Education

B.Sc. (Hons), James Cook University, 1986

Professional Affiliations

Australian Freshwater Sciences Society

Australian Water Association

Canadian Society of Limnology

Society of International Limnology

International Water Association

Golder Associates Ltd. – Calgary and Yellowknife

Principal, Senior Water Quality Specialist

John is a Principal and senior water quality specialist in the Calgary and Yellowknife offices. He has over 25 years of experience undertaking and directing surface water quality and limnological assessments of river, lake, and inshore marine environments.

John has been with Golder for over 12 years. Prior to joining Golder, John spent the majority of his professional career working on the east coast of northern Australia at the Australian Centre for Tropical Freshwater Research at James Cook University, Townsville, Queensland. While at the Centre, John managed the consulting component of the business, as well as its analytical service laboratory, and collaborated on a number of research projects that focused on freshwater and marine environments. Relevant work John undertook while at the Centre included the assessment of effects of mining and refinery operations to freshwater and inshore marine receiving environments, and the assessment of effects of agricultural runoff to coastal rivers and nearshore environments.

Since joining Golder, John has worked as a component lead, project manager, senior technical advisor, technical director, and project director for projects involving water quality baseline and assessment studies and environmental impact assessments. These projects have focused on mining and municipal business sectors. Although John's background is water quality, John's work at Golder has predominantly been associated with leading baseline and environmental impact assessments for mining projects in north-western Canada; the key mining projects John has been involved with include the environmental assessment, permitting processes, and annual environmental monitoring for the Dominion Diamond Mine Jay project, the De Beers Gahcho Kué Diamond Mine, the Fortune NICO, the Agnico Eagle Whale Tail Expansion projects, as well as the annual aquatic effects monitoring program for De Beers Snap Lake Diamond Mine. The key municipal project John has been involved with is leading the annual environmental monitoring program for the City of Edmonton, which he has been associated with since he joined Golder.

Employment History

Golder Associates Ltd. – Calgary, Alberta

Principal (appointed 2014), Senior Water Quality Scientist (2007 to Present)

Design, implementation, management, and interpretation of water quality investigations, including environmental baseline studies and components of environmental impact assessments (EIAs); project coordination, management, and direction; report preparation; and senior technical review of environmental assessment reports.

Australian Centre for Tropical Freshwater Research, James Cook University – Townsville, Queensland

Senior Water Quality Scientist / Water Quality Laboratory Manager (2002 to 2007)

Design, implementation, management, and interpretation of commercial, municipal and industrial water quality assessments, environmental baseline studies and EIAs, and water quality research projects. Duties included external project development and management, staff management, report preparation,

and public presentations. Concurrently managed a water quality laboratory that was responsible for water and sediment quality analysis.

Australian Centre for Tropical Freshwater Research, James Cook University – Townsville, Queensland
Water Quality Scientist (1988 to 2002)

Assisted in the design, implementation, management, and interpretation of water quality research projects. Duties included planning and undertaking field surveys, laboratory analyses of water and sediment quality analyses, and preparation of proposals and reports.

Department of Botany, James Cook University – Townsville, Queensland
Research Assistant / Demonstrator - Plant Physiology (1986 to 1987)

Aided in a research program investigating amino acid distribution in C4 plants under sodium deficiency utilizing gel electrophoresis techniques. The position also demonstrated to third-year plant physiology practical classes.

Department of Geology, James Cook University – Townsville, Queensland
Research Assistant (1985 to 1986)

Aided in a research program funded by the Great Barrier Reef Marine Park Authority investigating the occurrence of crown-of-thorn starfish skeletal remains in vibra-core reef sediment samples collected from the Great Barrier Reef to determine outbreak frequency in recent history.

SELECT MINING EXPERIENCE

EA/Permitting Agnico Eagle Mines Whale Tail Expansion Project
Nunavut, Canada

John is the senior water quality technical lead (since 2019) involved in the NIRB and NWB permitting processes, including preparation of technical responses to information requests and technical comments, and attendance at technical sessions and regulatory hearings as an expert panel witness for the water quality component.

De Beers Gahcho Kué Mine – Environmental Impact Statement (EIS) / Permitting / Monitoring / Regulatory Support
Northwest Territories, Canada

John is currently the Project Director for all Golder work being conducted at this mine (since 2016). In 2007, John started as the Aquatic Components Coordinator for the initial EIS phase of the Project (2007 to 2009), which included managing an external consultant retained by De Beers for completion of several of the aquatic component sections for the EIS. From 2012, John transitioned into the Technical Director leading the Golder technical team through a rewrite of the EIS and the EIR process with MVEIRB, and through the permitting process. These roles included participating as an expert panel witness in the MVEIRB and MVLWB technical sessions and public hearings. As Project Director, John is responsible for leading the Golder environment, water resource engineering, and construction teams, reviewing all Golder technical environmental products, including De Beers' environmental regulatory products (when needed), and maintaining a high level of engagement with the De Beers project teams (2007 to current).

Baseline/EA/Permitting /Monitoring Dominion Diamond Jay and Misery Underground Projects
Northwest Territories, Canada

John has been the senior water quality technical lead since 2013 involved in the completion and reporting of water quality baseline data and the water quality assessment for the Developer's Assessment Report (DAR). This work included writing, reviewing, and preparing components of the assessment that involved summarizing the water management plan, describing site mitigation to reduce or eliminate potential Project effects to water quality (and the aquatic receiving environment), and assessing cumulative effects to a key downstream operation.

John supported the Golder and Dominion Diamond project team through the MVEIRB and permitting processes, including attendance at technical sessions and regulatory hearings as an expert panel witness for the water quality component.

John continues to contribute to the design of the Aquatics Effects Monitoring Program (AEMP) for the Jay Project, and worked with the permitting and engineering teams to develop a Total Suspended Sediment Management and Monitoring Plan for the Dyke Construction process.

De Beers Snap Lake Mine – Monitoring / Regulatory Support
Northwest Territories, Canada

John is currently the Project Director for the environmental work being conducted by Golder at this mine site (since 2017). In addition to this role, John has provided senior review and technical support to the AEMP water quality and/or sediment quality component team (since 2008).

Giant Mine Environmental Support Services and Civil Design Contracts, PSPC/AECOM
Northwest Territories, Canada

John is currently the Project Director for the project management team that provides oversight to the technical services delivery teams for a variety of tasks under two contracts (since 2017). The contracts are currently established under a partnership with AECOM. Under the Civil Design contract, Golder is the prime contractor and AECOM the sub-contractor. For the ESS contract, Golder is the sub-contractor to AECOM. John's responsibilities include engagement with the PSPC Project Director and the AECOM Project Integration Manager.

John also acts as the Golder Project Sponsor to PSPC on the project.

Giant Mine MDMER Annual Reporting Program, AECOM (formerly DCNJV)
Northwest Territories, Canada

John provides senior review and technical guidance to the water quality task lead for this program (2010 - 2019).

Fortune Minerals NICO Project – Baseline / EA / Permitting / Monitoring
Northwest Territories, Canada

John was the water quality component lead (2009 to 2014) involved in the completion and reporting of water quality baseline data and water quality assessment for the DAR. The water quality assessment included integrating each of the aquatic components (e.g., hydrology, hydrogeology, sediment quality, aquatic health, and aquatic ecosystems) into the DAR. John participated in the MVEIRB regulatory and the MVLWB permitting processes as an expert panel witness in their respective technical sessions and public hearings.

Since 2016, John has provided project direction supporting the client and project permitting team for aquatics effects monitoring and associated regulatory processes.

SaskPower Elizabeth Falls Project – EA Saskatchewan, Canada	John provided senior review and technical support to the water quality and sediment quality effects assessment component lead and the water quality modelling component lead during the EA process. John also provided technical support to the Golder Project team through the Government and Stakeholder review process (2013 to 2015).
Farim Phosphate Project GB Minerals Ltd. – River Morphology and Physical Oceanography Baseline Study Guinea-Bissau	John provided senior review and technical support to the water quality component lead, and to the Golder Project team (2013).
IMG / BP – Contaminants Sampling Program Nunavut, Canada	John provided senior review and technical support to the field and water quality data analysis component leads during the contaminants program (2011 and 2012). This role included technical review of the field program sampling protocols, analytical techniques, and the water quality report.
UTS/Teck Cominco Equinox Project – Water Quality Baseline Study Alberta, Canada	John was the component lead (2008 to 2010) involved in the organization, management and preparation of the water quality and sediment quality baseline study for the Equinox Oil Sands development. John was also responsible for providing support and coordination to the client for the Pilot Plant testing program that will service the UTS/Teck Equinox and Frontier Oil Sands developments.
AREVA Resources – McArthur River Ore Haulage Project Description and EIS Saskatchewan, Canada	John contributed to the environmental assessment for the transportation of uranium ore slurry along existing provincial highways from the McArthur River Mine to the McClean Lake Operation for milling at the JEB Mill. John worked directly with the client and senior Golder project team to deliver the project description and EIS.
Cameco Corporation – Cigar Lake EA, Saskatchewan, Canada	John contributed to the aquatic effects analysis of the environmental assessment process in the development of an expansion to the Cigar Lake Mine in northern Saskatchewan (2009 and 2010). The expansion included the construction, operation, and decommissioning of two new parallel pipelines that will deliver and discharge treated water from treatment facilities on the site to a single deep-water point in Seru Bay. John contributed to the environmental assessment for the Cigar Lake Mine McArthur River Mine in northern Saskatchewan (2010 and 2011).
Strateco Resources – Water Quality Baseline Study – Matoush Exploration Ramp Project Ontario, Canada	John provided senior review and technical guidance to the water quality component lead for the Project (2009 and 2010).
DIAND-CARD – Tailings Lake Investigation, Colomac Mine Northwest Territories, Canada	John provided senior technical review and guidance to the water quality component lead for the project (2009 and 2010).

Cameco Corporation – Millennium Mine Project Proposal
Saskatchewan, Canada

John provided technical support for the environmental assessment process in the development of a project proposal for the Millennium Mine development in northern Saskatchewan (2009). This work included reviewing sections of the draft project description (e.g., detailed project information and the existing environment) with particular emphasis on the screening of potential Project effects to the biophysical environment.

Newmont / Miramar – Hope Bay Project Annual Aquatic Study Program
Nunavut, Canada

John provided senior review and technical guidance to the water quality and sediment quality component lead for the 2006 to 2008 Annual Aquatic Studies Program (2009).

OTHER SELECT PROJECT EXPERIENCE

EPCOR – North Saskatchewan River Environmental Monitoring Program
Alberta, Canada

John provides the senior technical review and guidance to the project team for a variety of environmental projects completed for EPCOR (originally the City of Edmonton), which includes the annual environmental monitoring program (EMP). The work that Golder completes for EMP includes undertaking a series of annual monitoring and sample collection programs in the North Saskatchewan River (NSR), municipal as well as storm sewer and combined sewer outfalls, tributaries to the NSR, and stormwater collection ponds and wetlands programs, deriving annual loading estimates of water quality constituent inputs, and preparing two annual reports (since 2007).

The role has developed from initially undertaking the data analysis and reporting components for the EMP, to currently providing the senior technical direction for the EMP. John has provided senior technical review and guidance for other related projects, which were conducted for the City of Edmonton, such as the NSR Intensive Intake Monitoring Program, and the Kennedale and Pylypow Wetland Monitoring Programs.

City of Calgary – Bow River Water Quality Monitoring Station
Alberta, Canada

John provided senior technical review and guidance in the recommendation of a preferred site location of a remote water quality monitoring station on the Bow River downstream of Calgary, and the monitoring infrastructure and equipment required to monitor various water quality parameters in real-time and collect regular, time-based (baseflow) and event-based (stormflow) water samples (2015 to 2017).

Stantec – Wabamun Regional Biomonitoring Program
Alberta, Canada

John provided senior review and technical support to the water quality and sediment quality component leads in this program (2009 to 2014, and 2016). The study area included power station cooling ponds, and adjacent localised lakes and streams.

Shell Canada Ltd. – Environmental Gap Analysis / Water Quality Baseline Study, Groundbirch Project,
British Columbia, Canada

John provided senior review and technical support to the water quality component for a gap analysis and baseline study for this development (2010 and 2011).

PUBLICATIONS

Journal Articles

Chapman, P.M., Hayward, A. and J.W. Faithful. 2017. Total suspended solids effects on freshwater lake biota other than fish. *Bulletin of Environmental Contamination and Toxicology.* 99(4), 423–427.

Faithful, J.W. 2016. Physico-chemical changes in two northern headwater lakes in the Northwest Territories, Canada, during winter to spring transitions. *Journal of Great Lakes Research*. 42, 167-172. DOI 10.1016/j.jglr.2016.01.004

Vandenberg, J.A., Herrell, M., Faithful, J.W., Snow, A.M., Lacrampe, J., Bieber, C., Dayyani, S. and V. Chisholm. 2015. Multiple Modeling Approach for the Aquatic Effects Assessment of a Proposed Northern Diamond Mine Development. *Mine Water and the Environment*. DOI 10.1007/s10230-015-0337-5.

Brodie, J.E., Schroeder T., Rohde T., Faithful J.W., Masters B., Dekker A., Brando V. and M. Maugham. 2010. Dispersal of suspended sediments and nutrients in the Great Barrier Reef lagoon during river discharge events: conclusions from satellite remote sensing and concurrent flood plume sampling. *Marine and Freshwater Research*, 61, 651-664.

Mitchell, A., Reghenzani J., Faithful J.W., Furnas M. and J.E. Brodie. 2009. Relationships between land use and nutrient concentrations in streams draining a 'wet-tropics' catchment in northern Australia. *Marine and Freshwater Research*, 60, 1097-1108.

Bainbridge, Z.T., Brodie J.E., Faithful J.W., Sydes D.A. and S.E. Lewis. 2009. Identifying the land-based sources of suspended sediments, nutrients and pesticides discharged to the Great Barrier Reef from the Tully-Murray Basin, Queensland, Australia. *Marine and Freshwater Research*, 60, 1081-1090.

O'Reagain P.J., Brodie J., Fraser G., Bushell J.J., Holloway C.H., Faithful J.W. and D. Haines. 2005. Nutrient loss and water quality under extensive grazing the upper Burdekin River catchment, north Queensland. *Marine Pollution Bulletin*, 51, 37-50.

Faithful J.W. and W. Finlayson. 2005. Water quality assessment for sustainable agriculture in the Wet Tropics – A community approach. *Marine Pollution Bulletin*, 51, 99-112.

Faithful J.W. and D.J. Griffiths. 2000. Turbid flow through a tropical reservoir (Lake Dalrymple, Queensland, Australia): responses to a summer storm event. *Lakes and Reservoirs: Research and Management*, 5, 231-247.

Faithful J.W. Phosphorus in Wetlands - A Review. 1997. *Queensland Department of Natural Resources, Brisbane*, ISBN 0 7242 7414 6, 53 pp.

Walbran P.D., Henderson R.A., Faithful J.W., Polach H.A. and R.J. Sparkes. 1989. Crown-of-Thorn starfish outbreaks on the Great Barrier Reef: a geological perspective based upon the sediment record. *Coral Reefs*, 8, 67-78.

Conference Proceedings

Herrell, M.K., J. Vandenberg, J.W. Faithful, A. Hayward and L. Novy. 2019. *Influence of Probability Distribution Function Sampling Frequency on Stochastic Water Quality Model Predictions*. Proceedings of the 11th International Conference on Acid Rock Drainage & IMWA Annual Conference, September, 2015. Pretoria, South Africa.

Herrell, M.K., J. Vandenberg, J.W. Faithful, A. Hayward and L. Novy. 2019. *Long-term Water Management of Saline Groundwater at the Ekati Diamond Mine*. Proceedings of the 11th International Conference on Acid Rock Drainage & IMWA Annual Conference, September, 2015. Pretoria, South Africa.

Herrell, M., J. Vandenberg and J.W. Faithful. 2015. *Designing meromictic pit lakes as a mine closure mitigation strategy in northern Canada*. Proceedings of the 10th International Conference on Acid Rock Drainage & IMWA Annual Conference, 21-24 April, 2015. Santiago, Chile.

Lewis, S. E., J.E. Brodie, Z.T. Bainbridge, A.M. Davis, J.W. Faithful, L. Liessman, K. Rohde and B. Masters. 2008. *Herbicide residues in waterways draining sugarcane catchments of the Great Barrier Reef.* Proceedings of the 5th SETAC World Congress, 3-7 August. Sydney, Australia.

Hately, L.R., J.D. Armour, J. Brodie, J.W. Faithful, G.L. Pitt and P.N. Nelson. 2007. *Modelling, monitoring and sediment tracing in the Tully River catchment, north Queensland: a comparison of techniques*. 2007 International Congress on Modelling and Simulation. Modelling and Simulation Society of Australia and New Zealand, December. Auckland, New Zealand.

Brodie, J., A.G. Dekker, V.E. Brando, B. Masters, J.W. Faithful, R. Noble and K. Rohde. 2006. *Extent and duration of the algal bloom in the Great Barrier Reef lagoon following river discharge events in the Mackay Whitsunday's Region, Australia*. 13th Australasian Remote Sensing and Photogrammetry Conference: Earth Observation – from Science to Solutions, November. Canberra.

Cooper, M., G. Shields, J.W. Faithful and J. Zhao. 2006. *Using sediment Sr/Nd isotopic ratios to determine sediment sources in the Burdekin Falls Dam, Queensland, Australia*. 16th Annual V.M. Goldschmidt Conference, August -September. Melbourne, Australia.

Cooper, M., J.W. Faithful, T. Steiglitz and G. Shields. 2005. *Sediment dynamics of a large tropical river system: the Burdekin River and Lake Dalrymple, Australia*. 10th International Symposium on the Interactions between Sediment and Water, August - September. Bled, Slovenia.

Taylor, J., T. Lloyd, A. Melzer and J.W. Faithful. 2004. *Conserving ecosystems and managing biodiversity in industrial land and seascapes – Yabulu Nickel Refinery experience*. Minerals Council of Australia, Inaugural Global Sustainable Development Conference, October. Melbourne, Australia.

Lukacs, G.P., C. Perna and J.W. Faithful. 2004. *Coastal wetlands of north-eastern Australia: Condition and management interventions*. Seventh Intecol International Wetlands Conference, July. Utrecht, The Netherlands.

Faithful, J.W. and W. Finlayson. 2004. *Water quality assessment for sustainable agriculture in the Wet Tropics – A community-assisted approach*. Catchment to Reef Conference, Great Barrier Reef Marine Park Authority, March. Townsville.

Faithful, J.W. and D. Burrows. 2003. *From blue to brown: persistently elevated turbidity resulting from damming the tropical Burdekin River*. Ninth International Conference on River Research and Applications, July. Albury.

Connor, R., J. Milsom, A. Melzer, B.M. Butler, J.W. Faithful, W. Dennison, T. Lloyd and G. Swain. 2003. *Ecosystem-based assessment and management of marine and estuarine systems at the QNI Yabulu Nickel Refinery, Townsville*. In: Protecting the Values of Rivers, Wetlands and the Reef. From: 2nd National Conference on Aquatic Environments: Sustaining our Aquatic Environments - Implementing Solutions, 20 - 23 November 2001, Townsville, QLD, Australia.