Reconciling Survey Data on GIS Projects

PhotoSat™
Leaders in Satellite Topography for Mining and Energy
www.photosat.ca

Maximize the value of existing survey data investments

Leveraging Existing Survey Investments

On many GIS projects there are several hundred thousands of dollars invested in surveying. For a modest investment PhotoSat can reconcile existing project location data, including data from multiple surveys and as-built drawings, and extend this data to our 1m topographic grid (DEM) accurate to 15cm in elevation. We have invented a process to produce engineering quality topographic surveys from satellite photos.

As shown in the example project, this expansion in the utilization of existing data provides engineering quality surface elevation data for your entire GIS project. This added data can significantly reduce ground surveying, streamlining site selection and facilities engineering projects.

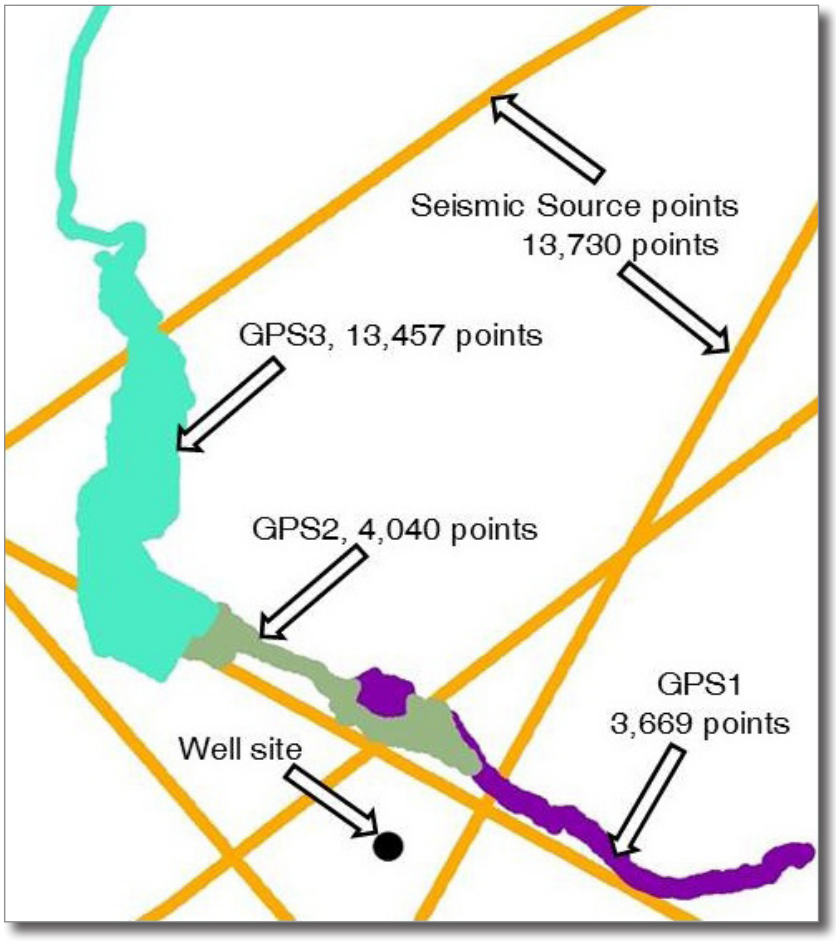

Image of 5 surveyed datasets from an oil and gas GIS project. These datasets have horizontal or elevation offsets from each other.

The Challenge

On most projects, GIS professionals must work with multiple survey datasets acquired at different times by different teams. These survey datasets are often referenced to different benchmarks, and processed to slightly different datums. When common points are not surveyed, it is usually impossible to determine accuracy and the relative offsets between the datasets without contracting new ground surveys.

Failing to recognize and correct offsets between different survey datasets in the early stages of a GIS project can lead to embarrassment and costly errors when the projects reach more advanced stages. To advance the project an independent method of verifying the accuracy and relative locations of the surveys is required.

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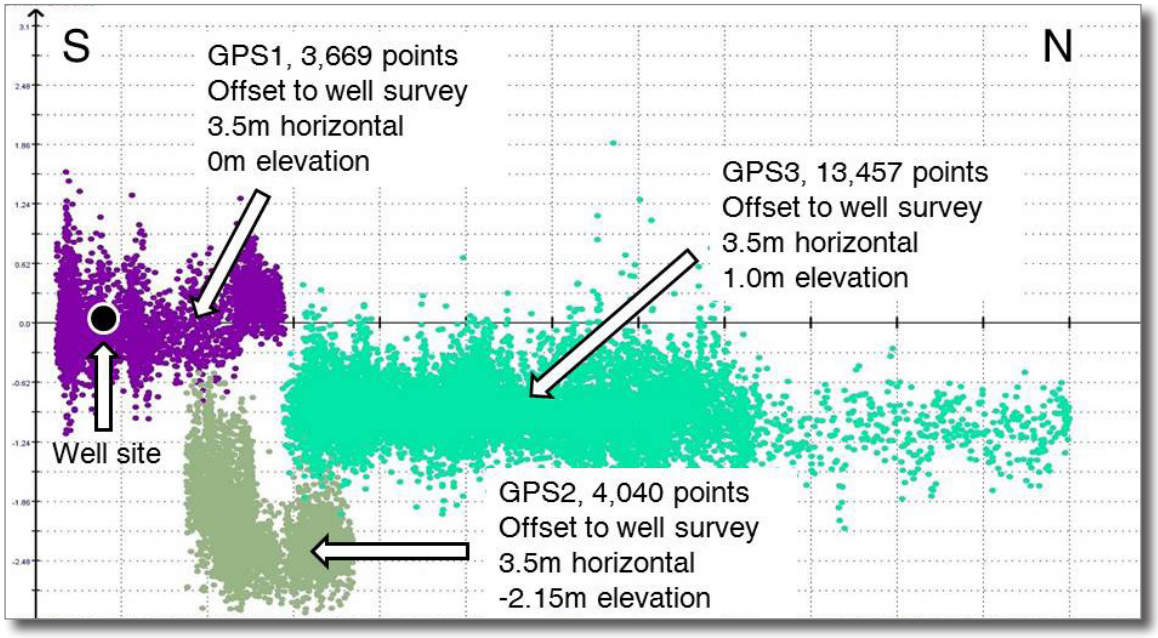
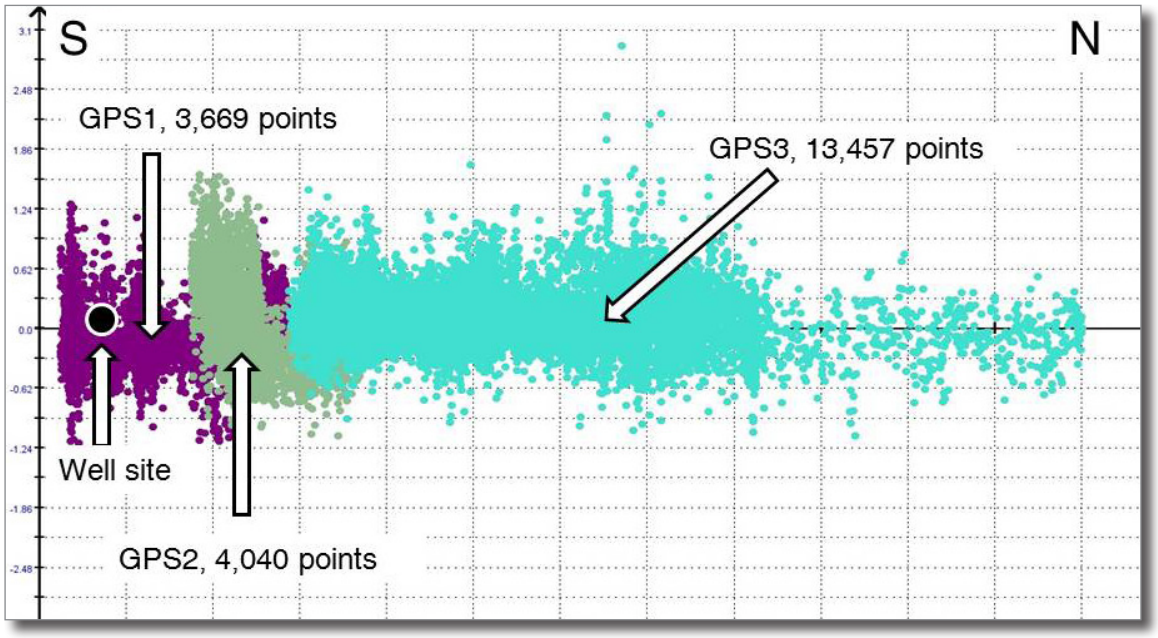
The Solution

PhotoSat has developed a process for matching existing project survey data to stereo satellite photos to determine the relative offsets between survey datasets. Once we have measured and corrected the offsets we use the corrected survey data to make systematic adjustments for minor distortions in the stereo satellite photos, enabling us to produce a 1m topographic grid that is accurate to 15cm in elevation, covering the entire project.



Scatterplot of the elevations of the GPS datasets relative to PhotoSat's satellite topographic mapping, showing elevation offsets of GPS2 and GPS3 from the well location. All three GPS datasets and the seismic data are offset 3.5m horizontally from the well survey.



Scatterplot of the adjusted elevations of the GPS datasets relative to PhotoSat's satellite topographic mapping. These datasets were also adjusted 3.5m horizontally to match the well survey.

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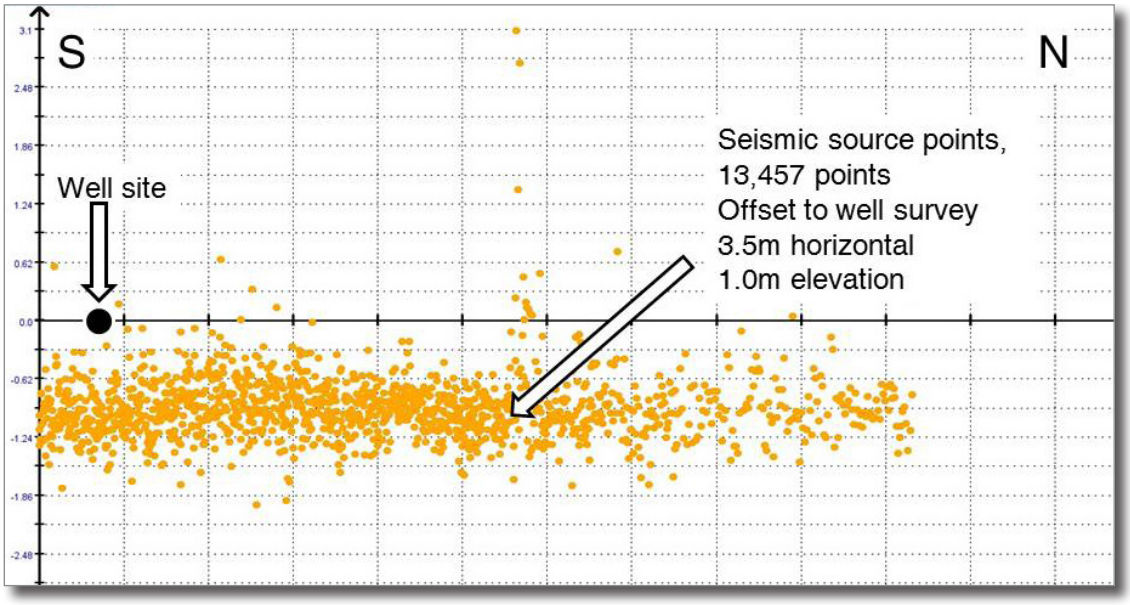
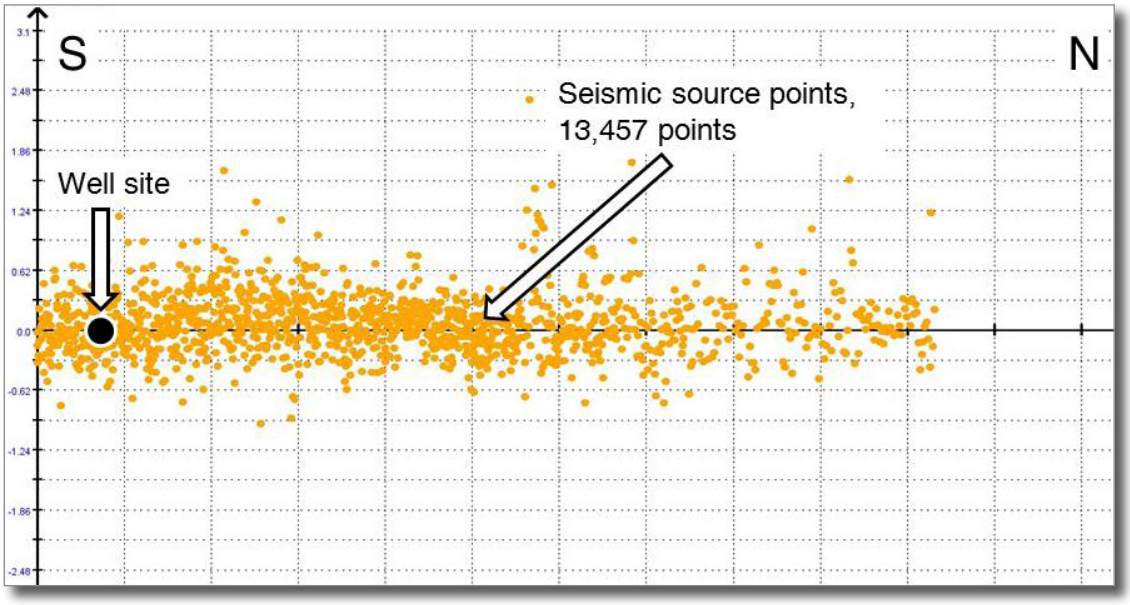


Scatterplot of the elevations of the seismic dataset relative to PhotoSat's satellite topographic mapping, showing a 1.0m elevation offset from the well survey. The seismic data is also horizontally offset by 3.5m from the well survey.



Scatterplot of the adjusted elevations of the seismic dataset relative to PhotoSat's satellite topographic mapping, matched to the well survey. The seismic locations were also adjusted 3.5m horizontally to match the well survey.

Experience

PhotoSat has completed over 480 highly accurate topographic mapping projects globally.

We have produced proof-of-accuracy studies, case studies, and demonstration projects which are available on the Experience page of our website.

Reliable Engineering Quality Digital Topographic Data for GIS Projects

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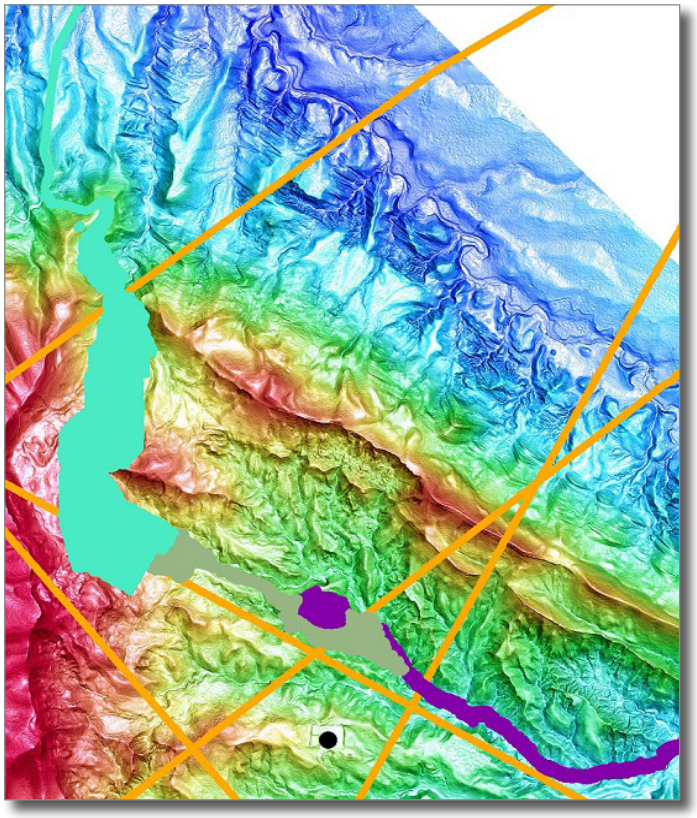
PhotoSat's digital topographic mapping

PhotoSat supplies your project team with an adjusted, verified set of survey and surface engineering data, a matching 1m grid of our digital topographic data accurate to 15cm in elevation, and a 50cm precision satellite ortho photo, accurate to 25cm horizontally. The topographic grid and ortho photo can then be used as an alternative to new surveying for most of the subsequent GIS and surface engineering design work.

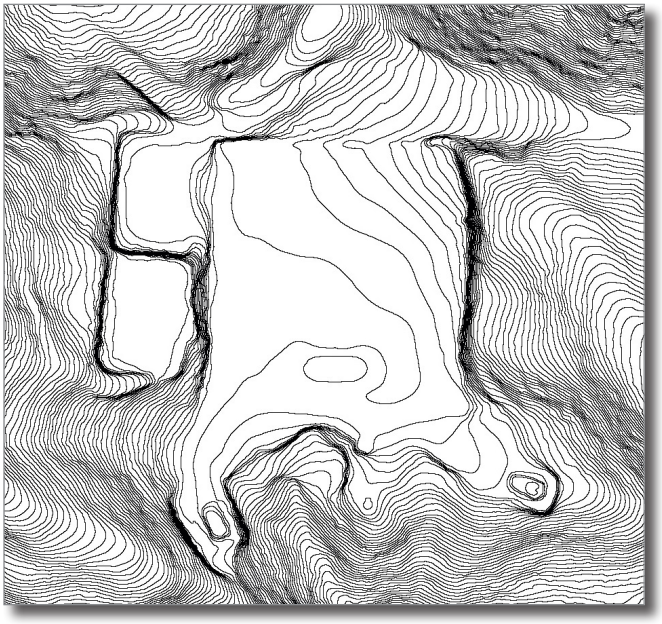
Our topographic maps are available globally and are recognized as a cost-effective alternative to ground surveying and LiDAR. They are ideal for remote locations, difficult terrain, sparse vegetation, or hazardous areas.

Package Includes

- 1m bare earth digital topographic grid (DEM)
- 50cm or 1m contours
- 50cm satellite ortho photo
- Reconciled and adjusted survey data



Colour image of the 15cm accuracy 1m topographic grid (DEM) with the adjusted survey data.



50cm contours accurate to 15cm in elevation.

50cm precision satellite ortho photo accurate to 25cm horizontal.