

John Vanderlaan, L.P.G.
Vice President / Geophysicist
Prism Geolmaging, Inc.



SUMMARY OF PROFESSIONAL CAPABILITIES

Mr. Vanderlaan has been engaged in a variety of engineering and environmental projects including subsurface geophysical investigations, site characterization studies, and environmental remediation operations. Mr. Vanderlaan's specialty is characterization of the subsurface using the geophysical methods of electromagnetic conductivity and metal detection, two-dimensional electrical resistivity, downhole logging, seismic refraction, ground-penetrating radar (GPR), and gravimetry. He has provided expertise in the areas of geophysical method selection, survey design, field data acquisition, site mapping, data processing, interpretation, and presentation of results. Mr. Vanderlaan also has expertise in Global Positioning System (GPS) instruments, operation and software, and the incorporation of GPS positioning information with geophysical data acquisition.

Mr. Vanderlaan also has experience with environmental site assessments and remediation of contaminated properties, providing project management on a variety of soil and groundwater contamination projects. In addition to the administrative tasks of bid soliciting, budget development, invoicing, and subcontractor oversight, Mr. Vanderlaan has also applied his expertise in records searches, drafting, and immunoassay-based analytical field testing to these projects. Mr. Vanderlaan has drafted and provided assistance on various Initial Site Characterization (ISC) reports, Site Corrective Action Plans (CAPs), Remediation Work Plans (RWPs), and Corrective Action Progress Reports (CAPRs) for submittal to the Indiana Department of Environmental Management (IDEM). Mr. Vanderlaan has managed a variety of tasks relating to groundwater contamination assessment and remediation, including monitoring well installation, dedicated well sampling pump installation, soil and groundwater sampling, and remediation system operation and maintenance.

WORK EXPERIENCE

- Vice President / Geophysicist, Prism Geolmaging, Inc., Jan. 2008 to Present
- Project Geologist/Geophysicist, Mundell & Associates, Inc., 2000 - 2008
- Graduate Teaching Assistant, Bowling Green State University, 1998 - 2000

EDUCATION

- M.S., Summa cum Laude, Geology, Bowling Green State University, 2000
specialization - geophysics
- B.S., Geology, Calvin College, 1995

PROFESSIONAL REGISTRATIONS

- Licensed Professional Geologist: Indiana, License No. 2146

PROFESSIONAL AFFILIATIONS

- Environmental and Engineering Geophysical Society (EEGS)
- Indiana Geologists

PROJECT EXPERIENCE

Sampling of Geophysical Project Experiences

- Contributed to numerous groundwater resource investigations for proposed ethanol plants in Indiana and Ohio. These projects variously utilized electromagnetic terrain conductivity mapping and two-dimensional resistivity methods to locate sand and gravel bodies within glacial till sequences, and bedrock fracture zones.
- Implemented several multi-faceted geophysical investigations of former manufactured gas plant (MGP) facilities. Electromagnetic conductivity mapping, high-resolution EM-61 metal detection, two-dimensional resistivity, and GPR were used to locate former MGP structures and possible environmental impacts.

- Utilized GPR for non destructive testing and analysis of a concrete spillway, the retaining walls of outfall structures, and portions of the Wyandotte Cave in southern Indiana.
- Participated in a two-dimensional resistivity investigation to locate the source of leaks in wastewater treatment lagoons. Analysis of groundwater sampling data integrated with the geophysical investigation was successful in identifying the leaking area.
- Designed and implemented several very large scale EM31 terrain conductivity mapping projects. Mr. Vanderlaan built an apparatus to facilitate towing of the EM31 with all-terrain vehicles using GPS for positioning data. This allowed for cost effective geophysical investigations for peat bogs within a 320 acre construction area, buried waste mapping, and karst hazard identification along several miles of an Indiana state highway.
- Contributed to various bedrock mapping projects in Indiana, Ireland, southwestern Ohio, and northern Alabama to identify preferential contaminant pathways through the bedrock and over the bedrock surface. These projects utilized the seismic refraction and two-dimensional resistivity methods. Mr. Vanderlaan used the Generalized Reciprocal Method to process much of the refraction data, generating two-dimensional seismic velocity cross-sections and compositing these into bedrock topography and seismic velocity maps.
- Participated in an EM-34 terrain conductivity study to locate possible paint waste pits from a former manufacturing operation in eastern Illinois. Conductivity anomalies were investigated further with two-dimensional resistivity cross-sections. Instrument responses in the field indicated the presence of large-scale linear metallic objects. A subsequent EM-61 survey confirmed the presence of large-scale hazardous waste drum burials. The EM-61 survey used GPS rather than conventional location methods, resulting in timely completion and more complete coverage of the study area.
- Implemented and contributed to several karst hazard investigations throughout Indiana and southwest Missouri. These studies utilized large-area EM-31 and EM-34 conductivity mapping and selected high-resolution two-dimensional resistivity cross-sections to identify dominant fracture orientations, areas of potential sinkhole and cavern locations, and to identify void extents in the bedrock as well as provide depth-to bedrock measurements.
- Collected and processed EM-34 terrain conductivity, two-dimensional resistivity, and magnetic field data for a study designed to locate possible areas of wastewater treatment sludge. Results of this study were used in a land reclamation project at the site of a former landfill operation in central Indiana.
- Conducted EM-31 terrain conductivity data collection and processing as part of a site remediation project of an active truck stop in central Indiana. A multi-faceted geophysical survey was implemented to discover migration pathways for diesel and gasoline contaminants in the soil and groundwater. Results from the EM-31 study confirmed a working hypothesis that contaminant migration was occurring along field tile drainage trenches, and additionally indicated areas of increased conductivity due to biodegradation of hydrocarbons. Use of real-time GPS positioning allowed for rapid completion of field activities while causing minimal disturbance to the business and fueling activities of the facility.
- Collected and processed EM-31 terrain conductivity data for a project in southern Indiana to find construction debris burial trenches. Comprehensive ground conductivity mapping was utilized in a criminal activities investigation of unlawful disposal of used building materials. Results from the study indicated several areas of potential disposal, which were later excavated and shown to contain such material.
- Contributed to downhole seismic shear wave investigations. Results of these investigations were used in earthquake hazard analysis for civil engineering projects.
- Conducted numerous UST searches utilizing detailed site feature mapping, EM-61 high-precision metal detection, GPR, and other methods such as magnetic field gradient measurements, hand probing, and radiodetection. These searches have used both GPS and conventional land survey tools for positioning information.
- Contributed to multiple geophysical investigations for groundwater resources for municipalities across Indiana. A variety of geophysical methods were used for these studies, including two-dimensional resistivity and EM-34 terrain conductivity mapping. Mr. Vanderlaan was instrumental in the timely and cost-effective completion of a very large EM-34 mapping project, utilizing a low-cost GPS receiver he improved to yield differentially corrected positions.
- Supervised collection of EM-31 terrain conductivity, EM-61 metal detection, and two-dimensional resistivity data as part of geophysical surveys designed to locate chemical and laboratory waste trenches in two locations in central Indiana. Provided field services, and directed excavation activities for exploratory test pit confirmation of geophysical anomalies.

- Completed downhole logging investigations in eastern Missouri, utilizing caliper, conductivity, natural gamma, spontaneous potential, borehole video, and heat pulse flowmeter logs to identify bedrock fracture zones and unconsolidated aquifer material.
- Performed and contributed to multiple landfill, buried waste mapping, and drum search investigation projects utilizing EM-61 metal detection, and EM-31 and EM-38 terrain conductivity mapping. These very large-scale surveys were made feasible and economically possible through the use of integrated GPS receivers. One such project was overseen by the US Environmental Protection Agency (EPA), details of the investigation may be found at <http://www.epaosc.net/herronave>.
- Designed and implemented a gamma radiation survey integrated into the Site Health and Safety Plan for a Superfund cleanup near Chicago. A logging radiation meter was used in conjunction with a GPS receiver to produce a radiation level map used to safeguard worker safety.
- Implemented several three-dimensional GPR surveys, utilizing time-slice amplitude mapping to identify the locations of various targets including USTs, archeological features, and voids underneath concrete.
- Completed and participated in various cemetery mapping and archeological investigations to detect and locate graves as well as human remains. These projects were completed using a combination of several geophysical methods including EM-38 terrain conductivity mapping, total magnetic field measurement, and GPR profiling as well as mapping.

Sampling of Environmental Projects

- Project management for a leaking underground storage tank (LUST) Site in central Indiana. Work included management of an on-site landfarm, free-product recovery of weathered diesel fuel in a Site monitoring well, coordination and oversight of impacted soils excavation and remediation, and oversight of subcontractor work and invoice submittals. Mr. Vanderlaan also contributed to the development and IDEM approval process for the Site corrective action plan (CAP).
- Project management of a Site impacted with chlorinated solvents and their breakdown products. The Site is located in central Indiana and enrolled in VRP. Mr. Vanderlaan performed and provided oversight on a number of Site activities including a geophysical metal detection survey, monitoring well installation and sampling, impacted soils excavation and remediation, and remediation work plan development, drafting, and implementation. Mr. Vanderlaan also managed the implementation of remedial action using soybean-based vegetable oil, which assists bioremediation by providing free hydrogen as the oil breaks down into fatty acids.
- Managed the acquisition and installation of an extensive network of dedicated well sampling bladder pumps at a LUST Site in northern Indiana. This was the first dedicated pump installation approved by IDEM for reimbursement under the Excess Liability Trust Fund (ELTF). Savings to the fund due to decreased labor costs are estimated to be \$35,000 over a five year period.
- Developed high-quality data presentations for use as visual aids by an expert witness in an environmental litigation case. Mr. Vanderlaan's designs effectively communicated complex geologic concepts, such as the groundwater interaction between bedrock and surface topography, to individuals with little or no geological training.
- Provided oversight of soil and water sampling activities and monitoring well installations as part of site characterization and remediation activities throughout central Indiana.
- Responsible for operation, maintenance, and monitoring of soil vapor extraction and soil sparging systems.

SELECTED PUBLICATIONS AND PRESENTATIONS:

- Vanderlaan, J.H.M., Byer, G.B., "Bedrock Characterization with Seismic Refraction, for Cost-Effective Brownfield Investigation and Remediation: A Case History", Environmental and Engineering Geophysical Society's 19th Annual Symposium on the Application of Geophysics to Engineering and Environmental Problems (SAGEEP), Seattle, Washington, April 2-6, 2006.
- Vanderlaan, J.H.M., Byer, G.B., "GPR Analysis of a Concrete Spillway At The Lincoln State Park, Indiana", Environmental and Engineering Geophysical Society's 17th Annual Symposium on the Application of Geophysics to Engineering and Environmental Problems (SAGEEP), Colorado Springs, Colorado, February 22-26, 2004.

- Byer, G.B., Vanderlaan, G.B., “Practical Application of Geophysical Mapping For Wellfield Exploration – Two Indiana Case Studies”, Environmental and Engineering Geophysical Society’s 17th Annual Symposium on the Application of Geophysics to Engineering and Environmental Problems (SAGEEP), Colorado Springs, Colorado, February 22-26, 2004.
- Byer, G.B., Mundell, J.A., Vanderlaan, J.H.M., “Geotechnical/Geophysical Evaluation of Karst Limestone Sites – Case Histories,” Environmental and Engineering Geophysical Society’s 15th Annual Symposium on the Application of Geophysics to Engineering and Environmental Problems, Las Vegas, Nevada, February 13, 2002, Paper 13CAV2.