

GEOHAZARD MONITORING

ACQUIRE ANALYZE ANSWER

Identify terrain threats and track ground movement change to mitigate risk through lidar analysis

- Oil & Gas Utilities
- Mining
- Midstream Operators
- Regulatory Agencies

WHY NV5 GEOSPATIAL?

It's important to have the right partner when safety, compliance, and reputation are on the line.

Per PHMSA's Mega Rule, owners and operators of gas, hazardous liquid pipelines, or other assets are responsible for taking all practical steps to mitigate risk surrounding the potential for damage to their pipeline, facilities, and transmission lines caused by earth movement and other geological hazards.

These hazards may include washouts, floods, unstable soil, landslides, or other hazards that may cause the pipeline or asset to move or to sustain abnormal loads. In addition, statutes require gas transmission lines to have a patrol program to observe surface conditions on and adjacent to the transmission line right-of-way to monitor acute and slowly occurring changes which may affect the current or future safe operation of the pipeline.

NV5 Geospatial's Geohazard Monitoring provides the latest in remote sensing lidar technology combined with geospatial analytics and expertise to enhance your visibility and understanding of your pipeline or asset stability from the design and construction phase to ongoing systems patrolling and condition management.

Geohazard Identification - Why Lidar?

Lidar modeling reveals subtle surface features that are undetectable via aerial photographs or field observation, leading to an unparalleled richness in resulting topographic models. After semi-automated terrain hazard identification, all areas are subject to rigorous

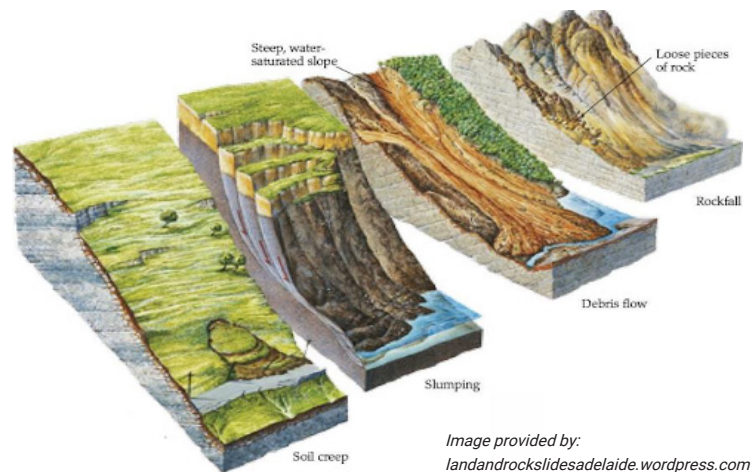
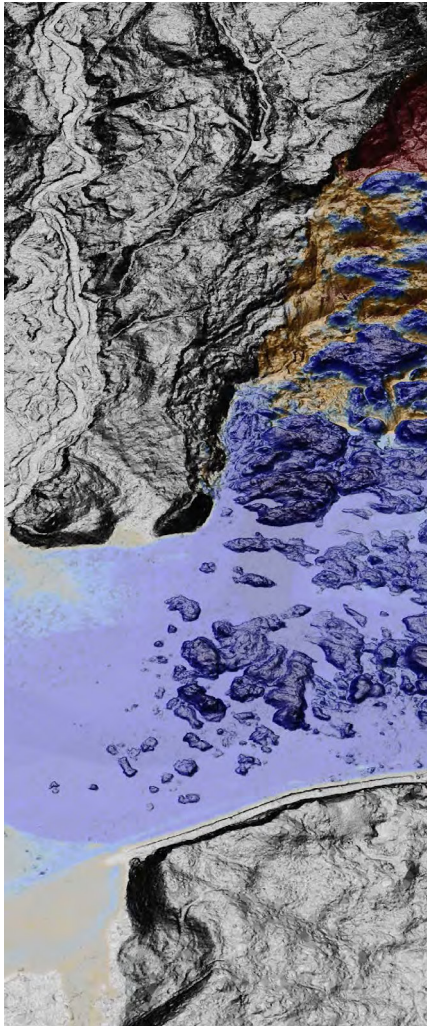


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landandrockslidesadelaide.wordpress.com

NV5 Geospatial's specialty is ground movement monitoring utilizing lidar data, geological datasets, and change detection methodologies to identify areas of active or potential risks.

quality control by staff geologists. Areas of landslide risk are reported and combined with asset information to prioritize mitigation efforts.





Change Quantification

NV5 Geospatial couples this precise change detection analysis of the lidar point cloud with proprietary tracking methods for detailed comparisons of individual assets and features year-over-year to help identify and mitigate risk. Change detection can isolate any identifiable features captured by remotely sensed data monthly, quarterly, or annually. Maintenance effectiveness can be evaluated each year if desired. The high degree of absolute accuracy of our data (~5-10cm) allows for detailed change detection.

NV5 Geospatial Approach

NV5 Geospatial provides customized solutions tailor-fit to meet our client's specific needs from innovative acquisition technology to proprietary data analysis software to answer your toughest questions.

ACQUIRE

NV5 Geospatial is an industry thought leader, partnering with sensor manufacturers to test new technologies, while constantly designing, upgrading, and investing in the latest state-of-the-art remote sensing technologies; including our unique CLASS system, 1560i and 1560ii lidar sensors, CASI hyperspectral imagery sensors, and topobathy lidar sensors among others.

Airborne lidar, Topobathymetric lidar, Ground Mobile lidar, Large Format Cameras, Oblique Cameras, Thermal Infrared Imaging, Hyperspectral Imaging



ANALYZE

Quantum Spatial has developed specialized automated and manual methodologies for efficient identification of areas of several types of failed terrain. The results are robust, efficient, cost-effective datasets that indicate the presence of subsidence, landslides, erosion, fault lines, heave/frost effects, etc.

Topographic Maps, Planimetric Maps, Orthophotos, Full Feature Classification, 3D and 4D Models, Enterprise GIS, Geospatial Cloud Solutions

ANSWER

Digital Elevation Models (DEM) derived from lidar, combined with attributed information, provide any surveyor powerful tools to successfully investigate stability and detect areas that are likely prone to future failure. Lidar-based change detection can identify previously unrecognized failure areas in which significant historical events have occurred. These insights and analytics deliver strong support for clear decisions and resolution to your objectives.

Regulatory Compliance, Subsidence, Landslide Potential, Environmental Monitoring, Land Use & Permitting, Infrastructure Management, Hazard Detection, Disaster Preparedness

