**University Consortium for Field-Focused Groundwater Contamination Research**

***Program for Annual Progress Meeting: June 2-4, 2015***

103 Rozanski Hall, University of Guelph

This meeting is a forum for communications between the Consortium academic community and the corporate sponsor community, research collaborators and "friends" of the Consortium who provide additional insights and links to relevant research in other parts of the world. It also provides opportunity for graduate students to acquire presentation experience in front of an audience with diverse experience and interests.
NOTE: Wireless internet access will be available in Rozanski Hall. Please do not leave valuables in cars in the parking lot.

# Agenda

**Presenters Please Allot 3-5 Minutes of your Timeslot for Questions**

## Day 1: Tuesday June 2nd Presentations in 103 Rozanski Hall, UG

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| 7:30 – 8:30 | **Registration (Rozanski Hall Registration Area)** | |
| 8:30 – 8:40 | B. Parker (UG) | Welcome to the University of Guelph and G360 |
| 8:40 – 8:50 | J. Cherry (UG) | Consortium Overview: Past, Present, Future and This Meeting |

**Theme 1: Conceptual Modeling: From Data to Concepts - Part 1** — Moderator: John Cherry

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|---|---|---|
| 8:50 – 9:00 | J. Cherry (UG) | Conceptual modeling: Issues and Relevance |
| 9:00 – 9:20 | T. Sale (CSU) | Evolution of the LNAPL Site Conceptual Model |
| 9:20 – 9:35 | S. Pitkin (Stone) | Revising site conceptual models based on Waterloo profiler results |
| 9:35 – 9:50 | F. Payne (ARC) | Plume Architecture in Sandy Aquifers and Remediation Relevance |
| 9:50 – 10:05 | J. Meyer (UG) | Bias Imposed on Fracture Network Conceptual Models by Head Profiles Obtained from Long Open Boreholes |
| 10:05 – 10:20 | Discussion | |
| **10:20 – 10:35** | **Break** | |

**Theme 1: Conceptual Modeling: From Data to Concepts - Part 2** — Moderator: Beth Parker

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|---|---|---|
| 10:35 – 10:55 | B. Parker (UG) | Contrasting Plume Conditions in Sandy Aquifers & Fractured Sedimentary Rock: Implications for Site Characterization and Monitoring Strategies |
| 10:55 – 11:10 | K. Bairos (UG) | Development of 3 Dimensional Discrete Fracture Network Geologic Model for Study Site in Santa Susanna Field Laboratory |
| 11:10 – 11:25 | G. Wealthall (UG, Geosyn) | High Resolution Organic Contaminant Profiles to Advance Plume Conceptual Models in Sandy Aquifers |
| 11:25 – 11:40 | J. Kennel (UG) | Role of interactivity and updatability in conceptual modeling |
| 11:40 – 12:00 | Discussion | |
| **12:00 – 1:00** | **Lunch:** The Rozanski Hall | |

**Theme 2: Coring and Downhole Measurements** — Moderator: Gary Wealthall

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|---|---|---|
| 1:00 – 1:15 | S. Kiaalhosseini (CSU) | Cryogenic Core Collection |
| 1:15 – 1:30 | R. Johnson (OHSU) | New Biogeochemical Site Characterization Capabilities Based on Cryogenic Core Collection |

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| 1:30 – 1:45 | G. Martin (UG, DOW) | The "Button" Sampler for Organic Analyte Pore Water Analyses: Lab and Initial Field Trials |
| 1:45 – 2:00 | P. Quinn (UG) | Insights from Multiple Parameter Data Acquisitions from Straddle Packer Testing in Fractured Rock |
| 2:00– 2:15 | S. Britt (Prohydro) | Snap Sampler Update: Advances in Technology and Regulatory Status |
| 2:15 – 2:30 | F. Salim (UW) | Waterloo Membrane Sampler for water analysis for VOCs |
| 2:30 – 2:45 | Discussion | |
| **2:45 – 3:05** | **Break** | |

**Theme 3: Natural Attenuation and Assimilation Capacity and Compound Specific Isotope Analysis (CSIA)** — Moderator: Orfan Shouakar-Stash

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| 3:05 – 3:25 | S. Mancini (Golder) | Overview of the Denver Focus Meeting (2014) – Compound Specific Isotope Analysis to Assess Origins and Degradation of Organic Contaminants |
| 3:25 – 3:40 | O. Shouakar-Stash (UG) | Latest Advancement in Employing Chlorine CSIA in Organic Contaminant Studies |
| 3:40 – 3:55 | P. Bennett (H&A) | Insights from Stable Carbon and Chlorine Isotope Analysis at Chlorinated Solvent Release Sites: A Case Study |
| 3:55 – 4:10 | P. Casado (UG) | Mixed Solvent Plume Distribution and Fate in Complex Geology |
| 4:10 – 4:25 | K. Leite (UW) | Use of environmental stable isotopes to evaluate the fate and distribution of nitrate in a bedrock aquifer |
| 4:25 – 5:00 | Discussion | |
| **5:00 – 5:30** | **Cash Bar: Creelman Hall** | |
| **5:30 – 8:00** | **Group Dinner: BBQ Dinner in Creelman Hall** | |

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## Day 2: Wednesday June 3rd Presentations in 103 Rozanski Hall, UG

**Theme 4: Transport and Fate of Gas** — Moderator: Uli Mayer

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|---|---|---|
| 8:00 – 8:20 | U. Mayer (UBC) | Modeling analysis of methods for CO2-flux–based measurement of NSZD |
| 8:20 – 8:40 | E. Emerson (CSU) | Rates and Models for Petroleum Natural Source Zone Depletion |
| 8:40 – 8:55 | K. Scully (UBC) | Sand tank experiment of a large scale biodiesel spill |
| 8:55 – 9:10 | A. Verdin (UG) | Hydro-geochemical Impacts of Methane on Shallow Groundwater Systems: Borden Field Experiment |
| 9:10 – 9:30 | D. Carr (Sanborn) | VOC Mass Loading and Mass Flux: Metrics for Characterization and Prediction of Vapor Intrusion into Building Space |
| 9:30 – 9:45 | Discussion | |
| **9:45 – 10:00** | **Break** | |

**Theme 5: Remediation** — Moderator: Jens Blotevogel

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| 10:00 – 10:20 | H. Hopkins (Exxon) | The Evolving LNAPL Regulatory Environment |
| 10:20 – 10:35 | A.Chong (UBC) | Column experiments to investigate gas ebullition and compartment transfer of chlorinated solvents during remediation |
| 10:35 – 10:50 | C. Campbell (CSU) | Oleophilic Bio Barriers |
| 10:50 – 11:05 | K. Dunfield (UG) | Characterization of Physical, Chemical and Microbial Processes Related to Phytoremediation of Toluene in a Shallow Fractured Bedrock System |
| 11:05 – 11:20 | J. Blotevogel (CSU) | Electrolytic Stimulation of Aerobic 1,4-Dioxane Biodegradation |
| 11:20 - 11:40 | J. Gerhard (UWO) | Maturation of Smouldering Remediation (STAR) Technology and Full Scale Application |
| 11:40 – 12:00 | Discussion | |
| **12:00 – 2:00** | **Lunch (allow business meeting attendees to obtain lunch first)** | **Consortium Business Meeting @ 109 Rozanski hall (for Principal Investigators and Corporate Representatives – call-in option will be available to external participants)** |

**Theme 6: Groundwater-Surface Water Interactions** — Moderator: Mike Annable

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| 2:00 – 2:20 | M. Annable (UF) | Development of a Passive Sensor for Characterizing Groundwater-Surface Water Interactions |
| 2:20 – 2:35 | C. Kennedy (UG) | Measurements of Groundwater Flux in a Bedrock River Using New Devices |
| 2:35 – 2:50 | S. Chapman (UG) | Small Portable Drills for Investigating Groundwater Discharge in Sensitive Areas Near Bedrock Streams and Estuaries |
| 2:50 – 3:05 | C. Steelman (UG) | Monitoring geoelectrical response of groundwater-surface water interaction along a fractured sedimentary bedrock river |

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| 3:05 – 3:15 | Discussion | |

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| **3:15 – 3:30** | **Break** | |

**Theme 7: Emerging Methods, Issues and Opportunities** Moderator: Beth Parker

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| 3:30 – 3:50 | J. Cherry (UG) | Monitoring Groundwater in the Upstream Oil and Gas Industry: Issues, Concepts and Research Initiatives |
| 3:50 – 4:05 | R. Jackson (UW, Geo) | Groundwater Quality Monitoring: The Domestic Well Sampling Debate |
| 4:05 – 4:20 | D. Woodward (AECOM) | An Introduction to Perfluorinated Compounds and Lessons Learned from Characterizing Several Dozen Sites |
| 4:20 – 4:35 | W. Robertson (UW) | Natural Attenuation of Perchlorate in Denitrified Groundwater |
| 4:35 – 4:50 | A. Stanton (UG) | Management Challenges for Complex Subsurface Datasets |
| 4:50 – 5:15 | Discussion | |

**Dinner:** No group arrangements. A list of recommended restaurants will be provided.

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## Day 3: Thursday, June 4th Presentations in 103 Rozanski Hall, UG

**Theme 8: Advances in Methods** — Moderator: Beth Parker

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|---|---|---|
| 8:30 – 8:50 | R. St. Germain (Dak) | DyeLIF -- A New Direct Push LIF Technology for Delineating Chlorinated Solvent DNAPL in the Subsurface |
| 8:50 – 9:05 | A. Fomenko (UG) | An integrated lithostratigraphic and geomechanical conceptualization of dense fracture networks in a shallow Paleozoic dolostone |
| 9:05 – 9:20 | J. Munn (UG) | Updates on distributed fibre optic sensing in the Guelph Area: New cable coupling technique using flexible borehole liners for improved Distributed Acoustic Sensor (DAS) seismic investigations |
| 9:20 – 9:35 | H. Groenevelt (SiREM) | Waterloo Membrane Sampler™: From Concept to Commercialization |
| 9:35 – 9:50 | A. Pierce (UG) | Bedrock Vadose Zone Application of the Waterloo Membrane Sampler |
| 9:50 – 10:05 | G. Bartlett (AMEC) | Transmissivity Profiling and Water FLUTe Installations Under Challenging Deep Artesian Conditions |
| 10:05 – 10:20 | Discussion | |
| **10:20 – 10:30** | **Break** | |

**Theme 9: Heat for Site Understanding and Remediation** — Moderator: Tom Sale

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| 10:30 – 10:50 | P. Pehme (UG) | Understanding heat transport and the roles of convection, conduction and advection in the use of thermal techniques to interpret groundwater flow |
| 10:50 – 11:10 | T. Sale (CSU) | Overview of Heat in Remediation |
| 11:10 - 11:25 | E. Stockwell (CSU) | Continuous NAPL Loss Rates Using Subsurface Temperatures |
| 11:25 – 11:40 | C. Maldaner (UG) | Potential approach to quantify groundwater flux at fracture zones based on active distributed temperature sensing (DTS) |
| 11:40 – 11:55 | P. Kulkarni (GSI) | Enhancing Natural Source Zone Depletion Using Solarization |
| 11:55 – 12:15 | Discussion | |
| **12:15 – 1:00** | **Lunch:** Rozanski Hall (Eat In or Take away) | |

**END OF MEETING**

**Abbreviations:**

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|---|---|---|---|
| **CSU** | Colorado State University | **Stone** | Stone Environmental Inc. |
| **UG** | University of Guelph | **ARC** | ARCADIS |
| **UWO** | Western University | **ProHydro** | ProHydro Inc. |
| **UBC** | University of British Columbia | **DOW** | The DOW Chemical Company |
| **UW** | University of Waterloo | **Exxon** | Exxon Mobil |
| **UF** | University of Florida | **Golder** | Golder Associates |
| **UCDavis** | University of California, Davis | **Geo** | Geofirma Engineering Ltd. |
| **OHSU** | Oregon Health & Science University | **Sanborn** | Sanborn, Head & Associates Inc. |
| **H&A** | Haley & Aldrich | **Geosyn** | Geosyntec |
| **Dak** | Dakota Technologies | | |
| **GSI** | GSI Environmental Inc. | | |

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