Corporate Office

Nagpur

GIS Centers

Nagpur | Mumbai | Hyderabad | Lucknow

Domestic Offices

Mumbai | Pune | Hyderabad | Lucknow | Ahmedabad

International Offices

Nairobi (Kenya) | Accra (Ghana)

Windhoek (Namibia) | Zambia

INDIA KENYA GHANA NAMIBIA ZAMBIA

MEGHE GROUP
VALUES REDEFINED

Education | Hospitals | Industry
Infrastructure | Cooperative

ADCC Infocad Limited

Subsidiaries

ADCC Infocom Pvt. Ltd.
ADCC International East Africa Limited
ADCC Geosys West Africa Limited
ADCC Academy Pvt. Ltd.
AI Instrumentation Pvt. Ltd.
ADCC Technology Zambia Limited

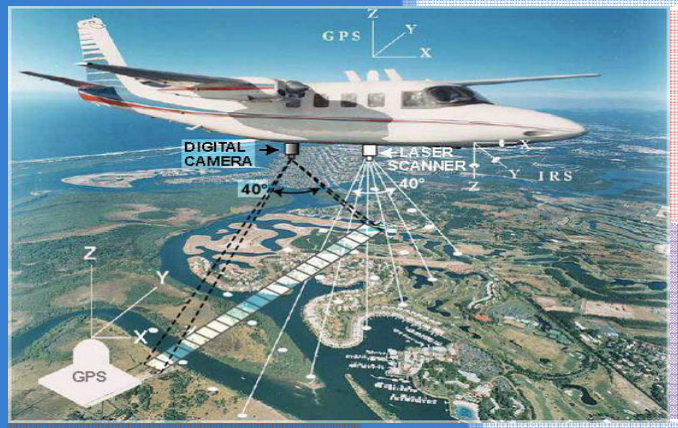
/adccinfocad

www.adccinfocad.com

The Product landscape of GIS Industry is very wide as almost all sectors require some form of Geo-Spatial Data and Analysis

		Infrastructure Development					Government				Industry					
		Airports	Energy/ Hydro	Highways/ Railways	SEZ	EPC	Homeland Security	Defense	Govt/ City Municipality	Environment /Irrigation	Retail	Telecom	Transport/ Logistics	Utilities	Mining	Others
Data Capture	TLS Survey	✓	✓		✓	✓		✓							✓	▪ Heritage
	Mobile LiDAR	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			▪ Coasts
	Aerial Survey		✓	✓	✓	✓	✓	✓	✓	✓			✓	✓		▪ Coasts
	Bathymetric					✓	✓	✓		✓						▪ Coasts
	GPR - Below Ground	✓		✓					✓						✓	▪ GPR
	UAV		✓		✓	✓	✓	✓		✓					✓	
End User Products	Map Digitization	✓	✓				✓	✓	✓		✓		✓	✓		
	GIS – Asset Management	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	
	GIS – Analytics		✓				✓	✓	✓		✓	✓	✓	✓		
	GIS – LBS Services						✓	✓	✓		✓	✓	✓	✓	✓	▪ Apps etc

Aerial Survey can help Governments in meeting multiple requirements through a single data-set



Flooding Analysis

- Accurate DEM will help in creating Flood Models for different scenarios
- Infrastructure interventions can then be planned in 3D for maximum benefit

Disaster Management

- Identify disaster prone areas and take preventive measures
- Generate visualized 3D scenario analysis for various disaster management plans for better co-ordinated responses

Environment impact studies

- Study Forest Cover – pre and post infrastructure projects
- Study Slope stability – pre and post infrastructure projects
- Monitor construction activity within disaster prone areas

Land Use Study

- Accurately map current use of land for planning of infrastructure and Asset management

Web GIS

- Act as a base for GIS services like Asset Management, land record management etc

Multiple Solutions from Mobile LiDAR

Corridor Survey

- Engineering Grade survey of Highways and Railways
- Highly accurate, person independent and upto 3 times faster than traditional survey

Municipal GIS

- Municipal GIS for applications like Property Tax, Land Records Management and Municipal Services

Smart & Safe City

- Capturing of whole city into a 3D platform will help to provide multiple Smart and safe City applications like:
  - Intelligent transport systems
  - Infrastructure management
  - Disaster Management
  - Crime Mapping
  - 3D Training environment
  - 3D Crime capture

Retail GIS

- Store location analysis
- Customer targeting
- Location based services

Utility/Telecom GIS

- Asset Management
- Vegetation & Safety analysis

Multiple Solutions from Terrestrial LiDAR

Mining Products

- Highly accurate and quick volumetric calculations for mines
- Multiple other GIS applications like: Slope stability, new mine exploration, fleet management, Environment monitoring etc

Heritage Products

- Highly accurate and non-contact capturing of heritage buildings for digital preservation, reconstruction purposes
- Digital fly-through for tourists

3D As Built Analysis

- Capturing of complex structures such as Oil & Gas plants, Power Plants for re-fitment/ modernization purposes
- Analysis of difficult structures such as Chimneys, bridges etc

Hydro Survey

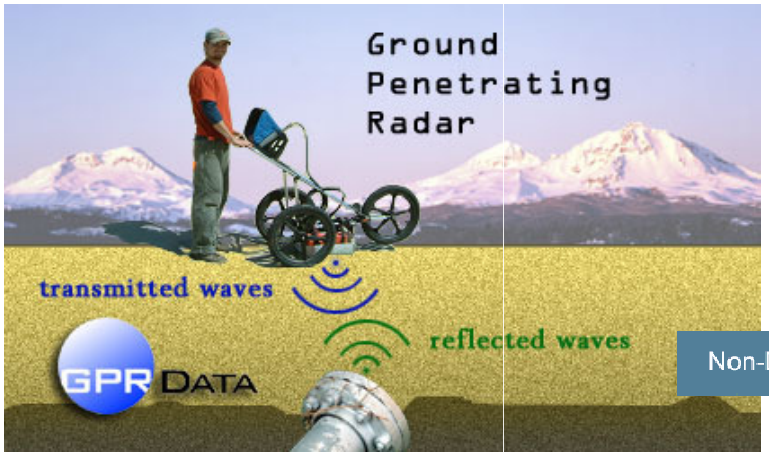
- Survey of difficult topography such as sites of Hydro power projects etc

Tunnel Survey

- Accurate calculation of Tunnel overburden values

Sub-surface Mapping can add additional strength for comprehensive 3D

Quality & Technology used for Sub-surface mapping depends on '**Utility Quality Level Attribute**'



Non-Destructive Digging (NDD) / Hydro Excavation

Quality Level 'D'

- Least reliable
- Developed from existing records and cursory field visits

Quality Level 'C'

- Surface Appurtenances are surveyed and accurately plotted on a current site plan
- This is correlated with records

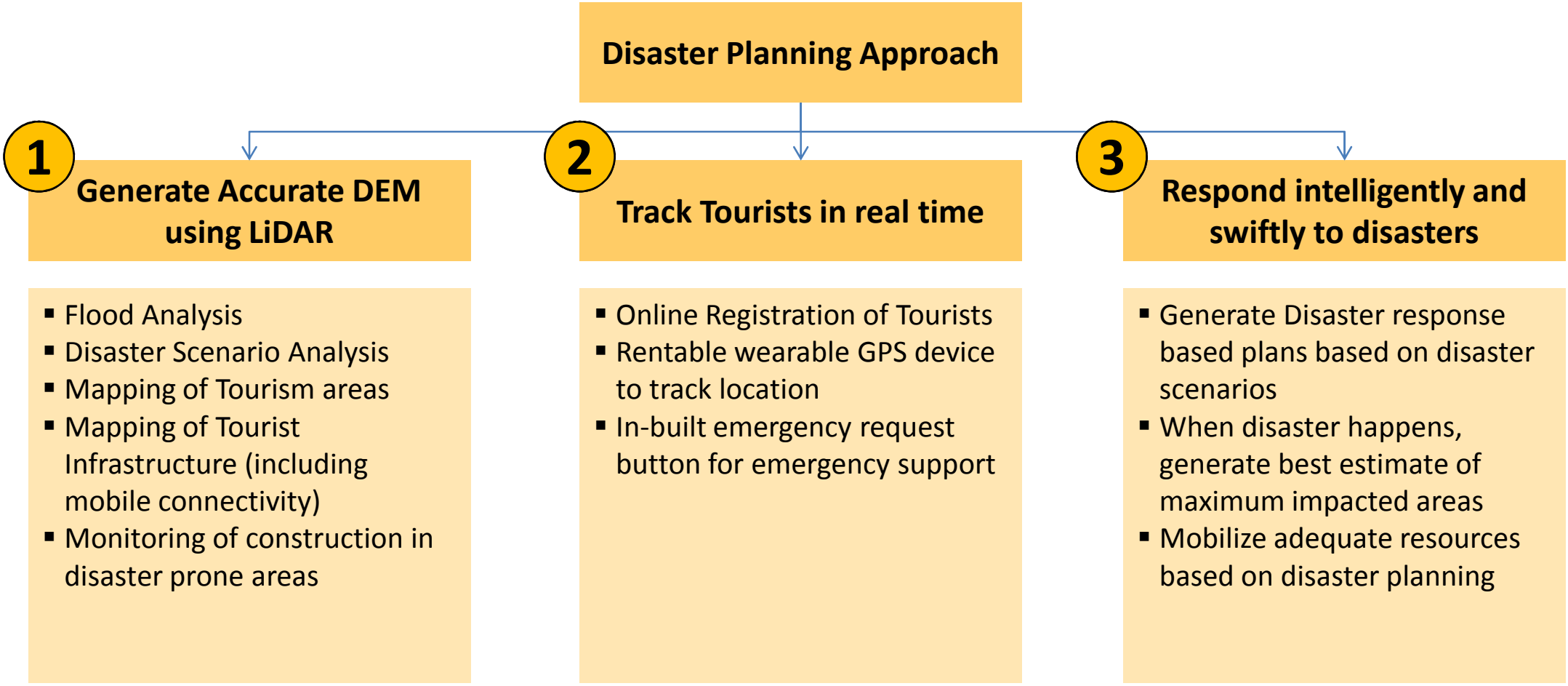
Quality Level 'B'

- Surface Geophysical Methods (**GPR, Electro-Mechanical** methods) used to search for and trace existing utilities

Quality Level 'A'

- Guaranteed 3D
- Utilities exposed via **non-destructive air-vacuum** means
- Exposed utilities are then surveyed and plotted on site plan Elevations

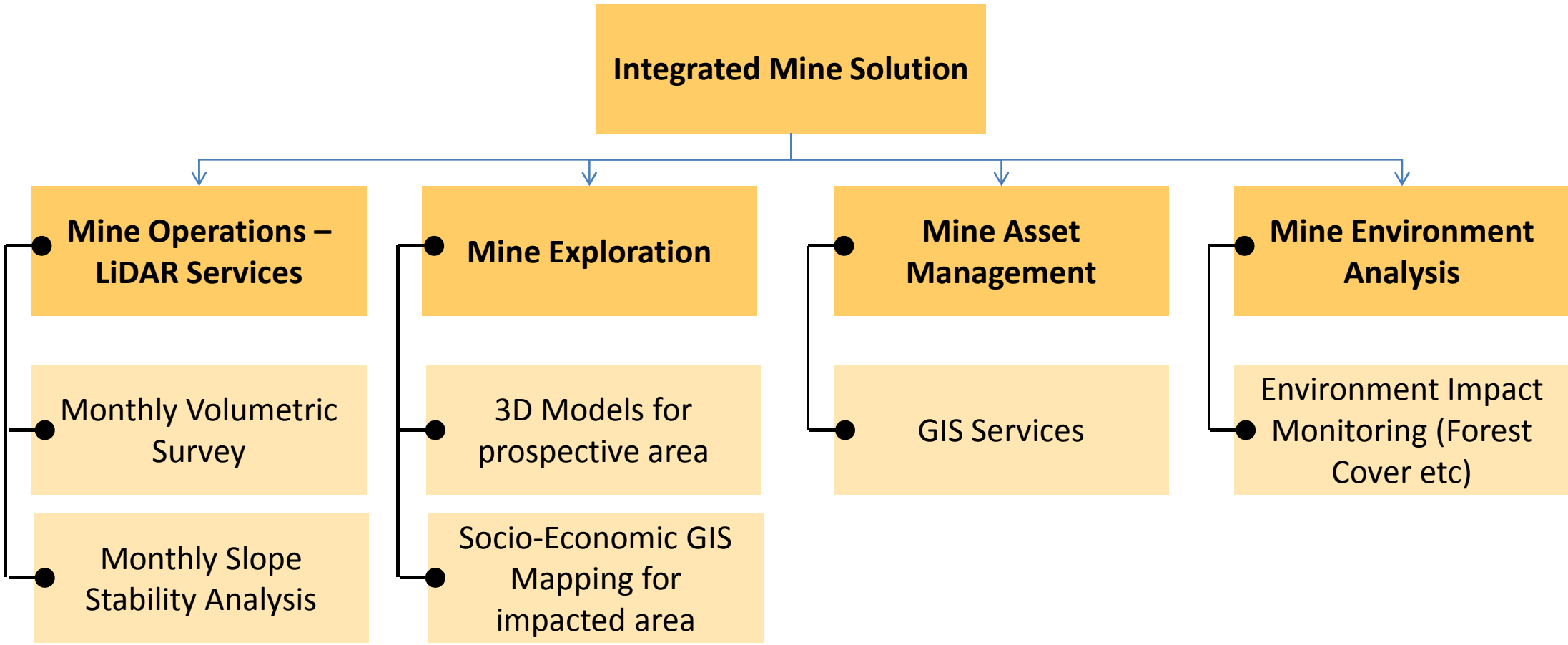
Aerial survey can form basis of a GIS Based Disaster Planning Approach in areas like Uttarakhand



- GIS based approach can help in giving a more structured response to disaster areas by managing and focusing relief efforts and hence help in even saving precious lives

Mining Solution offered by ADCC

Integrated Mine Solution



- Abroad, mining companies are using GIS extensively for improving productivity and improved decision making
- In India, the need for technology is being felt with mines like Singareni adopting LiDAR already

Mining surveys possible with TLS

- Overburden volume computation
- Open cast pit volume
- Volume of material mined between any two dates
- Slope measurement and monitoring
  - Slope failure leads to losses to life and property
- Land subsidence monitoring
- Underground mine tunnel cross-section measurement
- Mining machinery as built measurement
- Comprehensive data archival for insurance, legal, compensation, environmental clearances etc.
- Data available to mine surveyor in his office for making necessary data products on desktop

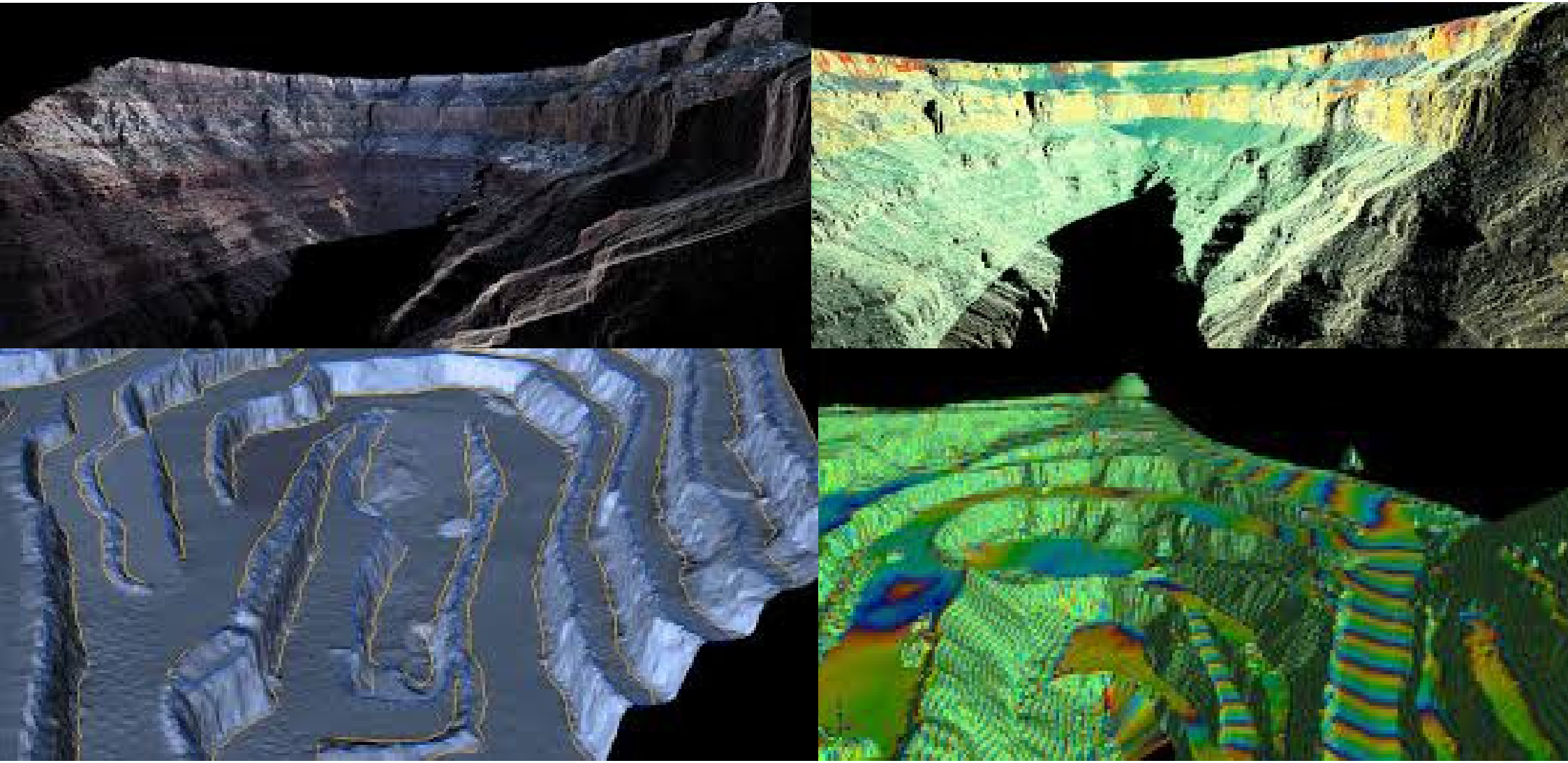
Advantages of using TLS

- Remote survey
  - No danger to people (surveyor)
  - No interference to on going work
  - Mapping of inaccessible areas/slopes
- Fast survey
  - Fast data capture-quick results-crucial in decision making
  - Least disturbance to site-minimal shutdown time
- Comprehensive
  - High data density-each detail is capture
- Accurate
  - Each point accurate to few cm
  - Accuracy in volume generates more revenue or saves the cost
  - Contour Interval up to 5 cm

Advantages…some more

- Three-dimensional data acquisition and visualization
- Long range measurements
- Scanning up to 1.5km range
- Remote measurement of large and inaccessible area possible
- Integration with CAD to generate map
- Day and night operation
- Data archived for future-Can be used to extract information any time
- Easy access to complete data by higher authorities for checking measurements produced from field

Application



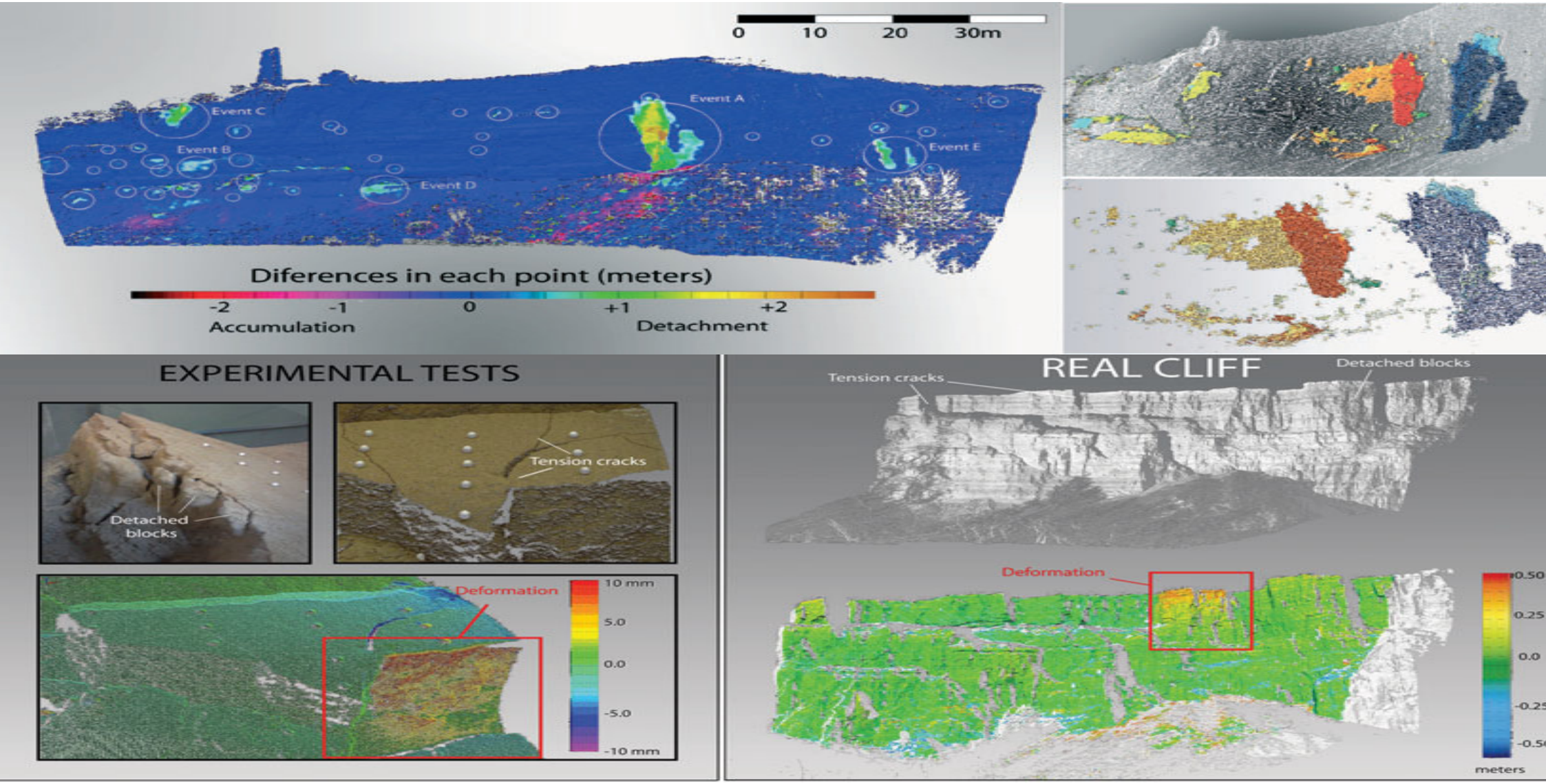
Stock Pile

Classified LiDAR Point Cloud

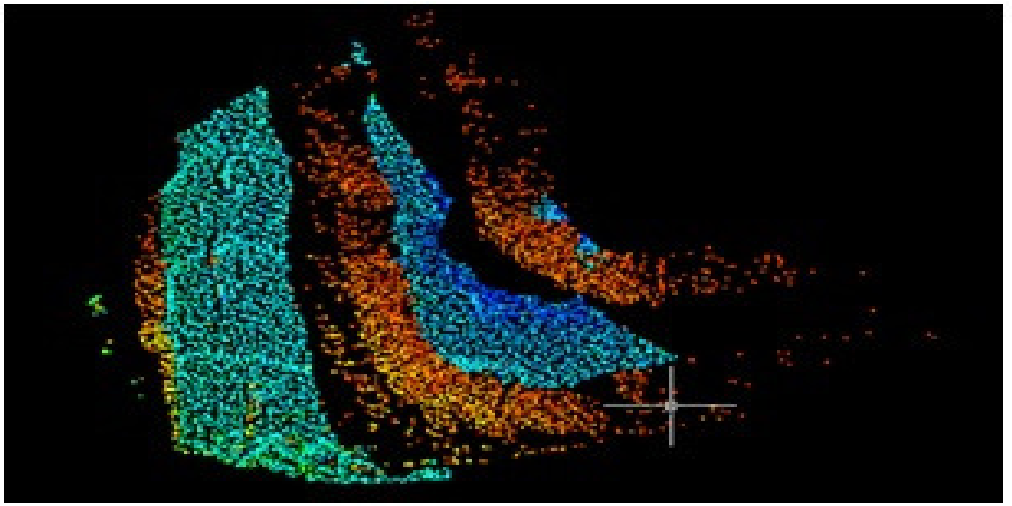
Intensity image of LiDAR Point Cloud

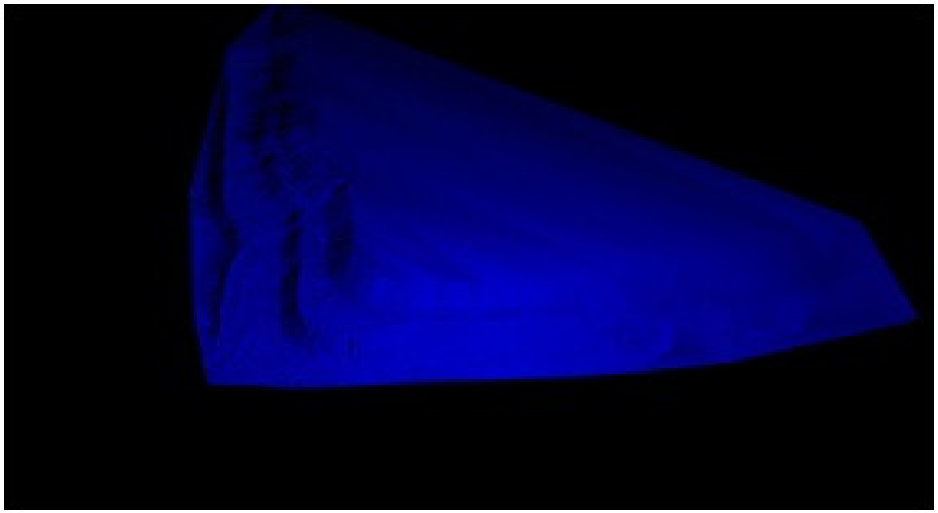
Contour map of Stock pile

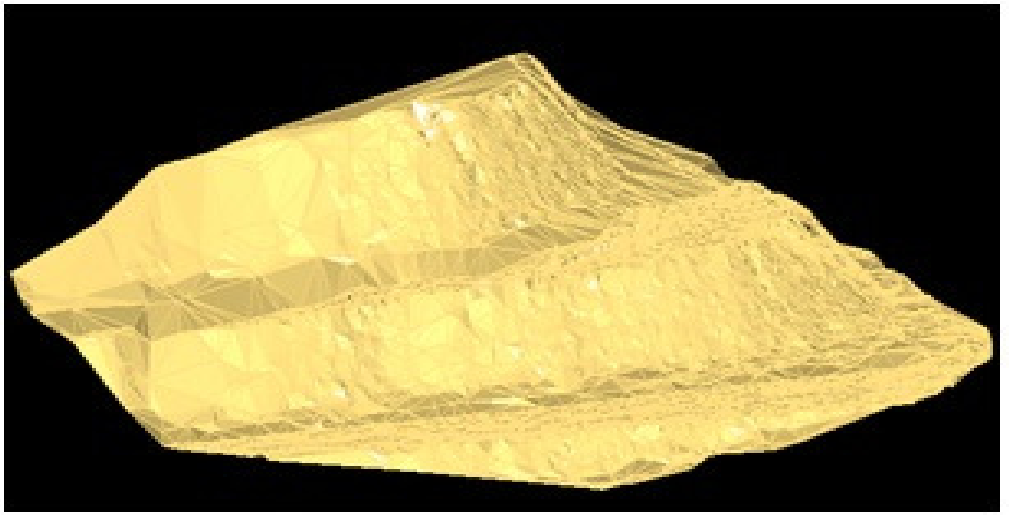
Change Detection Planning

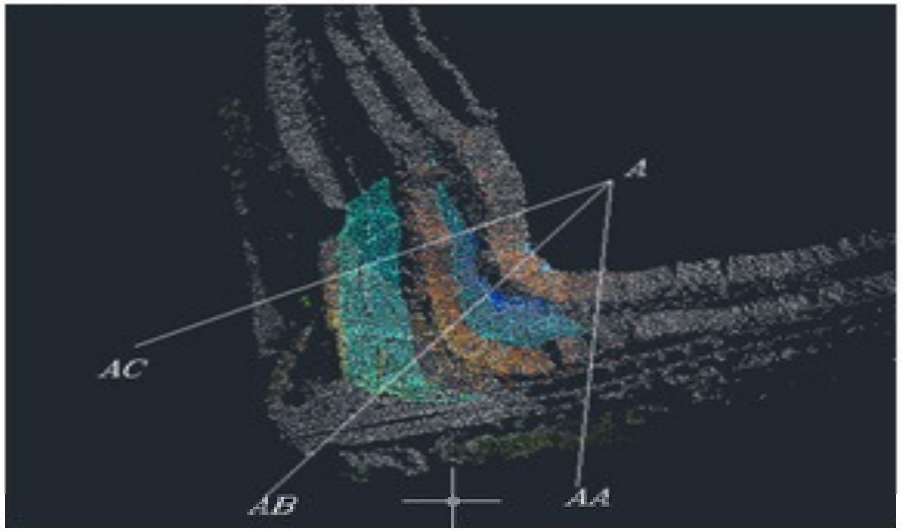


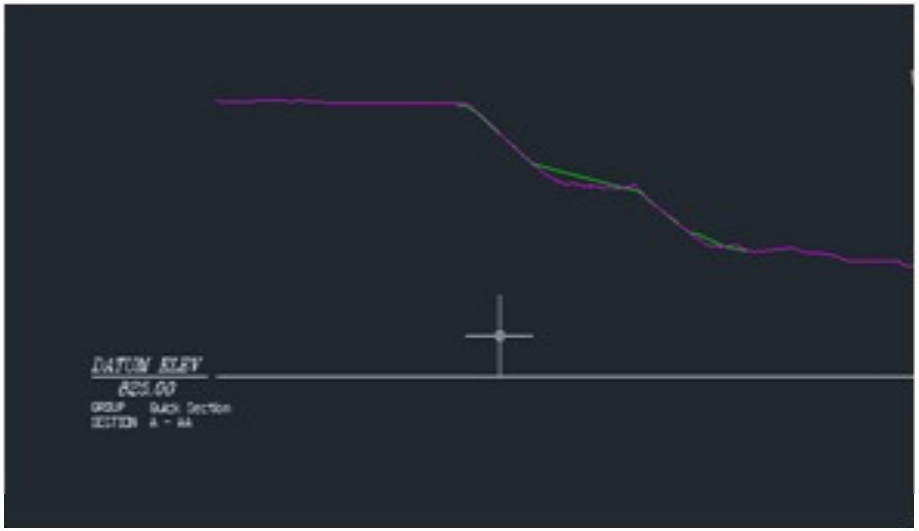
Bench Slope Analysis

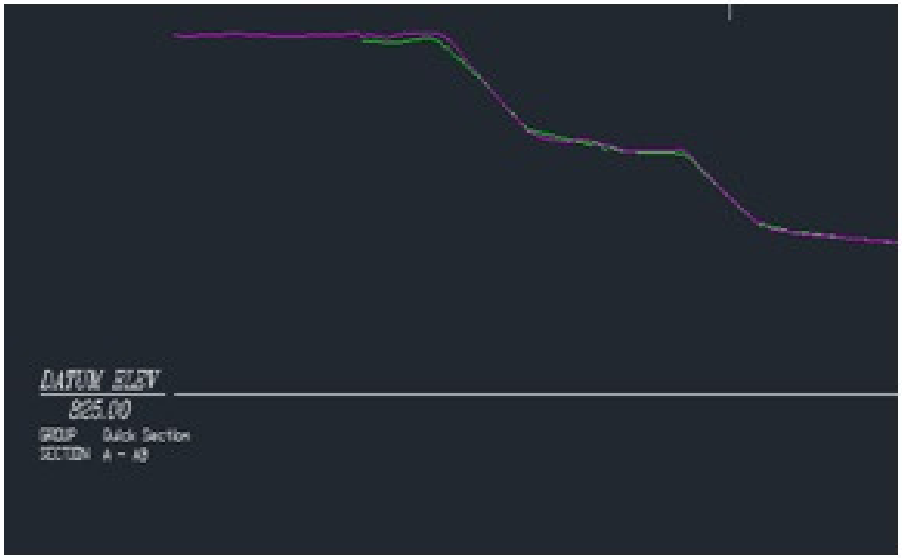


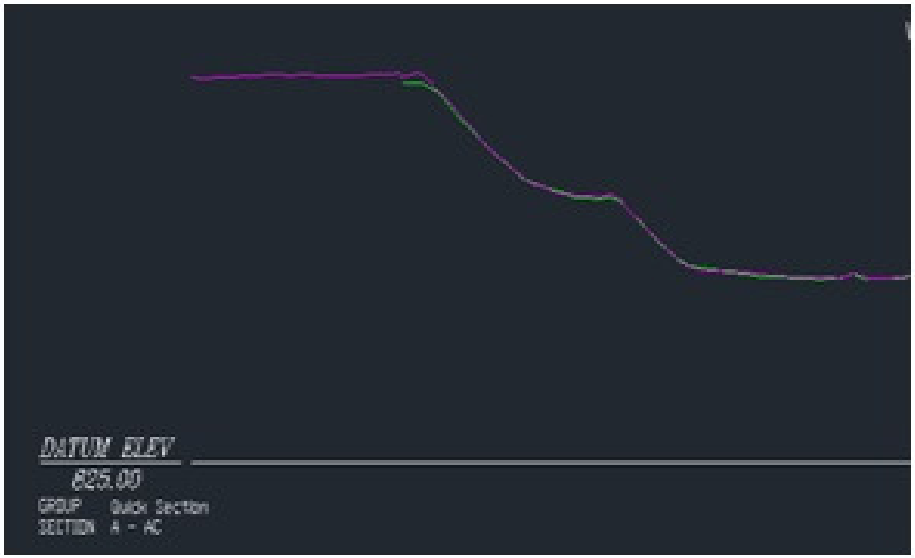




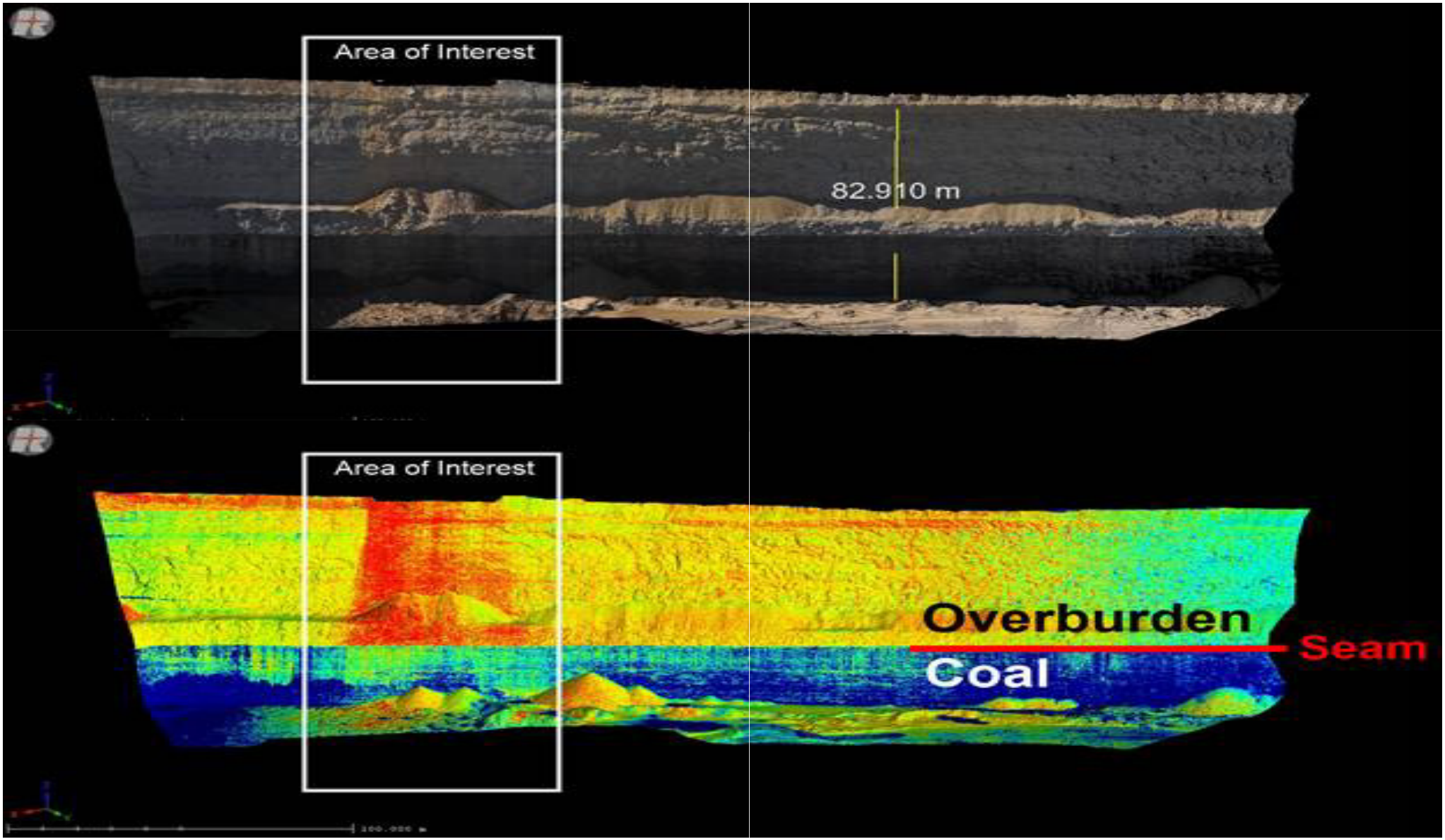

A
AC
AB
AA


DATUM ELEV
825.00
GROUP Quick Section
SECTION A - AA

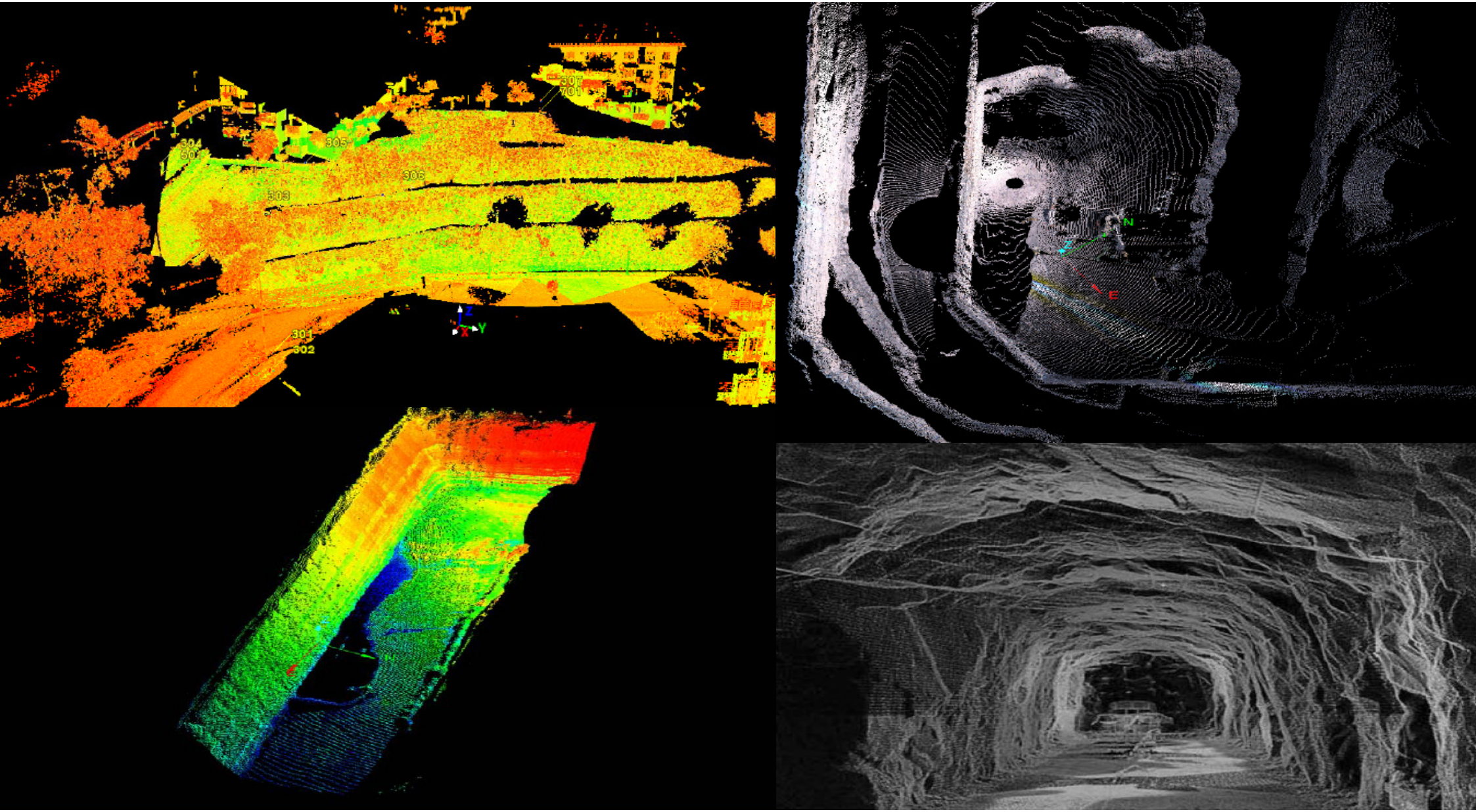

DATUM ELEV
825.00
GROUP Quick Section
SECTION A - AB


DATUM ELEV
825.00
GROUP Quick Section
SECTION A - AC

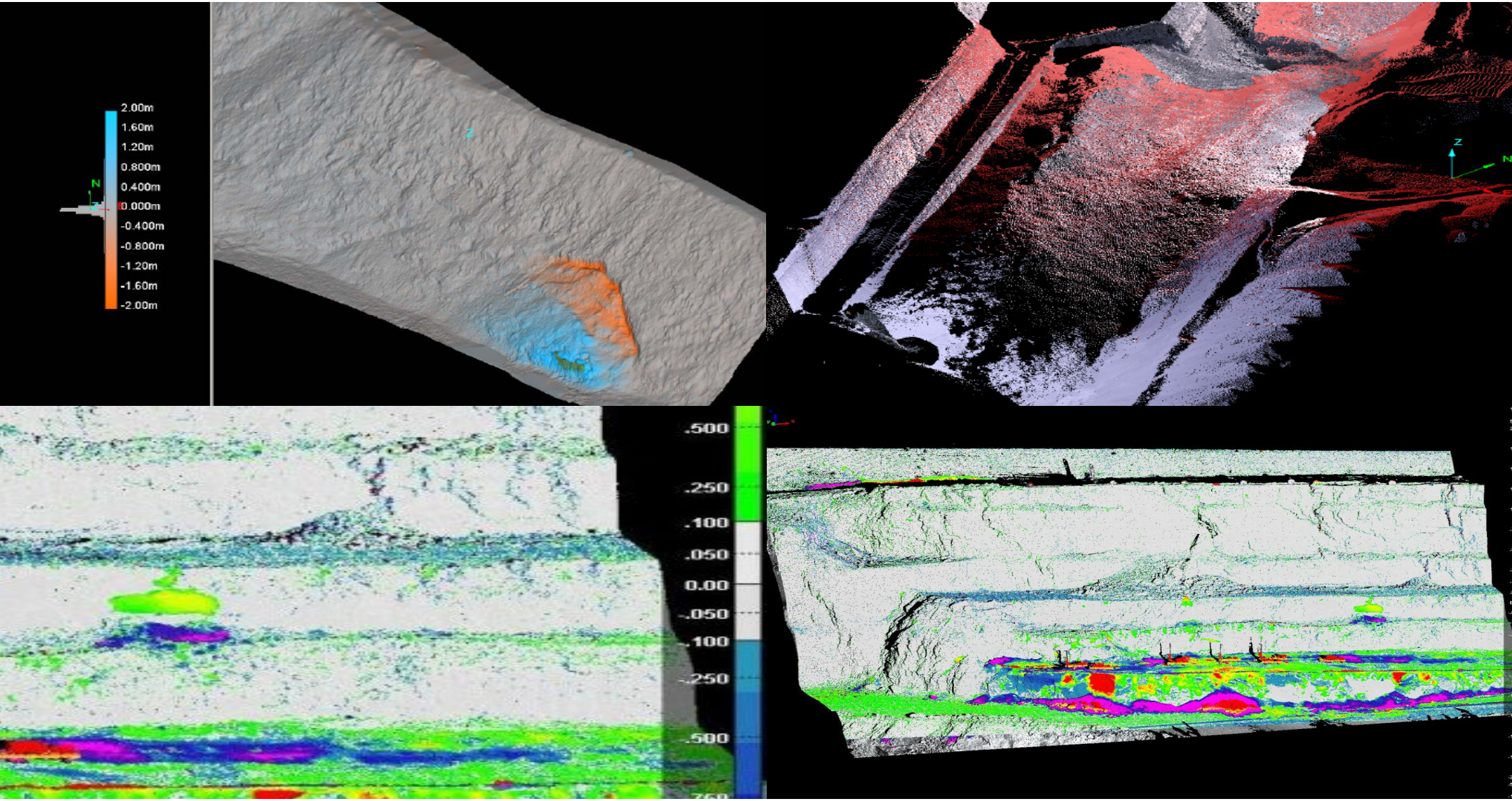
Volume and Overburden Calculation



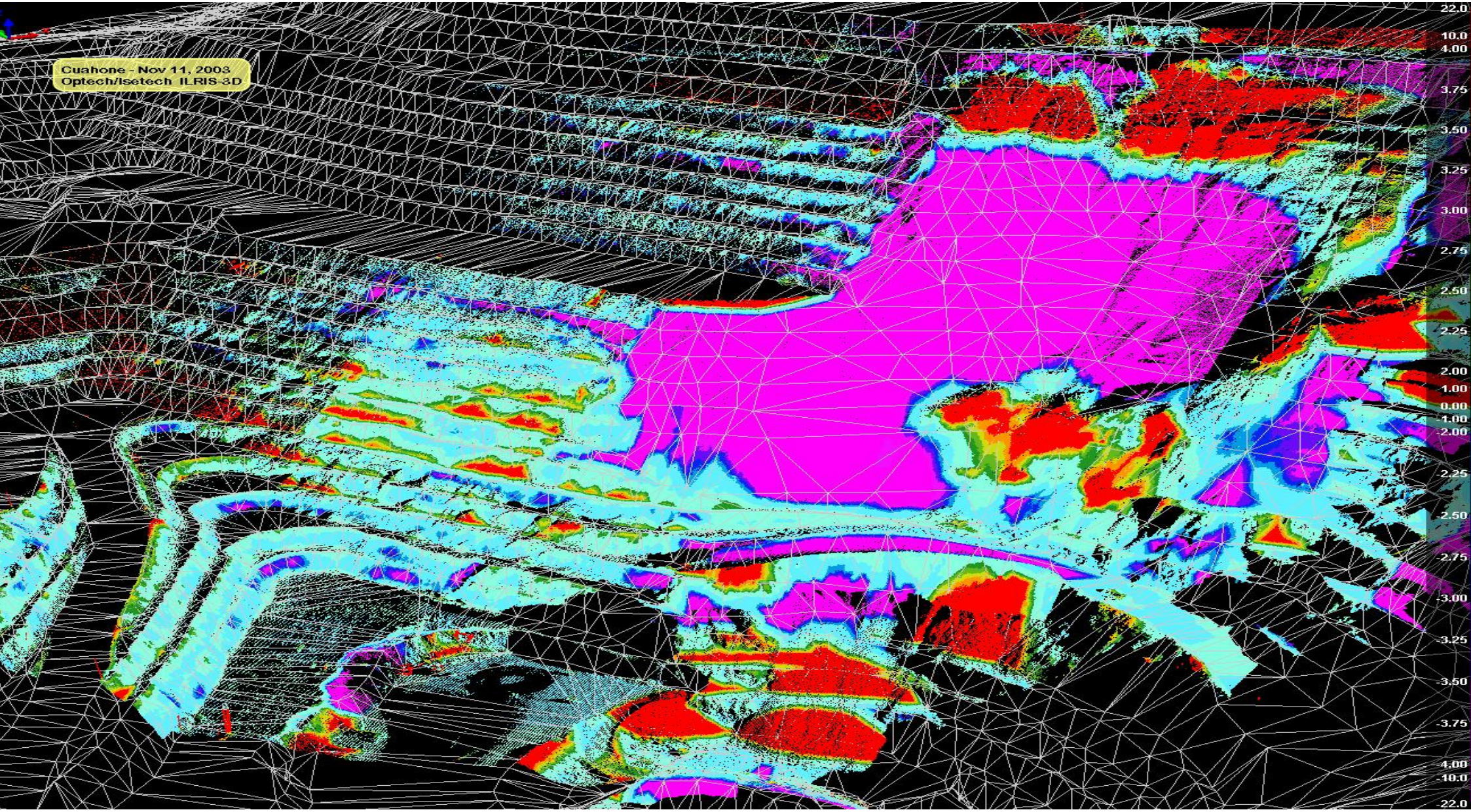
3D Plan of Mines



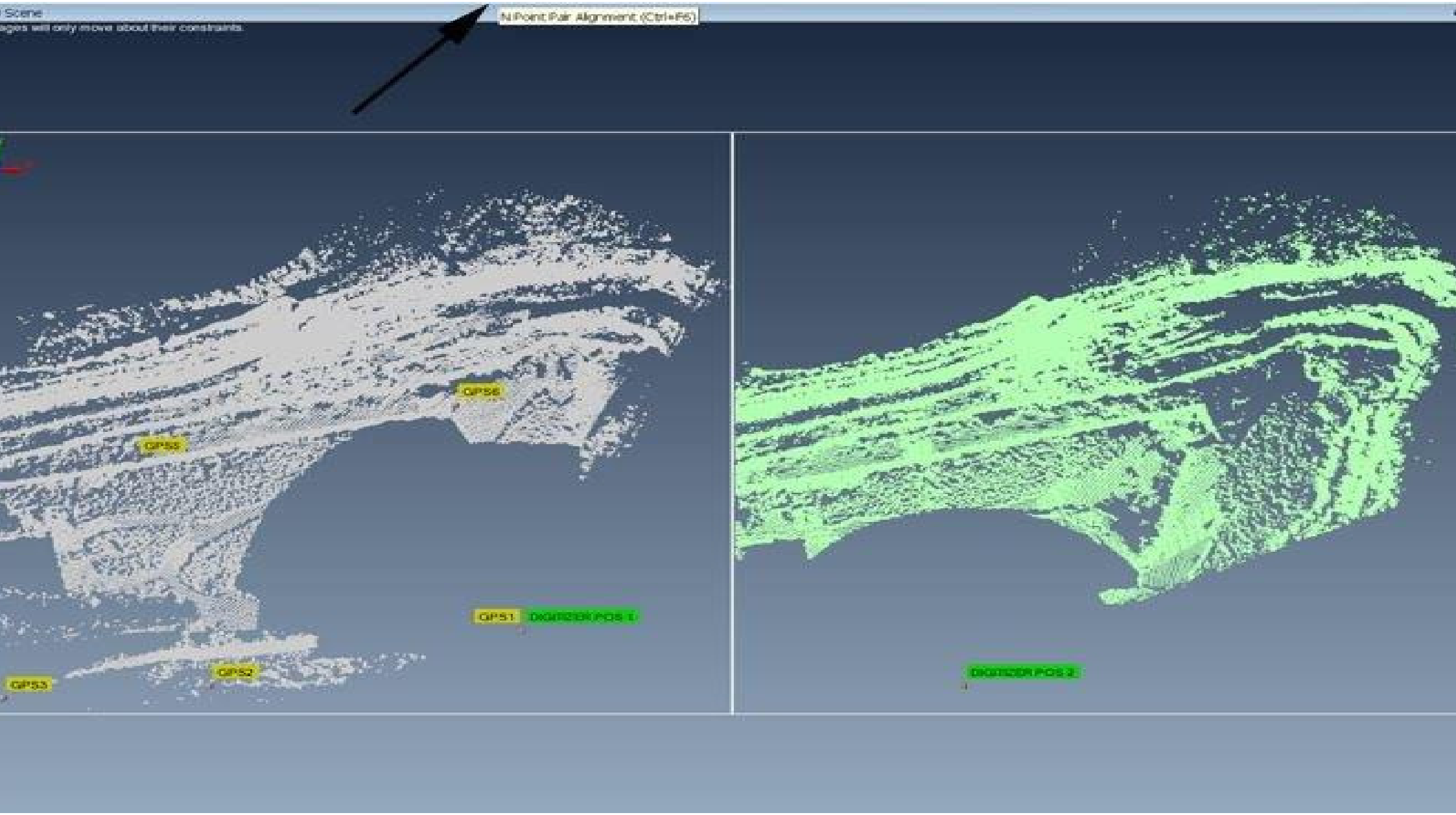
Slope Stability Analysis



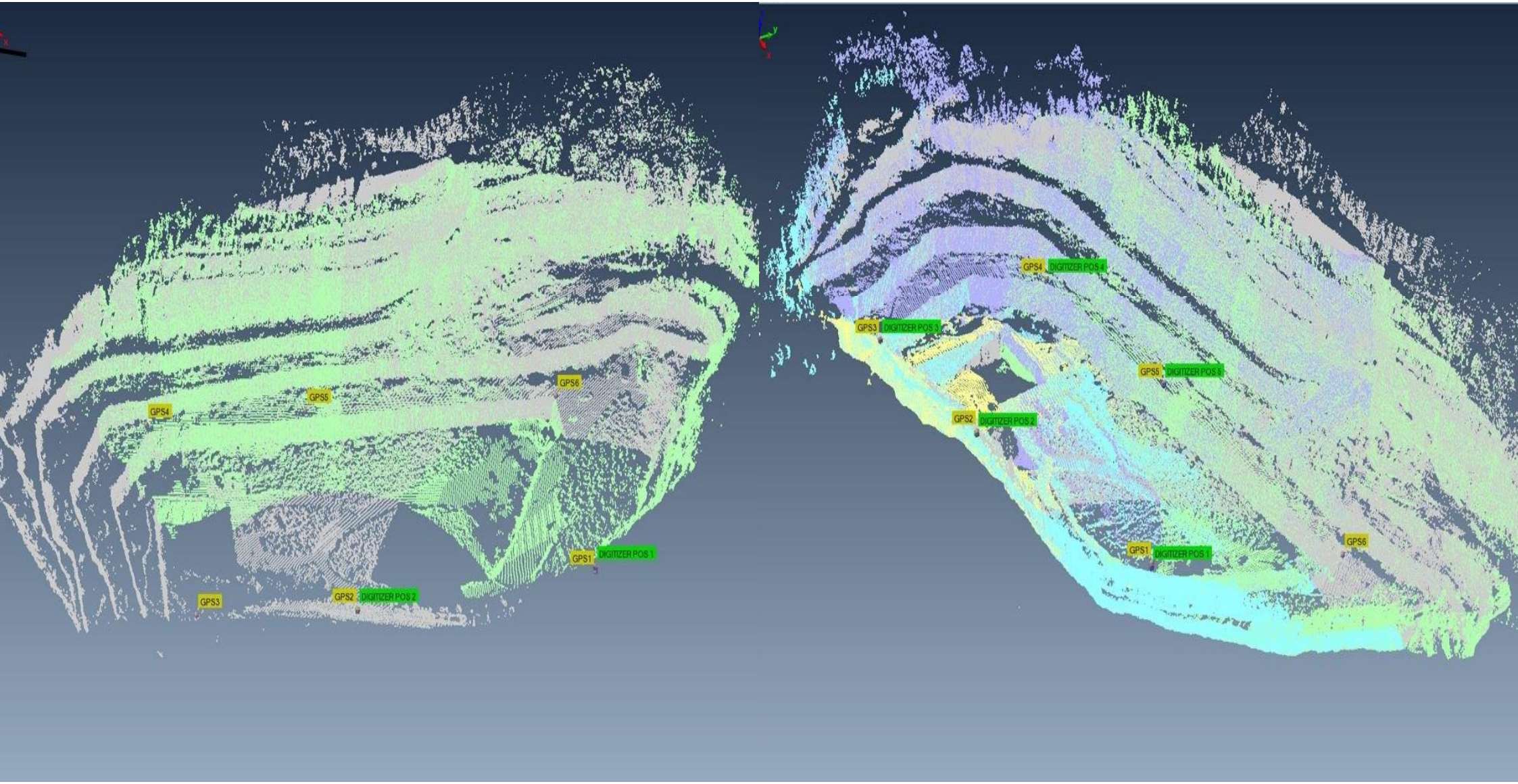
Slope Stability Analysis



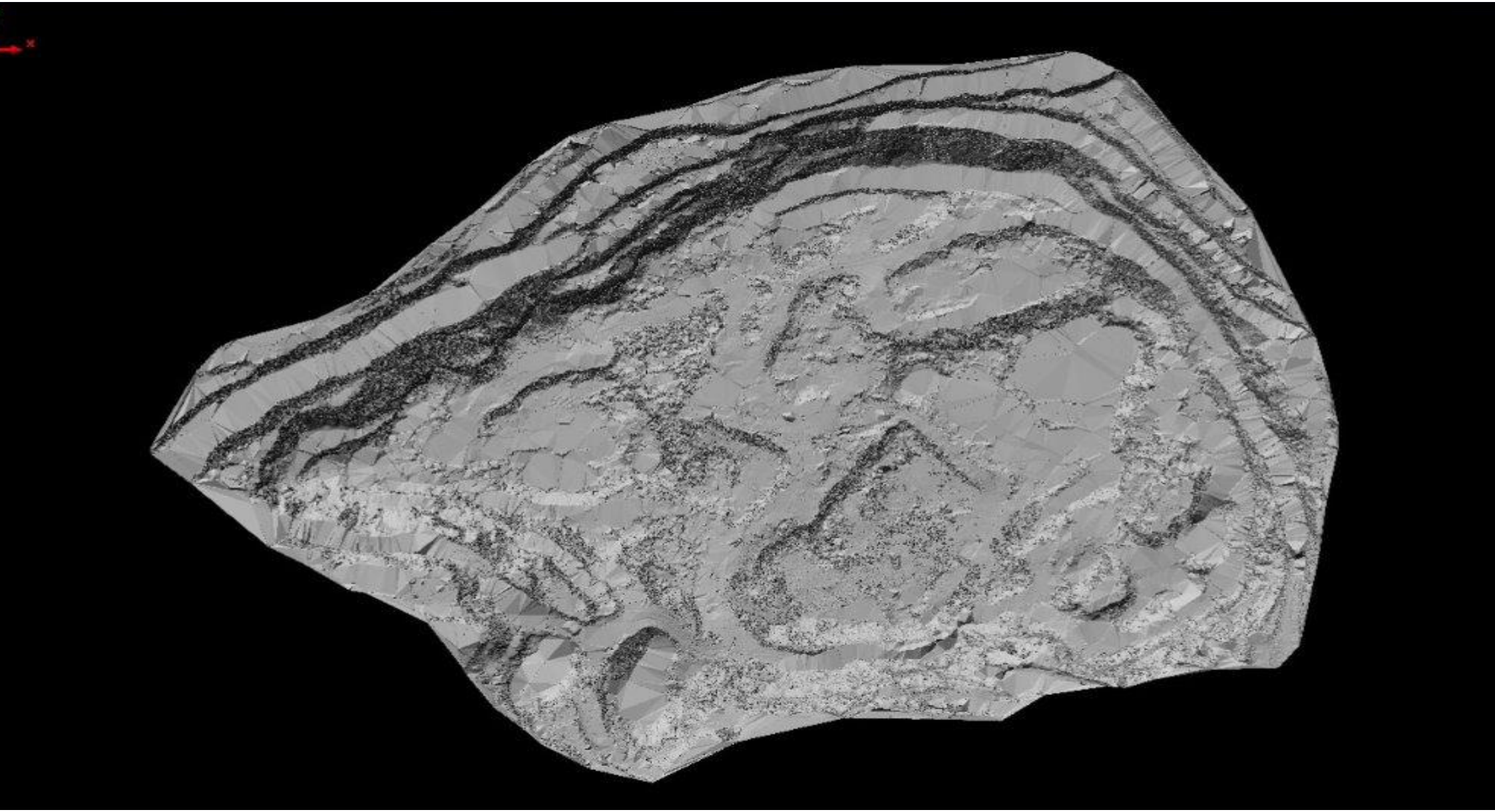
Work Flow of TLS



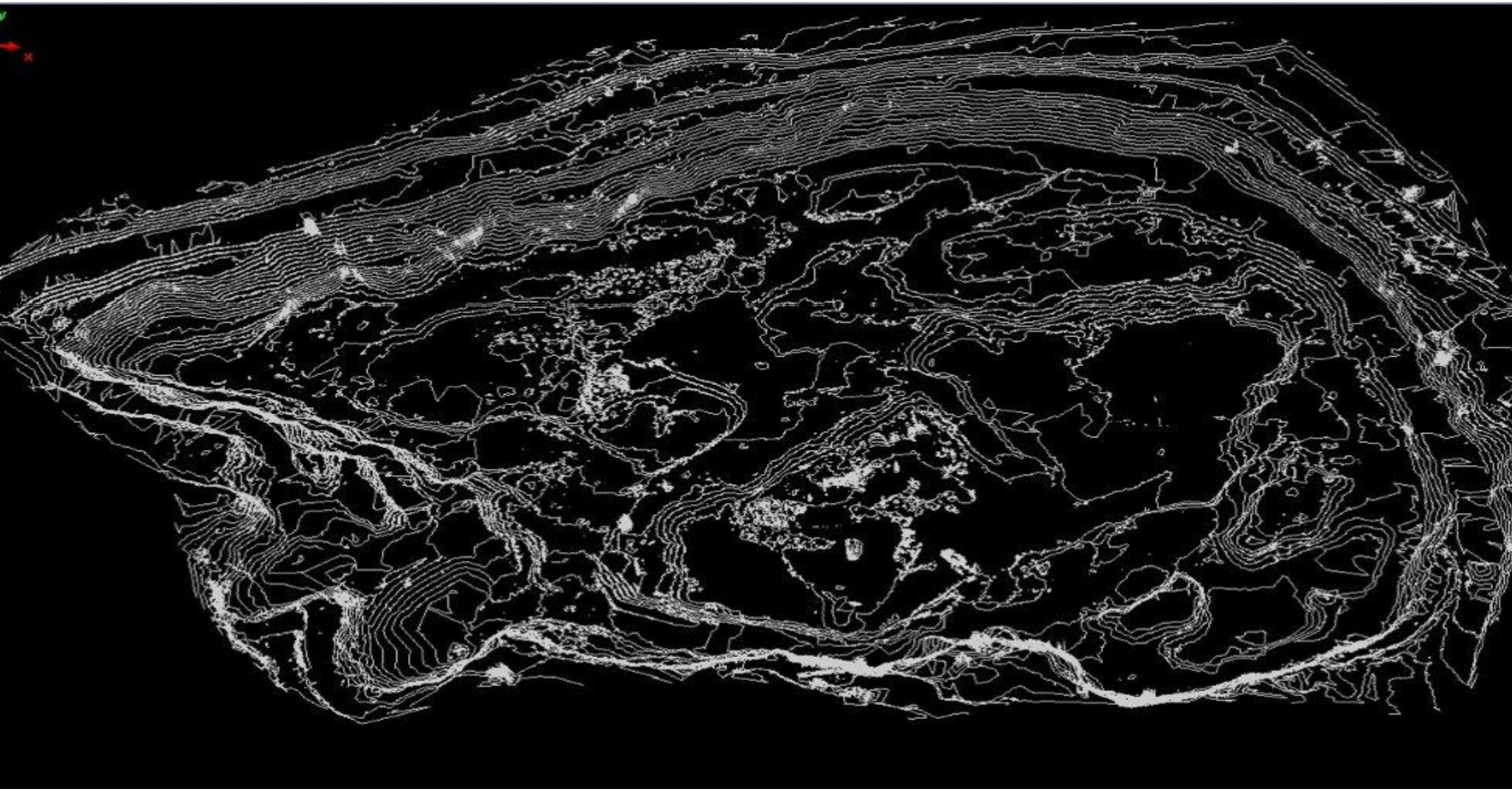
Aligned Scan



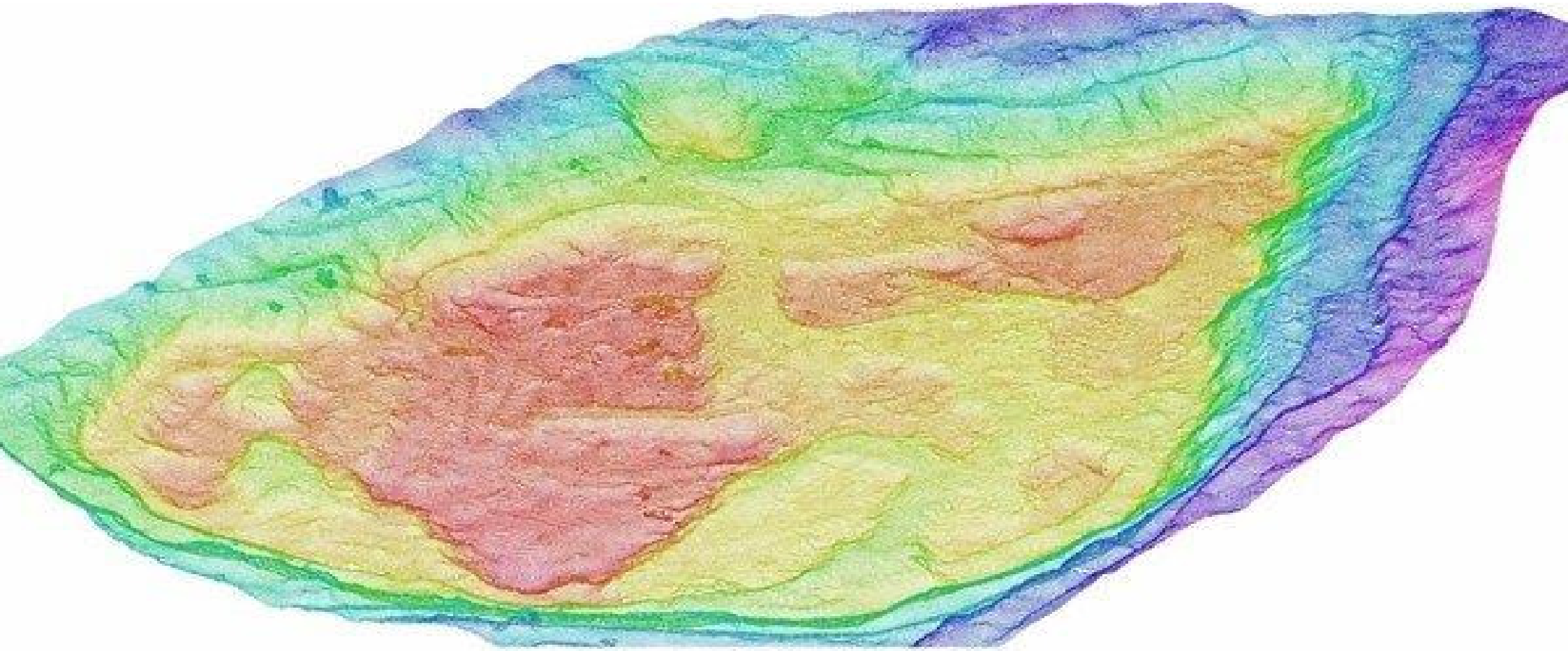
MESH Model



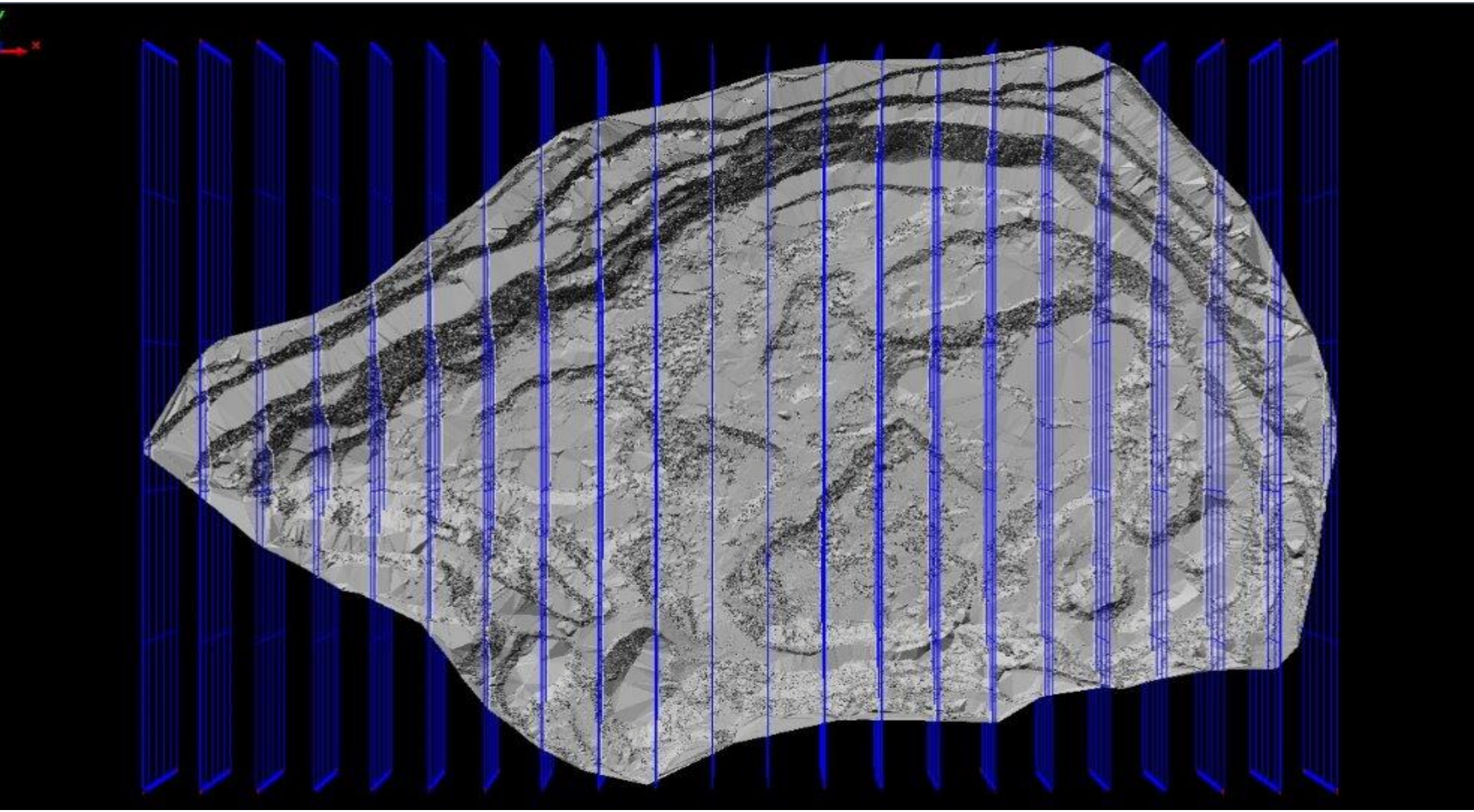
Contour Map



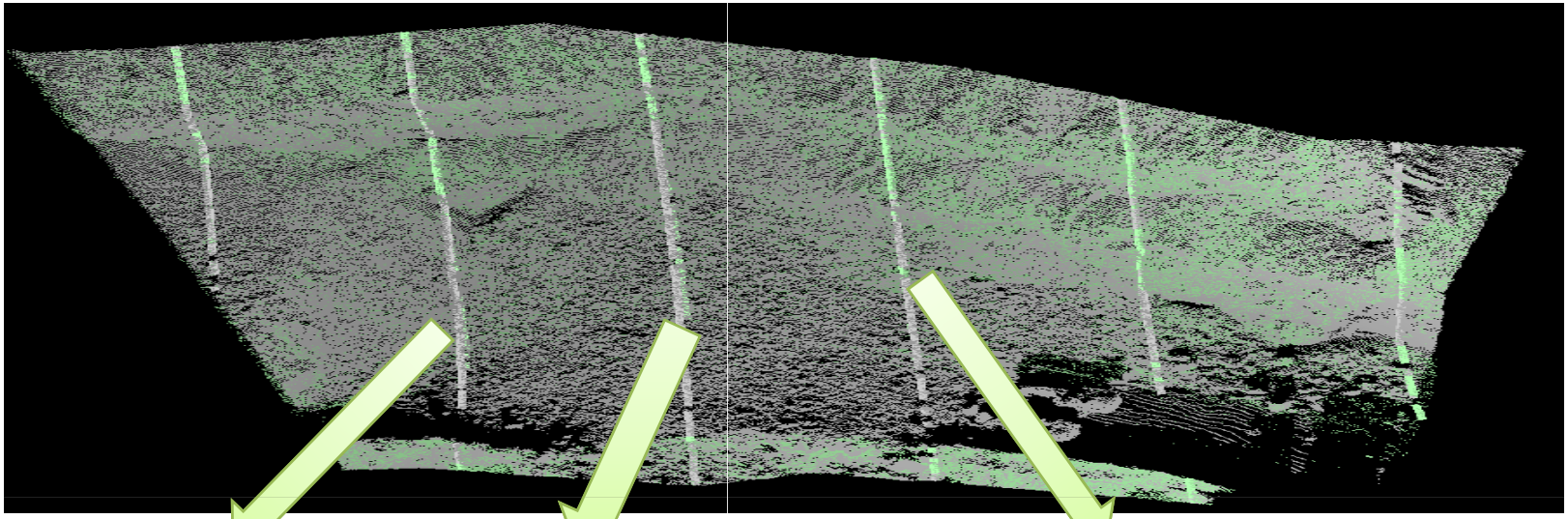
Elevation Model

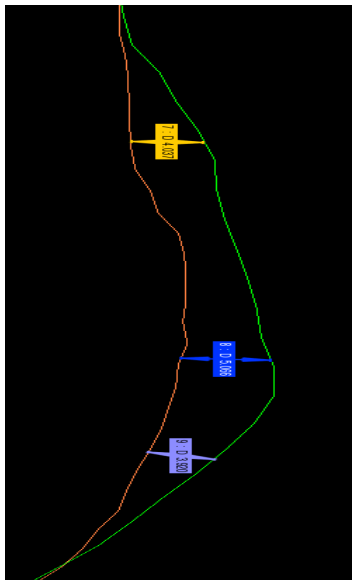


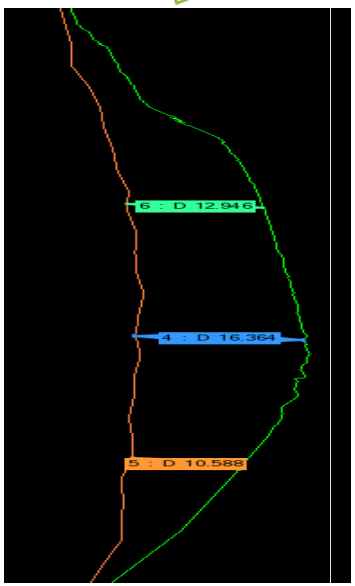
Cross Section

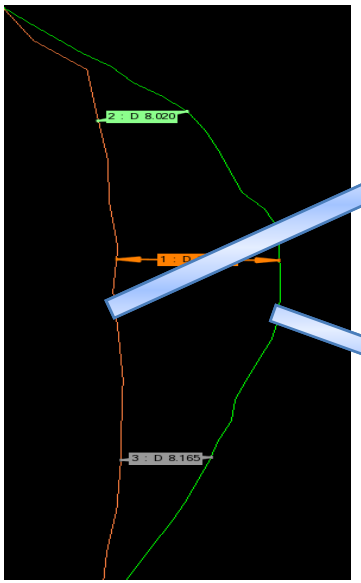


Cross Sections with some measurements









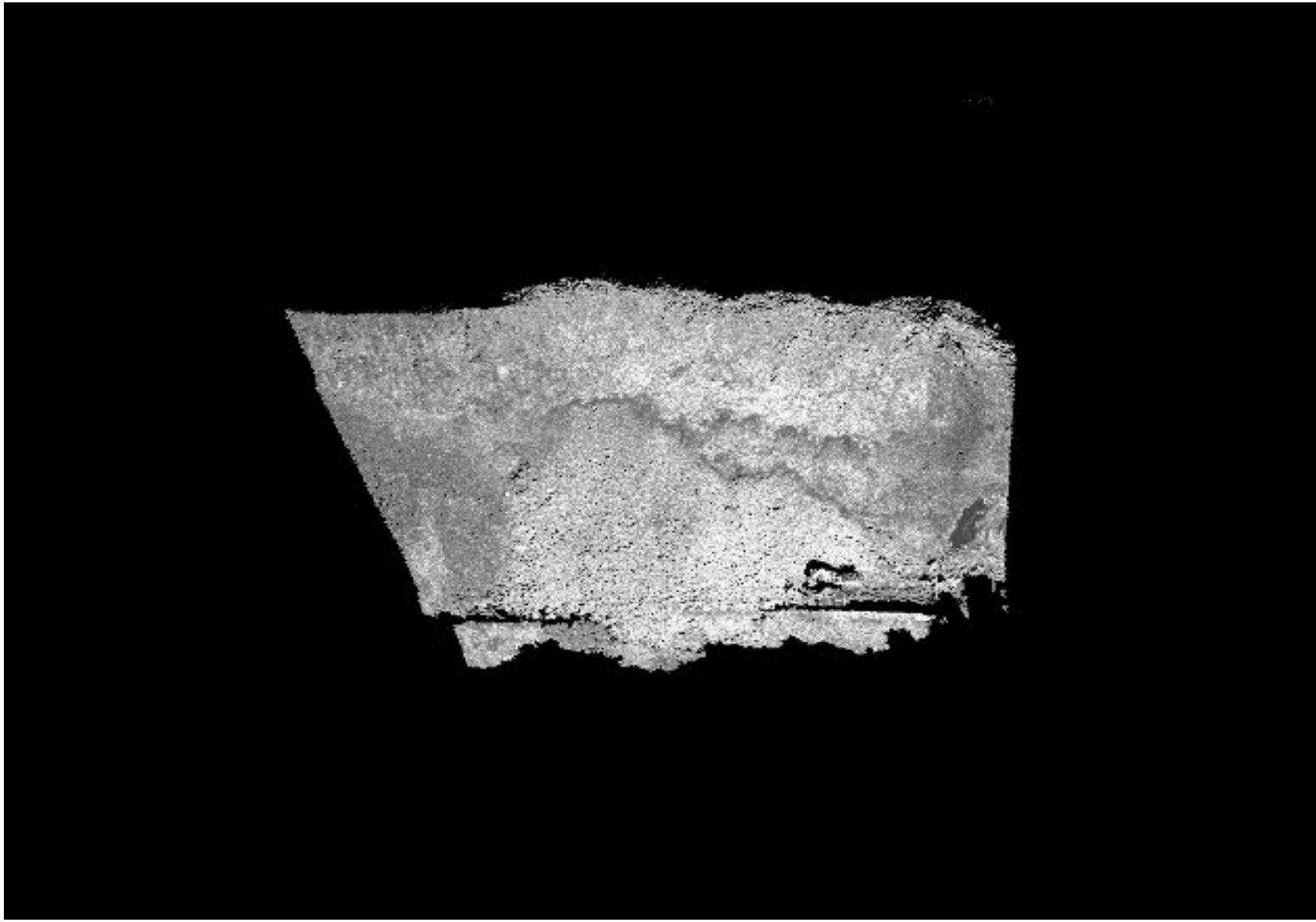
Surface before excavation

Surface after excavation

Point cloud of mining site before excavation

Characteristics

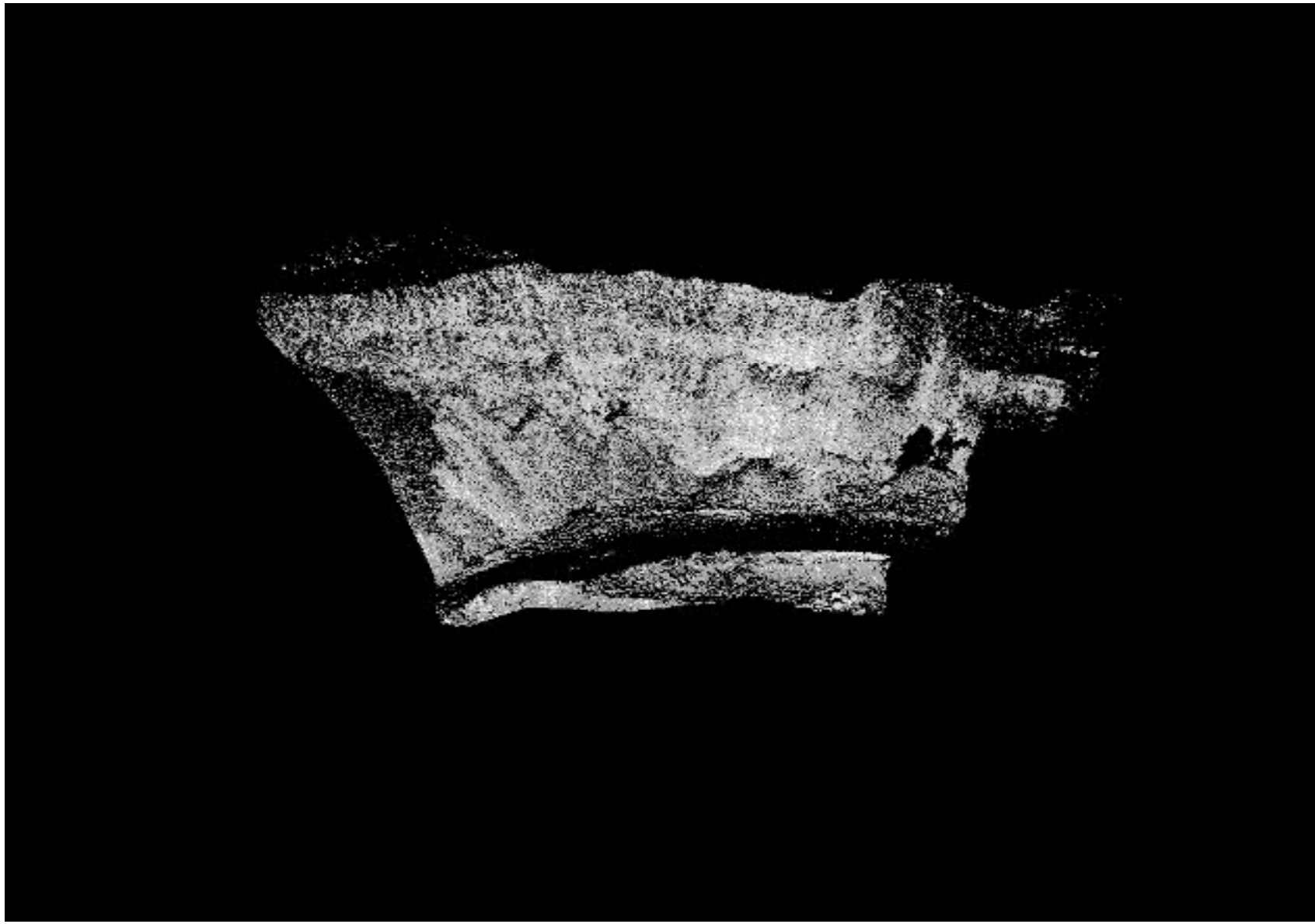
- No. of Scans: 1
- No. of Point:4,20,000
- Scan time: 30min
- Resolution: 25cm
- Dimension:250mx150m



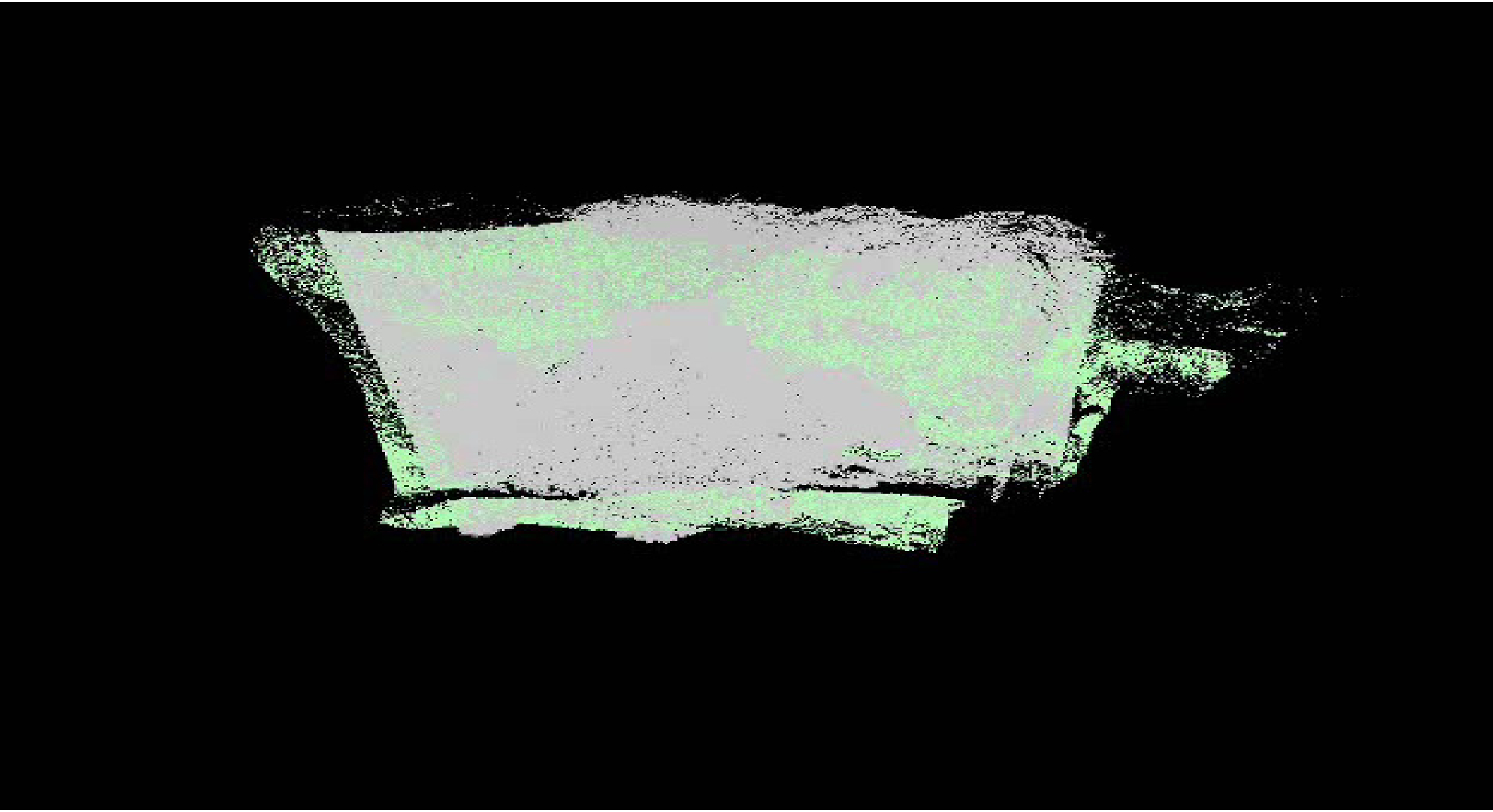
Point cloud of mining site after excavation

Characteristics

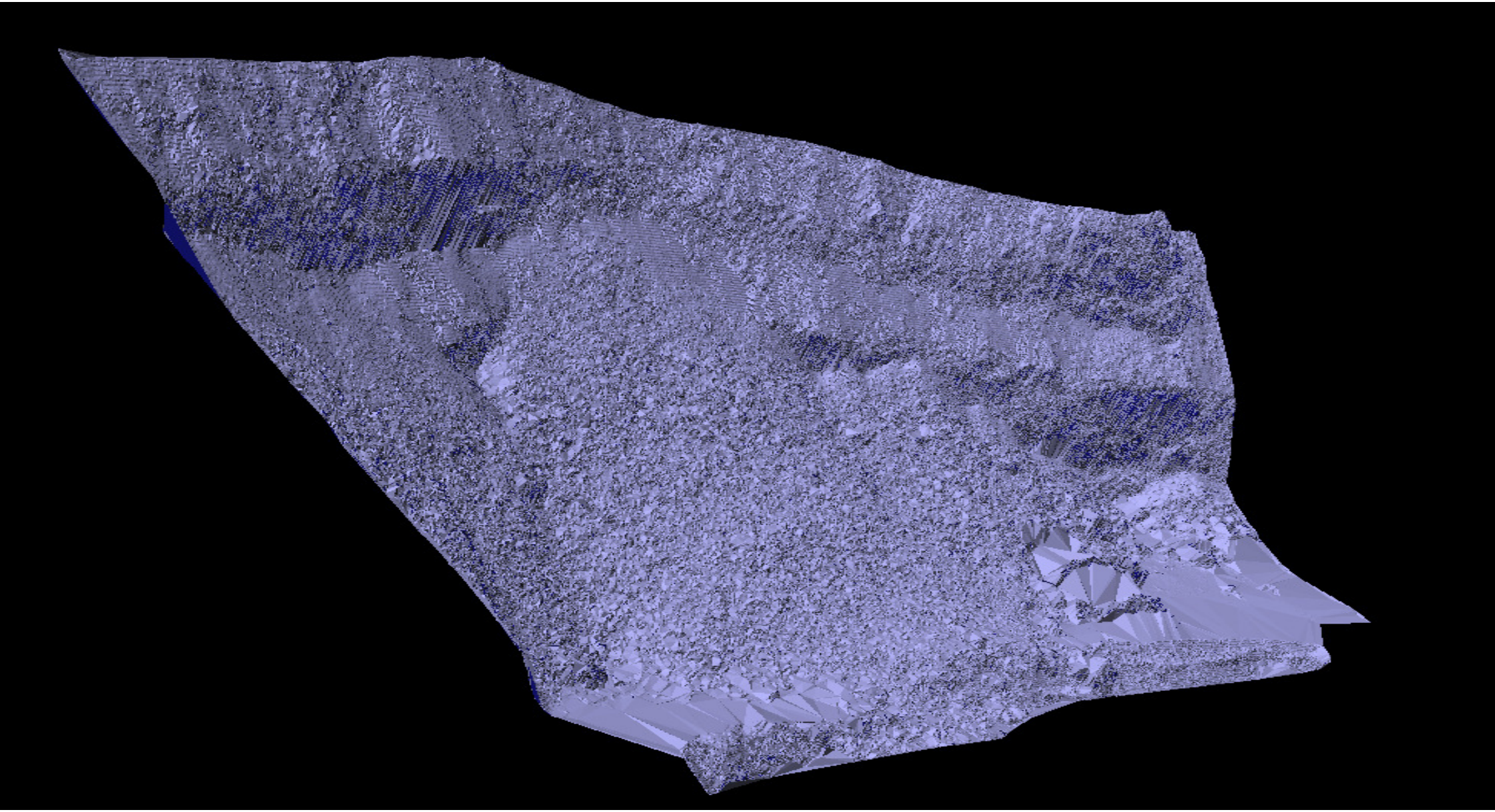
- No. of Scans: 1
- No. of Point:3,50,000
- Scan time: 25min
- Resolution: 30cm
- Dimension:250mx150m



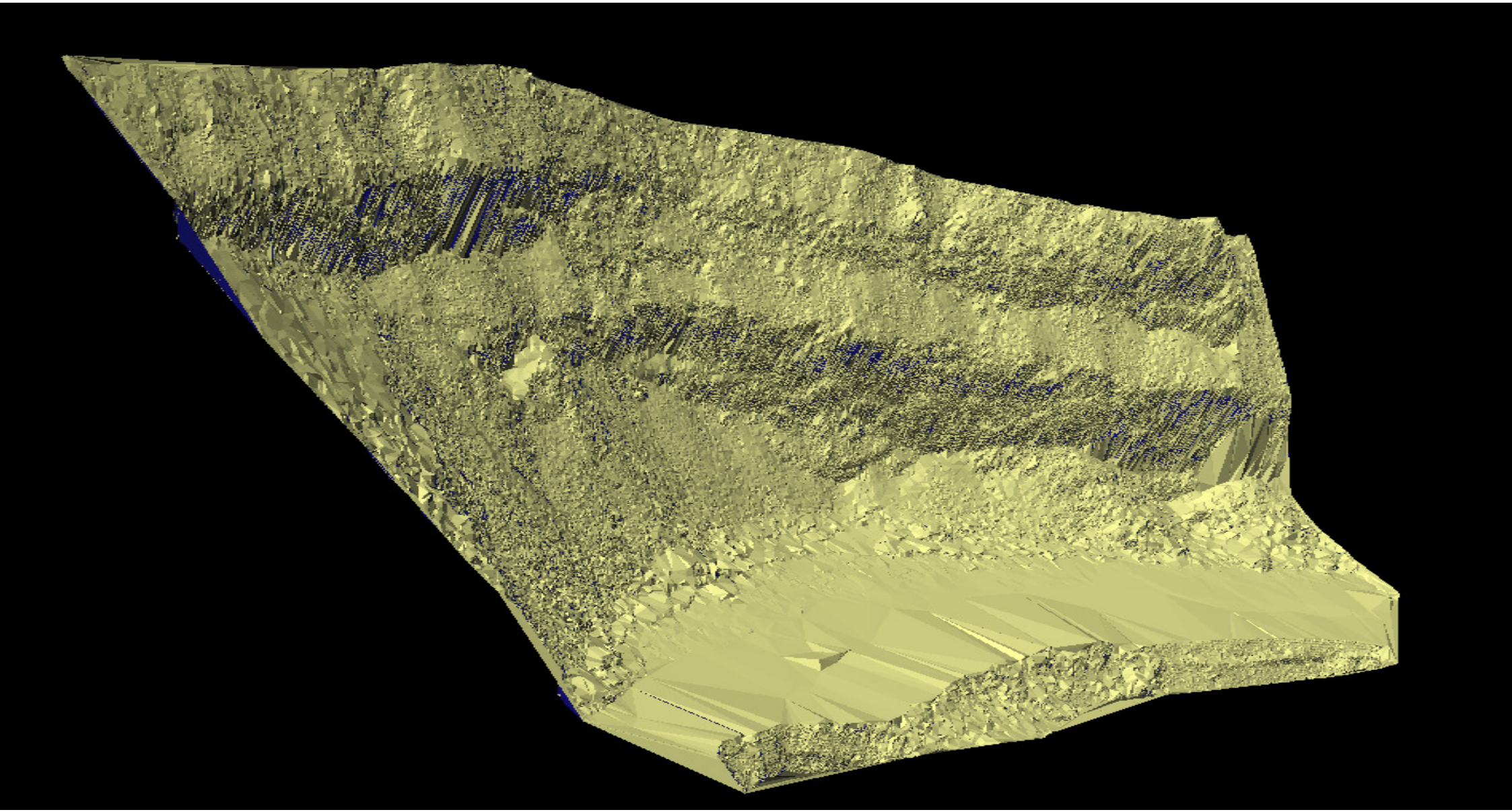
Point Cloud Before and After Excavation



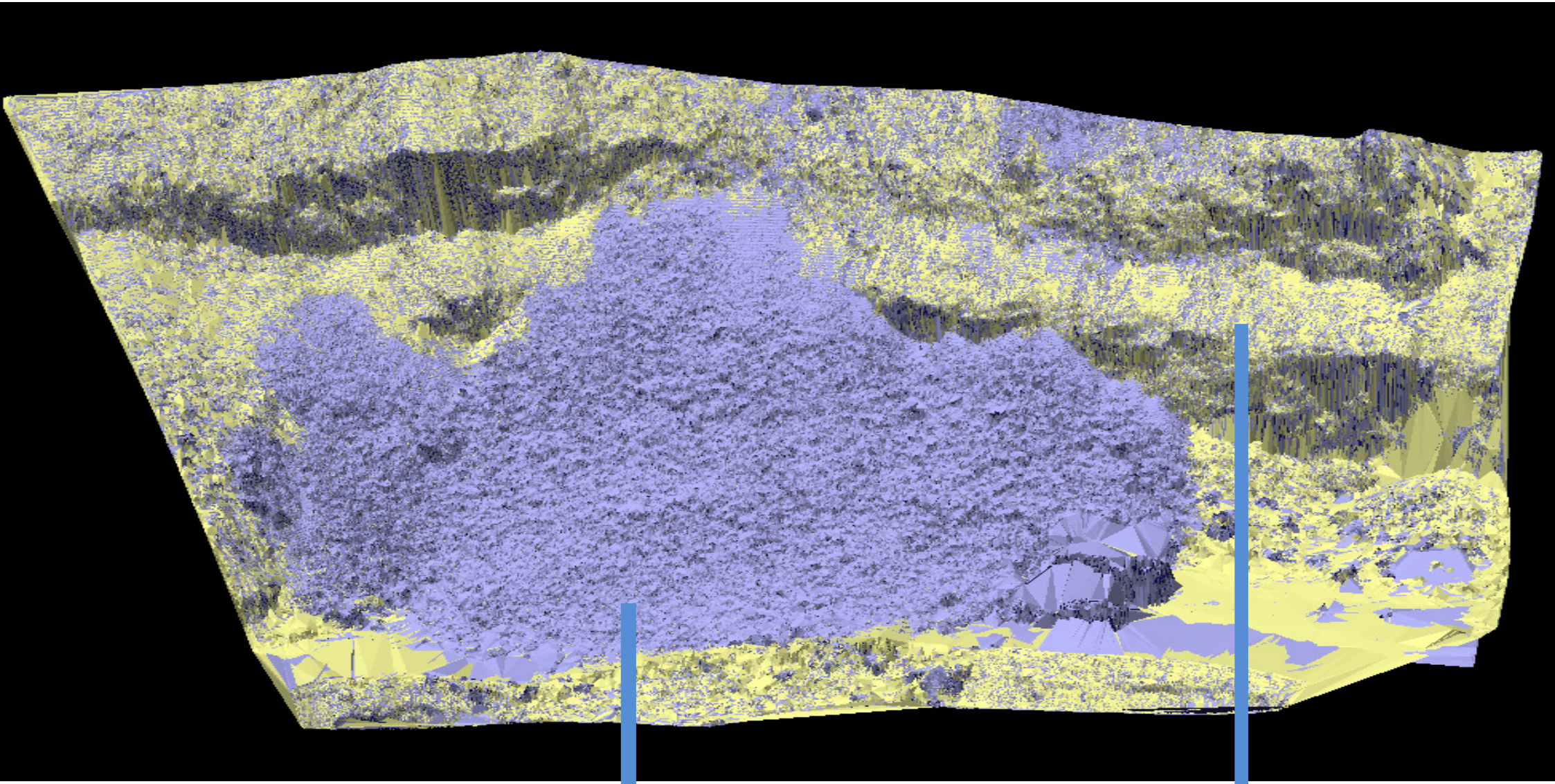
Mesh model – Before excavation



Mesh model – After excavation

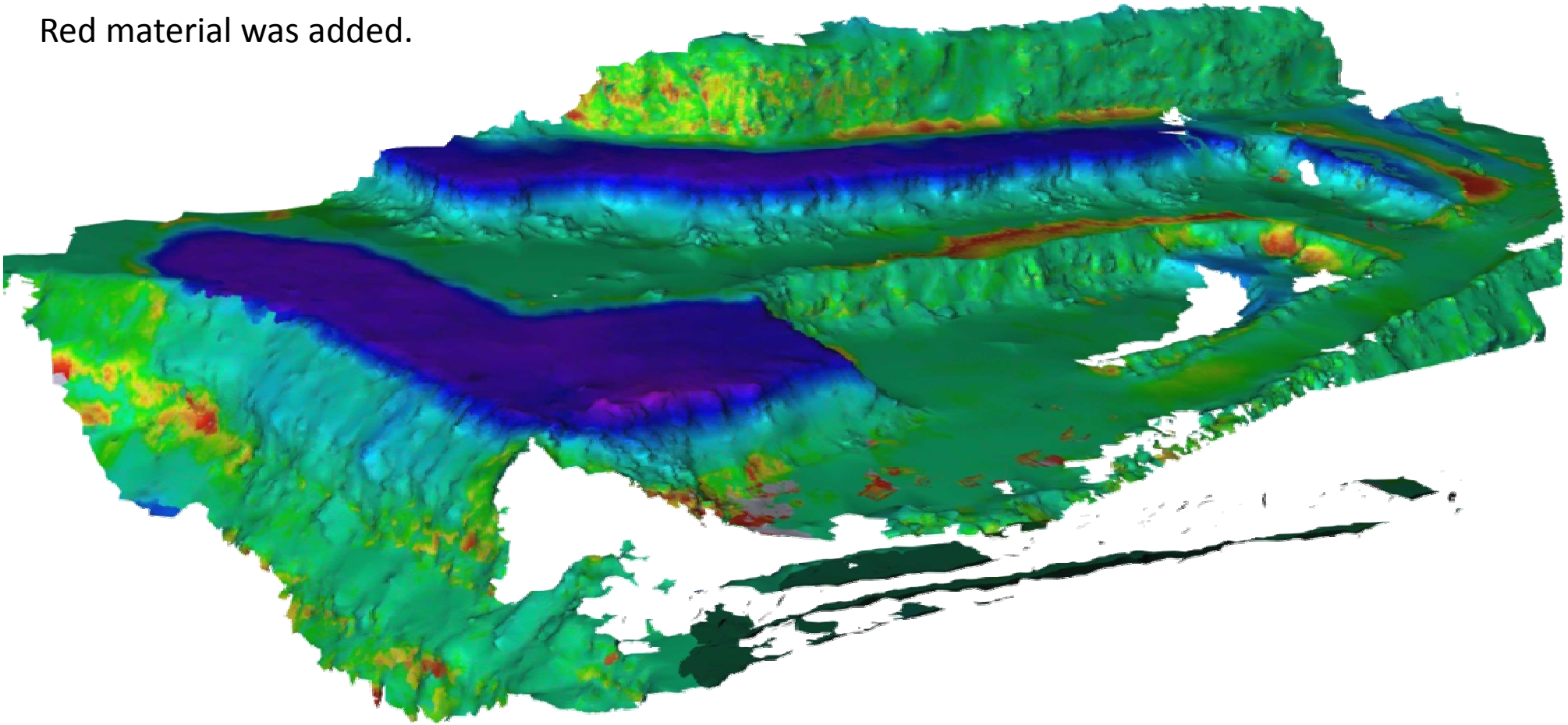


Combined Mesh Model

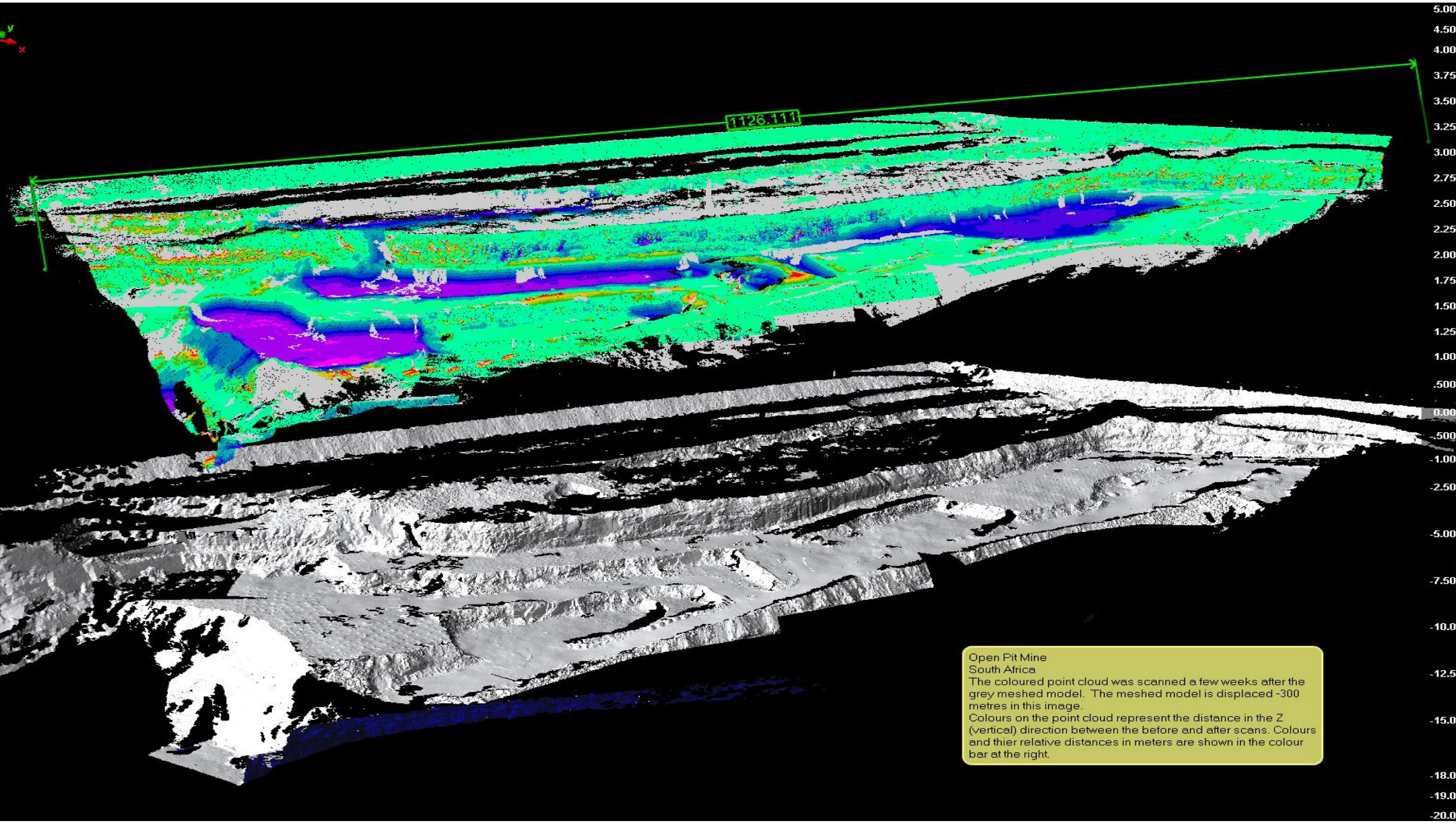


Combined Mesh Model

- Blue material was removed.
- Red material was added.



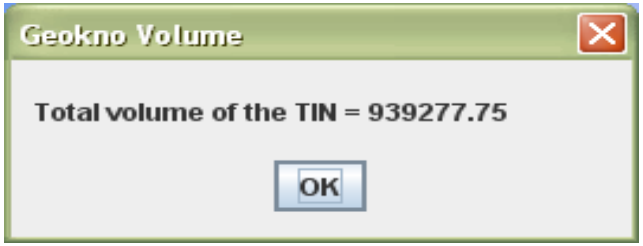
Visualization of Volume

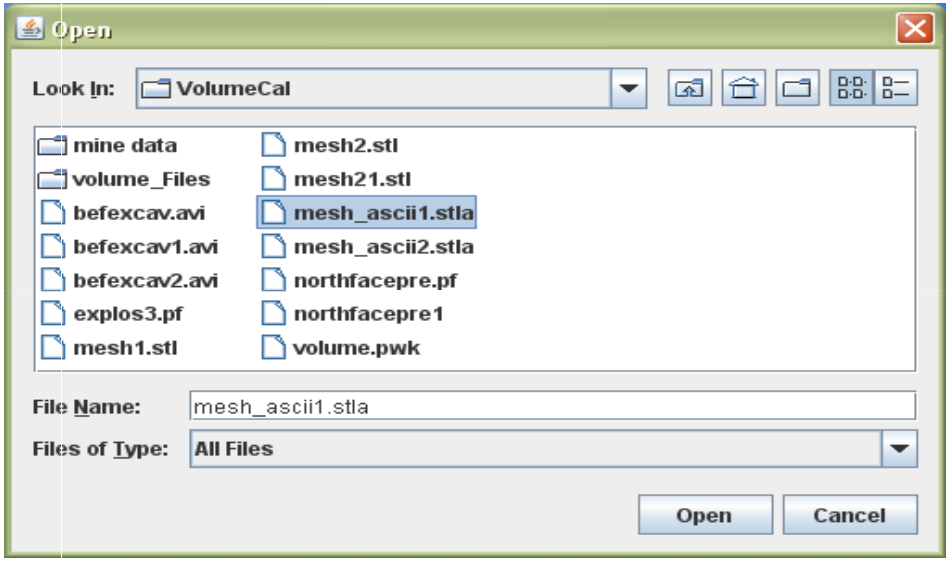


Volume Computation

Gk Volume+ is a module developed to calculate the volume of the individual scan

GeoknoVolume.jar



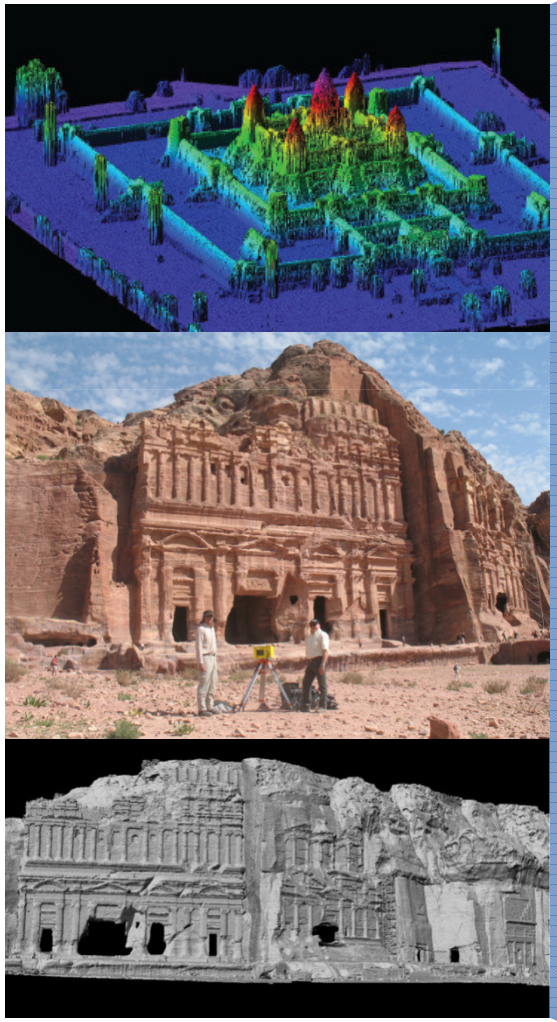


Volume before excavation = 939277.8 m^3

Volume after excavation = 873218.3 m^3

Excavated Volume = 66059.5 m^3

Heritage Survey – LiDAR is becoming the preferred way of digital conservation and analysis



Product

- LiDAR Scan of Heritage structures for
  - Digital preservation
  - 3D Models for rebuilding sites
  - Online display for boosting tourism

Recent Projects

International Projects:

- Petra: Petra ranks among the most famous cultural heritage of the world and has been elected to represent one of the "New Seven Wonders of the World".
- Maya City: LiDAR helped in discovering hidden features of famed Maya ruins. It was commented "Mapping the site of Caracol has been a long and protracted effort that has spanned almost 60 years. ***By looking at the history of the various mapping efforts at the site, the full potential of airborne LiDAR as a technique for recording ancient Maya sites becomes glaringly evident***. The earlier mapping techniques used at Caracol were labor-intensive, tedious, and partial – providing nowhere near the amount of information contained in the digital elevation model gained from LiDAR"
- Angor Wat: After success with Maya ruins mapping, the same technique is being applied for Angor Wat in Cambodia

SAFE City & SMART City can be served through a common Geospatial Platform so as to achieve multiple objectives at lower costs

SAFE City

Geo-Spatial Platform

SMART City

3D GIS Platform

Security Infrastructure

Operating & Response Mechanism

Monitor & Improve

SMART Governance

- Geo-spatial Governance
- Infrastructure Management
- Tax Collection

SMART Living

- Optimal City design
- Smart buildings
- Safety

SMART Environment

- Pollution Control
- Solar & Carbon Mapping, Flood Modeling etc

SMART Mobility

- Intelligent design & monitoring of Transport Networks

Retail GIS

Multiple applications for Retail GIS

1	Evaluate Store Location
2	Customer segmentation and analysis
3	Focused Advertisement campaigns
4	In Store GIS for merchandise management
5	Supply Chain Optimization

Corporate Office
Nagpur
GIS Centers
Nagpur | Mumbai | Hyderabad | Lucknow
Domestic Offices
Mumbai | Pune | Hyderabad | Lucknow | Ahmedabad
International Offices
Nairobi (Kenya) | Accra (Ghana)
Windhoek (Namibia) | Zambia

MEGHE GROUP
VALUES REDEFINED

Education | Hospitals | Industry
Infrastructure |Cooperative

ADCC Infocad Limited

Subsidiaries
ADCC Infocom Pvt. Ltd.
ADCC International East Africa Limited
ADCC Geosys West Africa Limited
ADCC Technology Zambia Limited
ADCC Academy Pvt. Ltd.
AI Instrumentation Pvt. Ltd.

www.adccinfocad.com