Phase I Completion Report

Project U15064

LiDAR Acquisition
IL Counties of Ford, Iroquois & Livingston

Surdex Corporation Project # 2500204
July 2015

LIDAR Acquisition:

The Illinois project areas of Ford, Iroquois & Livingston Counties were fully covered by 2,000' tiles in a State Plane IL East layout provided by the University of Illinois. Full tiles covering these counties areas were buffered for flight planning purposes. The following parameters were used in preparing the flight plan.

Flight altitude	Approximately 4757' AMSL
Airspeed	150 knots
Full swath width	1,055 meters
Scan Rate	53.4 Hz
Sidelap	20.00%
Field of View	40 degrees
Nominal Post Spacing	0.67 meters
Max Pulse Repetition Rate	375 KHz
Returns per pulse	4 + intensity

LiDAR data was flown by Surdex Corporation between April 27 to June 7, 2015. Surdex utilized their twin engine Cessna 335 with a Leica ALS70-HP multi-pulse instrument and based their operations at three airports: Pontiac (PNT), Schertz (C34) and Kankakee (IKK) Airports were used in order to keep the baseline distance to a maximum of 25 miles. The graphic below shows areas covered by each flight date. Perpendicular (east-west) lines indicate cross flights flown.

The flight crew was guided by a GPS controlled flight management system, which displayed the flight plan; including altitude, heading, cross track deviation and PDOP. During the flight mission, the system operator monitored flight management data and laser information, to ensure a successful mission.

Before and after each LiDAR mission, Surdex Corporation collected a perpendicular cross flight over lines collected during that lift. This process ensures the ability to compare point data collected in multiple directions for any indication of problems with the data.

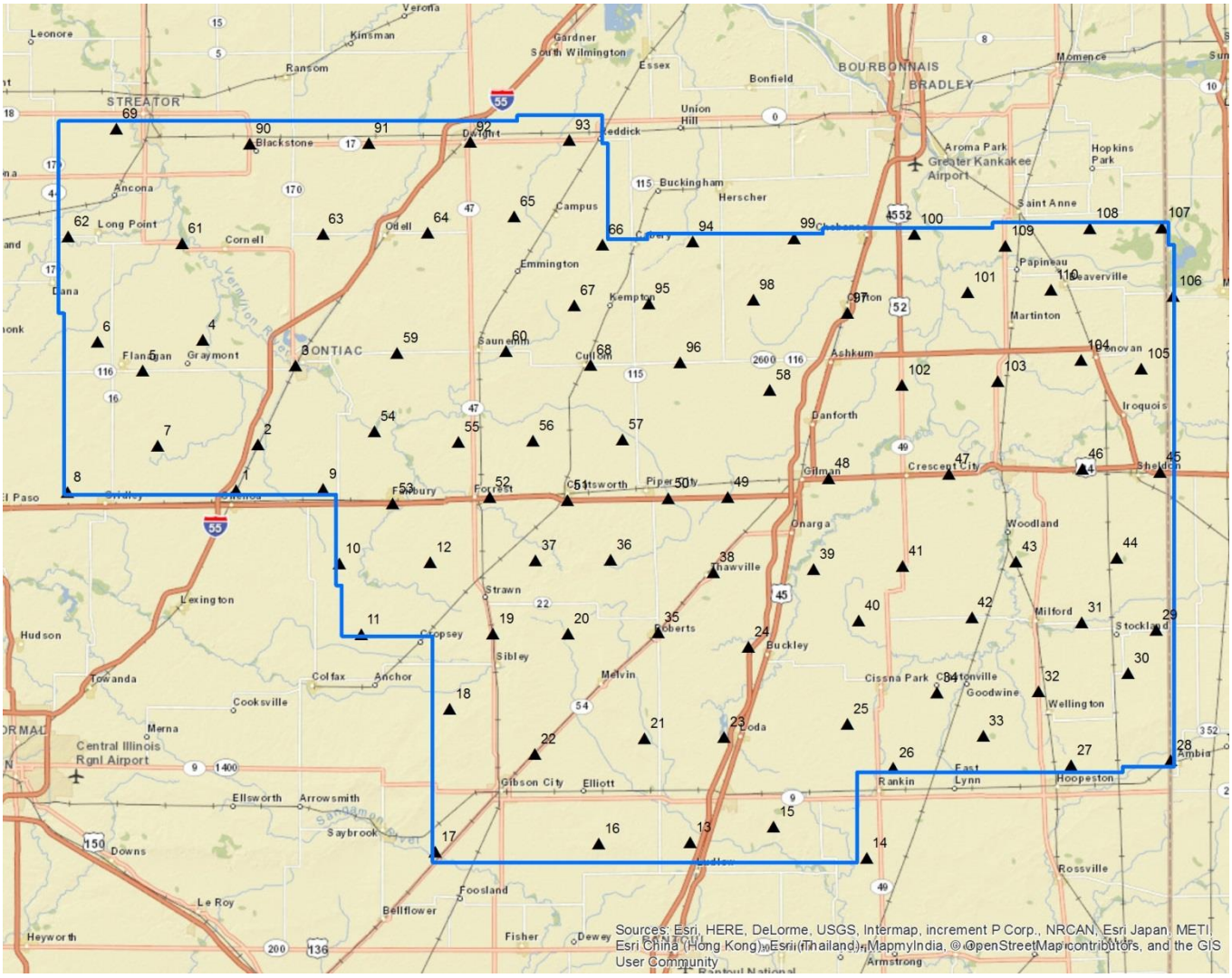
Surdex performed quality checks against all missions to ensure sufficient point coverage of all collected flight lines, review of intensity data and verification that all collected GPS-IMU data was within expected data quality ranges. All other initial processing yielded no issues and allows Surdex to progress into Phase II for full processing and delivery.

Ground Survey

Surdex collected 90 survey ground control points across both counties. This data will be used to vertically adjust the LiDAR data, if necessary, once all bare earth classification macros have been successfully run-early in Phase II of this project.

Surdex has found the most success with ground control adjustment when evaluated exclusively against bare earth data. Although all points would receive the adjustment, performing the assessment at this stage ensures that low lying vegetation is not used to assess the vertical accuracy of the LiDAR data when determining how much of a vertical adjustment should be applied.

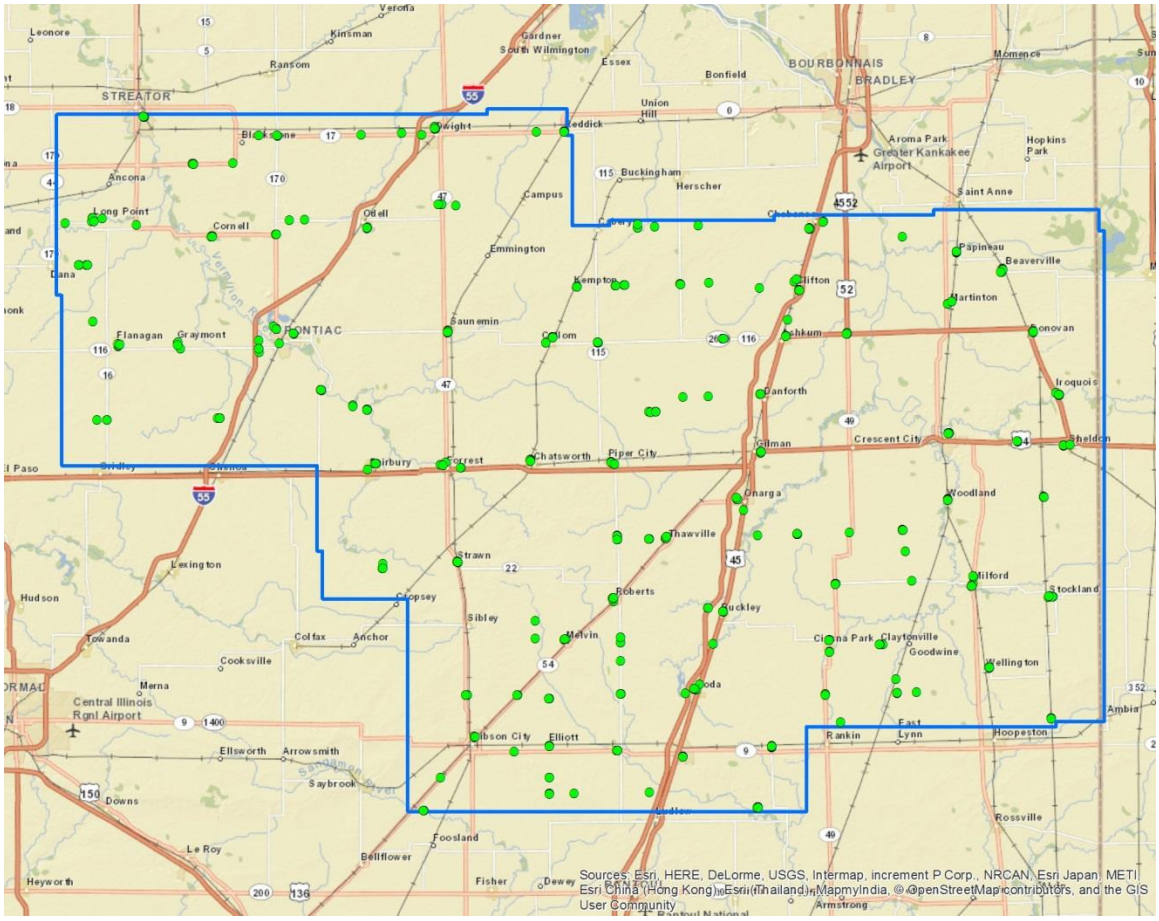
Here is an overview of the survey control collected for the project.



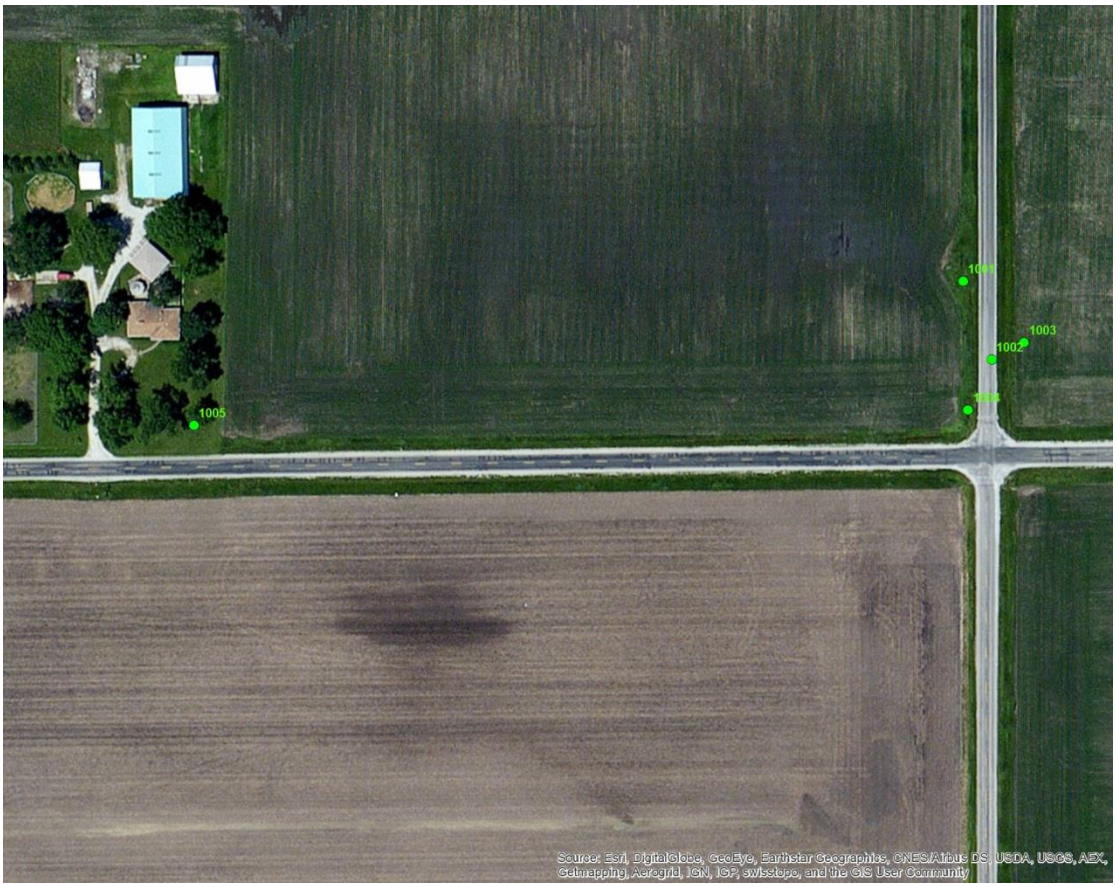
QC Check Points

Surdex has also completed field collection of over 400 QC points in State Plane IL East zone. This data will provide an independent evaluation of the processed LiDAR against all five ground cover classes - Hard Surfaces (HS), Short grass (SG), Tall grass (TG), Brush (B) and Forested (F). This process included collection of ground photos where possible, samples of ground photos in the various classes are included below. This data will be used in Phase II for final completion of all project deliverables.

Overview of the point locations is shown below.



Sample of QC point cluster in Livinsgton County.



Sample ground photos of QC points by groundcover:

SHORT GRASS

TALL GRASS

HARD SURFACE

BRUSH

FORESTED