

## **GILLES WENDLING, Ph.D., P.Eng.**

Dr. Wendling has been involved in the assessment of water supplies (drinking water) and in the protection of groundwater resources. His fields of interest and expertise are the following:

- \* regional hydrogeology;
- \* the water-energy nexus (interaction between the energy related activities and watersheds);
- \* design of production wells;
- \* monitoring, maintenance and rehabilitation of water wells;
- \* characterization and protection of aquifers and watersheds;
- \* education on water supply systems, hydrogeology, water conservation and water microbiology;
- \* water management and water demand assessment; and
- \* ground disposal of treated liquid wastes.

Gilles Wendling was invited to provide a professional opinion about the risks of hydraulic fracturing for unconventional gas extraction on watersheds to the Select Committee of the Yukon Legislative Assembly (2014).

Gilles Wendling was founder of Global Aquifer Development Foundation, a Canadian charity creating partnerships with developing countries and assisting in the establishment of groundwater management systems. GADF has merged with Hydrogeologists Without Borders (HWB) in 2010.

Gilles Wendling has also conducted and managed studies in many fields of hydrogeology such as:

- \* Environmental impact studies (commercial and industrial activities – mostly for the mining and petroleum industries);
- \* Impact assessments of municipal and regional solid waste and liquid waste disposal facilities;
- \* Geotechnical investigations (seepage and slope stability assessments);

## **EDUCATION**

### **EDUCATION**

|                        |   |                   |
|------------------------|---|-------------------|
| Ph.D.                  | École Polytechnique - University of Montréal (Québec) | 1991 Hydrogeology |
| M.Sc.                  | École Polytechnique - University of Montréal (Québec) | 1985 Geotechnics  |
| MST (B.SC. equivalent) | University of Grenoble, France                        | 1983 Géotechnique |

## EMPLOYMENT HISTORY

|                                |  |
|--------------------------------|--|
| 2005 - Present                 | GW Solutions Inc., President   |
| 2000 to 2005                   | EBA Engineering Consultants Ltd., Senior Hydrogeologist, Project Manager             |
| 1999 to 2000<br>& 1993 to 1997 | Morrow Environmental Consultants Inc., Senior Hydrogeologist,                        |
| 1997 to 1999                   | Levelton Engineering Ltd., Senior Hydrogeologist, Project Manager                    |
| 1991 to 1993                   | Klohn Leonoff, Hydrogeologist  |
| 1987 to 1991                   | École Polytechnique of Montréal, Québec, Part-time Lecturer – Hydrogeologist         |
| 1986 to 1988                   | Geos Consulting Engineers Ltd., Geneva Switzerland, Field Engineer and Field Manager |

## PROFESSIONAL MEMBERSHIPS

|        |  |
|--------|--|
| Member | Association of Professional Engineers and Geoscientists (BC & Alberta) |
| Member | International Association of Hydrogeologist                            |
| Member | British Columbia Water and Waste Association                           |
| Member | National Groundwater Association (US)                                  |
| Member | British Columbia Groundwater Association                               |

## PROFESSIONAL EXPERIENCE

### AQUIFERS, WATERSHEDS & WATER SUPPLY

#### **Most Complex – Largest Projects (budgets ranging between \$ 100,000 and \$ 1 Million).**

- Water management study, in coordination with the Maa-Nulth First Nations, to provide enough detail about the nature of their groundwater resources to be used in treaty negotiations in 2017-18. The objectives are to adequately understand, characterize, and quantify the groundwater present and flowing through each watershed of Maa-Nulth First Nations territories and to ensure that the groundwater and aquifers are properly and adequately defined, both in quality and quantity, to evaluate the groundwater reservations for the population, and for all living creatures and their ecosystems, for a fair negotiation of their rights under Treaty.
- Groundwater baseline study (both for physical and geochemical characterisation) of the Peace River Regional District, Northeast BC.
- Regional hydrogeological study of the Athabasca Chypewyan First Nation Territory, in preparation for hearing for the Athabasca Chipewyan First Nation (ACFN) - Industry Relations Corporation (IRC), regarding the Application for Approval of the Teck – Frontier Oil Sands Project, North Athabasca Valley, Northeast Alberta.
- Following the August 4th, 2014 breach of the tailing dam which released contaminated effluent to Hazeltine Creek and Quesnel Lake, and as part of the Province's requirement to consult, the BC Ministry of Environment, the Williams Lake Indian Band, and the Soda Creek First Nations agreed to an integrated review of the application to safely discharge effluent from the tailing storage facility. Brian Olding & Associates Ltd. (BOA) was contracted to lead this work and GW Solutions was retained to assist with groundwater related issues.
- Hydrogeological assessment of several aquifers including drilling of large diameter production wells, complex development of the wells, and long-term summer pumping test, Lantzville, BC.
- Hydrogeological assessment of a well field and study of groundwater and surface water interaction because of the proximity of a lake and two fish bearing streams. This study included long term monitoring through spring, summer and fall, and a 6-day pumping test, pumping at a rate of 2000 m<sup>3</sup>/day (370 USgpm), Regional District of Nanaimo, BC.
- \* Aquifer management for the second largest private water utility in BC for 7 years – project manager, Parksville, BC.
- \* Characterization and numerical modelling (using GIS and Visual Modflow) of watersheds serving several municipalities, regional district and private water purveyors. Project conducted in partnership with the water purveyors and BC Ministry of Water, Land and Air Protection, Mt. Arrowsmith Watershed, East Coast of Vancouver Island, BC.

- \* Water supply assessment for a proposed land development on the East Coast of Vancouver Island. The project included a detailed study of the groundwater and surface water interaction due to the presence of a lake and two fish bearing streams adjacent to the targeted aquifer. Lantzville, BC
- \* Hydrogeological, hydrological, geotechnical and biophysical assessments of land proposed for large development (residential, commercial and golf course) – project manager, East Coast of Vancouver Island, BC.
- \* Completed a review and critique of a large hydrogeological study on behalf of the Halalt First Nation for a proposed series of production wells (water supply for the District of North Cowichan) as part of a provincial and federal environmental assessment process, Chemainus River Aquifer, Halalt First Nation, BC
- \* Investigation of water needs and water resources of 120 villages (150 to 3,000 inhabitants). Duties included a visit of each village, meeting with the representatives, global socio-economical study in order to estimate the most appropriate techniques to meet water needs. Guidimaka region, Mauritania.

#### **Other Projects (budgets up to \$ 100,000)**

##### ***“Aquifer and Watershed” related projects***

- \* Creation of a 3D hydrostratigraphic model (using Leapfrog) and water quality baseline (using data base connected to Tableau-based visualisation tool) for part of the Okanagan Basin (Kelowna and Mission Creek watershed), Okanagan basin Water Board, Kelowna, BC
- \* Hydrological and hydrogeological assessment for the design of a drainage system on a large forestry land parcel near Menzies Bay, Campbell River, BC.
- \* Assessment of the State of the Aquifers in the Regional District of Nanaimo, using a Tableau based data base, and production of newsletter to share information with the public, Regional District of Nanaimo, BC
- \* Assessment of potential impact of oil and gas industry activities (in particular unconventional drilling and fracking) on aquifers, Residential property, near Dawson Creek, BC
- \* Assessment of potential impact of oil and gas industry activities (in particular unconventional drilling and fracking) on aquifers, Ranch property, near Chetwynd, BC
- \* Provision of an expert opinion to Kamloops Area Preservation Association (KAPA) in relationship to the application for a Drinking Water Hazard Abatement and Prevention Order under s. 25 of the Drinking Water Protection Act, in association to the proposed KGHM Ajax mine, Kamloops, BC.
- \* Potential impact of residential subdivision on Aquifer, Maple Ridge, BC
- \* Hydrogeological review for the region of Calama, Chuquicamata copper mine and upper region of Loa River Watershed for the community of Chui Chui, Chile

- Hydrogeological study (including 3D conceptual model) to identify opportunities for improving the hydrology of a slough, with a particular goal of identifying the locations of the historical springs and developing a plan for reconnection with the slough, Katzie First Nation, BC.
- Technical review, including analytical modelling, for the design of a control and closure plan for an artesian well, Vancouver, BC
- Retained by Stk'emlupsemc Te Secwepemc Nation (SSN) to review of KGHM Ajax Project Environmental Assessment Application, including the review of a hydrogeological numerical model and pumping test interpretation, Kamloops, BC.
- Technical review of existing information and advice to Champagne & Aishihik First Nations (CAFN) Lands and Resources staff on matters relating to the relicensing of the Aishihik Dam, including the scoping of groundwater effects, influence of dam operations on local ponds and wetlands, ground subsidence in and around Aishihik Village, and permafrost degradation, and reviewing workplan of third-party consultants retained by Yukon Energy Corporation, and advice CAFN on any gaps and limitations of the proposed approach, Champagne & Aishihik First Nations, Yukon
- Hydrogeological investigation, including geophysical investigation, to identify a potential buried valley aquifer as a potential source of potable water for a public water system, North Cedar Improvement District, BC.
- Provided technical assistance in the filling of numerous permit applications for water wells under the new BC Water Sustainability Act (Powell River and Alberni Clayoquot Regional Districts, Nanaimo Airport, etc.)
- Review of hydrogeological conditions and design of land rehabilitation plan (i.e., improved drainage) for damaged land under forestry tenure, Campbell River, BC
- Retained to provide technical expertise and estimates of surface and groundwater fluxes through the Ditidath First Nation territory for Treaty negotiation.
- Retained to provide technical expertise and estimates of surface and groundwater fluxes through the Pacheedath First Nation territory for Treaty negotiation.
- Cumulative impact assessment of anthropogenic activities on water quality and quantity in Blueberry River First Nations Territory, BC
- Production of water guidelines for the Nacho Nyak Dun (NND) First Nation, Yukon.
- Source assessment review of wells used for a water bottling plant, Pemberton, BC
- Review and critique with the Nacho Nyak Dun (NND) First Nation of the Northern Cross application to drill investigative wells for oil and gas extraction in the Eagle Plains Area, (Peel River Watershed) focusing on risks to groundwater and the watersheds within the territory of the NND in central Yukon.
- Hydrogeological assessment, 3D imaging using LeapFrog of aquifer conditions near location proposed for sanitary sewer, short-term and long-term risk identification and rating associated with pump station siting and operation, CVRD, Comox, BC.
- Technical review pertaining to potential groundwater issues at the proposed Site C Project, and possible rationale of interactions with Treaty 8 Tribal Association. These

interactions could form potential issues for consideration by the Comptroller of Water Rights in the adjudication of BC Hydro's water licence application for the Site C Clean Energy Project (Project), BC.

- \* Technical input and review to/of groundwater related issues at Mount Polley Mine, following the August 4th, 2014 breach of the tailing dam. This work is being done with the Williams Lake Indian Band, and the Soda Creek First Nations, Williams, Lake, BC
- \* Hydrogeological assessment and 3D imaging using LeapFrog of aquifer conditions near location proposed for Sanitary sewer, Comox, BC.
- \* Development of a hydrogeological conceptual model for the Athabasca Chipewyan First Nation (ACFN) territory to build an understanding of the groundwater regime and its interaction with surface water within ACFN territory and to assist in reviewing the potential modification of the groundwater regime resulting from existing or proposed projects within ACFN territory, Alberta.
- \* Technical Review of the Application for Approval Renewal of the Bonnyville Class II Landfill, focusing on potential impacts on groundwater and aquifers, on behalf of the Cold Lake First Nations, Cold Lake area, Alberta.
- \* Series of pumping tests for residential development, YellowPoint, BC
- \* Cowichan Tribes, water source assessment (including GUDI potential), Duncan, BC
- \* Review of potential impacts of production well on aquifers drawdowns, flow of local stream and neighbouring wells, and design and implementation of a monitoring plan, Regional District of Nanaimo, BC
- \* Assisted in coordinating the Alberta Environmental Monitoring, Evaluation, and Reporting Agency (AEMERA) and Environment Canada (EC) in an independent scientific panel review of the proposed North and South Athabasca Oil Sands Groundwater Monitoring Plans. The objectives of the review were to assess whether the monitoring plans meet national, provincial, and regional objectives and to provide strategies and recommendations on how the objectives could be met if the monitoring plans were deemed deficient in any specific areas. The panel was also asked to advise on strategies to integrate the monitoring plans together and to review monitoring plan recommendations provided by an international panel in 2010, Alberta.
- \* Hydrogeological study of small water system on rocky peninsula, with bedrock wells creating salt water intrusion, Salt Spring Island, BC.
- \* Completion of large water supply well, added to a well field supplying a fish hatchery, and review of the production efficiency and capacity of the well field, Conuma River Hatchery, Vancouver Island, BC.
- \* Groundwater and surface water management and governance study for the Cowichan Valley Regional District, BC
- \* Groundwater and surface water management plan for the Bonsall Creek Watershed, District of North Cowichan, BC
- \* Review of potential impacts to surface water, groundwater, and aquifers of proposed shale gas drilling by Northern Cross in Eagle Plains, Yukon
- \* Water sampling and water quality review of the Brenot Creek and Lynx Creek water



system, Hudson's Hope, BC

- \* Critique of hydrogeological study for proposed subdivision relying on bedrock wells, Bullock Lake Watershed, Salt Spring Island, BC
- \* Development of a groundwater strategy for the Nanaimo Airport, BC
- \* Opinion on potential impact of proposed rise of Southern Lakes on aquifers and lakeshore properties, Yukon Southern Lakes Water Level Committee (SLWLC), Whitehorse and Tagish, Yukon, March 2014
- \* Opinion on potential impact of proposed gravel extraction on aquifers, Regional District of Nanaimo, BC.
- \* Study of potential impact of land subdivision on aquifers, Parksville, BC
- \* Identification of hotspots along Alaska Highway in northwest Fort Nelson First Nation territory, BC
- \* Identification of both the short-term and long-term risks of impact to aquifers and water supply due to the use of hydraulic fracturing in shale gas plays in the Upper Kiskatinaw Watershed, Dawson Creek, BC
- \* Identification of both the short-term and long-term risks of impact to aquifers and water supply due to the use of hydraulic fracturing in shale gas plays in the Peace River area. Risk identification associated with the use of deep disposal/injection wells, Fort Saint John and Hudson's Hope, BC
- \* Development of a water strategy for the Fort Nelson First Nation, Fort Nelson First Nation Territory, Northeast BC
- \* Review of applications for water extraction (part of the Oil and Gas Commission referral process) for the Fort Nelson First Nation, Fort Nelson First Nation Territory, Northeast BC
- \* Canada-wide assessment of the state of private wells in Canada. The study consists of compiling information on private drinking water wells in Canada and the risk posed to human health by water supply from these wells, assess management responses to these risks and identify opportunities for collaboration across jurisdictions to build on successful management examples, Council of the Federation, Ottawa, Ontario
- \* Providing technical assistance to a community group in the characterisation, protection and management of the Piercy and Milard Creek watersheds, Comox Valley Regional District, BC
- \* Assessment of the risks of impact to human health due to the deterioration of the quality of public water supply resulting from a proposed coal mine, Fanny Bay, BC
- \* Assessment of the yield of dewatering wells to be converted to water supply wells providing base flow to fish hatchery, UV treatment plant, Metro Vancouver, BC
- \* GUDI (Groundwater under the influence of surface water) assessment for water system considered for municipal water supply, External review, City of Nanaimo, BC
- \* Aquifer Storage and Recovery, Senior technical input and review, Parksville, BC
- \* Assessment of the presence of pharmaceutical and personal care products (PPCPs) in a

residential water supply, Shawnigan Lake, BC

- \* City of Whitehorse Source Water Protection Plan, Senior input and review, Whitehorse, Yukon
- \* Production of a primer document with the Partnership for Water Sustainability in BC and Living Rivers – Georgia Basin, with technical input to an Official Community Plan update, Parksville, BC
- \* Review of hydrogeological conditions and groundwater surface water interactions, municipal water supply system, Merritt, BC
- \* Hydrogeological study and water supply assessment, Long Beach Airport, Alberni Clayoquot Regional District, BC
- \* Hydrogeological study and water supply assessment, Lantzville, BC
- \* Hydrogeological study and groundwater supply potential, Public water system, Regional District of Nanaimo, BC
- \* Hydrogeological study and groundwater supply potential, proposed subdivision near Spider Lake, Qualicum Beach, BC
- \* Hydrogeological study and water supply assessment, Cassidy, Regional District of Nanaimo, BC
- \* Hydrogeological study and water supply assessment of forestry land proposed for residential and industrial development, Duncan, BC
- \* Review of hydrogeological assessment and of proposed setbacks for production wells of a public water system, Nanoose, Regional District of Nanaimo, BC
- \* Review of Steam Assisted Gravity Drainage (SAGD) application, on behalf of First Nations, McKay, Alberta
- \* Hydrogeological assessment of an agricultural property to assess the potential for an addition water source, Courtenay, BC
- \* Review of risk of contamination of aquifer due to surface contamination, Regional District of Nanaimo, BC
- \* Hydrogeological assessment of forestry land proposed for residential/commercial development, Parksville, BC
- \* Development of a business case to improve the safety and reliability of groundwater supplies for the agri-food sector in Canada for the Agri-Environment Services Branch (AESB) of Agriculture and Agri-Food Canada (AAFC)
- \* Hydrogeological assessment/review of an area proposed for an extension of a gravel pit, Duncan, BC
- \* Technical input to “Drilling Down – Groundwater Risks Imposed by In-Situ Oils Sands Development”, produced by Water Matters Society of Alberta
- \* Hydrogeological assessment/review of area proposed for residential development, Cowichan Valley Regional District, BC
- \* Hydrogeological assessment and well rating for a subdivision application, Maxey Road,



Regional District of Nanaimo, BC

- \* Assessment of hydrogeological conditions and water budget in watersheds where an underground coal mine is proposed, Comox Valley Regional District, BC
- \* Hydrogeological assessment of a private water system using a bedrock aquifer as a source, and that has suffered lack of water supply due to summer stress of the aquifer. Assessment conducted in preparation to the potential transfer of the management of the water system to the Cowichan Valley Regional District, Ladysmith, BC
- \* Hydrogeological characterisation near Minnie Lake, Alberta, and assessment of the potential impacts proposed drilling for oil extraction could have on the aquifers, St Paul, Alberta
- \* Hydrogeological assessment for a public water system and golf course and review (both water quality and quantity) of the operation of production and irrigation wells – Stress on the aquifer was observed. – Cowichan Valley Regional District, BC
- \* Assessment of aquifer potential for water supply, Cassidy, BC
- \* Assessment of aquifer potential for water supply, and estimation of a water budget in a sub-watershed, Shawnigan Lake, BC
- \* Professional opinion on potential impact of deep drilling near Liard Hot Springs, Department of Fisheries and Oceans Canada
- \* Assessment of aquifer potential for water supply, proposed development, Lantzville, BC
- \* Assessment of aquifer potential for water supply, Parksville, BC
- \* Review of the operation of water supply wells, RDN, Parksville, BC
- \* Assessments of groundwater regimes for the design of a rain water management plan, land subdivision, Comox, BC
- \* Assessment of potential impacts on watershed and drinking water source of proposed rural subdivision, Forbidden Plateau, Comox Valley Regional District
- \* Review of Steam Assisted Gravity Drainage (SAGD) application, West Ells, on behalf of First Nations, Alberta
- \* Review of Alberta Groundwater Management Framework, Northern Athabasca Oil Sands Region, on behalf of First Nations, Alberta
- \* External review of Water Resource Vulnerability Mapping for area covering the regional District of Nanaimo and the Cowichan Valley Regional District, BC
- \* Design of a brochure to promote public education on watershed management, Englishman River Watershed, BC
- \* Groundwater and surface water interaction assessment in the Englishman River watershed, including the involvement and participation of the public and the monitoring of private wells, Regional District of Nanaimo, BC
- \* Study of the bottled-water industry in Ontario (Canada) and its use of groundwater, describing water use, potential impact on water resources, and relevant regulation.

- \* Impact of proposed coal bed methane (CBM) development on salmon (via groundwater and surface water interaction) in the headwaters of the Skeena, Nass, and Stikine Rivers, BC
- \* Drinking Water – Watershed Protection Action Plan, Regional District of Nanaimo, BC
- \* Aquifer vulnerability assessment, associated with proposed large residential development, Cowichan Valley Regional District, BC
- \* Assessment of aquifer potential for water supply, Cumberland, BC
- \* Assessment of aquifer potential for water supply, Comox, BC
- \* Assessment of aquifer potential for water supply, Yellow Point, BC
- \* Assessment of aquifer potential for water supply, Cobble Hill, BC
- \* Expression of professional opinion on limitation of regional growth due to limitation of the water supply, Regional District of Nanaimo, BC
- \* Hydrogeological Assessment of land potentially developed for residential use, Comox, BC
- \* Aquifer delineation and characterization, Groundbirch to Dawson Creek, as part of BC Ministry of Water, Land and Air Protection aquifer mapping project, Northern BC
- \* Aquifer Mapping for BC Ministry of Water, Land and Air Protection, Qualicum Beach to Horne Lake and four of the Southern Gulf Islands, BC
- \* Aquifer modelling and preliminary aquifer protection plan, City of Merritt, BC
- \* Design of an aquifer protection plan, Ucluelet, BC
- \* Regional hydrogeological study and water supply assessment, Lantzville, BC
- \* Delineation of aquifers and definition of hydrogeological conditions in area of potential coal bed methane extraction, Courtenay-Comox area, BC
- \* Aquifer assessment, contamination risk assessment and input on by-laws for area proposed for industrial development, Parksville, BC
- \* Public presentations to educate the public, elected officials, and regulators on groundwater, aquifers, watersheds and groundwater sustainability (Parksville, North Cowichan, Victoria, Fort Saint John, Houdson’s Hope, Tumbler Ridge, Princeton, Keremeos, Fernie, etc.)

***“Water supply” related projects***

- \* Design and completion of two water production wells for a residential subdivision, June 2017

Lantzville, BC

- \* Groundwater at the Risk of Pathogens (GARP) assessment for a residential subdivision, Duncan, BC
- \* Design and completion of a water production well for 45 ha residential property, Le Muy, France
- \* Design and completion of a water production well under artesian condition near the Bonaparte River, Bonaparte First Nation, BC
- \* Design and completion of a water production well, Round Lake Health Center, First Nations Health, BC
- \* Review of water quality and THMs related water quality issues for three community production wells, Sandspit, Skeena Queen Charlotte Regional District
- \* Groundwater resource assessment for 3-lot subdivision, Yellowpoint, Cowichan Valley Regional District, BC
- \* Review of water source used for water bottling plant, Pemberton, BC
- \* Hydrogeological review of regional conditions on Roatan Island, Honduras, for a community water supply project – GW Solutions volunteered for Hydrogeologist Without Border, Honduras.
- \* Design and completion of a series of production wells for golf course irrigation, Parksville, BC
- \* Design and completion of large production well for Conuma River fish hatchery (DFO), Tahsis, BC
- \* Yield assessment of large production wells, Robertson Creek fish hatchery (DFO), Port Alberni, BC
- \* Hydrogeological assessment for small proposed subdivision, Regional District of Nanaimo, BC
- \* Groundwater resource assessment for 7-lot subdivision, Cedar, Regional District of Nanaimo, BC
- \* Groundwater resource assessment for use as a municipal water supply, Village of Tahsis, BC
- \* Groundwater resource assessment for proposed trailer park, Tofino, BC
- \* Design of large production well for resort, Fairmount, BC
- \* Review of water supply system relying on groundwater for a winery, Lake Cowichan, BC
- \* Characterisation of water supply source for Scout Canada Camp, southeast Alberta
- \* Professional opinion on potential groundwater supply for public water system, Whiskey Creek, Regional District of Nanaimo, BC
- \* Well siting and limited hydrogeological assessment, Nanoose, BC
- \* Background hydrogeological review and opinion on potential residential water supply,

Ladysmith, BC

- \* Large water supply investigation for residential development, Lantzville, BC
- \* Large water supply investigation for senior housing development, Lantzville, BC
- \* Hydrogeological investigation - including surface water groundwater assessment for large residential subdivision, Lantzville, BC
- \* Design of large production municipal well – Senior review, Parksville, BC
- \* Design of large production municipal well – Senior review, Quesnel, BC
- \* Design of large production municipal well – Senior review, Merritt, BC
- \* Assessment of surface water and groundwater interaction and groundwater travel time – Sun Peaks Resort, BC
- \* Professional opinion on potential groundwater supply for irrigation of agricultural land, Lantzville, BC
- \* Professional opinion on potential groundwater supply from a dug well for rural subdivision, Jameson Road, Nanaimo, BC
- \* Professional opinion on potential groundwater supply from a drilled well for rural subdivision, Jameson Road, Nanaimo, BC
- \* Design and preliminary testing of water wells, Nanoose, BC
- \* Assessment of water supply for land development, using an artesian well completed in a bedrock aquifer. The assessment included aquifer protection recommendations. Garden Bay (Sunshine Coast), BC
- \* Assessment of water supply for land development, using a surface water pond, Garden Bay (Sunshine Coast), BC
- \* Assessment of a water supply to provide base flow for fish habitat, as part of requested mitigative measure for a storm water management plan for a land subdivision, Township of Langley, BC
- \* Retained as the main consultant for aquifer characterization and protection and for system operation of a large water purveyor relying only on groundwater, Clearbrook, BC
- \* Assessment of potential impact to the water supply of a ski resort of a proposed open loop geothermal system, Sun Peaks, BC
- \* Water source assessment, residential development, Ucluelet, BC
- \* Water supply assessment for 70-lot subdivision, Nanaimo, BC
- \* Assessment of part of drinking water supply system (Regional District of Comox-Strathcona) and design, construction and testing of new production well, Oyster River, BC

- \* Salt water Intrusion study and design of monitoring plan for production well, Parksville, BC
- \* Assessment of failure (collapse of large cavity created by fine migration) of large production well for Canadian Forces Base, Comox, BC
- \* Decommissioning of municipal well, Lantzville, BC
- \* Development of a wellhead protection area, risk identification and well survey, Gold River, BC
- \* Hydrogeological assessment of bedrock well, Regional District of Lake Country, Ellison Ridge, BC
- \* Testing of a water supply well for a school and design of re-injection structure, Mayo, Yukon.
- \* Water supply, licensing review and preliminary study of potential new groundwater resources, Mount Washington Alpine Resort, Courtenay, BC.
- \* Characterization of water sources (water well and infiltration gallery) used by a bottled water processing plant. The study was completed to satisfy the requirements of provincial health officers and to apply for an exporting license to California, Fanny Bay, BC.
- \* Water demand and population growth assessment in preparation for treaty negotiation, Hul'Qumi'Num Treaty Group, central and southern Vancouver Island, BC
- \* Preliminary hydrogeological study for Olympic facility (Whistler Sliding Centre), CEAA screening, Whistler, BC
- \* Data review and recommendations for rehabilitation and maintenance plan for municipal well field, Ucluelet, BC
- \* Hydrogeological investigation for the potential development of a groundwater supply source for a proposed water bottling facility, Gold River, BC.
- \* Water Supply study for provincial park facility, Little Qualicum River, Qualicum Beach, BC
- \* Development of a wellhead protection area, risk identification and well survey, Gold River, BC
- \* Water supply monitoring and assessment of potential salt water intrusion, two municipal water supply wells, Regional District of Nanaimo, Nanaimo, BC
- \* Hydrogeological assessment to identify origin of hot spring and possibility of using hot water as a geothermal source (for Kaska Deena Council) without impacting sensitive ecosystems, Liard Hot spring, BC
- \* Regional hydrogeological study and assessment of artesian municipal production well with

large discharge rate at elevated temperature to be used as a source of energy - senior technical input and review, Haynes Junction, Yukon

- Well efficiency and microbiological assessment followed by design and implementation of well rehabilitation plan, Agriculture Canada Facility (well used for geothermal energy), Agassiz, BC
- Regional hydrogeological study (including numerical modelling) and development of water supply system for 150 lots subdivision, Parksville, BC
- Hydrogeological assessment (water supply and liquid waste assessment) for large residential development (80 lots) in preparation for preliminary layout (PLA) application, regional District of Alberni-Clayoquot, BC
- Hydrogeological study (water supply & liquid waste disposal) of large property proposed for residential development. Low impact development solutions proposed to counter adverse hydrogeological conditions encountered, Lantzville, BC
- Hydrogeological study for residential development (including 2D modelling) and promotion of low impact development solutions, Parksville, BC
- Literature review to assess impact of forest harvesting on water table fluctuation, Western BC

## **STORM WATER MANAGEMENT**

- Input to an integrated storm water management plan, team-work with a civil engineering consulting firm, Comox, BC.
- Input to an integrated storm water management plan, team-work with a civil engineering consulting firm, maple Ridge, BC.
- Hydrogeological Investigation for failing storm water residential system, Beaver Creek, Port Alberni, BC
- Stormwater infiltration study for Riverbend 2-lot subdivision, Parksville, BC
- Hydrogeological Investigation of damages to residential property potentially associated with storm water disposal, Comox, BC
- Hydrogeological Investigation for storm water disposal exfiltration gallery, Courtenay BC
- Stormwater infiltration study for subdivision, Parksville, BC
- Stormwater infiltration study for Parksville Fire Department property upgrade, Parksville, BC



- \* Stormwater infiltration study for subdivision , Qualicum Beach, BC
- \* Hydrogeological investigation to assess source of residence flooding in recently built subdivision, in preparation for litigation, Whitehorse, Yukon
- \* Hydrogeological study for stormwater disposal, Nanaimo, BC
- \* Hydrogeological assessment and design of storm water disposal facility (including analytical modelling), commercial facility, Courtenay, BC
- \* Stormwater testing of ICBC facility, Courtenay, BC
- \* Groundwater and stormwater monitoring - review, various ICBC works yard locations, Terrace area, BC
- \* Hydrogeological investigation and preparation of erosion and sediment control plan, residential development, Nanaimo, BC
- \* Impact assessment of failing septic fields on storm water quality, Lantzville, BC
- \* Hydrogeological study of large storm water drainage system (Queen's Ditch), Comox, BC
- \* Hydrogeological study and design of disposal to the ground of storm water for a residential development, Qualicum Beach, BC
- \* Hydrogeological study of the T'Kumlups Marsh and the Kamloops Indian Band Floodplain - review, Kamloops, BC
- \* Storm water disposal feasibility study for proposed development, Kal Lake, Kelowna, BC
- \* Storm water disposal feasibility study for large department store - review, Kelowna, BC
- \* Hydrogeological study to assess groundwater regime near sewage lagoons and potential impact on slope stability due to operation of lagoons, Cranbrook, BC
- \* Impact assessment of logging on quality and quantity of stream flows (streams used as drinking water and power sources), Glendale Cove, Knight Inlet, BC
- \* Assessment of infiltration capacity of a storm water infiltration basin, Langford, BC
- \* Assessment of causes of flooding of private property, Cumberland, BC
- \* Review of drainage of highway subgrade on steep hillside, Vancouver, BC

## FIRST NATIONS

### **Most Complex – Largest Projects (budgets ranging between \$ 100,000 and \$ 1 Million).**

- Regional hydrogeological study of the Athabasca Chipewyan First Nation territory, Northeast Alberta.
- Completed a review and critique of a large hydrogeological study on behalf of the Halalt First Nation for a proposed series of production wells (water supply for the District of North Cowichan) as part of a provincial and federal environmental assessment process and a BC Supreme Court case, Chemainus River Aquifer, Halalt First Nation, BC
- Investigation of water needs and water resources of 120 villages (150 to 3,000 inhabitants). Duties included a visit of each village, meeting with the representatives, global socio-economical study in order to estimate the most appropriate techniques to meet water needs. Guidimaka region, Mauritania.

### **Other Projects (budgets up to \$ 100,000)**

- Design and completion of a water production well, Round Lake Health Center, First Nations Health, BC
- Retained by Stk'emlupsemc Te Secwepemc Nation (SSN) to review of KGHM Ajax Project Environmental Assessment Application, including the review of a hydrogeological numerical model and pumping test interpretation, Kamloops, BC.
- Design and completion of a water production well under artesian condition near the Bonaparte River, Bonaparte First Nation, BC
- Review of potential impacts to surface water, groundwater, and aquifers of proposed shale gas drilling by Northern Cross in Eagle Plains, Yukon
- Presented information (workshop and webinar) on groundwater, aquifers and watersheds, in relation to the BC Water Sustainability Act, groundwater regulations to First Nations (land managers and decision makers) in preparation of the enactment of the new regulations. The presentations focused on groundwater and surface water interaction, and the requirements to maintain Environmental Flow Needs (for fish and fish habitat) in streams that could be impacted by groundwater extraction, Presentation in Kamloops and through Webinar, BC
- Hydrogeological background review to assess what is known, what is unknown and what should be known in order to estimate the potential impact of hydraulic fracturing on shallow aquifers, Vuntut Gwitchin Government, Old Crow, Yukon
- Cowichan Tribes, water source assessment (including GUDI potential), Duncan, BC
- Hydrogeological background review to assess what is known, what is unknown and what should be known in order to estimate the potential impact of hydraulic fracturing on shallow aquifers, Fort Nelson First Nation, BC

- Development of a water strategy for the Fort Nelson First Nation, Fort Nelson First Nation Territory, Northeast BC
- Review of applications for water extraction (part of the Oil and Gas Commission referral process) for the Fort Nelson First Nation, Fort Nelson First Nation Territory, Northeast BC
- Water System Description, Halalt First Nation, near Chemainus, Vancouver Island, BC
- Water demand and population growth assessment in preparation for treaty negotiation, Hul'Qumi'Num Treaty Group, central and southern Vancouver Island, BC
- Hydrogeological assessment to identify origin of hot spring and possibility of using hot water as a geothermal source (for Kaska Deena Council) without impacting sensitive ecosystems, Liard Hot spring, BC
- Hydrogeological assessment for habitat restoration plan (salmon spawning grounds), Maria Slough on Seabird Island, Seabird Island Band (Agassiz), BC
- Preparation and delivery of a one-day workshop to identify watershed protection issues and assess possibility of building partnership to design long-term plan, Kiskatinaw River Watershed, Dawson creek, BC
- Hydrogeological study at site proposed for sewage treatment facility - senior technical input and review, Carmacks, Yukon
- Hydrogeological Assessment, Esketemc First Nations I.R. #2, Johnny Sticks, Alkali Lake, B.C.
- Installation of monitoring well network to monitor potential impact of solid waste facility - review, Carmacks, Yukon
- KD First Nation water well inspections - review, Whitehorse area, Yukon
- Water supply upgrade assessments for Liard First Nation - review, Watson Lake, Yukon
- Hydrogeological study of the T'Kumlups Marsh and the Kamloops Indian Band Floodplain - review, Kamloops, BC
- Hydrogeological Assessment for septic field design on First Nations Land, Nanoose, BC
- Hydrogeological investigation and assessment of impact of installation of septic field on water quality and slope stability, Malahat Indian Band, Mill Bay, BC

## LIQUID AND SOLID WASTE

- Hydrogeological Investigation and Environmental Impact, Assessment – Liquid Waste Disposal Facility for Sakinaw Ridge, Garden Bay, BC
- Hydrogeological Assessment of groundwater regime in association with design of liquid waste treatment lagoon, Burwash Landing, Yukon.
- Study at site proposed for sewage treatment facility - senior technical input and review, Carmacks, Yukon
- Hydrogeological study at site proposed for sewage treatment facility - senior technical input and review, Atlin, BC
- Conceptual hydrogeological study, waste water predesign study, Carmacks, Yukon
- Hydrogeological study at land debris landfill, Tofino, BC
- Hydrogeological Study, open pit mine, design of leachate collection system, Port Hardy, BC
- Water supply and liquid waste disposal assessment for a resort - review, Carcross, Yukon
- Installation of monitoring well network to monitor potential impact of solid waste facility - review, Carmacks, Yukon
- Preliminary hydrogeological study for water supply and liquid waste disposal assessment for proposed resort, Ucluelet, BC
- Hydrogeological study at location of woodwaste landfill, Shawnigan Lake, BC
- Hydrogeological assessment and potential environmental impact assessment for proposed expansion of woodwaste landfill, Parksville, BC
- Impact assessment of failing septic fields on storm water quality, Lantzville, BC
- Complex hydrogeological study for water supply and liquid waste disposal for large commercial, residential and golf course development (2000 doors), Union Bay, BC
- Hydrogeological study to assess groundwater regime near sewage lagoons and potential impact on slope stability due to operation of lagoons, Cranbrook, BC.
- Hydrogeological investigation and assessment of impact of installation of septic field on water quality and slope stability, Malahat Indian Band, Mill Bay, BC.
- Hydrogeological investigation and assessment of impact of installation of sewage treatment plant on water quality, Hazelton, BC.
- Several hydrogeological studies for the design and implementation of septic fields in difficult hydrogeological conditions (Cedar, Duncan, Shawnigan Lake, Campbell River, Bamfield,

Sooke).

- Monitoring of ground disposal of sewage effluent, Shawnigan Lake, BC.
- Assessment of groundwater mound building in wastewater treatment dunes, Whitehorse, Yukon.
- Assessment of subsurface conditions associated with wastewater disposal and water supply assessment for the Aldergrove Border Crossing Facility, Aldergrove, BC.
- Characterization of a site formerly used as a waste sludge lagoon. Assessment of the contamination of the subsurface using geoprobes and real time logging (for collection of data and groundwater samples), Annacis Island, BC.

## LANDFILL

- Leachate control and impact of landfill on groundwater quality as part of the closure plan for the Campbell River Landfill, Comox Valley Regional District, BC
- Characterization of subsurface and hydrogeological conditions at a landfill site, for a proposed expansion of the landfill, Regional District of Nanaimo, BC.
- Review of landfill operation and impact on soil gases and groundwater - 3 year senior review, Cache Creek, BC
- Characterization of subsurface and hydrogeological conditions at a landfill site, for the design of a proposed leachate collection pond, Pender Harbour, BC.
- Characterization of subsurface and hydrogeological conditions at a landfill site, and conceptual design of measures to reduce and treat the generated leachate, Mount Waddington Regional District, Port McNeill, BC.
- Assessment and monitoring of impact on groundwater of several solid waste landfills (including web based on-line reporting) - 5 year contract, Regional District of Comox-Strathcona, BC
- Retrofit Bioenhancement of the Existing Regional District of Nanaimo Landfill Cell, Nanaimo, BC
- Long term monitoring of impact to groundwater of landfill operation, Mount Waddington Regional District, Port McNeill, BC.
- Hydrogeological investigation and Mitigation plan of land clearing debris landfill, Tofino, BC.
- Hydrogeological investigation of municipal landfill, Atlin, BC.
- Groundwater and surface water impact monitoring at location of woodwaste landfill, Shawnigan Lake, BC
- Hydrogeological study, Wood Waste Landfill, Parksville, BC
- Quarterly Landfill Gas Monitoring, Chemainus Wood Waste Landfill, Chemainus, BC
- Groundwater monitoring and sampling, China Creek Wood Waste Landfill, Port Alberni, BC
- Water Quality Monitoring, North Okanogan Regional District Landfills, Vernon, BC



## **LIQUID WASTE DISPOSAL ASSESSMENT**

- Septic Investigation - Buckley Bay Store, Buckley Bay, BC.
- Review Liquid Waste Treatment and Disposal Coombs Old Country Market, Qualicum Beach, BC
- Phase II Pre-design Sewage treatment Facility, Senior technical input and review, Burwash Landing, Yukon
- Septic Field Analysis, Campground Services - review, Watson Lake, Yukon
- Septic field analyses for First Nation Community, Nanoose, BC
- Environment assessment in relationship with proposed development of a marina, Toquaht First Nation, Toquaht Bay, BC
- Log sort waste water disposal field assessment, Sproat Lake, Port Alberni, BC
- Breakout assessment of ground disposal of liquid waste - review, Vernon, BC
- Hydrogeological investigation for the design of ground disposal of liquid waste facility, Kelowna, BC
- Hydrogeological study for septic fields upgrade at three BC provincial parks, central Vancouver Island, BC
- Hydrogeological assessment of proposed septic systems on water quality in the Englishman River, Parksville, BC

## ENVIRONMENTAL INVESTIGATIONS

- Assessment of subsurface conditions at a petroleum refinery. Tasks included identifying various areas impacted by historical operations, rating their potential impact on the environment and the degree of urgency of control and mitigative actions. Control and remediation was focused on a tidally affected loading spur located near an inlet. A series of recovery wells was installed to recover liquid phase hydrocarbon and create a hydraulic barrier controlling migration of contaminants. In addition, a subsurface investigation was carried out to fully delineate the extent of dissolved hydrocarbon plumes impacting a foreshore and assess the impact of the contamination on sediment and groundwater quality of this area. A control and remediation system was designed consisting of a 50 m long sheetpile wall and six recovery wells to prevent the transport of residual hydrocarbon to an intertidal zone. Fish habitat compensation was taken into consideration in the design, Burnaby, BC.
- Assessment and hydrocarbon contaminated soil and groundwater. Design and implementation of remediation using dual-phase extraction, Whitehorse International Airport, Whitehorse, Yukon.
- Assessment of subsurface conditions around and within a tank basin, using a light helicopter type drilling rig (due to access and safety restrictions), Burnaby, BC.
- Assessment of subsurface conditions in a tank basin, around a tank with corrosion perforated floor, Burnaby, BC.
- Assessment of subsurface conditions at a 260 ha property, (80 ha having been used as a refinery and terminal) for a comprehensive characterization of soil and groundwater quality for the establishment of an environmental management program and divestment plan, Port Moody, BC.
- Assessment and remediation of a tidally affected site. Remediation using bioslurping (total fluid and vapour extraction) and in situ bioremediation. Port Alberni, BC.
- Assessment of soil and groundwater contamination (hydrocarbon) at bulk plant sites, design of control and remediation measures (pump & treat, soil vapour extraction, dual vacuum extraction) and assessment of performance of treatment systems, Penticton, Kelowna, Grand Forks, Kamloops, BC.
- Emergency response to hydrocarbon spill in the context of a shallow aquifer (near lakes) in a developed tourist area. Remediation included the design and installation of recovery trenches, Osoyoos, BC.
- Assessment and remediation of soil and groundwater contamination (metals, DNAPLS) along a right-of-way for the construction of a water main pipeline crossing a ceramic waste landfill, Coquitlam, BC.
- Assessment of subsurface conditions of a printing facility, Langley, BC. In conjunction with a consulting firm in Montreal, Québec.
- Remediation of hydrocarbon contaminated subsurface using soil vapour extraction and bioremediation enhancement through two (120 m and 75 m long horizontal wells) and treating

the extracted vapours with flow through a biocell before reinjection in a trench to reach zero discharge, Penticton, BC.

- Assessment of eight remote hydrocarbon contaminated sites (radio telephone stations) and preparation of remediation and environmental management plans, Northern Ontario.
- Assessment and remediation of organochlorine pesticides contaminated soils on an orchard property, Kelowna, BC.
- Assessment and remediation of hydrocarbon and metals contaminated soils on sawmill property, Chemainus, BC.
- Assessment of hydrocarbon contaminated subsurface in a tidally influence zone and control and remediation of the contamination using bioslurping. Performance assessment of the remediating system, after two years of operation. North Vancouver, BC.
- Assessment of hydrocarbon contaminated subsurface and control and remediation of the contamination (liquid and vapour phases) using bioslurping, Surrey, BC.
- Subsurface investigation/tailings sampling for arsenic contamination and installation of groundwater monitoring wells, Campbell Mine, Ontario.
- Assessment of arsenic contamination (special waste soils) and design of a remediation plan, New Westminster, BC.
- Environmental investigation and remediation of commercial site contaminated with hydrocarbons, near foreshore, Alert Bay, BC.
- Assessment and remediation of hydrocarbon contaminated groundwater at a former Tree Nursery site, Vancouver, BC.
- Assessment of hydrocarbon and MTBE contaminated groundwater at main pipeline pumping station near National Park, Jasper, Alberta
- Assessment of soil and groundwater contamination due to wood waste storage, Nanaimo, BC.
- Review of regulatory compliance of landfill operations, Tofino, BC.
- Hydrogeological investigation and impact assessment of wood waste landfill, Parksville, BC.
- Hydrogeological investigation and impact assessment of wood waste landfill, Shawnigan Lake, BC.
- Literature review of impact of tree harvesting on groundwater and water table fluctuations.
- Contaminated soil - Delineation - review - Chetwynd Highway, northern BC
- Supplemental site investigation - review, Clayhurst, BC
- Supplemental site investigation - review, Chetwynd, BC

- Supplemental site investigation - review, Kiskatinaw, BC
- Detailed Site Investigation, Watson Lake airport - review, Watson Lake, Yukon
- Preliminary Site Investigation, Diesel Generating Station, Atlin BC.
- Jasper Pump station, Data Review, Preparation of Report with Recommendations for Groundwater Recovery and Treatment System, Jasper BC
- Stage 1 Preliminary Site Investigation - senior technical input, Delta, B.C.
- Highways Maintenance Yard, Groundwater Investigation -review, Jaffray, BC
- Stage 1 Preliminary Site Investigation - review, Chilliwack, BC
- Stage 2 Preliminary Site Investigation, At three redi-mix plants located in Central Vancouver Island, BC
- Groundwater monitoring - review, various Insurance Corporation of BC (ICBC) yards, BC
- Detailed Site Investigation - senior technical input and review, Canadian Pacific Site, Courtenay, B.C
- Stage 1 & 2 Investigations - review, Nanaimo, B.C
- Jet Fuel Spill Assessment - review, Zeballos, BC
- Environmental Impact Assessment, Cobble Hill, BC
- Stage 2 Preliminary Site Investigation - review, Vernon, BC
- BCBC Buick Creek Yard site Remediation - review, Buick Creek, BC
- Groundwater Monitoring industrial site - review, Dawson Creek, BC
- UST Inspection Report - review, Whitehorse, YT.
- Subsurface investigation and remediation, BCBC Highways Yard - review. Campbell River,
- Soil Assessment Biocells, Dryland Sort - review, Powell River, B.C.
- Preliminary Site Investigation - review, Texada Island, BC
- Geotechnical Liability Assessment - review, Texada Lands, Saltspring Island, BC
- Emergency Spill Response - technical input and review, Highway to Tofino, BC
- Stage 2 Preliminary Site Investigation - review, Westbank, BC
- Subsurface investigation and remediation planning, Whitehorse Airport - review, Whitehorse, June 2017

## Yukon

- Phase 3 ESA, Plan of Restoration and Remediation Supervision - senior technical input and review, Transportation Museum, Whitehorse, Yukon
- O&M Multi Phase Extraction System - senior technical input and review, Whitehorse, Yukon
- Assessment of Albert Creek Uranium - technical input, Albert Creek, Yukon
- Ph 3 ESA Yellowknife Centre - review, Yellowknife, NWT
- Quadra Island Highways Yard Remediation - review, Quadra Island, BC
- Gold River Highways Yard Remediation - review, Gold River, BC
- Supplemental Investigation - review, Parksville, BC
- Stage 2 PSI - review, Comox, BC
- Stage 1 PSI - review, Nanaimo, BC
- Stage 2 PSI, Former Hawes Camp - review, Cowichan Lake, BC
- Supplemental Detailed Site Investigation (DSI) - review, Sointula, BC
- Spill Response & Reporting, Generating Station - review, Campbell River, BC
- Stage 1 PSI - review, Parksville, BC
- Environmental Assess for sewer line construction, review, Parksville, BC
- Stage 1 PSI - review, Chemainus, BC
- Stage 1 PSI - review, Parksville, BC
- Environmental Assessment for Film Shoot - review, Pacific Rim National Park, Tofino, BC
- 3 Stage 1 PSI - project management and review, Parksville, BC
- Stage 1 PSI - review, Nanaimo, BC
- Stage 1 PSI - review, Elk Valley, BC
- Travel time estimate for contaminated site - senior technical input and review, Comox, BC
- Soils sampling and testing, Nanaimo Port Authorities, review, Nanaimo, BC
- Environmental Site Assessment, DND site - review, Nanaimo, BC
- Biophysical Investigation Two Sites - review, Courtenay, BC

- Problem Solving/Risk Assessment of groundwater contamination (organics), senior technical input, Port Alberni, BC
- Remediation of oil spill - review, Whitehorse, Yukon
- Groundwater travel time estimate for contaminated site, Vancouver, BC
- Phase 1 & 2 Environmental Site Assessment - review, Richmond, BC
- Remediation Plan, Burwash Camp - review, Burwash Landing, Yukon
- Environmental impact study, Miracle Beach Provincial Park, Courtenay, BC
- Preliminary Stage 1 investigation for large forested land with historical landfill and potential world war II plane crash, Ucluelet, BC
- Remediation of Hydrocarbon Contaminated Soil - review, Watson Lake Airport, Yukon
- Site Remediation, Hwy 97 South - review, Westbank, BC
- Environmental investigation of industrial site potentially contaminated with chromium, Langley, BC.
- Characterization and remediation of industrial property contaminated with salt and hydrocarbons, Alexis Creek, BC.
- Characterization and remediation of industrial property contaminated with salt and hydrocarbons, Barriere, BC.
- Environmental investigation and remediation of commercial site contaminated with hydrocarbons, Courtenay, BC.
- Design of dewatering measures to remediate hydrocarbon contaminated groundwater, Vancouver, BC.
- Hydrogeological assessment of industrial site contaminated with wood wastes, Nanaimo, BC.
- Assessment of the impact of acid mine drainage originating from the Mount Washington Copper Mine on the Tsolum River (rated as the most endangered river in BC in 1998). Identification of remedial measures. Tsolum River Task Force, Courtenay, BC.
- Preliminary Site Investigation Stage I and II, Civic Centre, Tofino, BC.
- Detailed Site Investigation for contaminated site near foreshore, Queen Charlotte Islands, BC.
- Review of completed environmental site investigations followed by recommendations on potential remediation options, Campbell River, BC.
- Assessment and remediation of chromium contaminated soil and groundwater at an industrial site, Campbell River, BC.



- Environmental assessment of the historical impact of an agricultural research centre, Duncan, BC.
- Environmental assessment of a light industrial site with history of hydrocarbon contamination, Nanaimo, BC.
- Environmental assessment of a large commercial/industrial site being rezoned (with history of hydrocarbon contamination), Langley, BC.
- Environmental assessment and remediation of industrial site (subsurface contaminated by hydrocarbon and metals), Langford, BC.
- Environmental assessment and remediation of light industrial site (subsurface contaminated by hydrocarbon and metals), Mt. Washington, Courtenay, BC.
- Environmental assessment and remediation of commercial site (subsurface contaminated by metals), Victoria, BC.
- Environmental assessment and remediation of commercial site (subsurface contaminated by metals), Duncan, BC.
- Environmental assessment and remediation of commercial property impacted by subsurface contamination associated with the operation of a dry cleaning facility, Port Alberni, BC.
- Monitoring of remediation through bioremediation of hydrocarbon contaminated gas station, Duncan, BC.
- Numerous Preliminary Site Investigations, Port Alberni, Parksville, Nanaimo, Victoria, Duncan, BC.
- Review of numerous Preliminary Site Investigation, Stage I and Stage II, for sites in Western Canada.
- Characterization of contaminated industrial sites, Paris, France.
- Review of projects (assessment and remediation of contaminated sites). Tasks consisted of reviewing data on stratigraphy, hydrogeology, chemistry, construction design, summarizing site conditions, assessing contamination sources, estimating contaminant pathways, assessing performance of existing remediation measures, making recommendations on modification of remediation measures and monitoring, and proposing remediation and monitoring plans. Campbell River, Chilliwack, Gibson, Grand Forks, Kamloops, Kelowna, Kimberley, Lake Cowichan, Nanaimo, North Vancouver, Oliver, Osooyos, Penticton, Port McNeill, Prince George, Richmond, Salmo, Terrace, Vancouver, Victoria (BC), Dauphin, Winnipeg, (MB), Melville, Saskatoon, St Walburg (SK), Calgary, Edmonton (AB).
- Review of project funding applications submitted by Canadian Universities to the Canadian National Research Council.
- Review for BC Environment, Lands and Park of a report on subsurface investigation of a small, simple site, as selected external reviewer.

## GEOTECHNICAL INVESTIGATIONS

- Complex hydrogeological modelling along dam abutment using Feeflow – Detailed Design of E2 Shaft Replacement / Remediation at Cleveland Dam – East Abutment, senior technical input and review, Vancouver, BC
- Assessment of artesian flow during excavation for residential complex and design of groundwater pressure release trenches, Campbell River, BC
- Water well evaluation and monitoring (baseline for assessment of potential impact due to Highway expansion) - review, Okanogan Improvements Project, Summerland, BC
- Review of the design of relief wells for the little Bow River Dam, Alberta
- Water reservoir groundwater investigation - review, Jean Marie River, North West Territories
- Assessment of drainage in rehabilitation of highway pavement, senior technical input, Gagliardi Way, Burnaby, BC
- Assessment of artesian flow following the installation of an elevator shaft and conceptual design of control measures, North Vancouver, BC
- Evaluation of water loss, transport of particles and subsequent ineffectiveness of vibro flotation techniques, Vancouver, BC
- Assessment of soil settlements during dewatering, Richmond, BC
- Characterization of hydrogeologic conditions of a landslide and implementation of depressurization wells, Kamloops, BC
- Field manager, geotechnical investigations for a 6 million m<sup>3</sup> reservoir, Great Man Made River Project (irrigation project), Libya. Duties included management of a drilling team, in situ and laboratory testing (four engineers, 10 workers).
- Field geotechnical engineer, involved in soil investigations along a 900-km trench, at well fields, and at reservoir sites. Duties included supervising soil and rock drilling, in situ and laboratory testing. Great Man Made River Project, Libya.

## EXPERT WITNESS AND LITIGATION

- Providing technical expertise in preparation for hearing for Fort McKay Metis Community Association, regarding the Application for Approval of the Prosper Petroleum Ltd. Rigel Oil Sands SAGD Project, Fort McKay, Alberta
- Providing technical expertise in preparation for hearing for the Athabasca Chipewyan First Nation (ACFN) - Industry Relations Corporation (IRC), regarding the Application for Approval of the Teck – Frontier Oil Sands Project, North Athabasca Valley, Alberta
- Providing technical expertise (expert witness) for a court case in the Matter of Certain Appeals under section 72 of the Oil and Gas Activities Act, Penalty Ranch Ltd. v. February 12, 2016 decision of OGC to issue a well permit to Crew Energy Inc., and a February 23, 2016 permit correction [2016-oga-001] and June 3, 2016 decisions of OGC to issue well permits to Crew Energy Inc. for Crew HZ Monias A15-09-082-20 [2016-OGA-002] and Crew NZ Monias B15-09-082-20 [2016-OGA-003] [OGAT File 2016-OGA-G01]
- Providing opinion about risks of hydraulic fracturing for unconventional gas extraction on watersheds to the Select Committee of the Yukon Legislative Assembly, Whitehorse, Yukon, 2014
- Hydrogeological Investigation of damages to residential property potentially associated with storm water disposal, Comox, BC
- Providing technical expertise for a supreme court case relating to the cause of icy conditions that created a car accident, Salt Spring Island, BC, 2013
- Provided technical support for small claim court case relating to the potential interaction between an artesian bedrock well and a spring, Salt Spring Island, BC, 2013
- Provided technical support in the *Halalt First Nation vs British Columbia (Minister of Environment)*, BCCA No. CA039264; No. CA039263, BC Supreme Court case (2010)
- Retained as a technical expert by the Minnie Lake Conservation Society (MLCS) for an intervention with the Energy Resources Conservation Board (ERCB), regarding the potential impact of proposed CNRL bitumen extraction wells on the groundwater resources, Alberta (March 2011)
- Provision of expert report regarding probability of finding drinkable water in a dug well at plaintiff's property, Erickson, for BC Ministry of Attorney General, BC (2010)
- Technical input in the assessment of the impact of a landfill on both the groundwater regime and the groundwater quality, Powel River, BC (2009)
- Impact of operation of sewage lagoons on the modification of the groundwater regime and potential slope instability creating damage to cutslopes and embankments along a railway track, preparation of hearing for Environmental Assessment Board, expert witness, Cranbrook, BC (2008)
- Hydrogeological investigation to assess source of residence flooding in recently built subdivision, report completed in preparation for litigation, Whitehorse, Yukon (circa 2003)
- Private property damaged by flooding, expert witness, Shawnigan Lake, BC
- Impact of proposed discharge of liquid waste to the ground near water well used by private water utility, expert witness, Parksville BC

- Appeal to the Ministry of Health associated with the completion of a sewage disposal field, expert witness, Campbell River, BC

## TECHNICAL PUBLICATIONS

Gilles Wendling has published over two dozens technical publications in peer-reviewed (e.g., Groundwater) and other technical and professional magazines, and conference proceedings.

- \* A PORTRAIT OF OIL AND GAS WELLBORE LEAKAGE IN NORTHEASTERN BRITISH COLUMBIA, CANADA, Joshua Wisen, Romain Chesnaux, John Werring, Gilles Wendling, Paul Baudron, & Florent Barbecot, GeoOttawa 2017
- \* CANADA'S GROUNDWATER RESOURCES, Co-author with Rivera and al, ISBN 978-1-55455-292-4, published by Fitzhenry and Whiteside Limited, 2013
- \* MODELING THE IMPACTS OF SHALE GAS EXTRACTION ON GROUNDWATER AND SURFACE WATER RESOURCES, Romain Chesnaux, Lucie Dal Soglio, and Gilles Wendling, GeoMontreal 2013
- \* INTEGRATING THE SITE WITH THE WATERSHED AND THE STREAM, with the Partnership for Water Sustainability in BC and Living Rivers – Georgia Basin, March 2012
- \* SQUEEZING A FEW MORE DROPS FROM BEDROCK – USING DISPERSANT TO INCREASE THE YIELD OF HYDROFRACTURED WELLS, with Tom Gleeson and Thom Hanna, Water Well Journal, August 2005
- \* RISK-BASED WELLHEAD PROTECTION PLANNING, with H. S. Schillereff and T. Gleeson, 2005 – First Groundwater Forum, San Antonio and posted on the WATERBUCKET, a Stewardship Canada website.
- \* Reviewer for: EVALUATING LONG-TERM WELL CAPACITY FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY, A guidance Document issued by the BC Ministry of Environment, 1999.
- \* QUANTIFYING THE EFFECTS OF WELL DEVELOPMENT IN UNCONSOLIDATED MATERIAL, with Robert P. Chapuis and Denis. E. Gill, Groundwater, May-June 1997, p.387-393.
- \* INVESTIGATION OF DISSOLVED PHASE ORGANIC CONTAMINATION USING A SONIC DRILL RIG AND A MOBILE LABORATORY, 1995, with Leslie Hardy, 5th Annual Symposium on Groundwater and Soil Remediation, 1995 10 2/6, Toronto, Ontario, October.
- \* VARIATION DE PERMÉABILITÉ AU VOISINAGE D'UN Puits DUE À UN DÉVELOPPEMENT PAR PISTONNAGE: REPRODUCTION EN LABORATOIRE, 1992 - with R.P. Chapuis and D.E. Gill. 45th Canadian Geotechnical Conference, Toronto.
- \* VARIATION DE PERMÉABILITÉ AU VOISINAGE D'UN Puits DUE À UN DÉVELOPPEMENT PAR PISTONNAGE, 1991 - Thèse de Doctorat, École Polytechnique de Montréal, 1991.
- \* ÉSSAIS DE PERMÉABILITÉ À NIVEAU VARIABLE DANS DES PIÉZOMÈTRES, 1990 - with R.P. Chapuis. Rapport CDT, no. P904, École Polytechnique de Montréal, 48 pages, juin.

- \* MONITORING WELLS: FIELD MEASUREMENT OF PERMEABILITY WITH MINIMAL MODIFICATION OF GROUNDWATER, 1990 - with R.P. Chapuis. Proceedings of the CSCE Annual Conference and 1st Biennial Environmental Specialty Conference, Hamilton, Ontario, Vol. 1-2, pp. 765-777.
- \* VARIATION DE PERMÉABILITÉ AU VOISINAGE D'UN PUIITS DUE À UN DÉVELOPPEMENT, 1989 - with R.P. Chapuis and D.E. Gill. Rapport technique, Édition de l'École Polytechnique de Montréal, EPM/RT 89/3, 93 pages, mai.
- \* ESSAIS DE PERMÉABILITÉ À NIVEAU VARIABLE DANS DES PIÉZOMÈTRES, 1988 - with R.P. Chapuis. Rapport CDT, no. A284, École Polytechnique de Montréal, 158 pages, janvier.
- \* ESTIMATING THE MERITS OF PUMPING TESTS FOR DETERMINING HYDRAULIC CONDUCTIVITY, 1987 - with R.P. Chapuis and D.E. Gill. Proceedings of the 40th Canadian Geotechnical Conference, Regina, pp. 291-300.
- \* FILTRATION OF BROADLY GRADED SOILS BY WOVEN GEOTEXTILES, 1986 - with J. Lafleur and M. Tetreault. Proceedings of the 3rd International Conference on Geotextiles, Vienna, Austria.
- \* ÉTUDE DE LA STABILISATION PAR AUTOFILTRATION DES SOLS MODÉLISÉS À GRANULOMÉTRIE ÉTALÉE, 1985 - Mémoire M.Sc.A., École Polytechnique de Montréal.

## **PRESENTATIONS AND WORKSHOPS (Given)**

Gilles Wendling has given over 100 presentations and workshops, to audiences including:

- \* elementary and secondary school students,
- \* university students,
- \* regulators (Ministry of Environment, Health, Environment Canada)
- \* scientists; and
- \* the public.

Gilles Wendling has also presented a series on groundwater on Radio Canada.

- \* NEW TOOL (TABLEAU BASED) TO VISUALIZE WATER DATA (CHEMISTRY, WATER LEVEL, FLOW, ETC.), Webinar to Regional District Land/Water Managers, June 2017
- \* THE ENGLISHMAN RIVER AND ITS AQUIFERS, Public Presentation, June 2017, Parksville, BC
- \* PEACE RIVER REGIONAL DISTRICT – WATER QUALITY BASELINE, presented at BC Water and Waste (BCWWA) Annual convention, May 2017, Victoria, BC.
- \* PEACE RIVER REGIONAL DISTRICT – WATER QUALITY BASELINE, presented to BC Real Estate Foundation (Board of directors), April 2017, Vancouver, BC.
- \* GROUNDWATER REGULATIONS UNDER THE WATER SUSTAINABILITY ACT – AQUIFERS AND GROUNDWATER, Presentation to Mandell Pinder Law Firm, April 2017, Vancouver, BC
- \* Upper Fraser Fisheries Conservation Alliance - Watershed Management Workshop – (presentations on: Watershed Functions and Values Water Sustainability Act and First Nations Dimension - Alteration of Watersheds – Cumulative Effects - Data and Data Management), March 2017, Prince George, BC
- \* GROUNDWATER REGULATIONS UNDER THE WATER SUSTAINABILITY ACT – AQUIFERS AND GROUNDWATER, Presentation to Naut'sa mawt Tribal Council, March 2107, Chemainus, BC
- \* GROUNDWATER REGULATIONS UNDER THE WATER SUSTAINABILITY ACT – AQUIFERS AND GROUNDWATER, Presentation to Woodward and Cie Law Firm, March 2017, Victoria, BC
- \* PEACE RIVER REGIONAL DISTRICT – WATER QUALITY BASELINE, presented at BC Groundwater (BCGWA) Annual convention, March 2017, Kamloops, BC.
- \* GROUNDWATER REGULATIONS UNDER THE WATER SUSTAINABILITY ACT (WSA) - LICENSING AND GROUNDWATER REGULATIONS UNDER THE WSA – TOP 5 THINGS TO CONSIDER, Webinar presented to the First Nation Fisheries Council of BC, recorded, and shared with over 200 BC First Nations, December 7, 2016, Nanaimo, BC
- \* DATA MANAGEMENT, COMMUNITY BASED MONITORING AND WATER STORY TELLING, Gathering of BC First Nations - Mackenzie Basin Water Workshop, November 26, 2016, Fort Saint John, BC.
- \* GROUNDWATER REGULATIONS UNDER THE WATER SUSTAINABILITY ACT (WSA) – June 2017



AQUIFERS AND GROUNDWATER – Part 1, BC Aboriginal Land Managers AGM, October 20, 2016, Osoyoos, BC

- \* GROUNDWATER REGULATIONS UNDER THE WATER SUSTAINABILITY ACT (WSA) – AQUIFERS AND GROUNDWATER – Part 2, BC Aboriginal Land Managers AGM, October 21, 2016, Osoyoos, BC
- \* Convener of the session SHARING GROUNDWATER KNOWLEDGE at the 43<sup>rd</sup> International Hydrogeologist Association Congress, September 25-29, 2016, Montpellier, France
- \* SITE C DAM - INADEQUATE HYDROGEOLOGICAL ASSESSMENT AND LACK OF ASSESSMENT OF CUMULATIVE EFFECTS, 43<sup>rd</sup> International Hydrogeologist Association Congress, September 25-29, 2016, Montpellier, France
- \* INVESTIGATION OF POSSIBLE SURFACE CONTAMINATION FROM A DEEP WASTE DISPOSAL WELL IN NORTHEASTERN BRITISH COLUMBIA, CANADA, Wisen Joshua, Chesnaux Romain, Barbecot Florent, Baudron Paul, Wendling Gilles, and Werring John, David S, 43<sup>rd</sup> International Hydrogeologist Association Congress, September 25-29, 2016, Montpellier, France
- \* REGIONAL INTEGRATED SURFACE WATER AND GROUNDWATER QUALITY BASELINE IN NORTH EAST BC, CANADA, Kiene Antonio Barroso and Wendling Gilles, 43<sup>rd</sup> International Hydrogeologist Association Congress, September 25-29, 2016, Montpellier, France
- \* PEACE RIVER REGIONAL DISTRICT (PRRD) PHYSICAL HYDROGEOLOGY DATABASE & 3D MODEL + WATER QUALITY BASELINE, Public presentation, September 2016, Charlie Lake, BC
- \* PRRD PHYSICAL HYDROGEOLOGY DATABASE & 3D MODEL + WATER QUALITY BASELINE, Public presentation, September 2016, Dawson Creek, BC
- \* PRRD PHYSICAL HYDROGEOLOGY DATABASE & 3D MODEL + WATER QUALITY BASELINE, Public presentation, September 2016, Hudson's Hope, BC
- \* PRRD PHYSICAL HYDROGEOLOGY DATABASE & 3D MODEL + WATER QUALITY BASELINE, Public presentation, September 2016, Chetwynd, BC
- \* PRRD PHYSICAL HYDROGEOLOGY DATABASE & 3D MODEL + WATER QUALITY BASELINE, Presentation to PRRD Board of Directors, August 2016, Dawson Creek, BC
- \* PRRD PHYSICAL HYDROGEOLOGY DATABASE & 3D MODEL + WATER QUALITY BASELINE, Presentation to PRRD Water Committee, August 2016, Fort Saint John, BC
- \* GROUNDWATER - UNSEEN, COMPLEX, AND WORTH PROTECTING – Presentation to Master in Geography class, Vancouver Island University, March 2016, Nanaimo, BC
- \* SURFACE AND GROUNDWATER INTERACTION AND HOW IT WILL BE ADDRESSED VIA ENVIRONMENTAL FLOW NEEDS, 2015 Water Purveyor Working Group Workshop, June 2017

Organized by the Regional District of Nanaimo, December 1, 2015, Parksville, BC

- \* KITSELAS FIRST NATION – WATERSHED AND GROUNDWATER MANAGEMENT, Presentation to Kitselas FN Staff, Terrace, BC, November 24, 2015
- \* SURFACE WATER, GROUNDWATER AND OIL&GAS, JFK Law Corporation, Groundwater Seminar, November 13, 2015, Victoria, BC
- \* GROUNDWATER – A LIFELINE FOR PEOPLE AND FISH, JFK Law Corporation, Groundwater Seminar, November 12, 2015, Victoria, BC
- \* GROUNDWATER REGULATIONS UNDER THE WATER SUSTAINABILITY ACT - AQUIFERS AND GROUNDWATER DEFINITIONS AND KEY PRINCIPLES, Canadian Bar Association - Aboriginal Law – Vancouver Island Section, Victoria, November 5, 2015
- \* GROUNDWATER CONTRIBUTIONS TO IN-STREAM FLOWS AND AQUATIC HABITATS, as part of the Groundwater Licensing and Regulation under the Water Sustainability Act Workshop, First Nations Fisheries Council, Kamloops, BC, October 2015 – Repeated during Webinar in November 2015
- \* CREATION OF A COMPREHENSIVE WATER QUALITY DATABASE FOR THE PEACE RIVER REGIONAL DISTRICT, International Association of Hydrogeologists (IAH), Waterloo, Canada, October 2015
- \* PARKER ROAD RDN WELL – MONITORING PROGRAM, Public meeting, Nanoose, BC, September 24, 2015
- \* GROUNDWATER SUPPLY TO THE FOOTHILLS, Public presentation at Open House, Lantzville, BC, September 2015
- \* VILLAGE OF SAYWARD GROUNDWATER SUPPLY, Presentation to Mayor and Council, Sayward, BC, August 10, 2015
- \* PARKER ROAD RDN WELL – MONITORING PROGRAM, Public meeting, Nanoose, BC, July 6, 2015
- \* PEACE RIVER REGIONAL DISTRICT – GROUNDWATER BASELINE – AQUIFERS AND WATER CHEMISTRY, Presentation to the Real Estate Foundation of BC, Vancouver, BC, June 1, 2015
- \* PEACE RIVER REGIONAL DISTRICT – GROUNDWATER BASELINE – AQUIFERS AND WATER CHEMISTRY, Public Presentation, Fort Saint John, BC, May 7 2015
- \* PEACE RIVER REGIONAL DISTRICT – GROUNDWATER BASELINE – AQUIFERS AND WATER CHEMISTRY, Presentation to Treaty 8 Tribal Association, Fort Saint John, BC, May 7 2015
- \* PEACE RIVER REGIONAL DISTRICT – GROUNDWATER BASELINE – AQUIFERS AND WATER CHEMISTRY, Public Presentation, Chetwynd, BC, May 6 2015
- \* PEACE RIVER REGIONAL DISTRICT – GROUNDWATER BASELINE – AQUIFERS AND June 2017

WATER CHEMISTRY, Public Presentation, Dawson Creek, BC, May 5 2015

- \* RIVER'S EDGE HYDROGEOLOGY, Public Presentation to River's Edge residents, Regional District of Nanaimo Water System, Parksville, BC, April 8, 2015
- \* ATHABASCA CHIPEWYAN FIRST NATION – GROUNDWATER AND AQUIFERS – TECK FRONTIER PROJECT AND ACFN TERRITORY, Presentation to ACFN Elders and Community, Fort Chipewyan, Alberta, March 17, 2015
- \* ATHABASCA CHIPEWYAN FIRST NATION – GROUNDWATER AND AQUIFERS – TECK FRONTIER PROJECT AND ACFN TERRITORY, Presentation to Technical Working Group, Edmonton, Alberta, March 3, 2015
- \* PARKER ROAD RDN WELL – HYDROGEOLOGICAL MODEL AND PROPOSED MONITORING PROGRAM, Public meeting, Nanoose, February 26, 2015
- \* COMOX – 3D HYDROGEOLOGICAL MODEL, presentation to Comox Valley Regional District, Water and Sewer Commission, February 3, 2015
- \* PEACE RIVER REGIONAL DISTRICT – GROUNDWATER BASELINE – PROGRESS REPORT, Presentation to PRRD Water Committee, Fort Saint John, BC, December 2014
- \* PEACE RIVER REGIONAL DISTRICT – GROUNDWATER BASELINE – PROGRESS REPORT, Presentation to Treaty 8 Tribal Association, Fort Saint John, BC, December 2014
- \* PEACE RIVER REGIONAL DISTRICT – GROUNDWATER BASELINE – PROGRESS REPORT, AND INFORMATION ON BRENOT AND LYNX CREEKS, Public Presentation, Hudson's Hope, BC, December 2014
- \* PEACE RIVER REGIONAL DISTRICT – GROUNDWATER BASELINE – PROGRESS REPORT, Presentation to Real Estate Foundation of BC, Vancouver, BC, December 2014
- \* ENGLISHMAN RIVER WATERSHED, WATERSHED HEALTH AND YOU, Parksville, BC, Dec 2014
- \* SURFACE WATER, GROUNDWATER, AND OIL&GAS IN CENTRAL YUKON AND FIRST NATION TERRITORY, Remote presentation to Tetlit Gwichin First Nation, Fort McPherson, Yukon, November 2014
- \* GROUNDWATER – NANOOSE AREA, Regional District of Nanaimo, Public Presentation, Nanoose, November 2014
- \* PEACE RIVER REGIONAL DISTRICT – GROUNDWATER BASELINE, Presentation to BC MOE, BC FLNRO, BC OGC, SFU, Victoria, BC, October 2014
- \* PEACE RIVER REGIONAL DISTRICT – GROUNDWATER BASELINE – INTRODUCTION, Presentation to PRRD Water Committee and REFBC team, Fort Saint John, BC, August 2014
- \* UNCONVENTIONAL GAS, HYDRAULIC FRACTURING AND WATERSHEDS, Presentation to Liard First Nation and Community, Watson Lake, Yukon, July 2014
- \* UNCONVENTIONAL GAS, HYDRAULIC FRACTURING AND WATERSHEDS, Presentation to CanWell 2014, Kelowna, BC, June 2014
- \* UNCONVENTIONAL GAS, HYDRAULIC FRACTURING AND WATERSHEDS, Presentation to Nacho Nyak Dun First Nation and Community, Mayo, Yukon, June 2014

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- \* WELL EFFICIENCY AND SAVINGS, Presentation to Annual Coast Water Suppliers Association, Duncan, BC, April 2014
- \* UNCONVENTIONAL GAS, HYDRAULIC FRACTURING AND WATERSHEDS, Presentation to Vuntut Gwichin Community, Old Crow, Yukon, April 2014
- \* UNCONVENTIONAL GAS, HYDRAULIC FRACTURING AND WATERSHEDS, Presentation to Mayor and Council, Tumbler Ridge, BC, February 2014
- \* UNCONVENTIONAL GAS, HYDRAULIC FRACTURING AND WATERSHEDS, Yukon Select Committee of the Legislative Assembly on Hydraulic Fracturing, Whitehorse, Yukon, January 2014
- \* UNCONVENTIONAL GAS, HYDRAULIC FRACTURING AND WATERSHEDS, Public Meeting, Whitehorse, Yukon, January 2014
- \* UNCONVENTIONAL GAS, HYDRAULIC FRACTURING AND WATERSHEDS, Yukon Conservation Society Workshop, Whitehorse, Yukon, January 2014
- \* MAYCO – WALZ ROAD QUARRY, presentation at a public meeting as part of an aggregate extraction application process, Qualicum Beach, BC, October 2013
- \* DEEP BAY VILLAGE – HYDROGEOLOGY AND WATER SUPPLY, Presentation to Regional District of Nanaimo - October 2013
- \* CLARK DRIVE AND RYELAND PROPERTIES – HYDROGEOLOGY AND WATER SUPPLY, presentation to staff of District of Lantzville, BC, October 2013.
- \* PAYING FOR GROUNDWATER INVENTORIES, MAPPING AND MONITORING, CASE STUDY: FORT NELSON FIRST NATION, BRITISH COLUMBIA, Program on Water Issues, University of Toronto - Munk School of Global Affairs, June, 2013
- \* THE ENGLISHMAN RIVER AND ITS AQUIFERS, Real Estate Foundation of BC Presentation, June 2013, Parksville, BC
- \* BEDROCK WELLS LOSING 90% OF THEIR CAPACITY... THIS COULD HAPPEN TO YOU! Coastal Water Suppliers Association Annual Conference, May 2013, Parksville, BC
- \* GROUNDWATER AND WATERSHEDS, to BC Union Chief Council, Nanaimo, BC, May 2013
- \* CLARK DRIVE AND RYELAND PROPERTIES – HYDROGEOLOGY AND WATER SUPPLY, presentation to Vancouver Island Health Authority, Nanaimo, BC, April 2013.
- \* BEDROCK WELLS LOSING 90% OF THEIR CAPACITY... THIS COULD HAPPEN TO YOU! BC Water and Waste Annual Conference, April 2013, Kelowna, BC
- \* GROUNDWATER, WATER MANAGEMENT, AND HYDRAULIC FRACTURING, Peace River Regional District workshop, Dawson Creek, BC, April 2013
- \* GROUNDWATER AND WATERSHEDS, to Association of Municipalities, Peace River Regional district, Fort Saint John, BC, April 2013
- \* CASSIDY VILLAGE HYDROGEOLOGY, to RDN staff and regional directors, Nanaimo, BC, March 2013
- \* UNCONVENTIONAL GAS, HYDRAULIC FRACTURING AND WATERSHEDS, to BC real Estate Foundation, Vancouver BC, February 2013

- \* GROUNDWATER AND WATERSHEDS, to Fraser Basin Council, Vancouver, BC, February 2013
- \* UNCONVENTIONAL GAS, HYDRAULIC FRACTURING AND WATERSHEDS, Science Tech North, Fort St John, BC, January 2013
- \* UNCONVENTIONAL GAS, HYDRAULIC FRACTURING AND WATERSHEDS, Hudson's Hope Fort St John, BC, January 2013
- \* UNCONVENTIONAL GAS, HYDRAULIC FRACTURING AND WATERSHEDS, Peace River Regional District, Fort St John, BC, January 2013
- \* GROUNDWATER, WATER MANAGEMENT AND OIL AND GAS ACTIVITIES, Fort Nelson – Townhall Meeting, BC, January 2013
- \* UNCONVENTIONAL GAS AND POTENTIAL IMPACTS OF HYDRAULIC FRACTURING ON AQUIFERS, Fort Nelson – Keepers of the Water VI, BC, September 2012
- \* UPPER KISKATINAW WATERSHED – POTENTIAL IMPACTS OF HYDRAULIC FRACTURING ON AQUIFERS, City of Dawson Creek, BC, July 2012
- \* UNCONVENTIONAL GAS AND HYDRAULIC FRACTURING, Presentation to Elizabeth May (leader of Green Party of Canada), and Ms. Starck, (leader of BC Green Party), Victoria, BC, April 2012
- \* UNCONVENTIONAL GAS AND HYDRAULIC FRACTURING, Presentation to Leonard Krohl Nanaimo MLA, Nanaimo, BC, April 2012
- \* UPPER KISKATINAW WATERSHED – POTENTIAL IMPACTS OF HYDRAULIC FRACTURING ON AQUIFERS, City of Dawson Creek, BC, March 2012
- \* INTEGRATING THE SITE WITH THE WATERSHED AND THE STREAM, with the Partnership for Water Sustainability in BC and Living Rivers – Georgia Basin, Parksville, BC, March 2012
- \* THE ENGLISHMAN RIVER AND ITS AQUIFERS, Public Presentation, November 2011, Parksville, BC
- \* LONG BEACH AIRPORT HYDROGEOLOGY, presentation to the Alberni Clayoquot Regional District, Parks Canada, and First Nations, September 2011, Tofino, BC
- \* WOODLEY RANGE HYDROGEOLOGY AND WATER SUPPLY - Update, Presentation given to BC MOE, September, 2011, Victoria, BC
- \* WOODLEY RANGE HYDROGEOLOGY AND WATER SUPPLY, Presentation given to BC MOE, August, 2011, Victoria, BC
- \* LIQUID WASTE AND SENSITIVE RECEPTORS, Public Presentation, May 2011, Mill Bay, BC
- \* WOODLEY RANGE HYDROGEOLOGY AND WATER SUPPLY, Presentation given to Woodley Range residents, May, 2011, Ladysmith, BC
- \* ARBUTUS RIDGE – HYDROGEOLOGY AND WATER SUPPLY – Mill Bay, Cowichan Valley Regional District, April 2011, BC
- \* SOUTH SHAWNIGAN LAKE – WATERSHED, WATER BALANCE, AND STREAM  
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DYNAMIC STUDY, Presentation given to Shawnigan Lake Association, March 2011, Shawnigan Lake, BC

- \* MINNIE LAKE HYDROGEOLOGY, Presentation given as part of an intervention with the Energy Resources Conservation Board (ERCB), regarding the potential impact of proposed CNRL bitumen extraction wells on the groundwater resources, March 2011, Glendon, Alberta
- \* PALDI WATER SOURCE, presentation given to Cowichan Tribes, October 2010, Duncan, BC
- \* GROUNDWATER, AQUIFERS, AND WATER MANAGEMENT, Bowser Waterworks District, September 2010, Bowser, BC
- \* GROUNDWATER, AQUIFERS, AND THE PROPOSED RAVEN COAL MINE, Public Presentation, September 2010, Fanny Bay, BC
- \* GROUNDWATER, AQUIFERS, AND WATERSHEDS, Public Presentation, August 2010, Gabriola Island, BC
- \* GROUNDWATER AND ALL ITS SECRETS, Public Presentation, August 2010, Lantzville, BC
- \* GROUNDWATER AND DEEP DRILLING, Department of Fisheries and Oceans Canada, July 2010, Vancouver, BC
- \* ENGLISHMAN RIVER WATERSHED – COMMUNITY BASED GROUNDWATER STUDY, Public Presentation, May 2010, Parksville, BC
- \* GROUNDWATER AND ALL ITS SECRETS, Public Presentation, April 2010, Rotary, Duncan, BC
- \* GROUNDWATER AND ALL ITS SECRETS, Public Presentation, March 2010, Cold Lake, Alberta
- \* GROUNDWATER AND ALL ITS SECRETS, Public Presentation, March 2010, Athabasca, Alberta
- \* GROUNDWATER AND ALL ITS SECRETS, Public Presentation, March 2010, Lake Labiche, Alberta
- \* GROUNDWATER AND ALL ITS SECRETS, Public Presentation, March 2010, Fort Assiniboine, Alberta
- \* ISLAND TIMBERLANDS CASSIDY VILLAGE HYDROGEOLOGY, Public Presentation, September 2009, Cassidy, Regional District of Nanaimo, BC
- \* “BEST WATER IN THE WORLD”, presentation at Clearbrook Waterworks District AGM, July 2009, Abbotsford, BC
- \* ENGLISHMAN RIVER, WATERSHED DYNAMIC AND HYDROGEOLOGY, Public Presentation, June 2009, Errington, BC
- \* ENGLISHMAN RIVER, WATERSHED DYNAMIC AND HYDROGEOLOGY, Presentation to RDN working group, June 2009, Nanaimo, BC
- \* ENGLISHMAN RIVER, WATERSHED DYNAMIC AND HYDROGEOLOGY, Public Presentation at Parksville Summit, May 2009, Nanaimo, BC

- \* RUN-ON-RIVER PROJECTS, Public Presentation, APRIL 2009, Lantzville, BC
- \* HYDROGEOLOGY 101, Drillers Training Workshop, 2009 BCGWA Convention and Trade Show, March 2009, Langley, BC
- \* AQUIFERS AND WATERSHEDS: THEIR VULNERABILITY AND SUSTAINABILITY, Public Presentation, October 2008, Bowser, BC
- \* AQUIFERS AND WATERSHEDS: THEIR VULNERABILITY AND SUSTAINABILITY, Public Presentation, October 2008, Nanoose, BC
- \* AQUIFERS AND WATERSHEDS: THEIR VULNERABILITY AND SUSTAINABILITY, Public Presentation, October 2008, Cedar, BC
- \* AQUIFERS AND WATERSHEDS: THEIR VULNERABILITY AND SUSTAINABILITY, Public Presentation, May 2008, Keremeos, BC
- \* AQUIFERS AND WATERSHEDS: THEIR VULNERABILITY AND SUSTAINABILITY, Public Presentation, May 2008, Princeton, BC
- \* AQUIFERS AND WATERSHEDS: THEIR VULNERABILITY AND SUSTAINABILITY, Public Presentation, May 2008, Tumbler Ridge, BC
- \* AQUIFERS AND WATERSHEDS: THEIR VULNERABILITY AND SUSTAINABILITY, Public Presentation, May 2008, Hudson's Hope, BC
- \* AQUIFERS AND WATERSHEDS: THEIR VULNERABILITY AND SUSTAINABILITY, Public Presentation, May 2008, Fort Saint John, BC
- \* HYDROGEOLOGY 101, Drillers Training Workshop, 2008 BCGWA Convention and Trade Show, March 2008, Kelowna, BC
- \* AQUIFERS AND WATERSHEDS IN A NORTHERN ENVIRONMENT: THEIR VULNERABILITY AND SUSTAINABILITY, Workshop and Public Presentation, Alberta Environment Network, December 2007, Edmonton, Alberta
- \* AQUIFERS AND WATERSHEDS: THEIR VULNERABILITY AND SUSTAINABILITY, Public Presentation, November 2007, Victoria, BC
- \* AQUIFERS AND WATERSHEDS IN THE KOOTENAYS: THEIR VULNERABILITY AND SUSTAINABILITY, Public Presentation, October 2007, Fernie, BC
- \* AQUIFERS AND WATERSHEDS IN A NORTHERN ENVIRONMENT: THEIR VULNERABILITY AND SUSTAINABILITY, Keepers of the Water II, September 2007, Fort Saint John, BC
- \* DÉVELOPPEMENT DE PUIITS ET RÉHABILITATION, seminar, May 2007, Bamako, Mali
- \* EXPLOITATION DURABLE DES AQUIFÈRES, seminar, May 2007, Bamako, Mali



- \* LES Puits sous l'effet direct des eaux de surfaces, seminar, May 2007, Bamako, Mali
- \* AQUIFERS AND WATERSHEDS: THEIR VULNERABILITY AND SUSTAINABILITY, Public Presentation, April 2007, Malaspina University College (Vancouver Island University), Nanaimo, BC
- \* LOCAL HYDROGEOLOGY AND CWD WELLS, April 2007, Clearbrook Waterworks District AGM, Abbotsford, BC
- \* PROVIDING SUPPORT TO A WATER PURVEYOR, 2007 BCGWA Convention and Trade Show, March 2007, Langley, BC
- \* AQUIFERS AND WATERSHEDS: THEIR VULNERABILITY AND SUSTAINABILITY, Public Presentation, March 2007, Lake Cowichan, BC
- \* AQUIFERS AND WATERSHEDS: THEIR VULNERABILITY AND SUSTAINABILITY, Public Presentation, January 2007, Parksville, BC
- \* GROUNDWATER MONITORING, Presentation to the board of the Drinking Water and Watershed Stewardship Program, Regional District of Nanaimo, November 2006, Nanaimo, BC
- \* HYDROGEOLOGY AND WATER WELLS IN AN ISLAND SETTING, Sky to Earth Water Workshop, April 2006, Mayne Island, BC
- \* THE HYDROGEOLOGICAL SETTING NEAR CLEARBROOK, BC, April 2006, Clearbrook Waterworks District AGM, Abbotsford, BC
- \* LIARD HOT SPRINGS HYDROGEOLOGY, April 2006, BC Ministry of Environment, Victoria, BC
- \* L'EAU, L'ENVIRONNEMENT, LES INTERVENANTS ET LE CADRE LÉGISLATIF EN COLOMBIE BRITANNIQUE, March 2006, presentation to the French Delegation attending Globe 2006, Vancouver, BC
- \* GLOBAL AQUIFER DEVELOPMENT FOUNDATION, March 2006, BC Groundwater Association 2006 Convention, Langley, BC
- \* HYDROLOGY – BASIC PRINCIPLES AND DEFINITIONS, February 2006, Clearbrook Waterworks District Board of Directors meeting, Abbotsford, BC
- \* HYDROLOGY – BASIC PRINCIPLES AND DEFINITIONS, November 2005, Public Workshop, Parksville BC
- \* GROUNDWATER MODELING IN THE MOUNT ARROWSMITH WATERSHED, November 2005, Public Workshop, Parksville BC

- \* HYDROLOGY – BASIC PRINCIPLES AND DEFINITIONS, October 2005, BC Ministry of Health Workshop, Prince George, BC
- \* WELL DEVELOPMENT – WHY IS IT IMPORTANT? October 2005, BC Ministry of Health Workshop, Prince George, BC
- \* GROUNDWATER MANAGEMENT IN NORTHERN BC, October 2006, Public Presentation, University of Northern BC, Prince George, BC
- \* GROUNDWATER, DRINKING WATER SUPPLY AND WATER CONSERVATION, June 2005, Lantzville, BC
- \* GROUNDWATER, DRINKING WATER SUPPLY AND WATER CONSERVATION, APRIL 2005, Oceanview Improvement District, Mill Bay, BC
- \* WATER MICROBIOLOGY, May 2005, Nanaimo, BC
- \* WATER MICROBIOLOGY, BCGWA annual convention, March 3-4, 2005, Penttinton, BC
- \* KISKATINAW WATERSHED PROTECTION, one-day workshop, March 15, 2005, Dawson Creek, BC
- \* CHEMAINUS AQUIFER WELL WATER PROJECT, January 10, 2005, District of North Cowichan, BC
- \* BC GROUNDWATER PROTECTION REGULATIONS, BCGWA workshops, Parksville (April 2005), Kelowna (June, 2005), Cranbrook (June 2005)
- \* GROUNDWATER AND CHILDREN EDUCATION, First Groundwater Forum, March 2005, San Antonio, Texas
- \* RISK-BASED WELLHEAD PROTECTION PLANNING, with H. S. Schillereff and T. Gleeson, presented by H. S. Schillereff 2005 – First Groundwater Forum, San Antonio, Texas
- \* DRINKING WATER PROTECTION ACT, EBA seminar, October, 2004, Vancouver, BC
- \* WATERSHED MANAGEMENT: INNOVATIONS AND CHALLENGES IN NORTHERN BC, keynote speaker, First Annual Conference, Planning Institute of Northern BC, September 17<sup>th</sup>, 2004, Fort St John, BC
- \* LIARD HOT SPRINGS HYDROGEOLOGY, March 2004, Fort St John, BC
- \* GROUNDWATER RESOURCE STUDY- NUMERICAL BLOCK MODEL -, January 2003, Parksville, BC
- \* HYDROGEOLOGY, Saving Small Towns: Low Impact Development Solutions June 19 and 20, 2003, Cumberland, BC

- \* HYDROGEOLOGY AND AQUIFER PROTECTION, presentation to Wellness Partnership, March 2003, Courtenay, BC
- \* AQUIFER PROTECTION, Half-day workshop, March 2002, Red Deer, Alberta
- \* THE C5 APPROACH TO WELL PROTECTION, C5H2O Conference, October 14-15<sup>th</sup> 2001, Kelowna, BC
- \* AQUIFER CHARACTERIZATION ON VANCOUVER ISLAND, Sixth Canadian/American Conference on Hydrogeology, July 9-10, 2001, Banff, Alberta
- \* WATER WELLS, WELL DEVELOPMENT AND WELL BIOFOULING, 1999, Vancouver Island Geotechnical Group, Victoria, BC, May.
- \* GROUNDWATER AND ITS VULNERABILITY, 1998, Quarterway Primary and Secondary School, Nanaimo, BC, May.
- \* CHARACTERIZATION OF SUBSURFACE CONDITIONS - PROPOSED APPROACH, 1997, Mount Waddington Regional District, Port McNeill, BC, May.
- \* GROUNDWATER AND ITS VULNERABILITY, 1996, Alpha Secondary School, Burnaby, BC, May.
- \* GROUNDWATER ASSESSMENT, 1996, Capilano College, North Vancouver, BC, May.
- \* GROUNDWATER CONTAMINATION: ASSESSMENT AND REMEDIATION, 1995, University of Montréal, Ecole Polytechnique, Québec, October.
- \* GROUNDWATER CONTAMINATION: ASSESSMENT AND REMEDIATION, 1995, University of Sherbrooke, Québec, October.
- \* VARIATION DE PERMÉABILITÉ AU VOISINAGE D'UN PUIITS DUE À UN DÉVELOPPEMENT PAR PISTONNAGE, 1993, Université de Grenoble, France, Octobre.
- \* INSTALLATION DE PUIITS D'OBSERVATION, 1993, Université de Grenoble, France, Octobre.
- \* VARIATION DE PERMÉABILITÉ AU VOISINAGE D'UN PUIITS DUE À UN DÉVELOPPEMENT PAR PISTONNAGE, 1991 - Présentation de Thèse de Doctorat, École Polytechnique de Montréal, Février.
- \* MIGRATION DES DÉCHETS DANGEREUX DANS LES SOLS ET RISQUES DE CONTAMINATION D'AQUIFÈRE, 1990 - Séminaire sur les déchets dangereux, École Polytechnique de Montréal, Février.

## **CONFERENCES AND WORKSHOPS (Attended)**

Gilles Wendling has attended or been involved with over 40 conferences in Europe and North America. He was responsible for the organization of the technical sessions of CanWell 2004 (over 500 delegates) and of the BC Groundwater Association conventions in 2003, 2005, 2006, 2007, and 2008.

- \* BC Water and Waste (BCWWA) Annual convention, May 2017, Victoria, BC.
- \* Gathering of BC First Nations - Mackenzie Basin Water Workshop – November 2016, Ft Saint John, BC,
- \* BC Aboriginal Land Managers, October 2016, Ossoyos, BC
- \* BC Groundwater (BCGWA) Annual convention, March 2017, Kamloops, BC.
- \* 43<sup>rd</sup> International Hydrogeologist Association Congress, September 25-29, 2016, Montpellier, France
- \* Water scarcity: A new reality on BC's "Wet Coast"?, BCWWA workshop, December 3, 2015, Nanaimo, BC
- \* 2015 Water Purveyor Working Group Workshop, Organized by the Regional District of Nanaimo, December 1, 2015, Parksville, BC
- \* 2015 International Association of Hydrogeologists (IAH) Canadian Convention, Waterloo, Canada, October 2015
- \* 2015 Canadian Water Summit, June 25, 2015, Vancouver, BC
- \* Forum on Advancing Watershed Governance and Management in First Nations Communities, January 13 and 14, 2015, Vancouver Wosk Centre for Dialogue, BC
- \* Northeast B.C. Enhanced water monitoring system – draft risk based approach, workshop organized by BC Ministry of Forest, Lands, Natural Resources and Operations (FLNRO), Fort St John, BC, December 2014
- \* Workshop on water governance and hydraulic fracturing, Water, Innovation, and Global Governance Lab of the University of Victoria, Victoria, BC, October 2014
- \* Inter-Regional Collaboration for Watershed Sustainability – Towards a Watershed Health Legacy in the Georgia Basin, Regional District of Nanaimo, September 2014
- \* Regional Surface and Groundwater Management and Governance Study, Duncan, BC, July 2014
- \* CanWell 2014, Canadian Groundwater Association bi-annual convention, Kelowna, BC, June 2014
- \* NGWA Deep Aquifer 1-day workshop, Denver, Colorado, May, 2014, USA
- \* NGWA Groundwater Summit, Denver, Colorado, May 2014, USA

- \* Watershed 2014, Duncan, BC, January 2014
- \* *A Natural Gas Research Agenda for BC*, workshop organized by the Pacific Institute of Climate Solutions (PICS), Vancouver, BC, November 2013
- \* BC Water and Waste Annual convention, April 2013, Kelowna BC
- \* Managing Groundwater Beneath the Agricultural Landscape, Dr. David Rudolph – 2013 NGWREF Darcy Lecture presentation, UBC Webinar, February 2013.
- \* Beyond Pipelines: Managing the Cumulative Effects of Resource Development in BC, West Coast Environmental Law Webinar, Vancouver, February 2013
- \* Keepers of the Water VI, Fort Nelson, September 2012
- \* Kaskatinaw Watershed Tour and Research Forum, Dawson Creek, July 2012
- \* Transport of Viruses in Partially Saturated Soil and Groundwater, Darcy Lecture, UBC, April 2012
- \* 6<sup>th</sup> BC Unconventional Gas Technical Forum, Victoria, April 2012
- \* BCWWA – Hydraulic Fracturing – Focus on Water, Fort St. John, BC, March 2012
- \* Partnership for Water Sustainability in BC - On The Ground Changes – Convening For Action Forum, Cowichan Valley Water Balance Model Forum, Duncan, March 2012
- \* “Securing Our Water Future” National Discussion Series, University of Victoria, November 9<sup>th</sup>, 2011
- \* “The Public Infrastructure Dilemma: How will we sustain our water, our streets, and ourselves?”, “Forum within the State of the Island Economic Summit”, , Vancouver Island Conference Centre, Nanaimo, October 18, 2011
- \* Worried about current market conditions? Ensure your portfolio is prepared, Barometer Capital, Vancouver Island Conference Centre, Nanaimo, September 30, 2011
- \* Pharmaceuticals, Personal Care Products, Illicit Drugs and Their metabolites in Screened Municipal Waters, AWMA Technical Luncheon, February 22, 2011
- \* Conservation Orientated Water Pricing, September 9, 2010, Parksville, BC
- \* BCGWA Annual Convention and Trade Show, organizer, March 2008, Kelowna, BC
- \* Keepers of the Water II, provided technical input, September 2007, Fort Saint John, BC
- \* Source Water Protection: Making it Work in BC, APEGBC, CWRA and ACRH Seminar, September 2007, Richmond, BC
- \* BCGWA Annual Convention and Trade Show, organizer, March 2007, Langley, BC
- \* BCGWA Annual Convention and Trade Show, organizer, March 2006, Langley, BC
- \* Groundwater Management, BC Ministry of Health Workshop, October 2005, Prince George, BC

- \* The New Groundwater Protection Regulations, BC Ministries of Health and of the Environment internal seminar, October 2005, Sun Peaks, BC
- \* Groundwater Forum, National Groundwater Association (US), April 17-20, 2005, San Antonio, Texas
- \* BC Groundwater Association Conference and Trade Show, organizer, March 2005, Penticton, BC
- \* Environmental Best Management Practices for Urban and Rural Land Development in BC, BC WLAP workshop, March 2005, Nanaimo, BC
- \* "Water - Our Limiting Resource", Canadian Water Resource Association BC Convention, February 23-25, 2005 Kelowna, BC
- \* Pollutec 2004, Dec 4-7, 2004, Lyon, France
- \* Application of Climate Models to Water Resources Management, C-CIARN Water Resources, November 18 and 19, 2004, Victoria, BC
- \* 2004 Drinking Water Conference for BC Drinking Water System Regulators, November 3-4, 2004, BC Ministry of Health, Vancouver, BC
- \* Tenth Annual General Meeting, Conference and Trade Show, the Water Supply Association of BC, October 27- 28, 2004, Sun Peaks, BC
- \* Watershed Management: Innovations And Challenges In Northern BC, First Annual Conference, Planning Institute of Northern BC, September 17th, 2004, Fort St John, BC
- \* Rural Water Supply in the Peace: How well are we doing to protect them? Peace River Water Council, September 18, 2004, Fort St John, BC
- \* Saving Small Town, June 2004, Cumberland BC
- \* CanWell 2004, Canadian Groundwater Association Conference and Trade Show, conference organizer (450 delegates, including an international delegation), March 2004, Penticton
- \* Adapting to Climate Change in the Coastal Pacific Northwest, BC Air & Waste Management Association, Canadian Climate Impact and Adaptation Research Network (C-CIARN), BC Ministry of Water Land and Air Protection and Capital Regional District, May 23, 2003, Victoria, BC
- \* Groundwater and Geostatistics, Course and Conference, Geological Survey of Canada, , Spring 2003, Ottawa, ONT
- \* CanWell 2002, Canadian Groundwater Association Conference and Trade Show, June 13, 2002, Toronto, ONT

- \* Coalbed Methane - A New Energy Source for BC and Related Developmental Issues, BC Air and Waste Management Association, November 27, 2001, Victoria, BC
- \* BC's Municipal Sewage Regulation - Implementation Workshop, BC Ministry of Environment Lands and Parks, June 1999, Nanaimo, BC
- \* 1999 Groundwater Protection Workshop Vancouver Island, BCWWA, May 13, 1999, Duncan, BC.



## LEGISLATION

- \* Design of a Handbook to illustrate the BC Water Sustainability Act and Groundwater Regulations — 2017
- \* Drafting of water well construction specification for water wells in the Yukon Territories, Government of Canada, 2004
- \* Design of material and delivery of workshops to educate the water industry and water purveyors on the Groundwater Protection Regulations, part of the Drinking Water Protection Act, BC, 2005
- \* Design of a Handbook to illustrate the BC Groundwater Protection Regulations – Phase 1 - 2005 – 2006

## EDUCATION PROJECTS AND PRESENTATIONS

- Walley Creek - Grade 5 Hammond bay School Pilot Project on water, groundwater and surface water interaction and watershed management - series of 5 sessions, May and June 2005, Nanaimo, BC
- Development of water conservation recommendations, development of educational material for public education (adults and children - posters, web site, brochures) and delivery of information sessions (in schools and to adults), LWBC Drought Preparedness Initiative, January to March 2005, Lantzville, Mill Bay, Oceanview Improvement District, Gold river, Thasis, Regional District of Comox-Strathcona, Beaver Creek Improvement District, Castlegar, BC
- Gulf Islands Water Poster, Technical Adviser on Steering Committee, Partnership between National Research Council of Canada (NRCan), BC Ministry of Water Land and Air Protection, and the Islands Trust, September and December 2003, Nanaimo and Victoria, BC