



LANDMARK
Spatial Solutions, LLC

LandMark Spatial Solutions Stockpile & Log Deck Inventory Solution

Measuring stockpile and log deck volumes using Landmark Spatial Solutions Stockpile Inventory Solution is by far one of the quickest, safest, most consistent, Most accurate, and most cost effective methods available. The LMSS Solution employs reflectorless laser technology in the form of a TruPulse electronic rangefinder and compass manufactured by LaserTech International (LTI). Whether it's aggregate, coal, wood chips, logs, asphalt or anything else you need to inventory, this system has the ability to accurately measure almost any surface without the need of a reflector and the additional crew member required to hold it.



Traditional Stockpile Inventory Methods

Traditional stockpile inventory methods require your crew to hold a prism pole and occupy areas over the surface of a pile. This process can be time-consuming and sometimes dangerous and requires a two person crew. Loose material, irregular shaped piles and steep slopes can make the use a total station and prism pole difficult if not impossible.

GPS systems in use also require individuals to occupy potentially dangerous positions over the surface of pile. Depending upon the type of GPS receiver/antenna used, results can be less than desirable. Satellite signal and/or availability can be an issue in certain environments.

Aerial fly-over inventories are expensive and the turnaround time for results can be days or weeks. With the LMSS Inventory Solution, volumes and tonnages can be calculated in the field instantly and download from the data collector in a variety of formats. Aerial fly-over inventories can be limited by severe weather and cloud cover which will not affect the LMSS Inventory Solution.

The Landmark Spatial Solutions Stockpile Inventory Solution – A Turnkey System

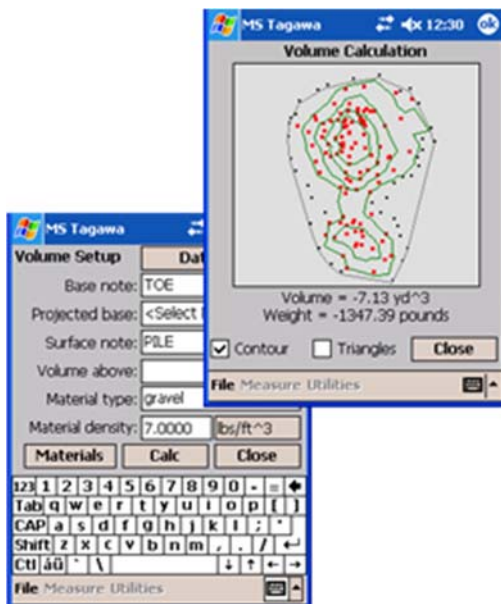
The Landmark Spatial Solutions Stockpile Inventory Solution utilizes either the LTI's TruPulse 360R Laser or LTI's TruPulse 200X model with a TruAngle angle encoder. The former system is used in most measuring environments, but the later with the angle encoder can be used in difficult environments that have strong magnetic field interferences. Software-wise, the system uses the MapSmart program for stockpiles and the Log Deck program for round wood. Both programs are simple and easy-to-use. MapSmart records all the base and pile positions shot by your laser for your stockpiles and then calculates the cubic volume of your pile, allows you to enter a conversion factor based on the density of your material, calculates the tons of material, and then creates contour maps of the stockpiles. The Log Deck program measures the length and square foot of the deck face, enabling you to convert that number to tons. The Logdeck program is Windows Mobile and requires a WM data collector. The Mapsmart program is either Windows Mobile or Android. This turnkey system includes tripod, mounting brackets and everything you need to start taking inventories today.

Training can be done on site or via the web and people are generally operational after a 4-6 hour session. Written materials and video tutorials are also available. Landmark Spatial Solutions also maintains a full service technical support and repair department and offers a variety of support options.

MapSmart

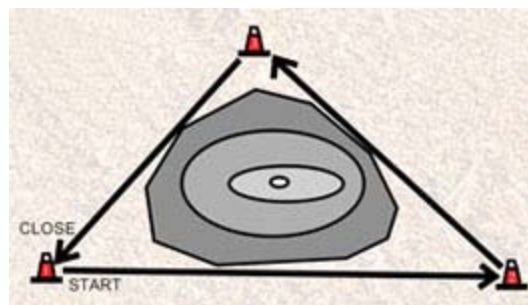
The developers of MapSmart understand the need for a software application to be easy to use and deliver good results. File/map creation are done in real time as each laser shot is taken. Quality control of data in the field is a snap because you can see them map of the pile begin to take shape as you measure. Bad data points will be visible and can be easily edited out and/or retaken. Volume calculations can be done in the field and stored in a variety of formats both tabular and graphic for download later. Below are screen captures of different MapSmart windows.

MapSmart Volume Setup and Volume Calculation windows showing a bitmap of the pile, weight and volume.



Typical Stockpile Measurement Procedure:

1. Walk around the pile, temporarily marking instrument points that will afford full views of the surface.

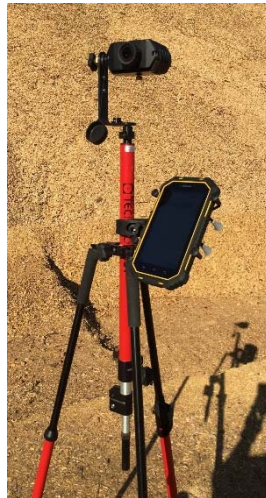


1. Choose a starting point, set up and configure TruPulse laser with the MapSmart software.
2. Aim and shoot all necessary points on the pile from the starting location.
3. After collecting your last data point, aim and shoot to the next instrument location and then occupy that point.
4. Continue shooting the pile from each new location until the entire surface has been measured.
5. Either transfer your field data to your PC for processing or perform volume calculations right in the field following a few steps found in MapSmart + Volume software.

2018 LMSS Recommended Stockpile Solutions

TP 360R C8

TruPulse 200X + TruAngle +C8



Pros:	Good quality, very simple, consistent measurement, and very efficient.	Highest quality measurements. Excels in environments with magnetic interference.
Cons:	May have trouble around big metallic objects.	Bulky survey tripod that requires a little more time to setup. Flat ground is best.
Distance Range (non reflective):	1000 M	1900 M
Distance Accuracy (Typical Target):	+/- 1 ft	+/- 1.5 in
Height Accuracy:	+/- 0.25 degrees	+/- 0.1 degrees
Azimuth Accuracy:	+/- 1 degree	+/- 0.05 degrees
Components:		
Laser:	TP 360R	TP 200X
Angle Encoder:	NA	TruAngle
Handheld:	C8	C8
Software	Mapsmart Android+ Volume	Mapsmart Android + Volume
Tripod Package:	Quick Release	Survey
Pelican Case:	Yes	Yes
Total	\$4154	\$5706

Log Deck Software (Windows Mobile Only) = \$295

To Summarize...

More and more companies are conducting stockpile and log deck inventories on a weekly or monthly basis and use this information to better schedule their production and manage their operations. Larger companies that are subject to the Sarbanes Oxley Act are hiring third parties to verify their stockpile inventories to stay in compliance with the law.

Landmark Spatial Solutions integrates all components necessary to create this Stockpile and Log Deck Inventory Solutions for purchase to be used internally by the customer, or we offer stockpile inventory verification services to those that are so inclined. Please contact a Landmark Spatial Solutions Representative today for a demonstration. You won't be sorry!



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