

ADVANCED AERIAL IMAGERY

3596 Maple Ave. Suite C
Zanesville, OH 43701
(740) 819-0470

March 17, 2017

Aggregate Producer
Zanesville, OH 43701

Re: Aggregate Producer

Dear ,

We were engaged by _____ Materials to perform a volumetric survey in cubic yards by photogrammetric procedures at one (1) plant.

Our procedures to provide these services are outlined below:

- A. A ground control survey was preformed to establish horizontal and vertical control. A survey grade GPS (RTK) was used to establish these points.
- B. Aerial photography was captured with our UAV (Drone) and Flight Management/Data Capture software. Photography was captured on 3/4/2017.
- C. The photos are processed into a point cloud using PIX4D Aerial Mapping Software. Scale is established within the software using the surveyed ground control points (outlined above).
- D. The shape and elevations of the piles are determined by tracing break lines within the point cloud. A contour map is made of each stockpile. The software compares two contour lines, or a slice of the pile, to determine the volume using average end area method. Each pair of contour lines is compared until the volume of the entire stockpile has been computed in cubic yards. The material within the pile and outline of the pile is marked by the owner and we confirm the outline when viewing the pile in point cloud. The density of the material is provided by the owner and is used to convert cubic yards to tons.
- E. Assumptions as to the exact outline or limits of the piles are made when a pile is not a free standing one. A pile may be stacked against a wall, embankment or over an uneven base. If we cannot see all sides of a pile, a decision is made as to where to take measurements by using our best judgement or by discussion with a _____ Materials professional familiar with the site.

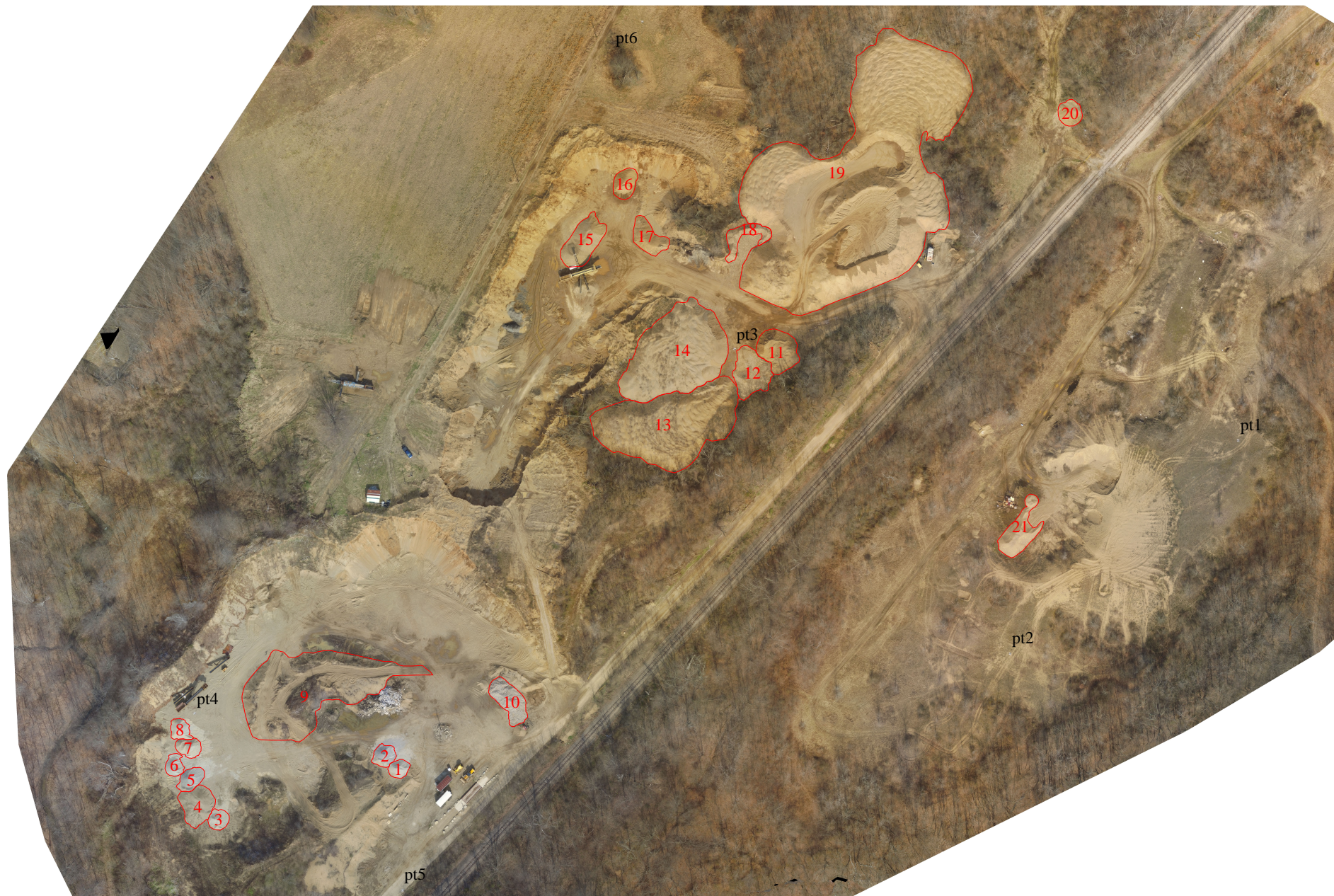
We recognize that our computations are important in determining the financial presentation of inventories. We have done everything within our capabilities to ensure accuracy in our report.

Our firm has no direct interest in _____ Materials.

Please feel free to contact us if any additional information is required.

Very truly yours,
Advanced Aerial Imagery

Jason Thomas



pt6

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pt1

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pt2

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pt5

ADVANCED AERIAL IMAGERY

3596 Maple Ave. Suite C

Zanesville, OH 43701

(740)819-0470

CLINET NAME

SITE NAME

JOB NUMBER 17-011

DATE FLOWN 3/4/2017 12:30pm

| PILE NUMBER | MATERIAL | DENSITY/CU BIC FOOT | VOLUME CUBIC FEET | VOLUME CUBIC YRDS. | Tons |
|--------------------|-----------------|--------------------------------|------------------------------|-------------------------------|-------------|
| 1 | #8 Limestone | 138.00 | 1863.81 | 69.03 | 128.60 |
| 2 | #57 Limestone | 138.00 | 2410.83 | 89.29 | 166.35 |
| 3 | 304 Limestone | 138.00 | 828.90 | 30.70 | 57.19 |
| 4 | #8 Gravel | 130.00 | 6572.07 | 243.41 | 427.18 |
| 5 | #4 Limestone | 138.00 | 1628.10 | 60.30 | 112.34 |
| 6 | Screenings | 113.00 | 1050.03 | 38.89 | 59.33 |
| 7 | #2 Limestone | 138.00 | 2505.87 | 92.81 | 172.91 |
| 8 | 411 Limestone | 138.00 | 2228.04 | 82.52 | 153.73 |
| 9 | Bankrun/Fill | 130.00 | 116046.00 | 4298.00 | 7542.99 |
| 10 | Gabion | 138.00 | 4210.11 | 155.93 | 290.50 |
| 11 | Sand | 130.00 | 12917.07 | 478.41 | 839.61 |
| 12 | Oversize | 138.00 | 4598.91 | 170.33 | 317.32 |
| 13 | Sand | 130.00 | 163621.89 | 6060.07 | 10635.42 |
| 14 | #8 Gravel | 130.00 | 83424.87 | 3089.81 | 5422.62 |
| 15 | #57 Gravel | 130.00 | 14132.88 | 523.44 | 918.64 |
| 16 | Sand | 130.00 | 3949.02 | 146.26 | 256.69 |
| 17 | Sand | 130.00 | 6077.35 | 225.07 | 395.03 |
| 18 | Oversize | 138.00 | 2426.73 | 89.85 | 167.44 |
| 19 | Sand | 130.00 | 660552.03 | 24464.89 | 42935.88 |
| 20 | #8 Gravel | 130.00 | 2831.92 | 104.85 | 184.07 |
| 21 | Concrete Sand | 98.00 | 10639.89 | 394.07 | 521.35 |

ADVANCED AERIAL IMAGERY
 3596 Maple Ave. Suite C
 Zanesville, OH 43701
 (740)819-0470

CLINET NAME
SITE NAME
JOB NUMBER 17-011
DATE FLOWN 3/4/2017 12:30pm

| PILE NUMBER | CONDITION | UNKNOWN ERROR | COMMENTS |
|-------------|-----------|------------------|--|
| 1 | GOOD | | |
| 2 | GOOD | | |
| 3 | GOOD | x | Blends into adjacent pile |
| 4 | GOOD | x | Blends into adjacent pile |
| 5 | GOOD | | |
| 6 | GOOD | | |
| 7 | GOOD | | |
| 8 | GOOD | | |
| 9 | GOOD | x | Multiple materials and vegetation in & around pile |
| 10 | GOOD | | |
| 11 | GOOD | | |
| 12 | GOOD | | |
| 13 | GOOD | | Vegetation along perimeter |
| 14 | GOOD | | |
| 15 | GOOD | | |
| 16 | GOOD | x | Pile againts bank |
| 17 | GOOD | | |
| 18 | GOOD | x | Blends into adjacent pile |
| 19 | GOOD | | Vegetation along perimeter |
| 20 | GOOD | | |
| 21 | GOOD | | |

