.
- **Phase II ESA's Various Site, Ontario – Public Works Government Services Canada**
  Project Manager responsible for the completion of Phase I and enhanced Phase I ESAs at seven (7) sites following the requirements of CSA Standard 2768. Work included review of historical information,

assessment to potential chemicals of concern and affected media (soil/ groundwater/surface water/sediment) and recommendations for further investigation and contaminant delineation if applicable.

- **Phase I/II Environmental Site Assessments – DFO/CCG Small Craft Harbours – Public Works Government Services Canada**
  Project Manager responsible for the completion of Phase I/II ESAs conducted at six (6) Department of Fisheries and Oceans / Canadian Coast Guard Small Craft Harbours in Ontario. Work included Phase I ESAs establishing chemicals of potential concern , and subsequent Phase II ESAs to investigate soil, groundwater, surface water and sediment contamination. Work included development of investigation and sampling plans, analysis of laboratory and field results, groundwater and contaminant modeling assessing extents of contamination and potential migration, and completion of reports for regulatory agency review. Where applicable, provided recommendations and cost estimates for further investigative works to delineate extents of contamination.
- **Phase II Environmental Site Assessment and Site Specific Risk Assessment- O.Reg 153/04 – Kingston Dry Dock, Kingston Ontario – Public Works Government Services Canada**
  Project Manager and lead environmental scientist responsible for the completion of a Phase II ESA and Site Specific Risk Assessment following O.Reg 153/04 procedures, for the Kingston Dry Dock Site located in Kingston Ontario. The Site Specific Risk Assessment (SSRA) was completed in conjunction with CH2MHILL, with KGS Group completing the conceptual site model portion of the (SSRA). KGS Group provided Class D estimates for remediation based on mitigation measures provided in the SSRA.
- **Phase I/II Environmental Site Assessments – First Nations**
  Project Manager responsible for the completion of Phase I/II ESAs conducted for four (4) First Nations. Work included Phase I ESAs establishing chemicals of potential concern (COPCs), and subsequent Phase II ESAs to investigate COPCs in soil and groundwater. Work included development of investigation and sampling plans, analysis of laboratory and field results, groundwater and contaminant modeling and assessing extents of contamination and potential migration, and preparation of technical reports for regulatory agency review. Provided recommendations for further investigative work to delineate contamination and costing where applicable.
- **Hydrogeologic Assessment – Municipal and Industrial Solid Waste Management Facilities**
  Project manager and lead environmental scientist for the completion of a hydrogeologic and hydrologic assessment (initial and annual assessments) at 10 solid waste management facilities in Northwestern Ontario. Field work included the installation of monitoring wells, and the sampling of groundwater and surface water for organic and inorganic landfill leachate parameters. Completed hydrogeologic assessment reports assessing groundwater contamination and contaminant migration for submission to the Ministry of Environment Conservation and Parks. Reports provided recommendations for further investigation and assessments where required.

Site Remediation

- **Remediation Eleven (11) Sites – Public Works Government Services Canada**
  Project Manager responsible for the preparation of remedial specifications for tendering of soil remediation and lighthouse encapsulation projects. Prepared tender specifications, and Class A cost estimates for remediation of hydrocarbon and metal impacted soils. Provided contract and site supervision, acting on behalf of PWGSC.
- **Groundwater Remediation System – Hornepayne Ontario – Canadian National Railway**
  Project manager and construction supervisor of a pump and treat groundwater remedial system for the collection of free phase diesel at the former Shop Track Fueling Area of CN's Hornepayne Yard. System

included the construction of a 30-m recovery trench equipped with a 900mm-diameter recovery sump with an automated pumping system and LNAPL skimming equipment.

- **Soil Remediation System – Thunder Bay Ontario – City of Thunder Bay**
  Project manager for soil remediation activities at the corner of Carrick St and Central Avenue for the City of Thunder Bay Realty Division. Approximately 8,000 m3 of heavy oil contaminated fill was excavated from the site and replaced with clean fill material. Completed a comprehensive report detailing remediation activities, and a Record of Site Condition.

Bonnie Hoffensetz, M.Sc.

SENIOR ENVIRONMENTAL SCIENTIST AND ENVIRONMENTAL ASSISTANT DEPARTMENT HEAD

PROFILE	Ms. Hoffensetz is a Senior Environmental Scientist and the Assistant Department Head for the KGS Group Environmental Department in the Winnipeg Office. She has over 20 years experience in the environmental consulting industry across Western Canada and Ontario. As Assistant Department Head she is responsible for assisting the Department Head with the management and supervision of staff, as well as review and preparation of various proposals and cost estimates. She is responsible for management and client liaison associated with Standing Offer contracts for Multidisciplinary Environmental Consulting Services for various Clients and provides Project Management and coordination, including senior review and direction, for various environmental projects including Phase I, II and III ESAs, Remedial Action Plans and Site Remediation, Emergency Environmental/Spill Response, Hazardous Materials Assessments and on-going remedial monitoring programs.
EDUCATION	• **Master of Science, Environment and Management**, Royal Roads University (2011) • **Bachelor of Science, Environmental Sciences**, University of Manitoba (1999)
EMPLOYMENT HISTORY	• **Assistant Department Head**, KGS Group (2011 – Present) • **Senior Environmental Scientist**, KGS Group (1999 – 2010)

RELEVANT PROJECT EXPERIENCE

Phase I Environmental Site Assessment

Completed and managed numerous Phase I Environmental Site Assessments (ESA) in accordance with CSA Z768-01 throughout Manitoba, Saskatchewan, Ontario, NWT and Nunavut from 1999 to present. As a Project Manager, Ms. Hoffensetz is responsible for overall project coordination, direction, supervision and training of staff, reports review, client liaison, meetings and invoicing. Properties include residential, institutional, commercial, and industrial in rural, urban and First Nations communities. She also provides expert review of various reports. Specific Phase I ESA projects are highlighted below.

- **Enhanced Phase I ESAs, Various DFO Small Craft Harbour Sites in MB and SK – PSPC (2000 – 2001)**
  Duties included a comprehensive historical records review, site visit and interviews, a preliminary intrusive investigation (surficial soil sampling) and report preparation with recommendations for any

additional investigations at each site. Also prepared a contaminated sites data sheet for each site using the DFO Contaminated Sites Database.

- **Updated Phase I ESAs, Various First Nations Properties in ON – PSPC (2005)**
  Properties included seven commercial and twelve residential properties located in Moose Factory, Moosonee and Pelican Falls. Responsible for the project coordination and client liaison, as well as the completion of records review, interviews, data analysis, interviews/consultation with site managers/tenants and First Nations, site reconnaissance and report preparation.
- **Phase I/II ESAs, Various DFO Properties in MB and SK – PSPC (2008)**
  Project Manager and Expert Reviewer responsible for overall project coordination, report review, and client liaison for Phase I/II ESAs at six DFO properties. Also responsible for supervision and direction of three junior field personnel during site reconnaissance's, soil and sediment sampling, and of sampling of various hazardous building materials, including potential asbestos and lead paint.
- **Phase I ESAs and Hazardous Materials Sampling, Various RCMP Properties in MB and SK – PSPC (2007 – 2008)**
  Project Manager and Expert Reviewer for responsible for overall project coordination, report review, and client liaison. Also responsible for supervision and direction of junior field personnel during site reconnaissance's and sampling of various hazardous building materials, including potential asbestos, lead paint, and mould.
- **Phase I ESA, Hazardous Materials Sampling and Preliminary Intrusive Investigation (2008)**
  Project Manager for Phase I ESA, Hazardous Materials Sampling and Preliminary Intrusive Investigation for two residential complex buildings in Lynn Lake, Manitoba. Responsible for overall project coordination, report review, and client liaison.
- **Phase I ESAs, Various RCMP Properties in MB and SK – PSPC (2009)**
  Project Manager and Expert Reviewerresponsible for overall project coordination, report review, and client liaison. Also responsible for supervision and direction of junior field personnel during site reconnaissance's and identification of various hazardous building materials, including potential asbestos, lead paint and mould.
- **Phase I/II ESAs, Various DFO Properties, Lake of the Woods, Ontario – PSPC (2010)**
  Responsible for project management, as well as overall coordination of the project. Also completed field activities, data analysis, reports preparation and client liaison.
- **EM Surveys, Phase I ESA Supplement and Phase II ESA Work Plan, Five Transport Canada Properties – PSPC (2010 – 2011)**
  Project Manager and Expert Reviewer responsible for overall project coordination, reports review, and client liaison.
- **Screening Level Reports (SLR) and Updated Enhanced Phase I ESAs, Various First Nations Properties in ON – PSPC (2012 – 2014)**
  Project Manager and Expert Reviewer responsible for the project coordination and client liaison, as well as direction of project staff and report review. Included two SLRs and four Updated Enhanced Phase I ESAs.
- **Development of Framework for Assessing the Environmental Condition of Lands Proposed for Inclusion in the Rouge National Urban Park (RNUP), Toronto, ON – PSPC (2014)**
  Project Manager and Expert Reviewer responsible for project coordination and client liaison, as well as direction of project staff and report review. Included the development of a Phase I ESA framework of over 350 properties proposed to be transferred to Parks Canada for the development of an Urban Park

located east of Toronto. The Framework consisted of a 2 Step Process: Step 1 - Completion of a Screening Level Review (SLR) to determine the appropriate level of environmental risk associated with the property (No Risk, Low, Medium and High); and Step 2 - Validating the conclusions of Step 1 (i.e. further work such as site visits, intrusive investigations, remediation, etc.).

- **Screening Level Reviews, Rouge National Urban Park, ON – PWGSC (2014 – 2016)**
  Project Manager and Expert Reviewer responsible for project coordination and client liaison, as well as direction of project staff and report review. KGS Group was responsible for creating a GIS database, training other consultants in the use of the database, and completion of SLRs on more than 30% of the properties following the Phase I ESA Framework. The GIS Database was created using ARCGIS software such that each property could be easily navigated and observed in the proper geographical space. The Database was used as a central depository for data required for the project, including historical aerial imagery, land use maps, and site boundaries with associated property numbers.
- **Phase I Environmental Site Assessment, Four Northern Airport Sites, Grace Lake, God's Lake Narrows, St. Theresa Point & Tadoule Lake – Manitoba Infrastructure (2017 – 2018)**
  Project Manager and Expert Reviewer responsible for the completion of four Phase I ESAs at northern airports for MI. Responsible for overall coordination of the project team; client liaison, meetings, review of findings from interviews/site reconnaissance and interviews; review of reports and invoicing. Also reviewed a separate letter with recommendations which was also completed as part of the project.
- **Phase I Environmental Site Assessment, Two Mile Channel & Eight Mile Channel, Norway House, Manitoba – Norway House Cree Nation (2017 – 2019)**
  Project Manager and Expert Reviewer for the completion of two Phase I ESA projects at Two Mile Channel and Eight Mile Channel sites. The sites were constructed by Manitoba Hydro in the 1970s as part of the Lake Winnipeg Regulation Project. Responsible for overall project coordination and direction of project team, client liaison, review of reports and findings, meetings and invoicing. Three presentations to the client and stakeholders were also completed (to date) as part of the project.
- **Phase I Environmental Site Assessments and EM Surveys, 12 Northern Airport Sites and 7 Maintenance Yard Sites – Manitoba Infrastructure (2018 – Ongoing)**
  Project Manager and Expert Reviewer responsible for client liaison, overall team direction and senior report review for the Phase I ESAs of 12 Airport Sites and 7 Maintenance Yard Sites in Northern Manitoba. EM Surveys, including EM-31 and EM-38, also completed at the Maintenance Yard Sites.
- **Phase I Environmental Site Assessment, Four RCMP Properties in Northern Manitoba – PSPC (2019)**
  Project Manager and Expert Reviewer responsible for the completion of four Phase I ESAs at RCMP properties for PSPC. Responsible for overall coordination of the project team, client liaison, meetings, senior review of deliverables and invoicing.

Phase II and III Environmental Site Assessment

- **Phase I/II and III ESAs, Various DFO Properties in NU and NWT – PSPC (2001 – 2002)**
  Properties included navigational aid sites, storage facilities, sea lift, and wharf sites. Responsible for records review, field investigations (test pitting and soil sampling), interviews, data analysis and interpretation, preparation/review of reports and the preparation of liability cost estimates for additional recommended investigations. Assisted in the preparation and cost estimates for remedial action plans, as required.
- **Phase II and Phase III ESAs, Various Agriculture and Agri-Food Canada (AAFC)/ Prairie Farm Rehabilitation Administration (PFRA) Properties in MB and SK – PSPC (2002 – 2003)**

Properties assessed included agricultural research stations and community pastures with fuel storage areas and former chemical dumpsites. Responsible for data analysis and interpretation of laboratory data, preparation/review of reports and the preparation of liability cost estimates for additional recommended investigations. Also responsible for the preparation and evaluation of remedial options such as risk assessment, in-situ and ex-situ remediation technologies, and the cost estimates associated with the recommended RAP for Phase III ESAs.

- **Phase II ESA and Phase III ESA, Impark Parking Lot, Winnipeg, MB (2003 – 2004)**
  Project Coordinator responsible for field coordination, client liaison, data analysis, report preparation, remedial options assessment and preparation of recommended remedial action plan.
- **Phase II ESAs, Kasabonika and Deer Lake First Nations – INAC/PWGSC (2004)**
  Project Coordinator responsible for client liaison, field coordination, soil and groundwater monitoring and sampling, data analysis and report preparation, including recommendations and cost estimates for remedial action plan.
- **ESA Study, Various Commercial Opaskwayak Cree Nation Properties in MB – INAC (2006)**
  Project Coordinator responsible for coordination of all field activities, client liaison, data analysis and report preparation, as well as the FCSAP classification scores for all impacted sites. The field and laboratory programs (Phase I, II or III ESA) were tailored to meet the individual site requirements, including the preparation of Remedial Action Plan for one site.
- **Phase III ESA, West Poplar Port of Entry in SK – PSPC (2006)**
  Project Coordinator responsible for project coordination, client liaison, data analysis and report preparation, including remedial alternative assessments, and recommendation and cost estimate for a remedial action plan.
- **Phase II and III ESAs, Former Bulk Facilities in MB and SK – CNR (2006 – 2011)**
  Project Manager/ Coordinator responsible for client liaison, field coordination, site supervision of drilling and soil sampling, data analysis, report preparation and remedial alternatives assessment for former bulk fuel facilities located on CNR properties.
- **Phase II/III ESA, Tadoule Lake Nursing Station – PSPC (2008)**
  Project Manager/ Coordinator responsible for project coordination, client liaison, data analysis and report preparation, including remedial alternatives assessment, and recommendation and cost estimate for a remedial action plan.
- **ESA and Remediation Study, Various Commercial Opaskwayak Cree Nation Properties in MB – INAC (2008-2009)**
  Follow-up to previous ESA Study completed in 2006. Project Coordinator responsible for coordination of all field activities, client liaison, data analysis and report preparation, as well as the FCSAP classification scores for all impacted sites. The field and laboratory programs (Phase I, II or III ESA) were tailored to meet the individual site requirements, including the preparation of a Remedial Action Plan/ Risk Management Plan for five sites and remediation of one site (soil excavation and off-site disposal).
- **Environmental Site Assessment, Hazardous Materials Inventory, and Rocket Debris Survey, Churchill Rocket Range – Manitoba Conservation (2008 – 2009)**
  Project Coordinator responsible for client liaison, coordination of all field activities, including supervision of field crew, test pitting, soil and groundwater sampling and hazardous materials sampling, as well as data assessment and report preparation. Also completed a comprehensive Remediation and Hazardous Materials Management Plan for the site.
- **Phase III ESA and Air Quality Assessments, Riding Mountain National Park – PSPC (2009)**

Project Manager responsible for project coordination, client liaison, and report review, including remedial alternatives assessment, and recommendation and cost estimate for remedial action plan.

- **Phase II and III ESAs and EM Surveys, Various RCMP Properties in MB and SK – PSPC (2010)**
  Project Manager responsible for overall project coordination, report review, and client liaison. Phase II ESAs completed at seven properties and a Phase III ESA was a completed at one property. EM-31 surveys were completed at two of the properties in order to identify underground storage tank locations and assist in development of the drilling program.
- **Phase II ESAs and Risk Assessments, Creosote Hydrometric Stilling Wells, SK – PSPC (2010 – 2011)**
  Project Manager responsible for overall project coordination and client liaison for two hydrometric station stilling wells constructed of creosote. Also responsible for report preparation of Phase II ESAs and assisted with the risk assessments at each property. Risk Assessments included both a Human Health Preliminary Quantitative Risk Assessment and a Screening Level Ecological Risk Assessment.
- **Environmental Site Assessments, EM Surveys and Waste Audit, Various First Nation Communities across Manitoba – Aboriginal Affairs and Northern Development Canada (2011 – 2012)**
  Project Manager and Expert Reviewer for multi-site environmental site assessment program at various properties located at seven First Nation communities within Manitoba, including remote northern locations. Properties included former fuel sites, and former and active landfill sites. Project work included the completion of Phase I, II and III ESAs, soil and groundwater monitoring/sampling, Electromagnetic (EM) Surveys at select sites, a Waste Audit at one site and preparation of Remedial Action Plans where required. Responsible for overall project coordination and direction of staff, reports review, client liaison and invoicing.
- **Phase II ESA, Federal Property, Kenora, Ontario – PSPC (2012)**
  Project Manager responsible for project coordination, client liaison, and report review.
- **ESAs and Risk Assessment, DFO Properties, Northwest Territories and Nunavut (2012)**
  Project Manager and Expert Reviewer responsible for project coordination, client liaison, and reports review, including remedial alternatives assessment, and recommendations and cost estimates for remedial action plan for ESAs at four DFO properties located in NWT and NU, and a Human Health Preliminary Quantitative Risk Assessment and a Screening Level Ecological Risk Assessment at one property in NWT.
- **Phase II Environmental Site Assessment/Detailed Testing Program, C.F.B. 19 Wing Comox, British Columbia – Defence Construction Canada (2015)**
  Project Manager responsible for overall project coordination, report review, client liaison and invoicing. Detailed testing program focused on Perfluorinated Compounds (PFCs), including Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) at the former firefighter training area.
- **Phase II ESAs, Former Fuel Sites, Ilford and God's Lake – Manitoba and Northern Affairs (2015)**
  Project Manager and Expert Reviewer responsible for overall project coordination, report review, and client liaison.
- **Phase III Environmental Site Assessment – Kinonjeoshtegon First Nation (2015 – 2016)**
  Project Manager and Expert Reviewer for the delineation of hydrocarbon impacted soil at the former UST location at the First Nation school site. Project work included testhole drilling and monitoring well installation, soil and groundwater monitoring/sampling and air quality testing. Responsible for overall project coordination and direction of staff, report review, client liaison, meetings, presentation of final report and invoicing.

- **Environmental Site Assessments, Tank Removals and EM Surveys at Various First Nations in Manitoba – Southeast Resource Development Council Corp. (2015 – 2016)**
  Project Manager and Expert Reviewer for the multi-site environmental site assessment program at various properties located at six First Nation communities within Manitoba. Project locations included former fuel sites, and former and active landfill sites. Project work included Phase II and III ESAs, removal of petroleum storage tanks, soil and groundwater monitoring/sampling, and the completion of Electromagnetic (EM) Surveys at select sites. Responsible for overall project coordination and direction of staff, reports review, client liaison, meetings and invoicing.
- **Environmental Site Assessments and EM Surveys for Various Sites in O-Pipon-Na-Piwin and Cross Lake First Nations, Manitoba (2016 – 2018)**
  Project Manager and Expert Reviewer for environmental site assessment program at 14 Addition to Reserve (ATR) sites, including former and active fuel tank sites, commercial properties and former and active landfill sites. Project work includes hazardous materials sampling, EM surveying, tank removals, testhole drilling and monitoring well installation, and soil and groundwater sampling/monitoring. Responsible for overall project coordination and direction of staff, site reconnaissance at select sites, reports review, client liaison, meetings and invoicing.
- **Sediment Assessment, DFO Cormorant Lake Small Craft Harbour, Manitoba – PSPC (2017 – 2018)**
  Project Manager responsible for team coordination, client liaison, invoicing and report review. The objectives of sediment assessment included refining the conceptual site model, determining if the site posed an unacceptable ecological and human health risk and incorporation of the results of the field and laboratory program into a technical report. The Federal Contaminated Sites Action Plan (FCSAP) Framework for Addressing and Managing Aquatic Contaminated Sites was used to design the field program and assess the data collected, with a focus on achieving Step 6: Site Reclassification. The field program consisted of five components including establishing a reference location, describing substrate at each sample station, delineating impacted sediment, toxicity testing, and evaluation of benthic macroinvertebrate communities. NovaTox Inc. provided technical input and review as part of the Project Team.

Remediation

- **Remediation of Hydrocarbon Impacted Soil at Impark Parking Lot, Winnipeg, Manitoba (2004)**
  Responsible for excavation direction and supervision, on-site soil screening, confirmatory soil sampling, soil volume estimation and report preparation/ site closure report.
- **Remediation and Decommissioning Mercury Impacted Hydrometric Stations, Remote Locations, Northwestern Ontario (2005)**
  Tasks included: assessment and remediation of soil and air in on-site structures; decommissioning or relocation buildings; miscellaneous activities (removal of cableway, batteries, debris, etc.); preparation of a Health and Safety Plan; and disposal of all waste generated. Responsible for the coordination of field activities and waste disposal, data analysis and report preparation, as well as client liaison.
- **Assessment and Remediation of Mercury Impacted Hydrometric Stations, Remote Locations, Northwestern Ontario (2010 – 2011)**
  Project Manager responsible for project coordination, reports review, as well as client liaison for the Assessment and Remediation of four mercury impacted hydrometric stations in northwestern Ontario.
- **Soil Remediation, Moose Factory, Ontario (2005 – 2012)**
  Completed data analysis and report preparation for the soil remediation activities that involved the on-site construction of a soil treatment cell for the treatment of hydrocarbon impacted soil (2005);

Supervised the installation of monitoring wells for natural attenuation monitoring of residual impacted groundwater (2006); Project Manager for yearly remediation activities (2007-2011) responsible for project coordination, report review, and client liaison of on-going monitored natural attenuation program and sampling of soil bioremediation cell.

- **Site Remediation, Tadoule Lake Nursing Station, Manitoba – PSPC (2010 – 2012)**
  Project Manager responsible for project coordination, report review, as well as client liaison for the site monitoring of hydrocarbon impacted soil at the Tadoule Lake Nursing Station. A Soil Vapour Extraction System was designed and installed by KGS Group at the site in 2009.
- **Soil Remediation, Riding Mountain National Park, Manitoba – PSPC (2010 – 2011)**
  Project Manager responsible for report review, as well as client liaison for the remediation of hydrocarbon impacted soil at Riding Mountain National Park within the town site of Wasagaming, Manitoba. KGS Group prepared tender specifications and provided on-site supervision of the excavation and disposal of approximately 3,300 cubic meters of hydrocarbon impacted soil.
- **EM Surveys and Technical Specifications for Remediation Projects – Opaskwayak Cree Nation (2011)**
  Project Manager responsible for coordination and client liaison of completion of EM surveys at two landfill sites and the preparation of technical specifications for the remediation of hydrocarbon impacted soil at two properties located on the Opaskwayak Cree Nation. Also prepared letter reports summarizing the findings of the EM surveys.
- **Long Term Remedial Monitoring Program, Former Sutherland Avenue Manufactured Gas Plant Site – Manitoba Hydro (2012 – Ongoing)**
  Project Manager responsible for project coordination, client liaison and invoicing, data assessment and report review for the Long Term Remedial Monitoring Program of the Former Sutherland Avenue Manufactured Gas Plant Site in Winnipeg, Manitoba. The Long Term Remedial Monitoring Program was implemented in 2012 under a Director's Order, which includes groundwater, soil vapour, sediment, surface water and indoor air monitoring and sampling of primarily polycyclic aromatic hydrocarbon (PAHs) impacts. Provide expert review of annual reports and deliverables prepared by subconsultants.
- **Historical File Reviews, Small Scale Sites, Port Hope Area Initiative – PWGSC (2012 – 2013)**
  Project Manager/Expert Reviewer responsible for project coordination, client liaison, invoicing, and reports preparation as a Historical File Review Consultant for the Port Hope Area Initiative (PHAI). The scope of work included the review of all historical files for approximately 600 small scale sites in the Port Hope area and the preparation of a Work Plan for each site. Following the completion of the Historical File Reviews all sites will be re-surveyed to determine the presence/absence of low level radioactive waste (LLRW), followed by remediation and disposal of all waste at a Long Term Waste Management Facility.
- **Remedial Action Plan, Technical Specifications and Site Supervision, Metals Contaminated Site, Fort Smith, NWT – PSPC/Dillon (2013 – 2014)**
  Project Manager responsible for management of KGS Group staff, review of deliverables (RAP, technical specs, and Mackenzie Valley Land and Water Board submission, including Engagement Plan and Spill Contingency Plan), and client liaison.
- **Soil Remediation, Pickering, ON – PSPC (2014)**
  Project Manager and Expert Reviewer responsible for project coordination and management of field staff, client liaison and invoicing, and report review for the site supervision and closure sampling during the remediation of metals impacted soil.

- **Remedial Action Plan, Technical Specifications and Remediation, Petroleum Hydrocarbon Contaminated Site – Kinonjeshtegon First Nation (2016 – 2017)**
  Assistant Project Manager responsible for assisting Project Manager with day-to-day management and coordination, client liaison, meetings, and invoicing, and providing expert review of feld and laboratory data.
- **Additional Investigation, Remedial Action Plan, Technical Specifications and Remediation, Petroleum Hydrocarbon Contaminated Site, Cross Lake First Nation (2016 – 2017)**
  Assistant Project Manager responsible for assisting Project Manager with day-to-day management and coordination, design of delineation program and direction of field staff, client liaison, meetings, and invoicing, and providing expert review of feld and laboratory data.
- **Remedial Action Plan, Technical Specifications and Remediation Site Supervision, Petroleum Hydrocarbon Contaminated Site, Riding Mountain National Park, Manitoba – PSPC (2017 – 2018)**
  Project Manager responsible for management and coordination of project team, review (technical specs) and completion of deliverables (RAP and closure report) and client liaison.
- **Emergency Response, Train Derailments, Various Locations, SK, Ontario and Manitoba (2018-ongoing)**
  Responsible for "First Call", as well as a Project Lead/Manager and Expert Reviewer providing support during the initial response to derailments of freight train involving hazardous substances, including petroleum hydrocarbons such as crude oil, fertilizers, metal ores, inset plastics, etc. KGS Group primary responsibilities at derailment sites have included initial assessment, documentation of site activities, development of remedial action plan, site surveying and drone imagery, direction of remedial activities using field screening techniques, background and confirmatory soil sampling, surface water sampling, and preparation of closure reports and documentation for regulatory approvals, as well as on-going remedial monitoring. As the Project Lead, responsibilities include team coordination, management and logistical support, scheduling, client/regulatory liaison, and preparation/review of daily reports.
- **Emergency Response Services, Dr. Hook Towing Services Ltd/Manitoba Public Insurance (2017-ongoing)**
  Project Manager and Expert Reviewer for the remediation of fuel spills resulting from vehicular incidents that have occurred across Manitoba. To date, KGS Group has responded to approximately 15 separate incidents involving fuel spills of 50 L to over 250 L of gasoline, diesel, and/or glycols, and in one incident a release of 42,000 L of hot liquid asphalt involving a semi-truck with tandem tanker trailers. Incidents have occurred along major highways on or near bridges with fuel released into drainage ditches, adjacent water bodies and/or private residential and agricultural lands. Responsible for team coordination/management, client/regulatory liaison and review of closure reports.

Fuel Storage Tank Removal

- **Underground Storage Tank Removal (1999 – 2008)**
  Provided site supervision for the removal of underground storage tanks in Manitoba and Ontario, including the supervision of remedial site clean-up activities, liaison with government officials, and preparation of reports on activities conducted.
- **AST closure and Confirmatory Soil Sampling at fourteen PFRA community pastures throughout Manitoba (2007)**
  Project Coordinator responsible for project coordination, client liaison, field investigations, and report preparation. Field investigations completed at each community pasture included a site inspection of ASTs, confirmatory soil sampling, interviews, and potable water sampling of all on-site water wells and/or livestock dugouts. Reports complete with detailed site plans, soil and groundwater results,

impacted soil volumes, FCSAP scores, and cost estimates were completed for each PFRA community pasture.

Demolition Waste Audits/Hazardous and Non-hazardous Waste Inventories

- **Demolition Waste Audit and ESA, Commercial Building, Yellowknife, NWT (2001)**
  Assisted in the data analysis and final report preparation. The results of the waste audit were used to prepare a Waste Reduction Plan and confirm the economical and "Green" demolition of the building and infrastructure components.
- **Hazardous Materials Inventory and Waste Audit, Former Nursing Home, Saskatoon, SK (2002)**
  Duties included PCB ballast survey, sampling of asbestos containing materials (ACMs), sampling of lead-based paint, and inventory of all ozone-depleting substances (ODSs), mercury containing materials, and other materials, such as chemical and fuel storage. Assisted with the preparation of volume estimates of non-hazardous and hazardous materials and calculation of a cost estimate for the "Green" demolition of the building.
- **Hazardous Materials Assessment, Mill Operational Area, Remediation and Demolition Abandoned Mine Site, Lynn Lake, Manitoba (2008)**
  Responsible for PCB ballast survey, sampling of asbestos containing materials (ACMs), sampling of lead-based paint, and inventory of all ozone-depleting substances (ODSs), mercury containing materials, and other materials, such as chemical and fuel storage. Also completed confirmatory air sampling following asbestos abatement immediately prior to demolition activities.
- **ESA, Hazardous Materials Inventory, and Rocket Debris Survey – Churchill Rocket Range (CCR), Manitoba (2008 – 2009)**
  Project Coordinator responsible for client liaison, coordination of all field activities, including supervision of field crew, test pitting, soil and groundwater sampling and hazardous materials sampling, as well as data assessment and report preparation. Hazardous materials inventory included identification of all PCB containing materials, sampling of asbestos containing materials (ACMs), sampling of lead-based paint, ozone-depleting substances (ODSs), mercury containing materials, and other materials, such as chemical and fuel storage. Completed a comprehensive Remediation and Hazardous Materials Management Plan for the demolition of the CCR.
- **Hazardous Materials Assessment, Point De Bois – Manitoba Hydro (2013)**
  Project Manager/Expert Reviewer responsible for direction of staff and report review for hazardous materials assessment and preparation of abatement costs estimates of asbestos and leachable-lead painted materials associated with the rehabilitation of various structures at the Pointe De Bois Generating Station.
- **Demolition Assessment and Waste Survey, Part of Phase III ESA an Remedial Design Project, FOX-D (Kivitoo) Intermediate DEW Line Site, Baffin Island, NU – PSPC/Dillon (2013)**
  Managed and coordinated KGS personnel for the completion field investigations (hazardous materials sampling, geophysical surveying and geotechnical) in conjunction with Dillon Consulting Ltd. staff. Responsible for the data assessment and report preparation for the Demolition Assessment and Waste Survey portion of the project.
- **Hazardous Building Materials Assessments, Various Buildings Across BC, AB, SK and MB (Wainwright-Garrison, 17 Wing/C.F.B. Cold Lake, and C.F.B. 18 Wing Edmonton, Alberta; C.F.B. Shilo, Manitoba; C.F.B. Esquimalt, British Columbia; 15 Wing Moose Jaw, Saskatchewan) – Defence Construction Canada, Alberta (2013-2019)**

Project Manager and Expert Reviewer responsible for client liaison, coordination of field staff, as well as data assessment, report preparation/review and abatement cost estimates. Also assisted with the preparation of Technical Specifications for Hazardous Materials Abatement prior to the demolition/renovations of select buildings.

- **Mould Investigation, C.F.B. 4 Wing Cold Lake, Alberta – Defence Construction Canada (2015)**
  Project Manager responsible for client liaison and coordination of field staff, as well as report review and preparation of remedial action plan and associated remedial cost estimate.
- **Air Quality Sampling (Mould) and Hazardous Building Materials Assessment, One Building at Wainwright Garrison, Alberta – Defence Construction Canada (2016)**
  Project Manager responsible for invoicing, client liaison and coordination of field staff, as well as report review.
- **Asbestos Surveys and Asbestos Management Plans, 4 CFIA Facilities in Saskatchewan & Alberta – Public Works and Procurement Canada/Canadian Food Inspection Agency (2018)**
  Project Manager responsible for client liaison, invoicing and senior review of all deliverables (4 survey reports and management plans). The project was completed under budget.
- **Asbestos Surveys and Asbestos Management Plans, Various RCMP facilities in Manitoba, Saskatchewan and Alberta – Public Works and Procurement Canada/Royal Canadian Mounted Police (2018-2019)**
  Project Manager and Expert Revirespons**ible for the team coordination, client liaison and senior review of deliverables for the completion of asbestos surveys and asbestos management plans at various RCMP facilities across Manitoba, Saskatchewan and Alberta. The scope of services (7 separate contracts) included a total of 129 communities and 414 buildings. The work included extensive asbestos surveys to be completed in accordance with the sampling methods and procedures outlined in the *Alberta Asbestos Abatement Manual* (October 2012), *Saskatchewan Asbestos Abatement Manual* (2017), Manitoba Guide for Asbestos Management (2017) and the Amended *PSPC Asbestos Management Standard* and *PSPC Department Policy 057 on Asbestos Management*. Also acted as a Lead Field Team Member responsible for completion of asbestos surveys, including sampling and training of junior staff at numerous buildings in Saskatchewan and Alberta.

Ed Collins, P. Eng., FEC

SENIOR ENVIRONMENTAL ENGINEER

PROFILE

Mr. Collins has a B.A.Sc. in Civil Engineering and over 35 years experience as a Professional Engineer. Mr. Collins has worked in the environmental engineering field for over 20 years, including 18 years with Environment Canada in Yellowknife, Northwest Territories and with KGS Group in Winnipeg, Manitoba since 2005. As a **Senior Environmental Engineer**, Mr. Collins responsibilities include: serving as Project Manager for various environmental projects including Environmental Site Assessments (ESAs) and site remediation; providing senior technical review for reports prepared by staff of the environmental section; and providing environmental engineering services. Clients include the Manitoba Department of Growth, Enterprise and Trade, Manitoba Department of Conservation and Climate, Canadian National Railway Company (CN), Canadian Pacific Railway (CPR), Public Works and Government Services Canada (PWGSC), and Manitoba Hydro. Projects have been conducted at locations across Manitoba, Saskatchewan, Ontario, Northwest Territories and Nunavut. Mr. Collins is a Registered **Professional Engineer** in Northwest Territories and Nunavut (NAPEG), Manitoba (EGM), Alberta (APEGA), and Ontario (PEO).

EDUCATION

- **Bachelor of Applied Science, Civil Engineering**, University of Waterloo (1978)

EMPLOYMENT HISTORY

- **Senior Environmental Engineer,** KGS Group, Winnipeg (2005 – Present)
- **Chief, Environmental Engineering Section**, Environment Canada, Yellowknife (1996 – 2004)
- **Senior Environmental Engineer**, Environment Canada, Yellowknife (1990 – 1996)
- **Environmental Engineer**, Environment Canada, Yellowknife (1986 – 1990)
- **Municipal Engineer**, FSC Group, Yellowknife (1982 – 1986)
- **Municipal Engineer**, Stanley Associates Engineering, Whitehorse and Fort McMurray (1981 – 1982)
- **Municipal Engineer**, Associated Engineering Services, Inuvik, Edmonton and Whitehorse (1979 – 1981)
- **Self-Employed Consultant**, Hamilton and Yellowknife (1978 - 1979)

RELEVANT PROJECT EXPERIENCE

Site Remediation Projects

- **Remediation of the abandoned Ruttan Mine site in Leaf Rapids, Manitoba – Manitoba Mines Branch (2010-ongoing)**
  Project Manager and Senior Environmental Engineer. The remediation project entailed site investigations to develop a Phase 3 Environmental Site Assessment (ESA), a hydrology study for the 130 hectare site, a hydrogeological study, a geotechnical study of the stability of the tailings dam and a study to identify the most cost-effective option for treating the contaminated water at the site. The information from these studies was used to develop a Conceptual Closure Plan for the site in 2012. The Closure Plan was finalized in 2012, at which time detailed drawings and specifications were developed for the remediation of the site. Major components of the Closure Plan included capping of the 18 hectare Tailings Management Area (TMA), installation of a sheet pile cutoff wall to reduce subsurface seepage from the TMA, a water treatment plant designed to treat 20,000 cubic metres of acid rock drainage per day, and a control dam to submerge an area of tailings under a water cover. KGS Group provided detailed design drawings and specifications, tender services and services during construction.

- **Remediation of the abandoned God's Lake Gold Mine site at Elk Island, Manitoba – Manitoba Mines Branch (2010-14)**

Project Manager and Senior Environmental Engineer. The remediation project entailed the abatement of hazardous materials including asbestos and PCBs at abandoned mine buildings, and the implementation of a Remedial Action Plan (RAP) for the site. Remediation activities included consolidation of tailings and capping the tailings area. KGS Group provided detailed design drawings and specifications, tender services and services during construction

- **Remediation of the West Tailings Management Area of the abandoned Farley Mine site in Lynn Lake, Manitoba – Manitoba Mines Branch (2006-11)**
  Project Manager and Senior Environmental Engineer. The remediation project entailed the abatement of hazardous materials including asbestos and PCBs at abandoned mine buildings, demolition of all on-site buildings, and site investigations to develop a Phase 3 Environmental Site Assessment (ESA). The information from the ESA was used to develop a Remedial Action Plan (RAP) for the site, which involved consolidation of approximately 500,000 cubic metres of tailings and waste rock. Following acceptance of the RAP, KGS Group provided detailed design drawings and specifications, tender services and services during construction.

Environmental Site Assessments and Studies

- **Remediation of Hydrocarbon Impacted Soil at the Former School in Split Lake, Manitoba – Tataskweyak Cree Nation (2018-ongoing)**
  Assistant Project Manager and Senior Environmental Engineer. The remediation project entailed the development of a Remedial Action Plan (RAP) for the site. The recommended RAP was to excavate the impacted soil, transport the soil to a new soil treatment facility (STF) in the community, and backfill the excavation with clean soil. KGS Group provided site investigations, development of the RAP, detailed design drawings and specifications, tender services and services during construction. Funding for the project was provided by Indigenous Services Canada (ISC).
- **Remediation of Hydrocarbon Impacted Soil at the School in Poplar River First Nation, Manitoba – Poplar River First Nation (2016-ongoing)**
  Project Manager and Senior Environmental Engineer. The remediation project entailed the implementation of a Remedial Action Plan (RAP) for the site. Remediation activities included construction of a new Soil Treatment Facility (STF), demolition of derelict buildings, moving an existing building to a new location, excavation of approximately 10,000 cubic metres of hydrocarbon impacted soil for treatment in the new STF, and backfilling the excavations with clean soil. KGS Group provided detailed design drawings and specifications, tender services and services during construction. Funding for the project was provided by Indigenous Services Canada (ISC).
- **Remediation of Hydrocarbon Impacted Soil at Opaskwayak Cree Nation near The Pas, Manitoba - Opaskwayak Cree Nation (2008-09)**
  Project Manager and Senior Environmental Engineer. The remediation method was removal and transportation of the impacted soil to a licensed disposal facility, with placement and compaction of clean fill in the excavated area. Funding for the project was provided by Indigenous and Northern Affairs Canada (now ISC).
- **Remediation of Hydrocarbon Impacted Soil at an RCMP facility in Regina, Saskatchewan - Public Works and Government Services Canada (2009)**
  Project Manager and Senior Environmental Engineer. The remediation method was removal and transportation of the impacted soil to a licensed disposal facility, with placement and compaction of clean fill in the excavated area.
- **Remediation of Hydrocarbon Impacted Soil at the Nursing Station in Tadoule Lake, Manitoba - Public Works and Government Services Canada (2009)**
  Project Manager and Senior Environmental Engineer. The remediation method was the installation of a vapour extraction system, with a monitoring program to determine when the site has become remediated.

Jason Mann, P.Geo.

GEOLOGIST AND DEPARTMENT HEAD – ENVIRONMENTAL SERVICES, ASSOCIATE PRINCIPAL

PROFILE

Mr. Mann has over 22 years of experience in geology and geological science, with applications in the field of hydrogeology and environmental management working in the consulting engineering field for over 20 years. His experience includes air photo interpretation and geological mapping, drilling and instrumentation design/installation for hydrogeological and geotechnical engineering projects, hydrogeological assessment, well and aquifer pumping test/dewatering design, groundwater and geological modelling for environmental and geotechnical applications, and water quality assessment. As Department Head for the Environmental Services Group, Mr. Mann is responsible for management and technical design for all hydrogeological and environmental projects at KGS Group, in addition to directing and assisting with field programs and data assessment tasks.

EDUCATION

- **Master of Science, Geology**, University of Manitoba (1999)
- **Bachelor of Science, Environmental Science**, University of Manitoba (1995)

Short Courses

- **Finite Element Groundwater Modeling**, Waterloo Hydrogeologic (2005)
- **Advanced Groundwater Modeling**, Waterloo Hydrogeologic (2003)
- **Canadian Geotechnical Society Air Photo interpretation Short Course**

Certifications

- **OSHA 40 Hour Course** (2000)
  - Refresher (2003 & 2005)
- **Confined Spaces Entry Course**, Manitoba Workplace Safety and Health WHIMIS

PROFESSIONAL ASSOCIATIONS

- Engineers Geoscientists Manitoba
- Association of Professional Geoscientists of Ontario
- Association of Groundwater Scientists and Engineers, National Groundwater Association
- Engineers Geoscientists Manitoba – 2017 - 2019 Council; Chair of Finance

Committee

- Director, Manitoba and Prairies Region, Tunnelling Association of Canada
- Editorial Advisory Board, Tunnels and Tunnelling Magazine (North American Edition)

EMPLOYMENT HISTORY

- **Senior Geologist, and Department Head of Environmental Services, Associate Principal**, KGS Group (2016 – Present)
- **Senior Geologist, and Assistant Manager of Environmental Services Department**, KGS Group (2013 – 2016)
- **Senior Geologist**, KGS Group (1999 – 2013)
- **Quaternary Geologist (Contract Position)**, Geological Survey of Canada (1998 – 1999)
- **Field/Lab Researcher**, University of Manitoba Department of Geological Sciences (1995 – 1999)
- **Drilling Assistant (Contract Positions)**, Manitoba Energy and Mines, Geological Services (1991 – 1993)

PROJECT EXPERIENCE

Phase II / III Environmental Assessments

- Duties include project development and borehole placement, soil logging, soil sampling, groundwater sampling, monitoring, and in-situ hydraulic conductivity testing at petroleum hydrocarbon impacted sites. Report preparation, data interpretation and analysis, and hydrogeological evaluations are undertaken following the fieldwork. Sites have ranged from petroleum hydrocarbon impacted sites at more than fifteen locations in Manitoba and Saskatchewan, to several heavy metals impacted sites and an ammonia/nitrate impacted site in Manitoba. Several sites also involved the development and preliminary evaluation of a number of potential remedial options.
- More specialized site assessment programs included the HVDC Converter Stations Oil Spill Risk Analysis for Manitoba Hydro. The risk analysis included evaluation of the potential for transformer oil spills and a preliminary phased design for oil spill containment at the main HVDC converter stations at Dorsey, Henday, Radisson.

Underground Storage Tank Removals

- Supervision of underground tank removal, soil sampling, data evaluation, and site closures at several sites in Manitoba. Duties include on-site soil screening, enforcement of standard operating procedures, and report preparation.

First Nations

- **8 Mile Channel Remediation – Manitoba Hydro**

Technical input and design for a hydrocarbon remediation project within Manitoba Hydro 8 Mile Channel. The project was executed by Norway House Cree Nation, as a Joint Venture with Sigfusson Northern Construction. KGS Group was responsible for all aspects of geotechnical and environmental investigations, geotechnical and environmental design, and cofferdam design, required to execute the work.

- **Bipole III – Manitoba Hydro**
  Project manager and advisor to build capacity, provide training, and deliver environmental monitoring framework for a First-Nations lead consulting firm who provided field environmental monitoring services to the Bipole III Contractors during construction.
- **Various Solid Waste Projects**
  Project Manager and technical advisor to various solid waste feasibility and environmental solid waste design projects at Pauingassi First Nation, Peguis First Nation, War Lake and York Factory First Nations, and Bunibonibee Cree Nation.
- Petroleum impacted site investigations at first nations communities located at Tadoule Lake, Manitoba, and at Fond Du Lac, Saskatchewan (Lake Athabasca). Duties included directing testpit locations, soil and groundwater sampling, and report preparation. Fieldwork was undertaken in conjunction with the First Nations Communities.

- **Lake St Martin Outlet Channel – Manitoba Infrastructure and Transportation**
  Preliminary and detailed hydrogeological and environmental design, and construction of the LSMOC. Responsible for site investigations and hydrogeological design. Participation in environmental licensing and construction management plans for the project.
- **2011 Lake St Martin Emergency Flood Channel – Manitoba Infrastructure and Transportation**
  Participated in site investigations for construction of the Reach 3 emergency flood channel, between Buffalo Creek and Lake Winnipeg. Involved in drilling, testpitting, and seismic refraction surveys, and data interpretation relative to defining the soil stratigraphy, till and bedrock surface elevations along the alignment of the channel.
- **LMB and LSM Outlet Channels Conceptual Design Stage 2 – Manitoba Infrastructure and Transportation**
  Design and involvement in hydrogeological field program, review of regional well location database, preliminary assessment of channel seepage/blowout conditions during construction and in the long-term, aquifer drawdown during construction and operation of channel options, assessment of risks and possible impacts to regional aquifers and the environment. Input to geotechnical design.
- **Groundwater, Surfacewater, and Geotechnical Investigations and Preliminary Engineering for LMB Outlet Channels Options C&D – Manitoba Infrastructure**
  Designed and conducted geological and hydrogeological investigations, including test drilling and pumping test programs. Evaluation of geological and groundwater conditions along LMB Options C and D channels, including assessment regional groundwater well use, evaluation of risks and potential impacts to regional groundwater aquifers with construction and operation of the LMB outlet channels. Development of detailed geological cross sections and modeling of bedrock surfaces and overburden thicknesses in the region of the projects. Input to geotechnical design.
- **PTH 110 Interchange, Brandon, Manitoba – Manitoba Infrastructure and Transportation**
  Designed and conducted hydrogeological investigation, including test drilling and pumping test, relative to design and construction of a groundwater underdrain system. Underdrain was designed to mitigate excess piping pressures within sandy soils during unwatering of the underpass during flood stage conditions along the Assiniboine River. Included preliminary evaluation of regional information and potential impacts on

nearby residences, initial assessment of licensing requirements, and design of underdrain system. Included compilation of Tender specifications and Owner's assistance, as required, through construction phase.

- **Powerview, Manitoba – Manitoba Infrastructure and Transportation (2009)**
  Designed and conducted hydrogeological investigation, including test drilling and 24- hour pumping test, relative to evaluation of stability of an embankment fill and concrete box culvert installation. Included preliminary evaluation of regional information and potential impacts on nearby residences, initial assessment of licensing requirements, and preliminary design of long-term passive depressurization system.
- **Powerview, Manitoba – Manitoba Infrastructure and Transportation (2014)**
  Final design, specification development, and tendering of a passive depressurization system to reduce deep foundation confined porewater pressures, and improve stability of an embankment fill and concrete box culvert installation. Construction completed in January, 2014.
- **White Horse Rapids Seepage Investigation – Yukon Energy Corporation**
  Provided data review, input, and analysis to assessment of seepage conditions associated with the intake power canal located at the Whitehorse Rapids Generating Station in Whitehorse, Yukon. Tasks included evaluation of new geotechnical drilling and instrumentation (completed by others), assessment of foundation groundwater levels, and water quality between reservoir, toe of dike, and sub-power canal rock drain seepage discharge areas.
- **Hardy Dam, Atikokan, Ontario – Ontario Ministry of the Environment**
  Conducted preliminary geotechnical drilling investigation and provided input to KGS Group contract administrative duties as related to monitoring and control of groundwater conditions during construction of remedial works (designed by others). The installed drainage system was designed to mitigate confined, flowing artesian groundwater pressures within the dam foundation soils.
- **Town of Mayo Dike Foundation Seepage Investigation – Yukon Energy Corporation**
  Drilling, well installation, and instrumentation to measure the response and seepage characteristics of a pervious granular dike in permafrost-affected ground conditions, along the Mayo River, adjacent to the Town of Mayo. Work to support river ice engineering and winter flooding mitigation studies.
- **Slope Stability/Drainage Assessment – Ski Assessippi**
  Conducted drilling investigations, instrumentation installations, test well drilling, pumping tests, and water quality assessments to determine the stratigraphy and hydrogeological relationship between a piping, valley wall seepage area, and overall slope conditions/stability of a mobilized valley wall. Included assessment of materials and design for subsurface slope drainage systems to improve overall stability of the ski hill slopes, in particular during critical periods such as during spring the spring melt when the soils are under a highly saturated condition.
- **Flood Protection Studies for Winnipeg**
  Groundwater Section, 2001, Manitoba Conservation. Assessment of potential impact of modifications to the Red River Floodway on groundwater availability, quality and use in the Winnipeg area. Included development of a 3-D finite difference groundwater model using MODFLOW.
- **Red River Floodway Expansion Regional Groundwater Modeling (2004)**
  Modeling of the potential effects of deepening the Red River Floodway in Winnipeg. 3-D Visual MODFLOW model included model calibration with conditions before and after Floodway construction in the 1960s, updating to current conditions and predictive modeling of several design scenarios.
- **Red River Floodway Expansion Surface Water Intrusion Modeling (2004)**
  Cross-Sectional Modeling using Visual MODFLOW. Model investigated the potential extent of intrusion of

Red River Water in the Floodway into the carbonate aquifer at several representative locations.

- **Grand Rapids Generating Station Phase I and Phase II Hydrochemical – Studies Manitoba Hydro**
  Conducted studies assessing water quality of the reservoir and water quality of possible seepage pathways through karstic dolomitic limestone bedrock of the dike and main powerhouse structure foundations. Study designed to assess possible variability in groundwater conditions due to seasonality, and whether a signal of changing water quality within seepage pathways could be identified and used as part of a long term dam safety monitoring program. Routine water quality parameters as well as isotopes and groundwater saturation states were analyzed.
- **Pine Falls Generating Station Groundwater Assessment Phase I – Manitoba Hydro**
  Conducted a study assessing groundwater flow conditions and water quality to determine overall groundwater site conditions, and confined aquifer piezometric pressures relative to stability of lacustrine clay riverbanks downstream of the Pine Falls Generating Station. Study included review of historical data from pre- and post-construction periods.

Geotechnical Investigations/Instrumentation/Permafrost

- **Whiteshell Laboratory – Canadian Nuclear Laboratories**
  Project manager and technical design services for geotechnical and hydrogeological standing services agreement. Drilling programs, well installations, and risk assessment work regarding the development of the closure and end state configuration of the facility. Has included GPR and drilling work in the Waste Management Area, environmental investigations and risk assessments of the lagoon and domestic landfill sites, long-term monitoring well nest installations, well decommissioning activities.
- **Grand Rapids Generating Station Spillway – Manitoba Hydro**
  Along with Manitoba Hydro, developed lab testing program to determine the representative friction angle for karstic limestone bedrock foundations at the Grand Rapids Spillway. Included evaluation of the role of joint surface roughness and joint surface strengths in finalizing laboratory tested rock sample final friction angles. Data was input into a Monte Carlo analysis of geotechnical stability analyses as part of a dam safety review of the structure.
- **Keeyask Generating Station – Manitoba Hydro**
  Test pitting, sonic drilling, sampling, laboratory testing, and instrumentation programs related to investigations along the 20+ km of Keeyask north and south dyke alignment foundations, and south abutment dam to dyke transition area. Included investigations and evaluations within ice-rich permafrost affected areas, and assessment of groundwater conditions for optimization of deep foundation excavations.
- **Grand Rapids Generating Station Spillway Stability – Manitoba Hydro**
  Core logging, sample selection, and development of laboratory testing program to determine representative bedrock friction angle, for input to stability analyses of the karstic limestone foundations.
- **Keeyask Generating Station – Manitoba Hydro**
  Geotechnical materials investigations, sampling, and testing of the G1 and G3 borrow material deposits. Work was required for confirmation of project construction materials sources (concrete aggregate and granular dam/dyke embankment fills), and deposit mapping to optimize materials utilization planning. Information compiled for, and provided to the construction contractor.
- **Field Assessment of Possible Future Hydro Sites – SaskPower**
  Conducted site visits and site walkovers to assess feasibility of a series of six potential future hydro development sites on the Churchill River and Fond Du Lac River systems in northern Saskatchewan. Field activities included preliminary bedrock/overburden mapping along proposed conveyance routes, and

preliminary geotechnical assessment of each proposed project, including review of possible permafrost affected soils and potential for occurrence of natural in-situ uranium mineralization zones, at a number of sites.

- **Future Bipole III HVDC Transmission Line Route – Manitoba Hydro**
  Managed a program of geotechnical drilling, soils logging, and soils laboratory testing/analysis for a series of 31 drilling sites located in central Manitoba along the proposed Bipole III transmission line route. Included delineation of till surface and soils conditions at key site locations.
- **Future Conawapa Generating Station – Manitoba Hydro**
  Historical data analysis, reporting, assessment, and input to reactivation of ground temperature monitoring for permafrost at the future Manitoba Hydro Conawapa Generating Station. Included a detailed desktop review of historical site conditions and instrumentation readings for permafrost conditions, used as a guide to identify new instrumentation needs and installations, which were advanced in 2009/2010. Data compilation, QA/QC, and reporting of detailed ground temperature measurements recorded in the field, and to the Manitoba Hydro MAFIC database system, between 2009 and 2013.
- **Manitoba Hydro – Future Conawapa Generating Station**
  Historical data analysis, reporting, assessment, and input to reactivation of piezometric aquifer pressure monitoring at the future Manitoba Hydro Conawapa Generating station. Included data review, input, and involvement with investigations and instrumentation installations advanced in 2006/2007. Input to and overview of database management and QA/QC programs for piezometric instrumentation and data collection, MAFIC database system, and development of instrumentation reports between 2009 and 2013.
- **Tazi Twe Geotechnical Investigation Program – SaskPower**
  Organized and developed a geotechnical investigation program to assist with preliminary design and further definition of bedrock shear zones located at the future Tazi Twe hydroelectric site on the Fond Du Lac River, in northern Saskatchewan (2013). Tasks included technical input to all permitting, program cost estimates, development of technical specifications and contracts, and contract administration duties related to site preparation (drill pad clearing and line cutting), helicopter procurement, geophysical (seismic refraction) investigations, and diamond drilling program, which included geotechnical coring, downhole water pressure (Lugeon) testing, downhole acoustical and optical oriented televiewer tool, and installations for groundwater monitoring and sampling requirements. Duties included coordinating reporting and providing technical input to geotechnical report, along with KGS Group/subconsultant team.
- **Mayo A Power Tunnel Intake Rock Slope Stabilization – Yukon Energy Corporation**
  Field investigation, structural bedrock mapping, design, specification development, and contract administration for the scaling and layback of the rockslope above the Mayo A power tunnel intake (2010), Mayo, Yukon. Work completed stabilized a 25 m high, weathered and frost affected rock face, comprised of weak phyllite/chloritic schists, to mica schists, which was subject to toppling and wedge failures.
- **Mayo B Generating Station – Yukon Energy Corporation**
  Geotechnical investigation programs 2008/2009 and 2010/2011 construction, Mayo B Generating Station, Mayo, Yukon. Tasks included overseeing field based drilling programs, core logging, soils and bedrock sample collection for geotechnical and geochemical analyses, structural bedrock mapping for tunneling assessment and excavation, collection of field data and assessment of packer testing and falling head permeability results in overburden and bedrock, gradation envelope development for classifying overburden material types, sampling and instrumentation for ground temperature (permafrost measurements), and definition of the groundwater regime, soils conditions, and conceptual approach for construction dewatering required within overburden and bedrock excavations.
- **Future Conawapa Generating Station – Manitoba Hydro**

Data assessment, information/database compilation, and updating of the Geological Interpretation of the Project report, as part of Stage IV Engineering Studies. Included compilation of overburden and bedrock geological and hydrogeological conditions, permafrost conditions, and 3D seepage modeling assessment of the south abutment. Preliminary modeling included characterization of potential post-impoundment seepage pathways and sensitivity analyses of possible ranges in geological conditions, and of projected seepage pathways to the planned grouting designs.

- **New Post Creek - Ontario Power Generation**
  Provided well design, specifications, contract administration, and data analysis for test well drilling and pumping tests completed at the proposed New Post Creek project, located near Cochrane, Ontario. Extensive construction dewatering within sand soils, with a direct hydraulic connection to the adjacent New Post Creek, required assessment and evaluation to assist with design and construction staging considerations.
- **Bridges B1 and B3 – East Side Road Project**
  Conduced site visits, inspections and bedrock outcrop mapping during bridge abutment excavation for the B1 (Wapiginow River) and B3 (Bloodvein) bridge sites.
- **Future Conawapa Generating Station – Manitoba Hydro**
  Reassessment and integration of detailed bedrock discontinuity data into a proper standardized Access database, for integration to 3D visualization tools, and overall assessment of karstic bedrock conditions at the future Manitoba Hydro Conawapa Generating Station. Database includes nearly 30,000 lines of data, entered using a standardized drop-down menu system compatible with Manitoba Hydro standards, and active QA/QC program for data entry verification.
- Duties have included bedrock coring and well installation for groundwater monitoring adjacent to an operational industrial site and landfill, and the coring and pump testing of a bedrock geothermal well within the city of Winnipeg. Bedrock well installation, logging, pump testing, and aquifer analysis were completed for a large-scale groundwater based industrial space cooling project at Dorsey Station for Manitoba Hydro. Reports including well logs and well construction details were produced.
- Various field-based investigations, including riverbank stability studies, and foundation evaluations. Duties include borehole logging, field soil shear strength and density testing, soil sampling for laboratory analyses. Detailed soil logging using continuous samplers and split spoon samplers is common.
- Other geotechnical projects have included bedrock coring to evaluate the condition/stability of concrete bridge abutments. Details included examination of the condition of the concrete/bedrock bond at the abutment base, the bedrock and concrete condition. Also important was the evaluation of the interconnection between the river and groundwater hydrology.
- Bedrock coring and logging for input to the foundation design of the Human Rights Museum in Winnipeg, Manitoba.

Hydrogeology and Geological/Groundwater Modeling

- **Future Conawapa Generating Station – Manitoba Hydro**
  Developed a 3D geological model in Mining Visualization Systems (MVS) for the future Conawapa Generating Station for Manitoba Hydro. Model to be used as a design tool relative to karstic limestone foundation design and geotechnical analysis of foundation bedrock conditions, excavation, and permafrost conditions.
- **Future Conawapa Generating Station – Manitoba Hydro**

Developed a 3D groundwater model in the finite element program FEFLOW for the future Conawapa Generating Station for Manitoba Hydro. Model to be used as a design tool relative to karstic limestone foundation design and grouting design, relative to analysis of groundwater flow conditions, possible seepage pathways, and sensitivity of the proposed foundation and grouting designs to overall groundwater regimes and seepage.

- **Future Keeyask and Conawapa Generating Stations – Manitoba Hydro**
  Peer review of Environmental Impact Study (EIS) technical work for the regional hydrogeology and groundwater flow system studies (by others) for Manitoba Hydro. Studies used 3-D models with EVS visualization software and groundwater model FEFLOW to assess bedrock and overburden groundwater regimes, including existing conditions and predicted conditions, with and without a reservoir.
- **Manitoba Hydro – Dorsey HVDC Converter Station**
  Compiled a hydraulic and groundwater heat flow model in HST3D for evaluation of a large-scale industrial groundwater based space cooling system. The model incorporated thermal and hydraulic (pumping rate) balancing in a fractured, high permeability bedrock aquifer system.
- **Prairie Farm Rehabilitation Administration (PFRA)**
  Under the Hill Farms, Irrigation Development 2002. Hydrogeologic study on the Assiniboine Delta Aquifer. Included field drilling, aquifer mapping, groundwater modeling using Visual MODFLOW.
- **Water Rights License Documentation, Carberry, Manitoba – MidWest Food Products (2000)**
  Assessment of groundwater supply system and lagoon wastewater disposal and effects on local and regional hydrogeology and stream flow. Included groundwater quality analysis and development of a 3 dimensional conceptual and numerical groundwater model.
- **Township of Manitouwadge Groundwater Study (2002)**
  Comprehensive groundwater study to define the aquifer used by the municipal wells. Included field studies, inventories of wells and potential contaminant sources, aquifer vulnerability mapping, modeling of wellhead capture zones using MODFLOW and development of groundwater protection action plan. All mapping was delivered in GIS format (ArcView) and data was included in the provincial Microsoft Access Data Base.
- **Conceptual 3-D model of a portion of Brady Landfill, Winnipeg, Manitoba**
  Developed conceptual 3-D model of a portion of the Brady Landfill to address leachate conditions, as input to landfill operations design, and assessment of improvements proposed for leachate monitoring systems.
- **3-D Visual MODFLOW Computer Models**
  Developed and constructed three-dimensional Visual MODFLOW computer models of several different project areas, including model calibration and evaluation of model results. Visual MODFLOW tasks included the evaluation of the impacts of a wastewater plume from a leaky industrial storage lagoon, simulation of artificial recharge enhancement to an unconfined aquifer, various irrigation feasibility assessments, and the hydrogeological assessment of possible floodway expansion in the city of Winnipeg. Many of these models included groundwater flow budget evaluations, and particle tracking for groundwater flow and wellhead capture zone delineation. Additionally, evaluations of aquifer vulnerability (surface water to groundwater infiltration and exfiltration) have been completed.

Waste Rock Assessment and Rehabilitation

- **Geotechnical Investigations, Assessment and Remediation of Ruttan Mine, Northern Manitoba – Province of Manitoba, Department of mineral Resources (formerly Mines Branch)**
  Responsible for the preliminary Acid Rock Drainage (ARD) and metals leaching assessment of bedrock

construction materials at the Ruttan Mine site remediation project in Leaf Rapids, Manitoba.

- **Mayo B Hydroelectric Project – Yukon Energy**
  Responsible for ARD and metals leaching assessment of tunnel and penstock rock excavation materials for the Mayo B expansion of the hydroelectric facility at Mayo, Yukon Territory. Included defining monitoring program and sampling requirements for waste rock runoff surface water, for environmental licensing compliance.

Environmental Licensing

- Duties have included the ongoing monitoring and data evaluation relative to Provincial licensing requirements for a large groundwater based cooling system for Manitoba Hydro at the Dorsey HVDC converter station. Duties include overseeing hydrogeological data collection by Manitoba Hydro personnel, and reporting.
- Duties have included the ongoing monitoring and sampling of monitoring wells at an industrial water supply and wastewater discharge lagoon site at Midwest Foods, Ltd., in Carberry, Manitoba. The monitoring and evaluation of the large scale water balance of the area, based on a system of plant production wells, groundwater control wells, and a groundwater recharge trench, along with groundwater quality analyses, have been assembled and analyzed for environmental licensing purposes. Hydrogeological analysis included the use of a detailed numeric groundwater modeling program.

Publications

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- Wilson, J., Mann, J., Pantel, P., and Halim, R. (2018). The Evolution of Identifying Construction Materials Sources. Digital Geotechnics Special Edition, Australian Geomechanics Journal v. 53, No.3, September 2018.
- Kenyon, R., Mann, J., Robak, C. (2017). Rehabilitating Hardy Dam for Stability and Seepage Control. GeoOttawa - Canadian Geotechnical Society Annual Conference.
- Arpin, B., Kenyon, R., Mann, J., Rahman, K. (2016). Passive Groundwater Depressurization for Improving Road Embankment Stability – Case Study: Powerview Creek, Manitoba. GeoVancouver – Canadian Geotechnical Society Annual Conference, Paper 3941.
- Dobson, R., Mann, J., Hamilton, A., Lukajic, B. (2016). Intake Slope Stabilization and Spillway Cut in Rock for Hydropower Projects. American Rock Mechanics Association Annual Conference, Houston, Texas. Paper 16-9.
- Mann, J., Dobson, R., Mc Phail, G., Lukajic, B. (2014). Old Meets New. Technical/Hydropower Supplement, Tunnels and Tunnelling International Magazine, December, 2014.
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- Sharif, S., Mann, J.D., Smith, J.B., Cook, G.N., (2012). Techniques for 3D Geological and Hydrogeological Modeling. A Case Study of Conawapa Generating Station. Canadian Geotechnical Society Annual Conference, Winnipeg, Manitoba. September 30 – October 3, 2012.
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Gary Crewdson, HBSc., EP

ENVIRONMENTAL SCIENTIST/ G.I.S. ANALYST

PROFILE	Mr. Crewdson is an Environmental Scientist/GIS Analyst with over 13 years experience in the environmental consulting field. As an Environmental Scientist, Mr. Crewdson is responsible for planning, coordinating and completing a variety of environmental field investigations ranging from environmental assessments, designated substances/hazardous materials surveys, environmental baseline studies, terrestrial and aquatic inventories to the remediation of soil and water.
EDUCATION	• **Bachelor of Science, Honours**, Lakehead University (2008) **Professional Development** • **Erosion and Sediment Control – Planning and Design**, Vancouver Island University (2017)
PROFESSIONAL ASSOCIATIONS	• EcoCanada, Environmental Professional (2016)
EMPLOYMENT HISTORY	• **Environmental Scientist**, KGS Group (2008 – Present) • **Fisheries Technician**, Ontario Ministry of Natural Resources (2008) • **Field Technician**, AMEC Engineering Ltd. (2007 – 2008) • **Environmental Officer**, Canadian Armed Forces Naval Reserve (2004 – Present)

PROJECT EXPERIENCE

Phase I Environmental Site Assessments

- **Various Phase I Environmental Site Assessments and Record of Site Conditions**
  Conducted numerous Phase I Environmental Site Assessments within Ontario. Properties assessed have included commercial and industrial properties. Responsible for review of historical records, site reconnaissance, interviews with individuals familiar with the property and preparation of reports.
- **Phase I/II Environmental Site Assessments – Various DFO/CCG Small Craft Harbors**
  Conducted Phase I/II at several Department of Fisheries and Oceans / Canadian Coast Guard Small Craft Harbors in Ontario. Projects included Phase I ESAs to establish chemicals of potential concern (COPC), and subsequent Phase II ESAs to investigate COPCs. Phase II ESA portions of the projects included soil sampling,

surface water sampling and sediment sampling. Duties included a comprehensive historical records review, site reconnaissance and interviews, on-site soil screening, visual and olfactory inspection of soil samples, collection of soil / sediment samples, data interpretation, NCSCS classification of contaminated sites and the preparation of reports. Sites investigated included:

- Phase I/II ESA – Port Elgin Small Craft Harbor (2012)
- Phase I/II ESA – Wellers Bay Small Craft Harbor (2012)

Phase II Environmental Site Assessments

- **Phase II/III Environmental Site Assessments – Various Federal Properties**
  Conducted Phase II and Phase II/III ESAs at various Federal properties in Ontario. Phase II ESA included the installation of groundwater monitoring wells and low flowing sampling of groundwater for various COPC including metals, PHCs, PAHs and PCBs. Duties included supervision of drilling activities and monitoring well installation, on-site soil screening, visual and olfactory inspection of soil/groundwater samples, collection of soil/groundwater sampling, data interpretation, NCSCS classification of contaminated sites, liability estimates and the preparation of reports and recommendations for further work if required. Sites investigated included:
  - Phase III ESA – Gereaux Island Light Station, Gereaux Island (2010)
  - Soil Delineation – Griffith Island Light Station, Griffith Island (2010)
  - Phase II ESA – Strawberry Island Light Station, Strawberry Island (2012)
  - Phase II ESA – Burlington Lift Bridge, Burlington Ontario (2012)
  - Phase II ESA – L'Orignal Small Craft Harbor Ontario (2012)
- **Phase I/II/ III Environmental Site Assessment, Water Street – City of Thunder Bay**
  Conducted a Phase I on former CP rail property to establish chemicals of potential concern (COPC) and a subsequent Phase II ESAs to investigate the COPCs. Duties included a comprehensive historical records review, site reconnaissance and interviews, on-site soil screening, visual and olfactory inspection of soil samples, installation of groundwater monitoring wells, data interpretation and report preparations.

Site Investigation / Remediation Activities / Contract Administration

- **Remediation Spec Development / Contract Admin / Site Supervision – Various Federal Properties**
  Environmental Scientist responsible for the development of remedial specifications for numerous soil remediation projects at various federal properties. Responsibilities included the development of specifications, contract administration and site supervision during remedial activities, collection of confirmatory samples, NCSCS classification scoring, and preparation of comprehensive reports. Sites investigated included:
  - Remediation Specifications and Cost Estimates – Griffith Island (2010)
  - Site Remediation and Lighthouse Encapsulation – Pie Island Light Station, Pie Island (2010)
  - Soil Delineation / Designated Substance Survey / Remediation Specifications – Manitouwaning Light Tower, Manitouwaning Ontario (2011)
  - Soil Delineation / Designated Substance Survey / Remediation Specifications – South Baymouth Front and Rear Range Light Tower, South Baymouth Ontario (2011)
  - Site Remediation Specifications and Cost Estimates – Michipicoten Harbour Light Station, Michipicoten Ontario (2011)
  - Remediation Specification / Designated Substance Survey / Site Supervision – Strawberry Island Light Station, Strawberry Island (2011)

  - Remediation Specifications and Soil Remediation – Killarney East Light Station, Killarney ON (2012)
  - Remediation Specifications and Soil Remediation – Killarney Northwest Light Station, Killarney ON (2012)
  - Remediation Specifications and Soil Remediation – Gereaux Island Light Station, Gereaux Island (2013)
  - Soil Remediation – Griffith Island Light Station, Griffith Island (2013)
- **Screening Level Risk Assessment, Strawberry Island Light Station, Georgian Bay Lake Huron (2012)**
  Environmental Scientist responsible for the completion of a Preliminary Quantitative Risk Human Health Risk Assessment and Screening Level Ecological Risk Assessment for the Strawberry Island Light Station located on Georgian Bay on Lake Huron. The Human Health PQRA was completed based on the Health Canada Contaminated Sites Program – Federal Contaminated Site Risk Assessment in Canada, Parts I and II and the SLERA was completed in accordance with the CCME – A Framework for Ecological Risk Assessment: General Guidance. The project was completed in 2012.
- **Train Derailment Site Remediation, CN Fort Francis Subdivision, Train Derailment – CN**
  Managed environmental monitoring personnel during site cleanup, liaised between contractors and CN railway and documented daily cleanup activities. Directed product recovery and activities at the site including the removal of remaining impacted soil and water and confirmatory sampling. Completed site visits with regulatory agency personnel and local land owners.
- **Train Derailment Site Remediation, CN Rivers Subdivision, Train Derailment – CN**
  Managed environmental monitoring personnel during site cleanup, liaised between contractors and CN railway and documented daily cleanup activities. Directed product recovery and activities at the site including the removal of remaining impacted soil and water and confirmatory sampling. Completed site visits with regulatory agency personnel, local land owners and local Indigenous Community Leaders.
- **Environmental Officer, Bipole III Transmission Line Project – Manitoba Hydro**
  Conducted environmental monitoring in conjunction with Oodanooketoh Inc. on Manitoba Hydro Bipole III Section N1 on behalf of the contractor (Rokstad Power) for construction of a new HVDV transmission line. Responsible for pre-project employee environmental orientations, ensured contractor compliance to all aspects of the Manitoba Hydro Construction Environmental Protection Plan and the contractor's Environmental Protection Program. On-site monitoring included ensuring environmentally sensitive sites are marked (signed), assessing mitigation measures designed to minimize soil compaction and rutting and inspection of sediment and erosion control measures.
- **Train Derailment Site Remediation, CN Kashabowie Subdivision Train Derailment – CN**
  Conducted environmental monitoring services throughout the project including daily inspections, soil and terrain monitoring due to the proximity to a water body and reporting. Directed product recovery and activities at the site including the installation of erosion control measures at the site and completed a report summarizing the remedial activities at the site for the Ontario Ministry of Environment, Conservation and Parks.
- **Train Derailment Site Remediation, CN Allanwater Subdivision Train Derailment – CN**
  Conducted environmental monitoring services throughout the project including daily inspections, soil and terrain monitoring due to the proximity to a water body and reporting. Directed product recovery and activities at the site including the installation of erosion control measures at the site and completed a report summarizing the remedial activities at the site for the Ontario Ministry of Environment, Conservation and Parks.
- **Train Derailment Site Remediation, CN Redditt Subdivision Train Derailment – CN**
  Conducted environmental monitoring services throughout the project including daily inspections and reporting. Directed product recovery and remedial excavations at the site, conducted soil sampling using a

portable x-ray fluorescence spectrometer, directed site restoration including the installation of erosion control measures at the site and completed a report summarizing the remedial activities at the site for the Ontario Ministry of Environment and Climate Change.

- **Spill Response and Site Remediation, CN Railway Swamp River – CN**
  Conducted initial spill response including the coordination and deployment of river containment booms and absorbent materials. Liaised with Ontario Ministry of the Environment and Climate Change Environmental Inspectors on behalf of CN. Developed a remedial plan for the site and directed remedial excavation work at the site. Collected confirmatory soil and surface water samples throughout the project and directed site restoration.
- **Due Diligence Operational Impact Environmental Assessment – Canadian Armed Forces HMCS Griffon Naval Reserve Division**
  Completed a due diligence environmental assessment for annual training activities completed by the unit in both marine and land environments as per the Naval Reserve Safety and Environmental Management System requirements. Work included a background review of the unit's activities and standard operating procedures, site visits and an assessment of the environmental effects of the unit's activities and proposed mitigation measures.
- **Spill Response and Site Remediation, CN Railway Auden – CN**
  Conducted initial fuel spill response, containment and cleanup in addition to developing and implementing a groundwater monitoring program.
- **Residential Fuel Spills**
  Removal of contaminated soils and confirmatory testing of soils and ground/surface water at various sites.
- **Removal of Various Underground Fuel Storage Tanks**
  Conducted numerous Underground Fuel Storage Tank removal and Site Remediation Projects. Properties assessed have included commercial and Provincial properties. Responsible for site supervision, soil and groundwater sampling and preparation of reports. Sites investigated included:
  - Ministry of Natural Resources Black Sturgeon Research Centre, Black Sturgeon Ontario
  - Armstrong First Nation, Armstrong Ontario
  - Husky Energy Inc., 1120 Alloy Drive, Thunder Bay, Ontario

Groundwater, Surface Water, Sediment Assessments

- **Groundwater Well Installation and Sampling, Sioux Lookout, ON**
  Completed utility locates, supervised the installation of groundwater wells on Municipal property, logged soil stratigraphy and conducted soil sampling and screening as required. Complete rising head conductivity tests on the installed wells and conducted low flow groundwater sampling.
- **Low Flow Groundwater Sampling and Monitoring, CN Hornepayne Yard, Hornepayne, ON – CN**
  Complete low flow groundwater sampling throughout various areas of the rail yard and completing rising head conductivity tests and Light Non-Aqueous Phase Liquid bail down tests. Coordinated field activities, provided project management and compiled data and reports.
- **Low Flow Groundwater Sampling and Monitoring, CN Sioux Lookout Yard, Sioux Lookout, ON – CN**
  Complete low flow groundwater sampling and monitoring throughout the yard.

Leah Poliszczak

SENIOR ENVIRONMENTAL TECHNOLOGIST

PROFILE	Ms. Poliszczak has 20 years experience in the fields of environmental assessment and remediation. As an Environmental Technologist, she is responsible for undertaking environmental fieldwork, assisting with analyzing and interpreting the data and reporting the findings for a variety of projects including Phase I, II and III environmental site assessments, Phase IV remedial action plans, groundwater and surface water monitoring and sampling, underground storage tank removal and designated substance surveys. She contributes to field investigations and remediation at hydrocarbon impacted sites (including CN and CP operating rail yards) and at train derailment sites as well as landfill sites in Northwestern Ontario. Ms. Poliszczak is also responsible for the preparation of cost estimates and proposal for various environmental projects, supervision and report review of selected projects for junior personnel, as well as client liaison for selected clients.
EDUCATION	• **Environmental Engineering Technology**, Confederation College of Applied Arts and Technology (1998)
EMPLOYMENT HISTORY	• **Environmental Technologist**, KGS Group (1999 – Present) • **Environmental Technician**, Trow Consulting Engineers (July 1998) • **Environmental Technician (Student)**, Placer Dome (CLA) Ltd. Musselwhite Mine July 1997) • **Environmental Technician**, Arcturus Environmental (1996 – 1997)

PROJECT EXPERIENCE

Phase I Environmental Site Assessments

- **Various Phase I Environmental Site Assessments and Enhanced Environmental Site Assessments (1999 – Present)**
  Conducted numerous Phase I Environmental Site Assessments within Ontario. Properties assessed have included commercial, residential and industrial properties. Responsible for review of historical records, site reconnaissance, interviews with individuals familiar with the subject properties and preparation of reports detailing actual and potential environmental concerns indentified in the investigation. Enhanced Environmental Site Assessments also included a preliminary intrusive investigation at the site which consisted of surficial soil sampling and/or sampling of various hazardous building materials, including potential asbestos containing materials and lead paint, halocarbon assessments and subsequent laboratory analysis and reporting.

- **Phase I Environmental Site Assessments and Enhanced Phase I Environmental Site Assessments, Various Federal Properties**
  Conducted numerous Phase I Environmental Site Assessments within Ontario following the requirements of CSA Standard Z768-01. Responsible for review of historical records, site reconnaissance, interviews with individuals familiar with the property and preparation of reports detailing actual and potential environmental concerns indentified in the investigation. Enhanced Phase I ESA also included a preliminary intrusive investigation at the site which consisted of surficial soil sampling and/or sampling of various hazardous building materials, including potential asbestos containing materials and suspected lead based paints, and subsequent laboratory analysis and reporting. Sites investigated included:
  - Phase I ESAs – Various RCMP Properties in NU – 2005
  - Phase I ESA, Vacant Lot, Oakville Ontario – 2012
  - Phase I ESA, Vacant Lot, Petawawa Ontario – 2012
  - Phase I ESA, 221 Archibald Street, Thunder Bay Ontario – 2012
  - Phase I ESA, 22 Circle Street, Kapuskasing Ontario – 2012
  - Updated Phase I ESA, Garden River FN Ontario – 2012
  - Updated Phase I ESA, Long Lake FN Ontario – 2012
  - Updated Enhanced Phase I ESA, Mohawks Bay of Quinte FN Ontario – 2013
  - Updated Enhanced Phase I ESA, Pic Mobert FN Ontario – 2013
- **Phase I/II Environmental Site Assessments, Various DFO/CCG Small Craft Harbours**
  Conducted Phase I/II at several Department of Fisheries and Oceans / Canadian Coast Guard Small Craft Harbours in Ontario. Project included Phase I ESAs to establish chemicals of potential concern (COPC), and subsequent Phase II ESAs to investigate COPCs. Phase II ESA portions of the projects included soil sampling, surface water sampling and sediment sampling. Duties included a comprehensive historical records review, site reconnaissance and interviews, on-site soil screening, visual and olfactory inspection of soil samples, collection of soil / sediment samples, data interpretation, NCSCS classification of contaminated sites, and assisting with the preparation of reports. Sites investigated included:
  - Phase I/II ESA – Thunder Bay Current River Small Craft Harbour – 2012
  - Phase I/II ESA – Port Elgin Small Craft Harbour – 2012
  - Phase I/II ESA – Wellers Bay Small Craft Harbour – 2012
  - Phase I/II ESA – Michipicoten Small Craft Harbour – 2012

Phase I Property Transfer Assessments

- **Phase I Property Transfer Assessment, Various First Nations in ON, PWGSC (Ontario Region) (2005)**
  Conducted Phase I Property Transfer Assessments for various First Nation communities in Northwestern Ontario. Duties included the completion of tasks associated with Phase I ESAs, and supplemented with tasks associated with Phase II ESAs, such as surficial soil and water quality sampling and storage tank audit. Each Phase I PTA also included consultation with each First Nation community and preparation of a comprehensive report for each site. Sites investigated included:
  - Phase I PTA – Aroland First Nation (19,599 ha parcel of land), Aroland Ontario – 2005

- Phase I PTA – Sand Point First Nation (820 ha parcel of land on Pijitwabik Bay – Lake Nipigon), Sand Point Ontario – 2005
- Phase I PTA – Pays Plat First Nation, Pays Plat Ontario – 2005
- Phase I PTA – Lake Lake First Nation, Longlac Ontario – 2005
- Phase I PTA – Garden River First Nation, Squirrel Island - 2005

Phase II and Phase II/III Environmental Site Assessments

- **Various Phase II Environmental Site Assessments (1999 – Present)**
  Conducted various Phase II Environmental Site Assessments at properties within Northwestern Ontario. Properties assessed have included commercial and industrial properties. Responsible for the coordination and completion of field activities including the coordination of underground utility locates prior to drilling, supervision and logging of testholes/boreholes and installation of groundwater monitoring wells, field screening of soil samples, collection of soil sampling for various parameters, development of groundwater wells and collection of groundwater samples.

  Sites investigated have included:

  Canadian National Railway

  - 120 N. Waterloo St., Thunder Bay, Ontario
  - Auden Yard, Auden, Ontario
  - Mile 145.0 to Mile 147.9 Caramat Subdivision, Caramat Ontario
  - Mile 77.06 to 78.30 Caramat Subdivision, Caramat, Ontario
  - Mile 42.0 to 43.9 Caramat Subdivision, Hillsport, Ontario
  - Mile 222.9 to 224.2 Ruel Subdivision, Fireriver, Ontario
  - PIN 35516 Kashabowie Subdivision, Thunder Bay, Ontario
  - PIN 34460 Kashabowie Subdivision, Thunder Bay, Ontario

  County Fair Plaza Limited

  - Northwood Plaza, Thunder Bay, Ontario
    Conducted a Phase II Environmental Site Assessment at Sunys Gas Bar site which included supervision and logging of 5 testholes and installation of 5 monitoring wells, sampling boreholes for hydrocarbons and field screening of soil, development of groundwater wells and the sampling of wells.
  - County Fair Plaza, Thunder Bay, Ontario
    Conducted a Phase II Environmental Site Assessment at 1020 Dawson Road which included supervision and logging of 6 testholes and installation of 5 monitoring well, sampling boreholes for hydrocarbons and field screening of soil, development of groundwater wells and the sampling of wells.

  City of Thunder Bay (Realty Division)

  - Dawson Court Home for the Aged, Thunder Bay, Ontario
    Conducted a Phase II ESA at the former Dawson Court Home for the Aged. Responsibilities included coordination of all field activities, client liaison, data analysis and interpretation and preparation of a comprehensive report.

- Corner of Carrick St., and Central Avenue, Thunder Bay, Ontario
  Participated in a Phase II Environmental Site Assessment at this dumpsite which included assisting with the logging of and installation of 3 monitoring wells, sampling of boreholes for hydrocarbons, volatile organic carbons, metals and field screening of soil.
- 110 Violet St., Violet St. Parking Lot, Thunder Bay, Ontario
  Conducted a Phase II Environmental Site Assessment at this site which included supervision and logging of 6 testholes and installation of 3 monitoring wells, sampling of boreholes for hydrocarbons and field screening of soil, development of groundwater wells and the sampling of wells.

Phase II Property Transfer Assessments

- **Public Works Government Services Canada**
  - Rocky Bay First Nation
    Conducted a Phase II Property Transfer Assessment at the Rocky Bay First Nation community, which included supervision and logging of 6 testholes, sampling of boreholes of hydrocarbons and field screening of soils.
  - Aroland First Nation
    Assisted with a Phase II Property Transfer Assessment at the Aroland First Nation community, which included assisting with the logging of 12 testholes and installation of 7 monitoring wells, sampling of boreholes for hydrocarbons and field screening of soil, development of groundwater wells, and sampling of wells.

Phase IV Remedial Action Plans

- **Canadian National – Thunder Bay North Yard, Thunder Bay, Ontario**
  Responsible for weekly diesel recovery system operations, monthly diesel recovery system effluent sampling for petroleum hydrocarbons, monitoring of groundwater and free product elevations, biannual groundwater sampling for petroleum hydrocarbons, and data analysis and interpretation.
- **Canadian National – Thunder Bay Neebing Yard, Thunder Bay, Ontario**
  Responsible for weekly diesel recovery system operations, monthly diesel recovery system effluent sampling for petroleum hydrocarbons, monitoring of groundwater and free product elevations, biannual groundwater sampling for petroleum hydrocarbons, and data analysis and interpretation.
- **Diesel Recovery Systems**
  Contributed to the upkeep of diesel impacted groundwater recovery systems, which included weekly diesel recovery system operations and maintenance, monthly recovery system effluent sampling, routine monitoring of groundwater and light non-aqueous phase liquid (LNAPL) elevations.
  - CN Hornpayne Yard
    Conducted biannual groundwater sampling for petroleum hydrocarbon impacts; monitored groundwater elevations and LNAPL thicknesses, conducted rising head and bail down tests; collected surface water samples from storm/surface water areas of concern.
  - CN Fort Frances Yard
    Conducted biannual groundwater sampling for petroleum hydrocarbon impacts; monitored groundwater elevations and LNAPL thicknesses, collected groundwater samples from residential areas of concern in the vicinity of the operating yard.

- CP White River Yard
  Conducted biannual groundwater sampling for petroleum hydrocarbon impacts; monitored groundwater elevations and LNAPL thicknesses.
- CP Schreiber Yard
  Conducted biannual groundwater sampling for petroleum hydrocarbon impacts; monitored groundwater elevations and LNAPL thicknesses.

Environmental Assessment

Prepared environmental assessments in accordance with the Ministry of Energy and Infrastructure (MEI) Class Environmental Assessment Process (EA) and Regulations for Building Construction and Renovation Projects at Provincial Properties in Ontario (2007 – 2009). Duties included interviews with federal, provincial and municipal authorities as well as other interested parties to allow for the identification of environmental, social, economic and cultural effects associated with all phases of the project. Mitigation plans and follow-up requirements were identified, as necessary.

SNC Lavalin Profac

- MNR Terrace Bay, ON
  Conducted a Category B Class EA for the removal of 3 buildings, 2 storage structures, 2 underground storage tanks and fuel pump island.
- MNR Shebandowan Fire Attack Base, ON
  Conducted a Category B Class EA for the demolition of three (3) buildings at the former MNR Fire Attack Base in Shebandowan, ON. Included an inventory and sampling program for designated substances and hazardous building materials including lead, asbestos, mercury and PCBs.
- 18 Bay Garage, Thunder Bay, ON
  Conducted a Category B Class EA for the demolition of an 18 bay garage at the Ministry of Transportation yard in Thunder Bay, ON.

CB Richard Ellis

- Wabigoon Fire Base, Dryden, ON
  Conducted a Category B Class EA
- Camp 19, Lac Seul, ON

Ministry of Culture and Tourism, Cold Storage Building Construction (2013)

Remediation

- **Historical File Reviews, Small Scale Sites, Port Hope Area Initiative – PWGSC (2013)**
  As a Historical File Review Consultant for the Port Hope Area Initiative, the scope of work included the review of all historical files for approximately 600 small scale sites in the Port Hope area and the preparation of a Work Plan for each site. Following the completion of the Historical File Reviews, all site will be re-surveyed to determine the presence/absence of low level radioactive waste (LLRW), followed by remediation and disposal of all wastes a Long Term Waste Management Facility. Responsibilities included reviewing historical files and the preparation of Work Plans.

Todd Williamson

ENVIRONMENTAL TECHNICIAN

PROFILE	Mr. Williamson has over 13 years of experience in the fields of environmental assessment and remediation. As an Environmental Technician, Mr. Williamson is responsible for many different types of environmental fieldwork, including environmental officer for multiple hydro transmission projects, completion of GPS surveys, total station surveys, and level surveying; Phase I, II and III Environmental Site Assessments, Designated Substance Surveys, long-term groundwater, surface water and sediment sampling; remedial activities including soil sampling, the interpreting and analyzing of data, reporting results from various projects, field inspections, supervision of soil remediation at various sites, and the monitoring and sampling of both surface and groundwater from various landfills and rail yards throughout Northwestern Ontario. Mr. Williamson is based out of KGS Group's office in Thunder Bay, Ontario.
EDUCATION	• **Environmental Technician**, Confederation College (2007) • **Pre-Technology**, Confederation College (2003)
EMPLOYMENT HISTORY	• **Environmental Technician**, KGS Group (2007 – Present)

PROJECT EXPERIENCE

Phase I Environmental Site Assessments

- **109 King Street, Dryden, Ontario**
  Conducted a Phase I Environmental Site Assessment for a commercial building on 109 King Street in Dryden Ontario, prior to the sale of property. Responsible for the completion of background/historical records review, site assessment and interviews and assisted with data evaluation and reporting.
- **20 Acres of Greenfield Property - Red Lake, Ontario**
  Conducted a Phase I Environmental Site Assessment for a parcel of land on Highway 105 in Red Lake, Ontario. The Phase I ESA was conducted to establish the environmental condition of the property, prior to development of the land. Responsible for the completion of background/historical records review, site assessment and interviews, data evaluation and assisted with report preparation.
- **Phase 1 ESA - 1539 Pembroke Road - Oakville, Ontario - PWGSC**
  Conducted a Phase I Environmental Site Assessment for Public Works and Government Services Canada on a parcel of land located in Oakville, Ontario to establish the environmental condition of the property.

Responsibilities included completion of background/historical records review, site assessment and interviews, data evaluation and assisted with report preparation.

Phase II/III Environmental Site Assessments

- **Cummins Eastern Canada Phase II ESA – Cummins Eastern Canada**
  Conducted a Phase II Environmental Site Assessment at the Thunder Bay Cummins Diesel site which included the supervision and stratigraphic logging of 13 test holes, on-site field screening of soil samples, collecting soil samples for laboratory analysis of target parameters; supervising installation of 9 groundwater monitoring wells, development of groundwater wells and sampling of wells, including conducting on-site field chemistry analysis. Assisted with data analysis and reporting.
- **Phase II ESA - Various Canadian National Properties, Algoma Central Railway section - Northwestern Ontario – Canadian National Railway**
  Conducted Phase II Environmental Site Assessments (ESAs) for six (6) Canadian National sites located in Northwestern Ontario in accordance with CSA Z769-00. The Phase II ESAs included the advancement of boreholes and the installation of groundwater monitoring wells, collection of soil and groundwater samples for various Contaminants of Potential Concern (COPC) including metals, petroleum hydrocarbons (PHCs) and polycyclic aromatic hydrocarbons (PAHs). Duties included assisting with the supervision of drilling activities and monitoring well installation, on-site soil screening, visual and olfactory inspection of soil/groundwater samples and the collection of soil/groundwater samples for laboratory analysis. Assisted with data evaluation and reporting.
- **Burlington Lift Station, Ontario – PWGSC**
  Conducted a Phase II Environmental Site Assessment at the Burlington Lift Station in Ontario. Responsibilities included supervision and stratigraphic logging of five test holes, supervising the installation of one groundwater monitoring well, completion of a total station topographic survey, soil sampling and monitoring and sampling the groundwater well for hydrocarbons, on-site screening of soil and groundwater samples, assisted with data evaluation and reporting.
- **Hawk Junction, Ontario – Canadian National Railway**
  Conducted a Phase II Environmental Site Assessment at the CN Hawk Junction Yard in Ontario. Provided site supervision during the installation of groundwater monitoring wells, completed the GPS survey; conducted soil sampling, and the monitoring and sampling of groundwater/surface water from all on-site monitoring wells and surface water sampling locations. Also assisted with data assessment and reporting.
- **Phase II/III Environmental Site Assessments, Various Federal Properties - PWGSC**
  Conducted Phase II/IIIESAs at various Federal properties in Ontario in accordance with CSA Z769-00. Phase II/III ESA responsibilities included supervising the installation of groundwater monitoring wells, and performing low flowing sampling of groundwater for various COPC including metals, PHCs, PAHs and PCBs. Duties also included supervision of drilling activities and monitoring well installation, on-site soil screening, visual and olfactory inspection of soil/groundwater samples and collection of soil/groundwater sampling. Sites investigated included:
  - Phase II ESA – 45 Prince Street, Sioux Lookout Ontario – 2010
  - Supplemental Phase III ESA – Saugeen River Range Rear Lighthouse, Southampton Ontario – 2010
  - Phase II ESA – Burlington Lift Bridge – Burlington Ontario – 2011
- **Phase II Environmental Site Assessment and Risk Assessment – O.Reg 153/04 – Kingston Dry Dock, Kingston Ontario - PWGSC**

Assisted with the completion of a Phase II ESA and Site Specific Risk Assessment following O.Reg 153/04 procedures for the Kingston Dry Dock site. Duties included the supervision of drilling activities for the advancement of boreholes and the installation of over 30 groundwater wells, logging soil stratigraphy, on-site soil screening, visual and olfactory inspection of soil/groundwater samples, collection of soil samples, low flow sampling of groundwater for various Contaminants of Potential Concern (COPC) including metals, petroleum hydrocarbons (PHCs), polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs), and completion of a GPS topographic site survey.

Site Investigation / Remedial Activities

- **Environmental Officer - Bipole III Transmission Line Project – Manitoba Hydro**
  Conducted environmental monitoring in conjunction with Oodanooketoh Inc. on Manitoba Hydro Bipole III Sections C1/C2 and N1 on behalf of the contractor (Rokstad Power) for construction of a new HVDV transmission line. Responsible for pre-project employee environmental orientations, ensured contractor compliance to all aspects of the Manitoba Hydro Construction Environmental Protection Plan and the contractor's Environmental Protection Program. This also ensured compliance with the Environment Act License, the Manitoba Hydro Project Environmental Impact Statement, Manitoba Hydro's Cultural and Heritage Resource Protection Plan, Annual Harvest Plan, Biosecurity Policy, Access Management Plan, and all applicable Acts, regulations, standards, guidelines, permits and other requirements. Provided information and advice to the construction contractor on environmental protection matters, responsible for the implementation of the emergency response and hazardous materials plans, identified and delineated environmentally sensitive sites and liaised with the Manitoba Hydro Environmental Inspector. On-site monitoring included ensuring environmentally sensitive sites are marked (signed), assessing mitigation measures designed to minimize soil compaction and rutting, enforcement of cleaning/disinfecting protocols to ensure agricultural biosecurity, and inspection of sediment and erosion control measures.
- **Environmental Officer - Lake Winnipeg East System Improvement Transmission Project, North Side of O'Hanley River to South Side of Duncan Creek – Manitoba Hydro**
  Conducted environmental monitoring in conjunction with Oodanooketoh Inc. and Manitoba Hydro for the construction of a hydro transmission line in eastern Manitoba. Responsible for the contractor's adherence to the Manitoba Hydro Construction Environmental Protection Plan, implemented pre-project employee environmental orientation and assisted Manitoba Hydro marking out all environmentally sensitive areas. Attended daily job planning meetings that informed the contractor's staff of environmental precautions, attended weekly progress meetings and completed daily inspections of contractor worksites. As an Environment Officer, he was responsible for overseeing all construction activities, monitoring for soil compaction, vegetation clearing buffers, erosion protection measures and remediation, spill response/clean-up and delineation, remediation and reporting of all incidents.
- **Wabigoon River Biota Assessment – Wabigoon Lake Ojibway Nation**
  Worked with Wabigoon Lake Ojibway Nation to collect, process and store large-bodied fish tissue samples along the Wabigoon River. Field protocols and procedures included the use of gill nets, electrofishing and angling for species collection. The fork length, weight, sex/maturity and aging structures of all fish were recorded prior to tissue sample collection. Quality Control measures were implemented to ensure no cross contamination occurred between fish samples.
- **Loader Incident – Wabigoon lake Ojibway Nation**
  Conducted the initial assessment, ice sampling thickness, and the collection of surface water samples from Dinorwic Lake where a Front End Loader broke through the ice. Sediment and soil sampling was completed

following the retrieval of the Front End Loader. Installed erosion and sediment control to re-vegetate the shoreline where the loader was pulled out of the lake.

- **Boom/River Monitoring Program, CN Hornepayne Yard, Hornepayne, ON – CN**
  Conducted biweekly inspections to maintain and adjust floating river booms and turbidity curtains and to change out floating absorbent pads and socks as required, ensuring the containment of deleterious substances within the boomed areas. Coordinating subcontractors and completing waste manifests for the removal of disposal of spent pads and socks.
- **Rail Yard Quarterly Inspection Program, Various Properties, Ontario – CN**
  Coordinated and completed field inspections of various railway yards and properties throughout Northwestern Ontario. Completed fuel tank and HAZMAT area inspections and inventories and compiled status reports for CN personnel.
- **Site Supervision - Various Federal Properties - PWGSC**
  Responsible for site and contractor supervision during soil remediation activities and collection of confirmatory soil samples for laboratory analysis of target parameters including PHCs, and metals to determine the extents of impacts. Assisted with the completion of site closure reports documenting all aspects of soil remediation activities. Sites investigated included:
  - Soil Remediation – Saugeen River Range Rear Lighthouse, Township of Saugeen – 2010
  - Soil Remediation – McNab Point Navigational Aid, Township of Saugeen Ontario – 2010
  - Soil Remediation – Killarney East Light Station, Killarney ON – 2012
  - Soil Remediation – Killarney Northwest Light Station, Killarney ON – 2012
  - Soil Remediation – Gereaux Island Light Station, Gereaux Island – 2013
  - Soil Remediation – Griffith Island Light Station, Griffith Island – 2013
- **Site Supervision - Environment Canada Hydrometric Stations, Various Federal Properties - PWGSC**
  Member of the field team responsible for the demolition of Environment Canada Hydrometric Stations in various remote Northwestern Ontario communities. Duties included the collection of soil samples and delineation and remediation of mercury impacted soil. Sites investigated included:
  - Attawapiskat Hydrometric Station – 2010
  - Ekwan Hydrometric Station – 2010
  - Kenogami Hydrometric Station – 2010
  - Little Current Hydrometric Station – 2010

Groundwater / Surface Water Monitoring Assessments

Completed numerous groundwater/surface water monitoring assessment programs at various industrial/commercial, residential and municipal sites in Ontario as part of long-term remedial monitoring programs for various on-going projects. Responsibilities included monitoring groundwater elevations, general site inspection, measuring Light Non-Aqueous Phase Liquid in groundwater wells, performing field chemistry on groundwater and surface water samples, sampling of groundwater and surface water for various target parameters, groundwater modeling, volume estimation, data analysis and reporting.

- **Bowater Pulp and Paper Company Landfill**

Responsible for the completion of field activities related to the annual groundwater and surface water monitoring and sampling program, and monthly inspections, in Thunder Bay, Ontario.

- **Resolute Forest Products**
  Supervise monitoring well installation along with groundwater monitoring and sampling activities at the Thunder Bay Hogg Fuel location within the mill's property.
- **Oliver Paipoonge North Landfill**
  Responsible for the completion of groundwater and surface water monitoring and sampling activities.
- **Georgia Pacific, Mercury Landfill**
  Responsible for the completion of groundwater monitoring and sampling activities for the analysis of inorganics and mercury impacts at the landfill in Marathon, Ontario.
- **Tembec Inc, Marathon Landfill and Bark Pile**
  Groundwater and surface water monitoring and sampling activities for the analysis of various parameters.
- **Manitouwadge Landfill**
  Groundwater and surface water monitoring and sampling activities for the analysis of indicator and comprehensive parameters, survey surface water levels from a known monitoring well elevation, and contribution to the Annual Environmental Status Report provided to the Township of Manitouwadge, in Manitouwadge, Ontario.
- **Ignace Landfill**
  Groundwater and surface water monitoring and sampling activities for the analysis of indicator and comprehensive parameters, and contribution to the Annual Environmental Status Report provided to the Township of Ignace, in Ignace, Ontario.
- **Hornepayne Landfill and Transfer Station**
  Groundwater and surface water monitoring and sampling activities for the analysis of indicator and comprehensive parameters, and contribution to the Annual Environmental Status Report provided to the Township of Hornepayne, in Hornepayne, Ontario.
- **Quetico Centre Landfill**
  Supervision and field logging of an up gradient background monitoring well. Groundwater and surface water monitoring and sampling activities for the analysis of comprehensive parameters, and preparation of the report provided to the Ministry of Natural Resources.
- **Herron Bay Landfill**
  Groundwater and surface water monitoring and sampling. Preparation of the report provided to the Ministry of Natural Resources.
- **CN Nakina Yard**
  Groundwater monitoring and sampling for petroleum hydrocarbons, bail down tests, and well decommissioning. Also contributed to the annual report detailing all activities performed during the groundwater monitoring and sampling events.

Soil & Sediment Investigation / Remediation Activities

Completed several soil and sediment investigations at various industrial/commercial, residential and municipal sites in Ontario. Responsibilities included general site inspection, performing on-site field screening of soil and sediment samples, sampling of soil and sediment for various contaminants of potential concern, data analysis and reporting. Responsibilities for remediation projects also included supervision of monitoring well installation

and/or decommissioning in accordance with applicable federal and provincial regulations, confirmatory sampling, soil/groundwater volume estimation, data analysis and reporting.

CN Rail Former Derailment Sites

- **Tondern, Ontario – Canadian National Railway**
  Collected groundwater and surface water samples for laboratory analysis to assess the remedial efforts being implemented. Performed a monitoring program to assess the migration of contamination. Contribution to the final Environmental Status Report.
- **Fire River, Ontario – Canadian National Railway**
  Installation of four wells to determine the migration of a hydrocarbon plume. Collected groundwater and surface water samples for laboratory analysis to assess the remedial efforts being implemented. Performed a monitoring program to assess the migration of contamination. Contribution to the Environmental Status Report.

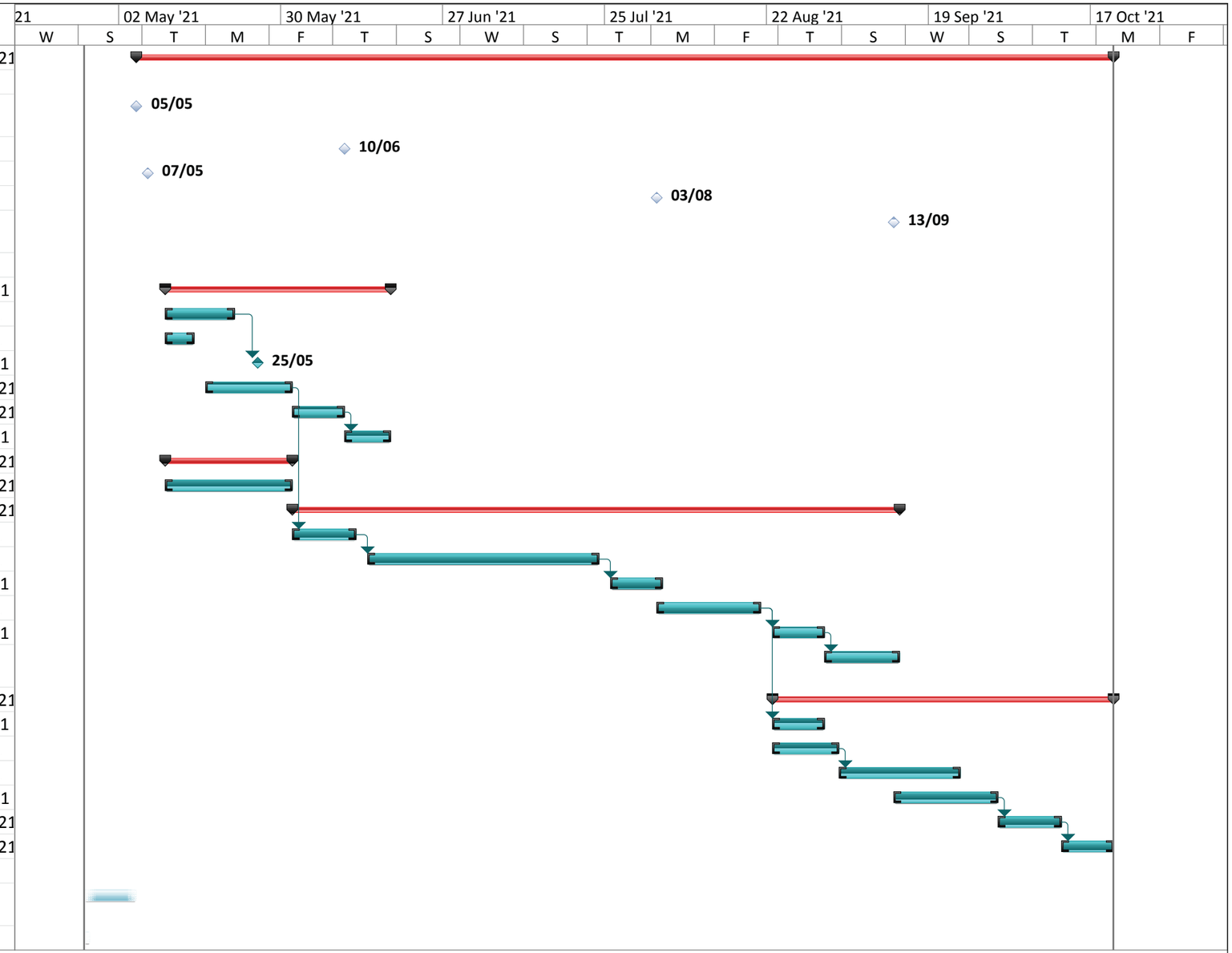
CN Rail Emergency Response

- **Auden, Ontario – Canadian National Railway**
  Assisted CN environmental personnel with emergency response, spill delineation, and site supervision of groundwater monitoring well installation and trenching at a diesel fuel spill. Collected groundwater samples from the installed monitoring wells and performed a GPS grade survey of the yard. Completed a site plan drawing from the survey data.
- **Train Derailment Site Remediation, CN Kashabowie Subdivision Train Derailment – Canadian National Railway**
  Conducted environmental monitoring services throughout the project including daily inspections, soil and terrain monitoring due to the proximity to a water body and reporting. Directed product recovery and activities at the site including the installation of erosion control measures at the site and completed a report summarizing the remedial activities at the site for the Ontario Ministry of Environment, Conservation and Parks.
- **Train Derailment Site Remediation, CN Allanwater Subdivision Train Derailment – Canadian National Railway**
  Conducted environmental monitoring services throughout the project including daily inspections, soil and terrain monitoring due to the proximity to a water body and reporting. Directed product recovery and activities at the site including the installation of erosion control measures at the site and completed a report summarizing the remedial activities at the site for the Ontario Ministry of Environment, Conservation and Parks.

APPENDIX C

Project Schedule

ID	Task Name	Duration	Start	Finish
1	**Project Management and Meetings**	121 days	Wed 05/05/21	Wed 20/10/21
2	Project Management			
3	Project Initiation and Meeting No. 1 - Kick Off Meeting		Wed 05/05/21	
4	Meeting No. 2 - Phase I ESA Review Meeting		Thu 10/06/21	
5	Meeting No. 3 - Pre Survey Meeting		Fri 07/05/21	
6	Meeting No. 3 - Phase 2 ESA Review Meeting		Tue 03/08/21	
7	Meeting No. 4 - Remedial Action Plan Review Meeting		Mon 13/09/21	
8	Meeting No. 4 - RSC Pre Submission Meeting		TBDT	
9	**Phase I Environmental Site Assessment**	29 days	Mon 10/05/21	Thu 17/06/21
10	Background Data Collection and Review	10 days	Mon 10/05/21	Fri 21/05/21
11	Interviews	5 days	Mon 10/05/21	Fri 14/05/21
12	Site Visit	2 days	Mon 24/05/21	Tue 25/05/21
13	Phase I ESA Draft Report	11 days	Mon 17/05/21	Mon 31/05/21
14	Town of Fort Frances Draft Report Review	7 days	Tue 01/06/21	Wed 09/06/21
15	Phase I Environmental Site Assessment Final Report	6 days	Thu 10/06/21	Thu 17/06/21
16	**Survey**	16 days	Mon 10/05/21	Mon 31/05/21
17	Completion of Required Surveys	16 days	Mon 10/05/21	Mon 31/05/21
18	**Phase II Environmental Site Assessment**	75 days	Tue 01/06/21	Mon 13/09/21
19	Develop and Finalize Sampling and Analysis Plan	9 days	Tue 01/06/21	Fri 11/06/21
20	Field Investigation	30 days	Mon 14/06/21	Fri 23/07/21
21	Data Review and QA/QC	7 days	Mon 26/07/21	Tue 03/08/21
22	Phase II ESA Draft Reports	14 days	Tue 03/08/21	Fri 20/08/21
23	Town of Fort Frances Draft Report Review	7 days	Mon 23/08/21	Tue 31/08/21
24	Phase II Environmental Site Assessment Final Report	9 days	Wed 01/09/21	Mon 13/09/21
25	**Remedial Action Plan**	43 days	Mon 23/08/21	Wed 20/10/21
26	Data Gap Analysis	7 days	Mon 23/08/21	Tue 31/08/21
27	Remedial Options Analysis	9.5 days	Mon 23/08/21	Fri 03/09/21
28	Cost Estimates	15 days	Fri 03/09/21	Fri 24/09/21
29	Draft Remedial Action Plan Report	14 days	Mon 13/09/21	Thu 30/09/21
30	Town of Fort Frances Draft Report Review	7 days	Fri 01/10/21	Mon 11/10/21
31	Final Remedial Action Plan Report	7 days	Tue 12/10/21	Wed 20/10/21
32	**Record of Site Condition**			
33	Preparation of Record of Site Condition Submissions	7 days	TBDT	TBDT
34	Submission of Record of Site Conditions	1 day	TBDT	TBDT



Project: Schedule_Shelvin Phase 1
Date: Mon 26/04/21

Task		Project Summary		Inactive Milestone		Manual Summary Rollup		Deadline	
Split		External Tasks		Inactive Summary		Manual Summary		Progress	
Milestone		External Milestone		Manual Task		Start-only			
Summary		Inactive Task		Duration-only		Finish-only			

APPENDIX D

Form of Agreement

ENGINEERING SERVICES AGREEMENT

dated as of the day of 2021.

by and between:

TOWN OF FORT FRANCES
hereinafter called the "Client".

and:

KONTZAMANIS GRAUMANN SMITH MACMILLAN INC.,
carrying on business as KGS Group
hereinafter called "KGS Group".

AGREEMENT

The Client and KGS Group agree as follows:

A1 THE SERVICES

A1.1 KGS Group will provide the Services (as defined in Schedule "A") in connection with the Project (as defined in Schedule "A"). A short description of the Project is as follows:

21-000-0573 – Phase I / II ESA - Former Shevlin Wood Yard

A2 AGREEMENT AND AMENDMENTS

A2.1 This Agreement constitutes the entire agreement between the Client and KGS Group relating to the Project and the Services and supersedes and invalidates all prior representations, arrangements, negotiations, understandings and agreements between them, whether written or oral, respecting the Project and the Services. No other terms, conditions or warranties, whether express or implied, form a part of this Agreement.

A2.2 If the Client issues or has issued a purchase order relating to the Services, any terms and conditions on the purchase order do not apply to this Agreement.

A2.3 This Agreement may by amended only by a written document signed by both the Client and KGS Group. Any such document may be executed in counterpart form.

A3 AGREEMENT DOCUMENTS

A3.1 The documents listed below form part of and are incorporated into this Agreement. In the event of any inconsistency or conflict between those documents, the order of priority in resolving such conflict or inconsistency will be as follows:
(a) Engineering Services Agreement;
(b) Schedule "B" – General Terms and Conditions; and
(c) Schedule "A" – Scope of Services.

A4 COMPENSATION AND PAYMENT TERMS

A4.1 The Client will compensate KGS Group as set forth in Schedule "A".

A4.2 Unless otherwise stated in Schedule "A", KGS Group will issue monthly invoices to the Client. Invoices are due and payable within 30 days of receipt.

A4.3 The Client will be charged interest at the rate of 1.5% per month (18% per year) on all past-due accounts. Payments will first be credited to interest and then to principal.

IN WITNESS WHEREOF the parties have executed this Agreement by the hands of their duly authorized representatives.

Kontzamanis Graumann Smith MacMillan Inc.
(o/a KGS Group)
Per:

Signature

Print Name

Title

TOWN OF FORT FRANCES

Per:

Signature

Print Name

Title

SCHEDULE "A"

SCOPE OF SERVICES

KGS Group Proposal 21-000-0573 – Phase I / II ESA - Former Shevlin Wood Yard, dated April 26, 2021.

(attached)

SCHEDULE B – GENERAL TERMS AND CONDITIONS

GC1. DEFINITIONS

GC1.1 "Agreement" or "this Agreement" means this Engineering Services Agreement between KGS Group and the Client, including all of the documents identified in **A-3** - AGREEMENT DOCUMENTS and any amendments thereto.

GC1.2 "Engineering Documents" means drawings, plans, models, designs, specifications, reports, photographs, computer software (if such computer software is proprietary to KGS Group), surveys, calculations and other data which are used in connection with the Project, and which were prepared by or on behalf of KGS Group and are instruments of service for the execution of the Work.

GC1.3 "Project" means the total endeavour contemplated in this Agreement of which the Services or the Work may be the whole or a part.

GC1.4 "Services" means those services that are identified in Schedule "A".

GC1.5 "Third Party Documents" means any shop drawings, as-built drawings, record drawings, other drawings, designs, reports or any other documents provided by the Client or third parties;

GC1.6 "Work" means any construction and/or related work performed by contractors, subcontractors or suppliers in connection with the Project.

GC2. TERM

GC2.1 This Agreement is effective as of the earlier of: (i) the date herein; or (ii) the date the Services are first performed by KGS Group and will continue in effect until KGS Group completes the Services, unless this Agreement is terminated earlier in accordance with the provisions hereof.

GC2.2 The provisions at **A4** (Compensation and Payment Terms), **GC5** (Ownership and Use of Documents and Intellectual Property) and **GC8** (Limitation of Liability) will survive the termination or expiry of this Agreement for any cause.

GC3. OBLIGATIONS OF KGS GROUP

GC3.1 KGS Group will provide the Services with that degree of care, skill and diligence normally provided by engineers in the performance of comparable services in respect of projects of a similar nature to that contemplated by this Agreement.

GC3.2 KGS Group will not be responsible for:

(a) the performance, acts or omissions of any contractors, subcontractors or suppliers;

(b) nor control, direct or supervise, the construction methods, means, techniques, sequences or procedures of contractors, subcontractors or suppliers; and

(c) safety precautions, programs, policies or procedures required in connection with the Work or for site safety at any location where Work is being performed.

GC3.3 KGS Group is entitled to rely upon the accuracy and completeness of records, information, data and specifications furnished by:

(a) government authorities and public utilities; and

(b) manufacturers and suppliers of equipment, material or supplies.

GC3.4 KGS Group will not be responsible for the failure of any manufactured product or any manufactured or factory assembled system of components to perform in accordance with the manufacturer's specifications, product literature or written documentation.

GC3.5 Unless otherwise specifically stated in Schedule "A", KGS Group will not make any on-site reviews.

GC3.6 If on-site reviews are specifically included in Schedule "A", KGS Group will attend the location where Work is being performed at such intervals as KGS Group considers to be appropriate or as otherwise specifically set out in Schedule "A". The presence of KGS Group's personnel at any location where Work is being performed is for the purpose of providing to the Client a greater degree of confidence that the Work will conform generally to any construction contracts or documents and that the integrity of the design concept as reflected in any construction contracts or documents has been implemented and preserved by the contractor(s) performing the Work. Only Work which KGS Group has reviewed during construction will be considered to have been assessed. Should KGS Group comment on parts of the Work which it has not reviewed during construction, KGS Group's comments must be construed as being assumptions only and must not be relied upon by the Client.

GC3.7 In soils, foundation, groundwater and other subsurface investigations, the actual characteristics may vary significantly between successive test points and sample intervals and at locations other than where observations, exploration and investigations have been made. Because of the inherent uncertainties in subsurface evaluations, changed or unanticipated underground conditions may occur that could affect the cost and/or schedule of the Project. Those conditions and/or the effect those conditions may have on the cost and/or schedule of the Project are not the responsibility of KGS Group.

GC3.8 Any estimates or opinions regarding probable construction costs or construction schedule provided by KGS Group represent KGS Group's professional judgment in light of its experience and the knowledge and information available to it at the time of preparation. KGS Group has no control over prices for construction labour, equipment or materials or bidding procedures, time or quality of performance of contractors, suppliers and manufacturers and other market or economic factors that may materially affect construction costs or schedule. Therefore, KGS Group does not make any representations, warranties or guarantees whatsoever, whether express or implied, with respect to such estimates or opinions, or their variance from actual construction costs or schedule, and accepts no responsibility for any loss or damage arising therefrom. If the Client wishes to secure an estimate or opinion regarding probable construction costs or schedule upon which it can rely, the Client is at liberty to retain a qualified quantity surveyor or an independent expert.

GC3.9 Third Party Documents will be reviewed by KGS Group only for the limited purpose of checking for general conformance with the information given and design concept expressed in any construction contracts or documents. KGS Group's review of Third-Party Documents is not for the purpose of:

(a) determining the feasibility or constructability of the information detailed within the Third-Party Documents; or

(b) verifying the accuracy or completeness of:

i. details such as dimensions and quantities; or

ii. instructions for installation or performance of equipment or systems;

and KGS Group will not be liable to the Client or any other party with respect to any inaccuracy or omission in any Third-Party Documents.

GC3.10 Unless otherwise specifically stated in Schedule "A", KGS Group is not responsible for the identification, reporting, analysis, evaluation, presence, handling, removal or disposal of asbestos or other hazardous substances, or for the exposure of persons, property or the environment to asbestos or other hazardous substances.

GC3.11 Unless otherwise specifically stated in Schedule "A", all samples obtained by KGS Group, including soil samples, may be discarded by KGS Group after 30 days from the date of submission of KGS Group's report to the Client.

GC3.12 Except as otherwise agreed in writing, all of the Services shall be for the Client's internal purposes and use. The Services are not intended for the express or implied benefit of any third party. No third party is entitled to rely, in any manner or for any purpose, on the advice, opinions, reports and/or other materials given or provided by KGS Group to the Client under this Agreement without the prior written consent of KGS Group. The Client further agrees that such advice, opinions, reports and/or materials shall not be distributed to any third party without the prior written consent of KGS Group.

GC4. OBLIGATIONS OF THE CLIENT

GC4.1 The Client will advise KGS Group of the Client's requirements in connection with the Project, including but not limited to, design objectives, time and other constraints, special equipment and systems and the budget for the Project.

GC4.2 The Client will, as soon as possible, make available to KGS Group all relevant data and information that KGS Group may need to perform the Services. KGS Group will, acting reasonably, be entitled to rely upon the accuracy and completeness of all such data and information furnished by or through the Client.

GC4.3 Unless otherwise specifically stated in Schedule "A", the Client will engage third parties directly to perform ancillary or specialized services that are necessary to enable KGS Group to carry out the Services. Such ancillary or specialized services may include, but are not limited to, legal or topographic surveys, mapping, quantity surveys and testing services. The Client will be entitled to determine which third parties to engage but will consult with KGS Group prior to doing so.

GC4.4 The Client is responsible for obtaining legal advice regarding tenders, requests for a proposal, quotation or information, bids, contract awards and the like, regarding the Project. The Client is responsible for decisions relating to the issuance, validity or award of tenders, proposals, bids or contracts and the like, and for the resulting consequences, even where the Services require KGS Group to review, evaluate or assist in the preparation of tenders, proposals, bids or contracts and the like or to make recommendations regarding them or regarding the qualification or selection of bidders.

GC4.5 The Client will designate in writing a representative who will have authority to transmit instructions to and receive information from KGS Group and to bind the Client.

GC4.6 The Client will promptly consider requests by KGS Group for directions or decisions and diligently inform KGS Group of the Client's direction or decision within a reasonable time so as not to delay the Services and/or the Work.

GC4.7 Unless otherwise specifically stated in Schedule "A", the Client will obtain required approvals, licenses and permits from municipal, governmental or other authorities having jurisdiction over the Project so as not to delay the Services and/or the Work.

GC4.8 If necessary, the Client will arrange access to any location that KGS Group must access to perform the Services.

GC4.9 The Client will promptly notify KGS Group whenever the Client or any of the Client's representatives becomes aware of any defects or deficiencies in the Services or the Engineering Documents.

GC5. OWNERSHIP AND USE OF DOCUMENTS AND INTELLECTUAL PROPERTY

GC5.1 The Engineering Documents are the property of KGS Group.

GC5.2 KGS Group retains ownership of all patents, trademarks, copyrights, industrial or other intellectual property rights resulting from the Engineering Documents, the Services or from concepts, products or processes which are developed or first reduced to practice by KGS Group in performing the Services. The Client will not use, infringe or appropriate such proprietary rights without the prior written consent of KGS Group.

GC5.3 Provided that the Services have been paid for in full, the Client will receive a royalty-free, non-transferable, non-exclusive license to use any proprietary concept, product or process of KGS Group which relates to or results from the Services for the life of the Project and solely for purposes of its maintenance and repair.

GC5.4 The Client will not, without notifying KGS Group and obtaining KGS Group's prior written consent:

(a) provide the Engineering Documents to third parties for purposes other than in connection with the Project;

(b) alter the Engineering Documents; or

(c) use the Engineering Documents on any other projects.

GC5.5 The Client will indemnify and hold harmless KGS Group from and against any and all demands, claims, actions, losses, expenses, causes of action, liabilities and costs (including legal costs on a solicitor and own client basis) incurred as a result of any breach of this Article **GC5**. In no event will KGS Group be responsible for the consequences of any such breach.

GC6. TERMINATION AND SUSPENSION

GC6.1 The Client may terminate this Agreement without cause on 30 days written notice to KGS Group. In such event, the Client will promptly pay to KGS Group:

(a) the fees and disbursements of KGS Group that are incurred and unpaid up to the date of termination; and

(b) the expenses reasonably and necessarily incurred by KGS Group in winding down the Services.

GC6.2 If KGS Group is in material default in the performance of its obligations under this Agreement, the Client may notify KGS Group in writing that the default must be corrected. If KGS Group does not correct the default within 30 days after receipt of such written notice or if KGS Group does not take reasonable steps to correct the default if the default is not susceptible of correction within 30 days, the Client may terminate this Agreement upon further written notice to KGS Group, without prejudice to any other rights or recourses of the Client. Such termination will not release the Client from its obligation to pay the fees and disbursements incurred by KGS Group up to the date of termination.

GC6.3 If the Client is in material default in the performance of any of the Client's obligations under this Agreement, including but not limited to the non-payment of fees and disbursements of KGS Group, KGS Group may notify the Client in writing that the default must be corrected. If the Client does not correct the default within 30 days after receipt of such written notice, KGS Group may terminate this Agreement upon further written notice to the Client, without prejudice to any other rights and recourses of KGS Group.

GC6.4 The Client may suspend the Services for the convenience of the Client. In such event, KGS Group's fees, disbursements and schedule will be equitably adjusted.

GC6.5 If the Client suspends performance of the Services at any time for more than 30 days, then KGS Group may choose to terminate this Agreement upon written notice to the Client. In this event, the Client will promptly pay the fees and disbursements of KGS Group that are incurred and unpaid as of the date of such termination, plus the expenses reasonably and necessarily incurred by KGS Group in winding down the Services.

GC7. FORCE MAJEURE

GC7.1 Neither party will be in default of this Agreement where the failure to perform an obligation is caused by or resulting from conditions or causes beyond its reasonable control. In such an event, each party will be allowed a reasonable period of time to fulfill its remaining obligations under this Agreement having regard to the applicable circumstances. Nothing herein will limit the obligation for any party to make any payment required by this Agreement.

GC8. LIMITATION OF LIABILITY

GC8.1 In this Section GC 8:

(a) "Client Claims" means any and all claims (which includes demands, losses, expenses, causes of action, liabilities and costs, including without limitation for all legal costs on a solicitor and own client basis) by the Client against any of the KGS Group Indemnified Parties, or third parties claiming contribution or indemnity from any of the KGS Group Indemnified Parties, that are related to or connected with this Agreement, including without limitation the performance of or failure to perform the Services, whether such claims arise in contract, tort (including without limitation negligence) or under any other cause of action, and "Client Claim" means any one of them;

(b) "KGS Claims" means any and all claims (which includes demands, losses, expenses, causes of action, liabilities and costs, including without limitation for all legal costs on a solicitor and own client basis) by KGS Group against the Client that are related to or connected with this Agreement, whether such claims arise in contract, tort (including without limitation negligence) or under any other cause of action, and "KGS Claim" means any one of them;

(c) "KGS Group Indemnified Parties" means KGS Group including, KGS Group's principals, officers, directors, employees, independent contractors, agents, representatives, subconsultants and/or subcontractors;

(d) "Liability Limit" means (i) the total fees paid by the Client to KGS Group under this Agreement, or (ii) $200,000, whichever is greater.

GC8.2 Notwithstanding any other provision of this Agreement, the liability of the KGS Group Indemnified Parties for Client Claims will not, in the aggregate, exceed the Liability Limit. Further, the Client agrees that it will indemnify and hold harmless the KGS Group Indemnified Parties from and against Client Claims which exceed the Liability Limit.

GC8.3 The Client agrees that KGS Group's principals, officers, directors, employees, independent contractors, agents, representatives, subconsultants and/or subcontractors will have no liability to the Client in respect of a Client Claim. Accordingly, the Client agrees that it will bring no proceedings and take no action in any court of law against any of KGS Group's principals, officers, directors, employees, independent contractors, agents, representatives, subconsultants or subcontractors.

GC8.4 The liability of each party with respect to a Client Claim or KGS Claim, as the case may be, is limited to direct damages only and neither party will have any liability whatsoever for indirect, incidental, economic or consequential loss or damage,

including and whether or not the following are determined in any proceeding to be direct damages: loss of profit, loss of revenue, loss of production, loss of business, loss of contracts or loss of opportunity and/or increased cost of capital, increased cost of financing or increased cost of overhead.

GC8.5 In any Client Claim, the Client agrees that KGS Group's liability will be several and not joint and several and that the Client will only be entitled to claim payment from KGS Group of KGS Group's proportionate share of the total liability based on the degree of fault of KGS Group as finally determined by a court of competent jurisdiction.

GC9. GENERAL LEGAL PROVISIONS

GC9.1 Neither party may assign this Agreement in whole or in part without the written consent of the other, which consent will not be unreasonably withheld.

GC9.2 No action or failure to act by the Client or KGS Group will constitute a waiver of a right or duty afforded or imposed under this Agreement, except as may be specified in writing.

GC9.3 This Agreement will be construed and governed by the laws of the province in which KGS Group has executed this Agreement. The parties attorn to the jurisdiction of the courts of that province.

GC9.4 If any provision of this Agreement is held by a court of competent jurisdiction to be invalid, illegal or unenforceable, such provision will be severed from this Agreement and the remaining terms and provisions in this Agreement will remain in full force and effect.

GC9.5 This Agreement, any amendment or other document delivered in connection herewith, may be executed and delivered in any number of counterparts, each of which when executed and delivered is an original but all of which taken together constitute one and the same instrument.

APPENDIX E

Statutory Declaration

STATUTORY DECLARATION

In submitting this proposal, I/We, on behalf of Kontzamanis Graumann Smith MacMillan Inc.
Legal Name of Company

certify the following:

(a) I/We have a health and safety policy and will maintain a program to implement such policy as required by clause 25(2) (j) the *Occupational Health and Safety Act*, R.S.O. 1990, c.O.1, as amended, (the "OHSA").

(b) With respect to the services being offered in this proposal, I/We and our proposed sub-contractors, acknowledge the responsibility to, and shall:

(i) fulfill all of the "employer" obligations under the OHSA and ensure that all work is carried out in accordance with the OHSA and its regulations.

(ii) ensure that adequate and competent supervision is provided as per the OHSA to protect the health and safety of workers; and

(iii) provide information and instruction to all employees to ensure they are informed of the hazards inherent in the work and understand the procedures for minimizing the risk of injury or illness.

(c) I/We agree to take every precaution reasonable in the circumstances for the protection of worker health and safety, as required under the OHSA.

Dated at Thunder Bay, ON this 26th day of April 2021.

Bryan Skrabek, M.Sc., P.Eng.
(Authorized signing agent for the Environmental Engineering Firm)

Regional Manager
(Title)

807-628-5409
(Telephone Number)

KGS GROUP

Experience in Action