

STATEMENT OF QUALIFICATIONS

GEOHAZARD MANAGEMENT FOR PIPELINES

SEPTEMBER 2026



WHAT CAN GEOSYNTEC DO FOR OUR CLIENTS?



ABOUT GEOSYNTEC

Geosyntec is a consulting and engineering firm that works with private and public sector clients to address new ventures and complex problems involving our environment, natural resources, energy, and civil infrastructure. With a combined staff exceeding 3,000 engineers, scientists, and related technical and project support personnel, we serve our clients from more than 140 offices in the United States, Canada, the United Kingdom, Ireland, Sweden, Spain, Finland, the United Arab Emirates, Saudi Arabia, and Australia.



TRUSTED GEOHAZARD PARTNER

Geosyntec helps energy, utility, transportation, and infrastructure clients identify, assess, and mitigate geohazards through integrated geotechnical, geological, environmental, and engineering services. We combine field experience, advanced analytics, and a global network of technical specialists to deliver practical solutions that support asset integrity, regulatory compliance, and long-term risk management.

We help clients manage geohazards across the full life cycle of their assets by delivering practical, scalable programs informed by field experience, advanced analytics, and industry-leading expertise.

HEALTH & SAFETY

Safety starts with our people. Safety is embedded in every aspect of our work, guiding decisions in the field, office, and project planning process. We pride ourselves on the high level of quality work performed by our professionals and are committed to achieving the same level of health and safety performance.

SUSTAINABILITY

Building a more resilient future. Sustainability principles are integrated into our work, to create meaningful impact through the projects our scientists, engineers, and technical specialists deliver.





65+ GEOHAZARD SPECIALISTS. NATIONAL REACH. INTEGRATED DELIVERY.



GEOTECHNICAL AND
GEOLOGICAL ENGINEERS



HYDROTECHNICAL
ENGINEERS



ARCHAEOLOGISTS



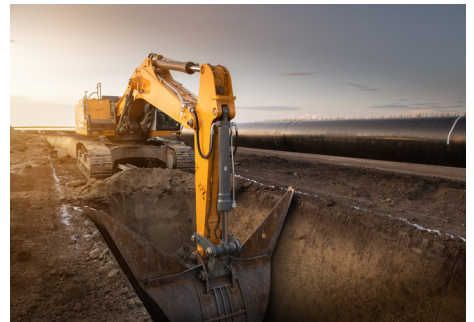
GIS/CADD
SPECIALISTS



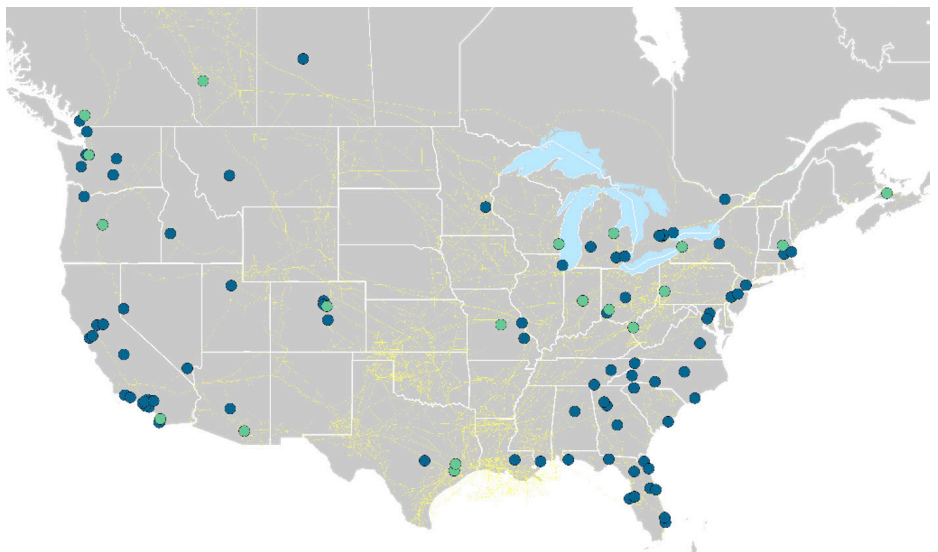
STORMWATER
SPECIALISTS

Geosyntec's onshore geohazard team consists of over 65 technical staff specializing in geohazards for pipelines, including geotechnical and geological engineers, hydrotechnical engineers, mechanical engineers, geologists, archaeologists, and GIS and CADD specialists.

We are geographically spread across the United States and Canada, allowing us to respond efficiently to our clients with widespread pipeline systems. In addition, we work closely with Geosyntec staff in our other offices when work in other regions arises. We also collaborate regularly with our offshore geohazard team to provide seamless support from land to sea.



STRATEGICALLY LOCATED ACROSS NORTH AMERICA TO DELIVER GEOHAZARD SUPPORT



- Geosyntec's Office Locations
- Geohazards Staff
- US and Canada Oil and Gas Pipelines

We are geographically spread across the United States and Canada allowing us to respond efficiently to our clients with widespread pipeline systems.

OIL AND GAS OVERVIEW

Geosyntec supports upstream, midstream, and downstream oil and gas clients. We support them with geological studies, engineering, environmental assessment, and risk analysis at onshore and offshore facilities, pipelines, inland and marine bulk storage facilities, and separation and compression

facilities. We help clients develop new technologies and tools to make better decisions and reduce risk. Because we know that projects often expand and evolve to include new tasks that require skills in adjacent fields, we stand ready to pull together expert teams to support a wide range of services.

We help clients develop new technologies and tools to make better decisions and reduce risk.

SERVICES	UPSTREAM	MIDSTREAM	DOWNSTREAM
Engineering and Risk Management			
Pipeline Routing and Planning		X	
Onshore and Offshore Geohazard Management	X	X	X
Geohazard Instrumentation and Asset Monitoring	X	X	X
River Engineering and Fluvial Morphology Assessments	X	X	X
Trenchless Feasibility, Risk Review, and Design		X	
Geotechnical Investigation and Analysis	X	X	X
Foundation Engineering and Civil Design	X	X	X
Construction Management Services		X	
Water and Wastewater System Planning, Engineering, and Design	X	X	X
Earthquake and Seismic Hazard Evaluation and Engineering	X	X	X
Pipeline Engineering and Design	X	X	X
Engineering and Risk Management			
Environmental Planning and Permitting	X	X	X
Compliance with FERC and State Regulations		X	
Spill Response Management	X	X	
Contaminated Site Assessment and Remediation	X	X	X
Air Quality Management and Air Pollution Control	X	X	X
Water and Natural Resources Management	X	X	
Climate Change and Greenhouse Gas Strategy	X	X	X
Information Management and Analytics	X	X	X
Regulatory Policy, Strategy, and Analysis	X	X	X
Sustainability and Environmental Social Governance	X	X	X
Mergers and Acquisitions	X	X	

GEOHAZARDS MANAGEMENT OVERVIEW

A geohazard is defined as a naturally occurring or human-triggered geologic process that has caused, or could result in, damage to the operation of a pipeline or associated facility; could impede the operation of a pipeline or associated facility; or could negatively affect the land, structures, and health and safety of landowners and other stakeholders who reside near the pipeline.¹

Geosyntec helps clients assess and manage geohazards throughout the life cycle of a pipeline.

Pipeline Planning and Routing | Design and Construction | Operations | Abandonment/Decommissioning



Typically assessed geohazards include the following:

- Landslide and rockfall hazards
- Ground subsidence hazards related to karst, underground mining, and fluid withdrawal
- Seismic hazards related to fault rupture, ground shaking, and liquefaction
- Growth fault and coastal subsidence hazards
- Hydrotechnical hazards related to watercourse crossings
- Meteorological hazards related to hurricanes, tornadoes, lightning, and frost heave
- Volcanic hazards

IDENTIFICATION—Geohazards are systematically identified along a pipeline or facility.

CHARACTERIZATION—Geohazards are evaluated to assess the threat they could pose to the pipeline or facility, and ultimately, to help clients decide which hazards to monitor or mitigate.

MITIGATION—Targeted geohazards are mitigated.

MONITORING—Areas are monitored to identify new hazards, to evaluate the need for future mitigation at existing hazards, and to evaluate the performance of existing mitigation.

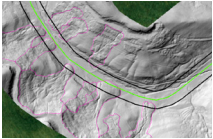
¹Sancio, R., Rice, T., Audibert, J., Morgan, D., and Rattaray, J. *Guidelines for Management of Geohazards Affecting the Engineering and Construction of New Oil and Natural Gas Pipelines*. Pipeline Research Council International. Document No. PR-616-164506-R01. May 2018.

GEOHAZARD MANAGEMENT OVERVIEW

We help clients manage geohazard risk by integrating advanced remote sensing, targeted field investigations, and engineering to reduce operational disruptions, control life-cycle costs, and support pipeline performance.

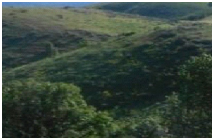
Our experience spans a broad range of geohazards, including landslide, subsidence (e.g., mining, karst, and fluid withdrawal), seismic, hydrotechnical, wildfire, and volcanic hazards)

SERVICE OFFERINGS



DESKTOP IDENTIFICATION AND CHARACTERIZATION:

Screening and evaluation of potential geohazards using available datasets, mapping, and historical information



GROUND AND AERIAL RECONNAISSANCE AND SUBSURFACE INVESTIGATIONS:

Field reconnaissance, aerial assessments, and targeted subsurface investigations to refine site conditions and risks



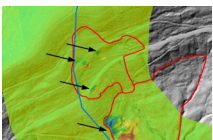
ENGINEERING ANALYSES, MITIGATION DESIGN, AND CONSTRUCTION SUPPORT:

Quantitative evaluation of geohazard risks and development of practical mitigation strategies, with support through implementation



MONITORING INSTRUMENTS AND REMOTE MONITORING UNITS (RMUS):

Design and deployment of instrumentation systems to monitor ground movement and asset performance



REGIONAL MONITORING (LIDAR DIFFERENCING, INSAR):

Application of advanced remote sensing technologies to detect and quantify deformation across large areas



DATA MANAGEMENT:

Integrated data management systems and visualization tools to support analysis, reporting, and decision-making

WHY GEOSYNTEC FOR GEOHAZARD MANAGEMENT

- **Life-cycle-focused programs** from screening and risk ranking through design and long-term monitoring
- **Field-informed solutions** grounded in hands-on assessment and real-world implementation experience
- **Advanced analytics and modeling** integrating GIS, remote sensing, and predictive tools for risk insight
- **Pipeline-specific expertise** with a deep understanding of integrity, regulatory, and operational requirements
- **Scalable program delivery** supporting single assets to system-wide geohazard management programs





GEOHAZARD MANAGEMENT SERVICES

Geosyntec offers clients comprehensive support for their geohazard programs, providing the services listed below.

NEW BUILD PIPELINES

- Pipeline routing
- Feasibility and fatal flaw assessments
- Permitting (FERC, federal, state, local)
- Real time hazard mitigation during construction
- Construction support

RUPTURE/LEAK SUPPORT

- Emergency rupture/leak response
- Root-cause analyses
- Environmental release response

GEOHAZARD PROGRAM MANAGEMENT

- Procedure development
- Geohazard training
- Data management, including GIS-based solutions and online mapping systems

SYSTEMWIDE ASSESSMENTS AND REGIONAL MONITORING

- Level 1: Desktop review, including remote-sensing review, to compile systemwide geohazard inventory
- Level 2: Ground or aerial reconnaissance at select hazard locations, including use of drones for data collection
- Level 3: Site-specific, often subsurface investigations (e.g., test pits, drilling, geophysics)
- Susceptibility mapping and risk assessment
- LiDAR differencing analysis
- InSAR analysis
- Aerial reconnaissance
- IMU bending strain review: systemwide or site-specific data review

GEOTECHNICAL INSTRUMENTATION AND MONITORING

- Design of geohazard monitoring systems

- Installation of instruments (e.g., strain gauges, inclinometers, piezometers) and remote monitoring units
- Development of thresholds for instrumentations
- Development of instrument data management and visualization
- Analysis and reporting of instrumentation data

GEOTECHNICAL MITIGATION

- Design of geohazard mitigations (e.g., landslides, karst, ground subsidence)
- Solutions that vary by site (e.g., slope stabilization, stress relief excavation, pipeline reroutes, horizontal direction drill, pipe and trench improvements, surface and subsurface drainage, engineered structures, retaining walls, soil nails)
- On-site construction support and quality control
- As-built development
- Owner's engineering

HYDROTECHNICAL RISK EVALUATION AND MITIGATION

- Systemwide hydrotechnical hazard assessments
- Hydrologic and hydraulic analysis and modeling
- Scour and lateral migration evaluations
- Sediment transport modeling
- Post-fire debris flow modeling and field hazard assessment
- Hydrodynamic loading and vortex-induced-vibration analysis
- Design of exposed pipe mitigations
- Natural channel and soft-armoring design
- On-site construction support and quality control
- As-built development
- Owner's engineering

TRENCHLESS FEASIBILITY, RISK REVIEW, AND DESIGN

- Geotechnical investigations and site characterization for horizontal directional drilling (HDD) and other trenchless techniques
- HDD geotechnical risk review
- HDD layout and design
- Inadvertent fluid return (frac-out) analysis
- Pipe pullback force and stress analysis
- Construction work plan and contract review

- Forensic review and claim support
- Permitting support

SEISMIC HAZARD ASSESSMENT

- Regional (United States Geological Survey) and site-specific ground shaking hazard analysis
- Liquefaction-induced settlement and lateral spreading analysis
- Surface fault rupture and fault displacement analysis
- Seismically induced landslide hazard and slope displacement analysis
- Integrated seismic vulnerability assessments (ground shaking, liquefaction, fault rupture, and landslides)
- Development of thresholds for the initiation of post-earthquake inspections

PIPELINE AND FACILITY ENGINEERING

- Pipeline replacement design at geohazards sites
- Process design
- Process flow diagrams (PFDs)
- Piping and instrument diagrams (P&IDs)
- Piping plans/sections/details
- General facility site layout
- Pipeline specifications
- Feasibility and pre-FEED studies
- FEED and detailed design
- Procurement support
- Pipe stress analysis

STORMWATER CONSTRUCTION COMPLIANCE - EROSION AND SEDIMENT CONTROL

- Stormwater Pollution Prevention Plan (SWPPP) development
- Erosion and sediment control risk assessments for traditional and linear projects
- Development of stormwater management plans, best management practices (BMP) maps, and water pollution control plans
- Contractor compliance training
- Construction compliance oversight, inspection, and field reporting
- Site stabilization approaches and final restoration
- SWPPP closure and notice of termination
- Erosion and sediment control slope stabilization
- Stormwater conveyance design and implementation/construction oversight

Geologists, geotechnical and hydrotechnical engineers, hydrologists, GIS specialists, and other technical experts make up our geohazards team. Brief profiles of our lead practitioners follow:



BAILEY THERIAULT, PG, LG

Senior Principal Geologist | 18+ Years of Experience

Specializes in developing and implementing geohazard management programs for oil and gas pipelines, with expertise in landslide hazards and data management

Expertise

Geohazard Management | Geohazard Assessment & Monitoring | Remote Sensing | GIS & Data Management | Geohazard Training



ALI EBRAHIMI, PhD, PE

Senior Principal Geotechnical Engineer | 20+ Years of Experience

Specializes in geotechnical engineering and geohazard mitigation, with expertise in subsurface characterization, slope stabilization, and advanced monitoring systems

Expertise

Geotechnical Engineering | Geohazard Mitigation and Management | Geohazard Instrumentation & Monitoring | Pipeline Geotechnical Design & Construction



JEFFREY SCHNEIDER, PE, PEng

Senior Principal | 19+ Years of Experience

Specializes in geohazard and geotechnical engineering for onshore pipeline systems, with expertise in hazard identification, risk evaluation, and mitigation strategies to enhance infrastructure reliability and resilience

Expertise

Geotechnical Engineering | Trenchless Pipeline Design | Geohazard Assessment & Mitigation | Hydrotechnical Hazard Evaluation & Mitigation | Project Management



JOHN deLaCHAPELLE, PhD, PE

Senior Principal Geologist | 26+ Years of Experience

Specializes in geohazard assessment and management for pipeline infrastructure, with expertise in geotechnical investigations, geospatial data development, and hazard mapping to support routing, design, permitting, and construction across large, multidisciplinary pipeline projects

Expertise

Geohazard Assessment, Mitigation Design, and Monitoring | Geospatial Database Development & Management | Remote Sensing & Field Mapping | Pipeline Permitting Support, Routing Assessments & Construction Support



RODOLFO SANCIO, PhD, PE, PEng, BC.GE

Senior Principal | 26+ Years of Experience

Specializes in geotechnical engineering and pipeline geohazards, providing expertise in hazard assessment, infrastructure resilience, seismic risk analysis, and geotechnical design for complex energy projects

Expertise

Geohazard Management | Geotechnical Site Investigations | Slope Stability Assessments | Foundation Engineering and Ground Improvement | Geotechnical Earthquake Engineering



ERIC STIFFLER, PG, PE

Principal Engineering Geologist | 18+ Years of Experience

Specializes in geohazard assessment and mitigation for infrastructure projects, with expertise in emergency response, geohazard identification, environmental and geotechnical investigations, mitigation design, and construction oversight to support compliant project delivery

Expertise

Geohazard Investigation, Characterization & Mitigation | Environmental Site Investigation & Remediation | Construction Compliance & Management | Environmental Due Diligence



ALEXANDER GREENE, PG, CEG

Senior Principal Engineer Geologist | 26+ Years of Experience

Specializes in geologic hazard assessment and mitigation for energy, utility, and transportation infrastructure, with expertise in landslide, fault, and subsidence investigations, subsurface characterization, and engineering geology

Expertise

Engineering Geology | Geologic Hazard Assessment | Geotechnical Engineering | Terrain Hazard Evaluation | Subsurface Exploration & Characterization | Stormwater Erosion & Sediment Control



DAVID VANCE, PG

Senior Consultant | 22+ Years of Experience

Specializes in applied fluvial geomorphology, stream and river stabilization, sediment transport analysis, and environmental permitting, helping clients assess and mitigate geohazard risks while advancing resilient infrastructure and watershed management solutions

Expertise

Ecosystem Restoration & Natural Systems Engineering Design | Applied Fluvial & Coastal Geomorphology | Hydrotechnical Hazards | Water Resources Technical Studies | Vegetation Ecology & Design | Mitigation Banking | Litigation Support



CHRISTIE HALE, PhD

Senior Seismic Hazard Analyst | 12+ Years of Experience

Specializes in seismic hazard analysis and seismic safety assessments for critical infrastructure projects with expertise in regional and site-specific ground shaking and fault displacement hazard analysis, seismic site characterization, and the development of criteria for the initiation of post-earthquake inspections

Expertise

Ground Shaking | Fault Displacement | Seismic Site Characterization | Earthquake Inspection Thresholds



BRIAN DEJEAN, PE, P.Eng.

Senior Principal | 21+ Years of Experience

Specializes in oil and gas, renewable energy, and landfill gas infrastructure projects, leading multidisciplinary engineering teams in the delivery of detailed design solutions that support project development, facility operations, construction, commissioning, and long-term asset performance

Expertise

Project Development | Overall Detailed Design Engineering Lead | Mechanical Engineering | Safety, Operations, Environmental & Maintenance Management | Project Management



MARCY MONTAGUE, PE

Senior Engineer | 14+ Years of Experience

Specializes in geohazard assessment and mitigation design for pipeline infrastructure, applying expertise in geotechnical engineering, slope stability, foundation design, seismic evaluations, and hydrotechnical risk management to support project delivery across North America

Expertise

Geotechnical Engineering | Geohazard Mitigation & Management | Foundation Engineering | Project Management



PATRICIA VARELA, PhD, PG

Senior Geologist | 12+ Years of Experience

Specializes in geohazard assessment and integrated site characterization, applying geological, geotechnical, GIS, remote sensing, and risk-based analyses to identify, evaluate, and mitigate pipeline and infrastructure hazards, including landslides, subsidence, hydrotechnical, and seismic risks

Expertise

Risk & Reliability Studies | Geotechnical & Geological Surveys | Geohazard Investigations | Remote Sensing | Data Analytics



DANIEL LANIER

Senior Principal | 24+ Years of Experience

Specializes in integrating geophysical and geotechnical data to evaluate seafloor conditions and support deepwater infrastructure siting, while providing project leadership, client coordination, and technical oversight of project delivery

Expertise

Marine Geology | Offshore Geoscience & Geotechnical Analysis | Offshore Site Investigations



ANICA HAYNES

Senior Principal | 21+ Years of Experience

Specializes in environmental permitting, regulatory compliance, and project management for pipeline and energy infrastructure projects, leveraging extensive experience with National Environmental Policy Act (NEPA), Federal Energy Regulatory Commission (FERC), United States Army Corps of Engineers (USACE), and state regulatory frameworks to support project development, construction, and operations across large, multi-state capital programs

Expertise

NEPA Compliance | NEPA Environmental Assessments | Water Permitting & Compliance | Air Quality Permitting & Compliance | Multimedia Permitting and Planning | Multimedia Compliance Auditing | FERC Permitting | Due Diligence



SCOTT WALKER

Senior Principal Ecologist | 23+ Years of Experience

Specializes in environmental permitting, ecological assessments, and regulatory compliance for infrastructure and geohazard projects, identifying environmental constraints, mitigating project risks, and developing practical solutions that support successful project delivery while protecting natural resources

Expertise

Energy Branch Permitting | Wetlands Ecology | Ecological Restoration | Environmental Impact Assessments | Threatened & Endangered Species Presence/Absence Surveys | Wildlife Biology | NEPA



SPENCER VARNADO

Senior Scientist | 20+ Years of Experience

Specializes in environmental permitting, wetlands science, and regulatory compliance for pipeline and infrastructure projects, providing ecological constraint analyses, protected species evaluations, environmental assessments, and agency coordination to support geohazard mitigation and project delivery

Expertise

Natural Resources & Environmental Sciences | Environmental Permitting & Compliance | Wetland Restoration & Enhancement | Environmental Assessments | Biological Assessments | NEPA Compliance | Agency Coordination | Environmental Permitting & Compliance



ANDREW MCGANN, CPESC, QSD/P, CCM

Senior Scientist | 16+ Years of Experience

Specializes in stormwater compliance, erosion and sediment control, and construction management, leading SWPPP development and implementation while supporting watershed protection, resource management, and environmental stabilization projects

Expertise

Stormwater Compliance | Water Quality Monitoring | Resource Management | Construction Management



JOHN HENNESSY, PG, LG

Senior Geologist | 14+ Years of Experience

Specializes in landslide geomorphology, geohazard assessment, and geohazard management for oil and gas pipeline systems across North America; leads geohazard mapping, monitoring, and mitigation programs for existing pipelines, and provides permitting and construction support for new pipelines

Expertise

Geologic Hazard Assessment | Geotechnical Investigation | Geologic Mapping | Construction Monitoring



CHRIS MARKLEY, PG

Senior Geologist | 11+ Years of Experience

Specializes in geohazard assessment and management for pipeline infrastructure, leading the identification, characterization, monitoring, and mitigation of geologic hazards through advanced remote sensing, GIS-based analysis, field investigations, risk assessments, and geohazard data management programs across North America

Expertise

Geohazard Assessment | Geohazard Identification, Characterization, & Monitoring | Remote Sensing | GIS & Data Management



SURAJ KHADKA, PhD, PE

Senior Engineer | 7+ Years of Experience

Specializes in geotechnical engineering and remote infrastructure monitoring, applying instrumentation, slope stability analysis, site characterization, and mitigation design to assess and manage geohazard risks for pipelines, dams, spillways, and other critical infrastructure

Expertise

Geotechnical Engineering | Vibration Monitoring | Geohazard Mitigation & Management | Geohazard Instrumentation & Monitoring | Foundation Engineering | Pavement Design



AMIR AHMADIPUR, PhD, PE

Senior Engineer | 11+ Years of Experience

Specializes in geohazard assessment and mitigation, applying expertise in geotechnical engineering, instrumentation and monitoring, vibration assessment, and static and dynamic foundation analysis to evaluate and manage risks for critical infrastructure projects

Expertise

Geotechnical Engineering | Geohazard Mitigation Design | Geohazard Instrumentation & Monitoring | Foundation Engineering | Vibration Monitoring



JARED WARNER, PG, CEG, CPG

Principal Engineering Geologist | 16+ Years of Experience

Specializes in engineering geology and geotechnical engineering, leading geohazard assessments, mitigation strategies, terrain evaluations, site characterization, and subsurface investigations to identify and mitigate risks for energy, mining, water, and critical infrastructure projects

Expertise

Engineering Geology | Geotechnical Engineering | Geologic Hazard Assessment & Evaluation | Geologic Mapping & Field Reconnaissance | Subsurface Exploration & Characterization | Environmental Site Assessments

SUPPORTING DOCUMENTS

Our geohazard professionals help shape industry best practices through leadership in technical publications, standards development, and conference presentations. These contributions demonstrate our commitment to advancing geohazard management and delivering innovative solutions for pipeline operators.

INDUSTRY DOCUMENTS



- Framework for Geohazard Management. [2023](#).
- Pipeline Integrity Management of Landslide Hazards. [2023](#).
- Guidelines for Management of Landslide Hazards for Pipelines. [2020](#).



- Pipeline Integrity Management of Landslide Hazards, API RP 1187. [2024](#). (primary authors of initial contents)
- Pipeline Integrity Management Under Geohazard Conditions. [2019](#).



- Desktop Review and Gap Analysis of Remote and Continuous Scour Monitoring Technologies. [2025](#).
- Operating Range of Vibrating Wire Strain Gauges for Pipeline Monitoring. [2024](#).
- Geohazards Affecting the Engineering and Construction of New Oil and Natural Gas Pipelines. [2018](#).

SELECT PUBLICATIONS

AIM-PIMG

Asset Integrity Management –
Pipeline Integrity Management
Under Geohazard Conditions

- Performance-based Approach for Stabilizing Steep Slopes on Pipeline Right of Way. [2019](#).
- Example of a Semi-Quantitative Stream Crossing Hydrotechnical Hazard Assessment for a New Pipeline. [2019](#).
- Correlation of Single-Run ILI IMU Bending Strain Features to Geohazard Locations. [2019](#).



- Hazard Quantification of Seismically Induced Tsunamigenic Subaerial/Submarine Mass Movements. [2017](#).
- Seismic Stability Performance of a Coastline Slope Beneath a Pipeline: A Case History of Onshore Observations for Offshore Application. [2016](#).

SUPPORTING DOCUMENTS

SELECT PUBLICATIONS



- Applying New Tools from Research to Earthquake Geohazard Projects for Pipelines. [2026](#).
- Optimizing the Approach to Hydrotechnical Hazard Assessment. [2026](#).
- Input Parameter Sensitivity in Empirical Scour Calculations at Pipeline River Crossings. [2026](#).
- Comparative Analysis of Leaf-On vs. Leaf-Off LiDAR Data Quality for Landslide Detection in Pipeline Corridors. [2026](#).
- Evaluating the Applicability and Limitations of InSAR for Landslide Monitoring along Pipeline Corridors in the Western U.S. and Appalachia. [2026](#).
- Combining Strain Data from IMU and Strain Gauges Using Strain Gauge Model. [2026](#).
- Performance of Stress Relief Excavation for Geohazard Management – Case Studies. [2026](#).
- Best Practices in Geohazard Data Management. [2024](#).
- Correlation of IMU Bending Strain Features to Geohazard Locations: An Update. [2024](#).
- Vibrating Wire Strain Gauges for Pipeline Geohazard Monitoring Operation, Failure Mechanisms, and Data Interpretation. [2024](#).
- Evaluation of Stress-Relief Excavation for Pipelines Affected by Landslides: Case Studies. [2024](#).
- Stress Relief Excavation of Pipelines Affected by Landslides: Case Studies. [2022](#).
- Development of an Interactive E-Learning Geohazards Training Program for Pipeline Operations Personnel. [2022](#).
- Development: Supporting Geohazard Risk Assessments Through Real Time Data and Geospatial Analytics. [2022](#).
- Effectiveness of Subsurface Drainage for Mitigation of Landslides Affecting Pipelines. [2022](#).
- A Deep Dive into the Use of LiDAR Change Detection Analysis for Regional Landslide Monitoring in the Appalachian Basin Region of the US. [2022](#).
- A New Method to Estimate Annual Probability of Pipeline Failure Resulting from Landslides Based on Actual Failure Locations. [2022](#).



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GEOLOGISTS



- Case Study of the Development of a Landslide Hazard Management Program for PG&E's Natural Gas Pipeline System in California. [2016](#).
- The 22 March 2014 Oso Landslide, Washington, USA. [2016](#).

We are engineers, scientists and innovators.

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CONTACT INFORMATION

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