

# STOCKPILE MEASUREMENT PILOT PROJECT

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Project results & expected benefits

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# Project scope

- Conduct measurements/adjustments to attain results within  $\pm 2\%$  of LiDAR on small stockpiles.
- Conduct 2 month operations pilot in Beaumont & Lubbock districts to learn advantages and disadvantages of app in daily operations.

# Application operation description

## Required equipment:

- iPhone 5 or higher w/Stockpile Reports app
- 2 solid orange traffic cones
- 25' length of rope
- Wireless internet access aids convenience

## Measurement

- Set cones in front of pile, known distance apart
- Video pile circumference
  - Keep top and bottom of pile in viewfinder
  - Start at one traffic cone, slightly overlap w/starting point
- Synchronize video data w/Stockpile Reports

# What we learned

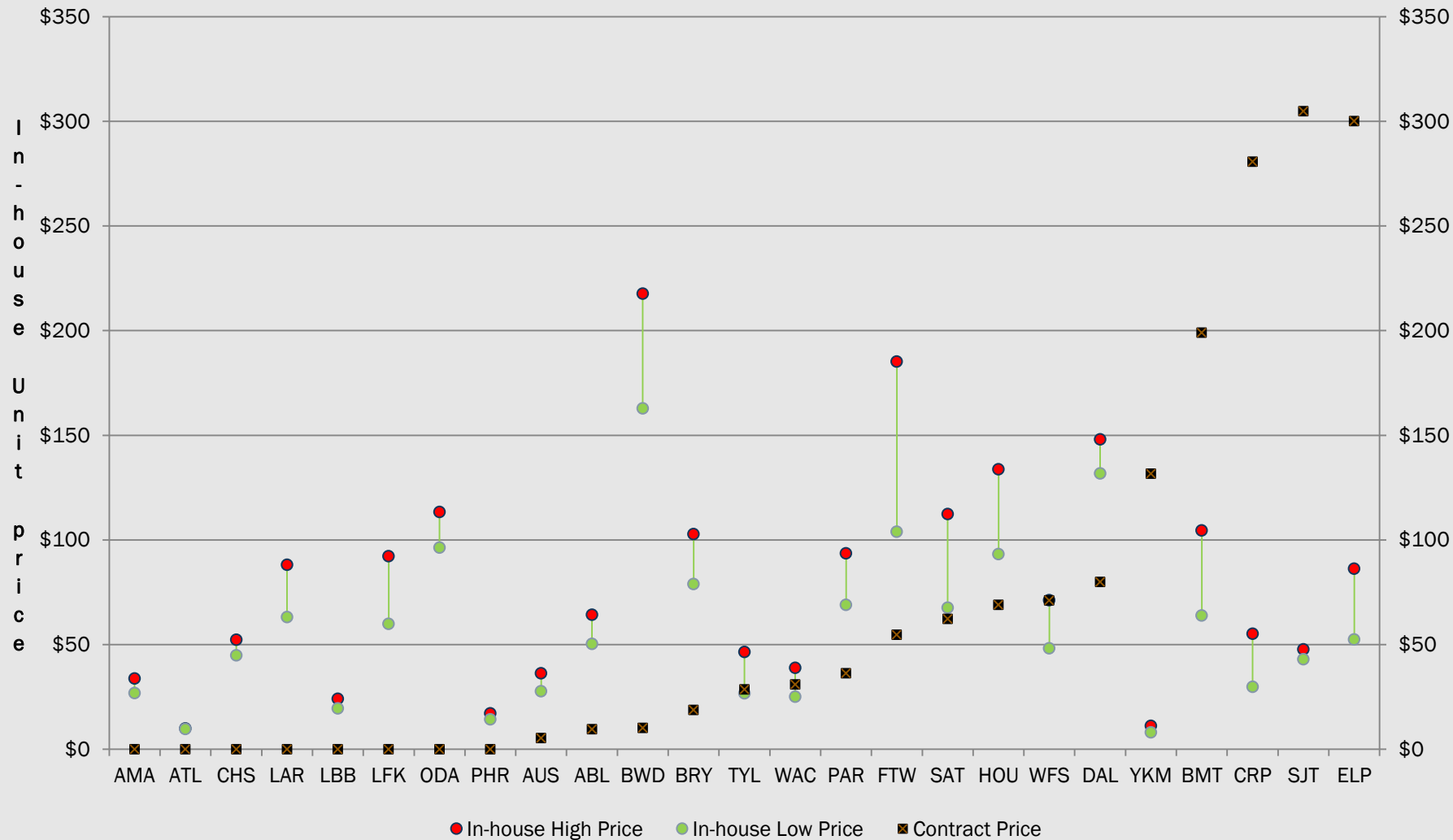
- Existing stockpile management methods are not Best in Class
- Maintenance supervisors want to improve stockpile management
- Existing, accurate measurement tools are expensive and impractical
- Cost allocations to some maintenance performance measures are incorrect
- All stockpiles can be managed with the Stockpile Reports (SPR) app
- Some stockpiles currently not measurable with the SPR app
- Pilot participants had good experience with the SPR app

# Pilot project measurement results

	Total LiDAR Measure	ABV GPS Variance from LiDAR	ABV iPhone Variance from LiDAR	ABV Employee Variance from LiDAR	ABV MSMS Variance from LiDAR
Phase I Measures (CY)	2,521.90	43.90	36.70	713.80	618.10
% Variance from LiDAR		1.74%	1.46%	28.30%	24.51%
			Total iPhone Measure	ABV Employee Variance from iPhone	ABV MSMS Variance from iPhone
Phase II Employee Measures (CY)	-	-	25,558.00	8,225.77	
Phase II MSMS Measures (CY)	-	-	15,047.74	-	8,142.61
% Variance from iPhone				32.18%	54.11%

# Material cost impacts on job cost reporting

## FY13 Remove & Replace function(110) in-house & contract cost per CY



# Expected benefits of stockpile measurement app

Improve stockpile management methods with new tools that:

- Require no additional equipment investment
- Eliminate climbing on stockpiles
- Provide same accuracy as GPS at greatly reduced cost
- Provide management visibility of stockpiled inventory
- Provide more accurate performance measurement data



# Stockpile account log in

[Home](#)
[Queue](#)
[Profile](#)
[Help](#)
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**Hierarchy:**

Texas DOT

**Site:** All

(s):

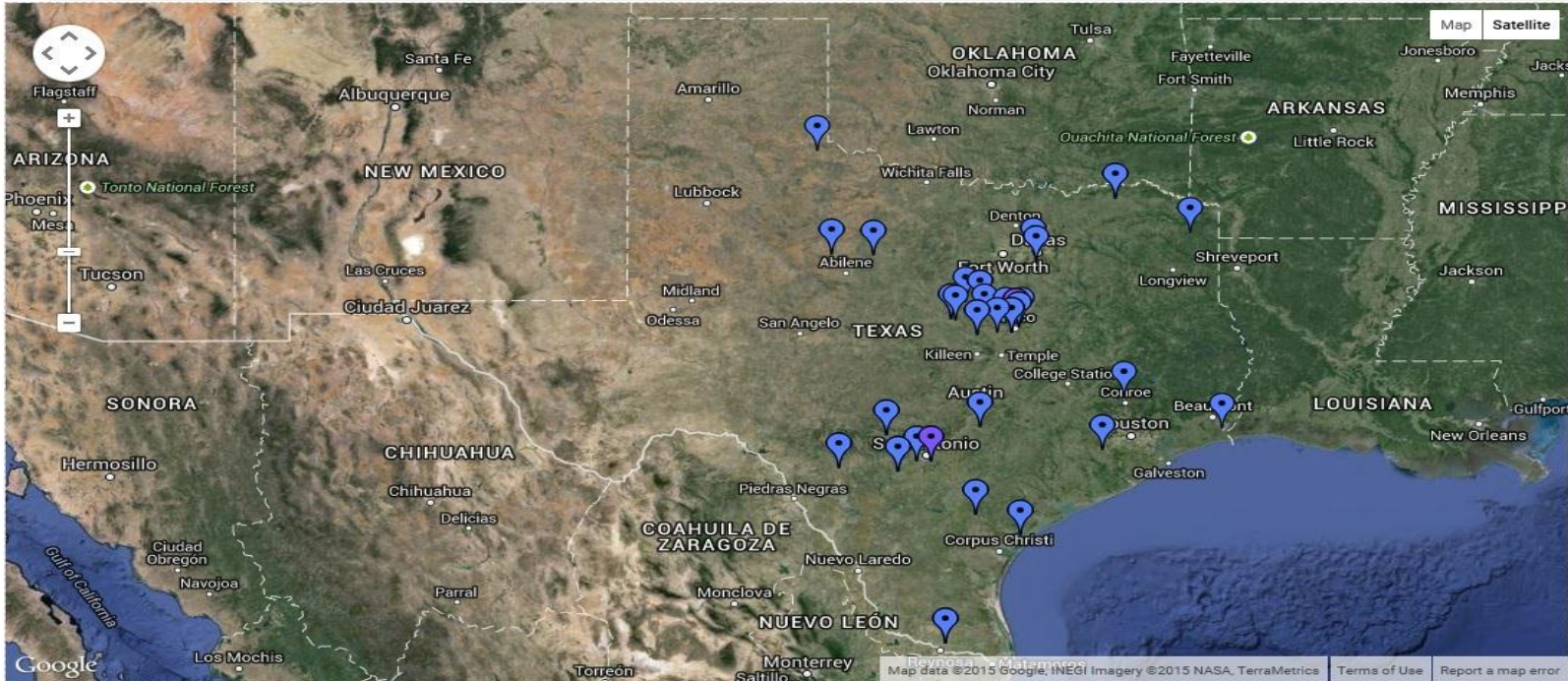
- FM-570 (23304-Eastland Co)
- East yard @ US90 (15305-Hondo)
- FM 2676 @ RM460-461 (15305-Hondo)
- FM-8 (23304-Eastland Co)

**Dates:**

- Month to Date
- Quarter to Date
- Year to Date
- Custom Date range
- All Available

2015-01-26 to 2015-03-17

Map  
 View  
 List  
 View



- iPhone
- Estimate
- Aerial
- Walking Wheel
- GPS
- Laser

# Stockpile summary report

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**Hierarchy:** Texas DOT

**Site:** All  
 (s): FM-570 (23304-Eastland Co)  
 East yard @ US90 (15305-Hondo)  
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**Dates:** Month to Date  
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2015-01-26 to 2015-03-17  
 Map  
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 Laser

**ROCK ASPHALT; LIMESTONE, CM/CL; #330, TYPE 1, GD AA, (X)**  
  
 Date: 03/16/15 11:37 AM  
 Site Name: 1, located at 1710 Hwy. 21, San Marcos, TX.  
 Site Code: 14306-0  
 Item Code: 74577531002  
 Volume CY: 392  
 Weight TN: 549  
[Full Report](#)  
[Reconstructed Video](#)

# Stockpile detail report

http://service.stockpilereports.com/index.php?m=0&opt=R&id=20698

Welcome to Stockpile Reports

Home Queue Profile Help Logout

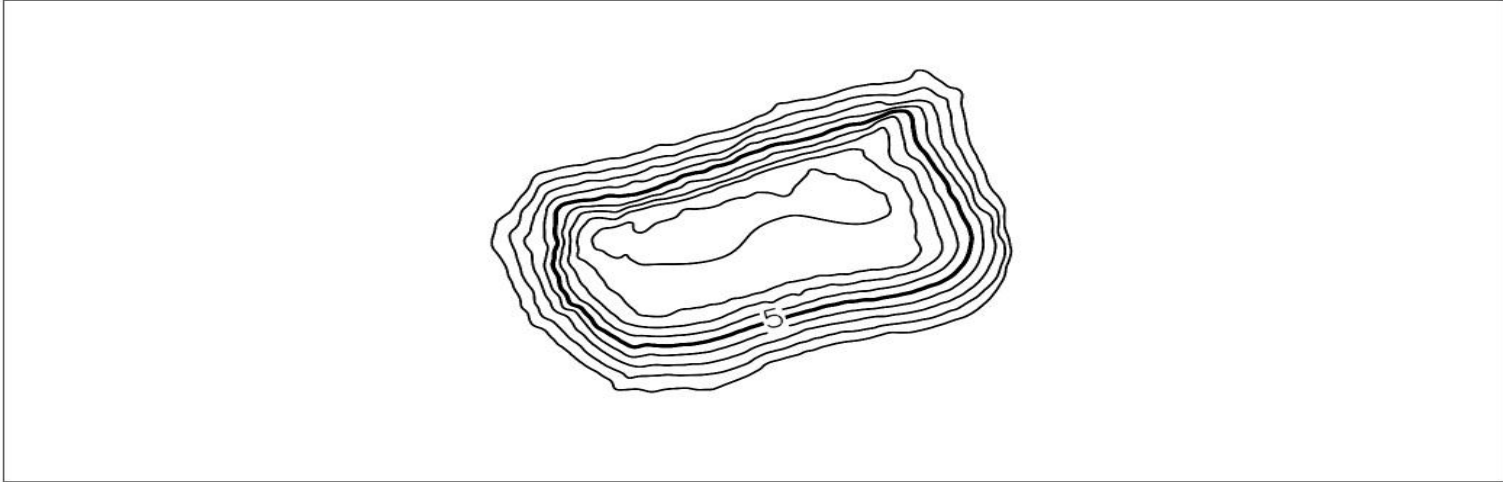


**1, located at 1710 Hwy. 21, San Marcos, TX. (14306-0) - ROCK ASPHALT; LIMESTONE, CM/CL; I#330, TYPE 1, GD AA, ( 74577531002)**

03/16/2015 11:37:33 AM



Cubic Yards : 392  
Tonnage Conversion : 1.400  
Tonnage : 549  
Collected By : James Petty  
Collected Method : iPhone  
Collection Time : 02m 36s



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# First functions to implement

## Materials we keep in inventory

- Material receipts – to establish known beginning inventory
- Annual inventory – to establish known ending inventory
- Verify inventory before starting a job
- Check inventory before/after job – ensure correct quantity charged to job

# Next steps

Develop the following business cases for stockpile measurement app:

- Measuring debris piles for contract hauling volumes
- Measuring materials on hand volumes
- Measuring stockpile volumes for change order negotiations
- Measuring stockpile volumes for monthly pay estimates
- Measuring monthly supplier inventories
- Measuring vendor stockpile volumes to meet testing requirements

# QUESTIONS?