



317.916.8000 ▪ www.augustmack.com  
1302 North Meridian Street, Suite 300 ▪ Indianapolis, Indiana 46202

November 16, 2020

Mr. Jerry Matlock  
Beaver Materials  
16101 River Road  
Noblesville, Indiana 46062

**Re: Noise & Fugitive Dust Monitoring Report  
Beaver Materials  
Noblesville, Indiana  
August Mack Project Number JU1826.250**

Dear Mr. Matlock:

August Mack Environmental, Inc. (August Mack) has completed a noise and fugitive dust survey at Beaver Materials' (Beaver) proposed Potter's Bridge quarry location and the current quarry operation at Strawtown both located in Noblesville, Indiana. The objective of this project was to compare the noise and fugitive dust levels between the two locations. A discussion of the noise and fugitive dust monitoring procedures are provided below followed by a summary of the results and conclusions.

### **SAMPLE COLLECTION & ANALYSIS**

Stationary sound level and fugitive dust sample collection activities were conducted by Ms. Riley Alexander on November 9, 10, and 11, 2020. At each location, two stationary noise samples and two stationary fugitive dust samples were collected for a total of four stationary noise and four stationary fugitive dust samples. Figures illustrating the locations of these samples are included in Figures 1 and 2 in Attachment A. The noise monitoring was conducted using the 3M Quest Soundpro Sound Level Meters calibrated to 114 dB(A). The fugitive dust monitoring was conducted using the TSI 8530 Dustrak II dust monitors calibrated using a manual zero flow attachment.

The area noise survey was conducted by Mr. Anthony Henley and Ms. Riley Alexander on the afternoon of November 9, 2020. The area noise survey involved taking instantaneous noise measurements throughout the entire property area. The recorded sound levels were then plotted on a grid which was used to develop a noise contour map. The noise contour map is included in Figure 3 in Attachment A.

## SAMPLE RESULTS

A summary of results of the sound level sampling and fugitive dust analysis are presented in Tables 1 and 2, respectively. A narrative description of the sampling points and results follows.

**TABLE 1**  
**Sound Level Sampling Results <sup>a</sup>**

| Location                          | Sampling Point | Runtime (dd:hh:mm:ss) | CNEL dB(A) | L <sub>Avg</sub> dB(A) | L <sub>pk</sub> dB(A) |
|-----------------------------------|----------------|-----------------------|------------|------------------------|-----------------------|
| <b>Potter's Bridge (Baseline)</b> | 1              | 01:00:00:00           | 74.8       | 61.7                   | 119.2                 |
|                                   | 2 <sup>b</sup> | 00:08:09:28           | 58.2       | 53.2                   | 92.0                  |
| <b>Strawtown (Active Quarry)</b>  | 3 <sup>c</sup> | N/A                   | N/A        | N/A                    | N/A                   |
|                                   | 4              | 01:01:11:13           | 60.8       | 57.3                   | 104.9                 |
|                                   | 5              | 01:00:00:00           | 58.3       | 53.9                   | 108.5                 |

CNEL = Community Noise Exposure Level. The accumulated exposure to sound measured in a 24-hour sampling interval and artificially boosted during certain hours (e.g., evening and nighttime).

L<sub>Avg</sub> = Average sound level measured over the run time.

L<sub>pk</sub> = This is the highest sound level value obtained during a study or a session.

<sup>a</sup> All results exclude sound level spikes caused by the operator and inclement weather. The real-time sound level measurements are included in Attachment B.

<sup>b</sup> Due to instrument malfunction only an 8 hour sample was collected at Sampling Point 2.

<sup>c</sup> N/A = Not Applicable. Sample location in close proximity to the sifter. August Mack did not collect a sound level measurement because a sifter is not planned for the Potter's Bridge project.

**TABLE 2**  
**Fugitive Dust Sampling Results**

| Location                          | Sampling Point | Runtime (dd:hh:mm:ss) | Minimum (mg/m <sup>3</sup> ) | Maximum (mg/m <sup>3</sup> ) | Average (mg/m <sup>3</sup> ) |
|-----------------------------------|----------------|-----------------------|------------------------------|------------------------------|------------------------------|
| <b>Potter's Bridge (Baseline)</b> | 1              | 01:00:00:00           | 0.000                        | 0.020                        | 0.000                        |
|                                   | 2              | 00:11:00:30           | 0.000                        | 0.077                        | 0.003                        |
| <b>Strawtown (Active Quarry)</b>  | 3 <sup>a</sup> | 00:01:26:00           | 0.012                        | 0.245                        | 0.019                        |
|                                   | 4              | 01:00:00:00           | 0.013                        | 1.310                        | 0.022                        |
|                                   | 5 <sup>c</sup> | N/A                   | N/A                          | N/A                          | N/A                          |

<sup>a</sup> Sample placement in close proximity to the sifter. A sifter is not planned for the Potter's Bridge project. August Mack collected a shortened sample for comparison purposes.

<sup>c</sup> N/A = Not Applicable. Due to instrumentation issues, fugitive dust measurements were not recoverable at Sampling Point 5.

### **Sampling Point 1**

Sampling Point 1 was located near the current Potter's Bridge Park property line and within 50 feet of the proposed quarry pit.

#### **Noise Results**

It should be noted that the two sound peaks at the start of the collection, which were caused by the operator, and the sound level peaks around 129 dB(A), which occurred during a recorded storm event with 20+ mile per hour (mph) wind gusts, were excluded in the results presented in Table 1 because they were not considered representative of the normal ambient conditions. The results indicate that the Community Noise Exposure Level (CNEL) and average sound level at this sampling point are 74.8 dB(A) and 61.7 dB(A), respectively.

#### **Dust Results**

There was minimal to no fugitive dust recorded in the area. The only spike in fugitive dust (0.020 mg/m<sup>3</sup>) occurred right as the sample collection started and therefore was caused by the operator and is not representative of the normal fugitive dust conditions at the sampling location.

### **Sampling Point 2**

Sampling Point 2 was located just inside the site boundary near Allisonville Road. The vegetation in the sample area was limited to some thin grass and weeds.

#### **Noise Results**

Due to instrument malfunction only an 8-hour sample was collected at Sampling Point 2. The sample was collected during the day when traffic noise was expected to be highest. The sound level measurements, acquired during the 8-hour workday, fluctuated with the quantity of vehicular travel. The results indicate that the Community Noise Exposure Level (CNEL) and average sound level at this sampling point are 58.2 dB(A) and 53.2 dB(A), respectively.

#### **Dust Results**

The average fugitive dust from the roadway (0.003 mg/m<sup>3</sup>) was slightly higher than that at Sampling Point 1 (0.000 mg/m<sup>3</sup>) and fluctuated with the quantity of traffic on Allisonville Road.

### **Sampling Point 3**

Sample Point 3 was located on the western side of the earthen berm located to the west of the sifter.

#### **Noise Results**

August Mack did not collect a sound level measurement because a sifter is not planned for the Potter's Bridge project.

### **Dust Results**

A shortened fugitive dust sample was collected for comparison purposes. The average fugitive dust measurement (average of 0.019 mg/m<sup>3</sup>) at the sampling point indicates some level of dust generation from digging operations and equipment traffic.

### **Sampling Point 4**

Sampling Point 4 was located in the center of the active quarrying operation to gain an understanding of fugitive dust and noise produced by typical day-to-day quarry operation.

### **Noise Results**

Sound level measurements were collected over a 24-hour period. The results indicate that the Community Noise Exposure Level (CNEL) and average sound level at this sampling point are 60.8 dB(A) and 57.3 dB(A), respectively.

### **Dust Results**

Fugitive dust spikes throughout the workday were observed as a result of dump truck and other vehicular travel throughout the active equipment area. After a series of higher fugitive dust measurements culminating in the maximum instantaneous fugitive dust measurement (1.310 mg/m<sup>3</sup>), the fugitive dust measurements dramatically decreased. It was during this time that August Mack observed the Beaver water truck wetting down the vehicle paths and other onsite area producing fugitive dust.

### **Sampling Point 5**

Sampling Point 5 was located near the turn-a-round for the dump truck carrying the broken pieces of asphalt used to create the underlayer of the road around the future fishing lake.

### **Noise Results**

Sound level measurements were collected over a 24-hour period. As previously explained, the sound peak at the start of the collection and the sound level peaks occurring during a recorded storm event with 20+ mile per hour (mph) wind gusts, were excluded in the results in Table 1. The results indicate that the Community Noise Exposure Level (CNEL) and average sound level at this sampling point are 58.3 dB(A) and 53.9 dB(A), respectively.

### **Dust Results**

Due to instrumentation issues, fugitive dust measurements were not recoverable at Sampling Point 5.

### Noise Area Survey

A noise area survey of Strawtown, the active quarry site, was conducted to determine the noise level at varying distances from the active construction areas in order to ultimately determine whether an active quarry would significantly increase the daily ambient noise levels experienced by the adjacent landowners and nearby residents. As illustrated in Figure 3 in Attachment A, the noise levels at Strawtown from the perimeter of the active digging and quarrying operations to the property boundary are consistent with the representative ambient noise of vehicular traffic (50-70 dB(A)). The elevated noise level within the digging area were only experienced onsite within a < 100 feet of the quarrying and construction equipment and dissipated to ambient levels within approximately 200 - 300 feet.

## DISCUSSION

### Noise Impacts

The Noblesville Noise Ordinance (No. IX §93.2) states that: *(B) No person, corporation, entity, or landowner shall permit any noise to be generated or produced which exceeds 75 dB/A for more than two minutes per hour, measured at a point no closer than one-half mile from the boundary of the property line from which the sound is generated.* It should be noted that under §93.24(B), that construction equipment is exempt from the provisions of the prohibition when properly muffled, between the hours of 7:00 a.m. and 10:00 p.m. only.

Comparing the average sound levels ( $L_{avg}$ ) observed between the baseline (Potter's Bridge) and active digging location (Strawtown) does not reveal a significant difference in average noise level. The spatial noise survey/mapping activities do reveal elevated noise levels when in close proximity (< 100 feet) to active construction equipment. The noise from construction equipment was observed to quickly dissipate. With the exception of the noise levels within close proximity to equipment, the highest noise levels observed on the property were on the property line to the east and are attributable to the traffic on State Road 37.

Based on a Federal Transit Administration (FTA) guidance manual for evaluating noise impacts, the following equation can be used to estimate noise impact from construction equipment by distance.<sup>1</sup>

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<sup>1</sup> *Transit Noise and Vibration Impact Assessment Manual*. Federal Transit Administration. September 2018.

$$L_{eq,equip} = L_{emission} + 10 \log(AdjUsage) - 20 \log\left(\frac{D}{50}\right) - 10G \log\left(\frac{D}{50}\right)$$

where:

- $L_{eq,equip}$  =  $L_{eq(t)}$  at a receiver from the operation of a single piece of equipment over a specified time period, dBA
- $L_{emission}$  = noise emission level of the particular piece of equipment at the reference distance of 50 ft, dBA
- $AdjUsage$  = usage factor to account for the fraction of time that the equipment is in use over the specified time period
- $D$  = distance from the receiver to the piece of equipment, ft
- $G$  = a constant that accounts for topography and ground effects

This equation results in noise levels shown in Table 3 below, assuming continuous operation of the machine and no noise reduction from topography and ground effects:

**Table 3  
Noise by Distance of Various Equipment**

| Equipment | dB(A) @ 50' | dB(A) @ 100' | dB(A) @ 200' | dB(A) @ 300' | dB(A) @ 400' |
|-----------|-------------|--------------|--------------|--------------|--------------|
| Backhoe   | 80          | 74           | 68           | 64           | 62           |
| Grader    | 85          | 79           | 73           | 69           | 67           |
| Dozer     | 85          | 79           | 73           | 69           | 67           |
| Loader    | 80          | 74           | 68           | 64           | 62           |

Source: *Transit Noise and Vibration Impact Assessment Manual*. Federal Transit Administration. September 2018.

The noise level readings observed at the Strawtown location showing dissipation to ambient levels within 200-300 feet is consistent with default construction equipment values and noise impact equations published by the FTA. It should also be noted that the berms that are installed on the Strawtown location will provide additional noise mitigation that could not be quantified due to the noise levels generated from State Road 37.

**Dust Impacts**

Comparing the average dust levels observed between the baseline (Potter’s Bridge) and active digging location (Strawtown) reveals higher dust levels at the active site. The current United States Environmental Protection Agency (USEPA) National Ambient Air Quality Standards (NAAQS) for particulate less than 10 microns in diameter (PM<sub>10</sub>) and particulate less than 2.5 microns in diameter (PM<sub>2.5</sub>) are shown in Table 4 below along with a comparison to the Strawtown monitoring results:

**Table 4**  
**Comparison of Sampling Results to NAAQS <sup>1</sup>**

| Parameter | NAAQS (ug/m <sup>3</sup> ) | Strawtown Sampling Point 3 (ug/m <sup>3</sup> ) | Strawtown Sampling Point 4 (ug/m <sup>3</sup> ) |
|-----------|----------------------------|-------------------------------------------------|-------------------------------------------------|
| PM10      | 150 <sup>2</sup>           | 19                                              | 22                                              |
| PM2.5     | 35 <sup>3</sup>            |                                                 |                                                 |

<sup>1</sup> Sampling conducted at Strawtown did not separate particulate by size.

<sup>2</sup> 24-hour period. Attainment status determined by 3-year average (98<sup>th</sup> percentile).

<sup>3</sup> 24-hour period. Not to be exceeded more than once per year on average over a 3-year period

Based on the comparison in Table 4 and the conditions on the day of the sampling, construction activities are not expected to lead to unacceptable dust concentrations. It should be noted that the results from Sampling Points 3 and 4 are within the property boundary. Concentrations would likely be less at and beyond the property line. Additionally, the results from Sampling Points 3 and 4 reflect total dust. The amount of PM<sub>10</sub> and PM<sub>2.5</sub> in the total dust is likely to only a fraction of the total dust.

### CONCLUSIONS

August Mack has completed noise and fugitive dust monitoring at Beaver Materials' proposed Potter's Bridge project and current quarry operation at Strawtown. The results of the noise monitoring study indicated that the noise from the quarry and construction equipment dissipates within 200-300 feet of the equipment. The noise levels outside of the equipment radius was observed to be equal or less than the noise levels of the traffic noise at the property line (i.e., Allisonville Road and State Road 37).

The results of the dust monitoring show that although a marginal increase in dust concentrations would be expected at Potter's Bridge, the concentrations both within and especially outside the property line are not likely to exceed USEPA air quality thresholds. There is evidence that the periodic wetting of the fugitive dust producing areas, does indeed limit the fugitive dust in the air.

The data and interpretations presented in this report are based solely on the site conditions that were subject to the monitoring on November 9, 10, and 11, 2020. Real-time sound level and fugitive dust measurement logs are included in Attachment B and Attachment C, respectively.

Mr. Jerry Matlock

November 16, 2020

If you have any questions or concerns regarding this report, please contact us at 317.916.8000.

Sincerely,

A handwritten signature in black ink that reads "Riley Alexander". The signature is written in a cursive style with a long, sweeping horizontal line at the end.

Riley Alexander  
Compliance Specialist

A handwritten signature in black ink that reads "Anthony Henley". The signature is written in a cursive style with a long, sweeping horizontal line at the end.

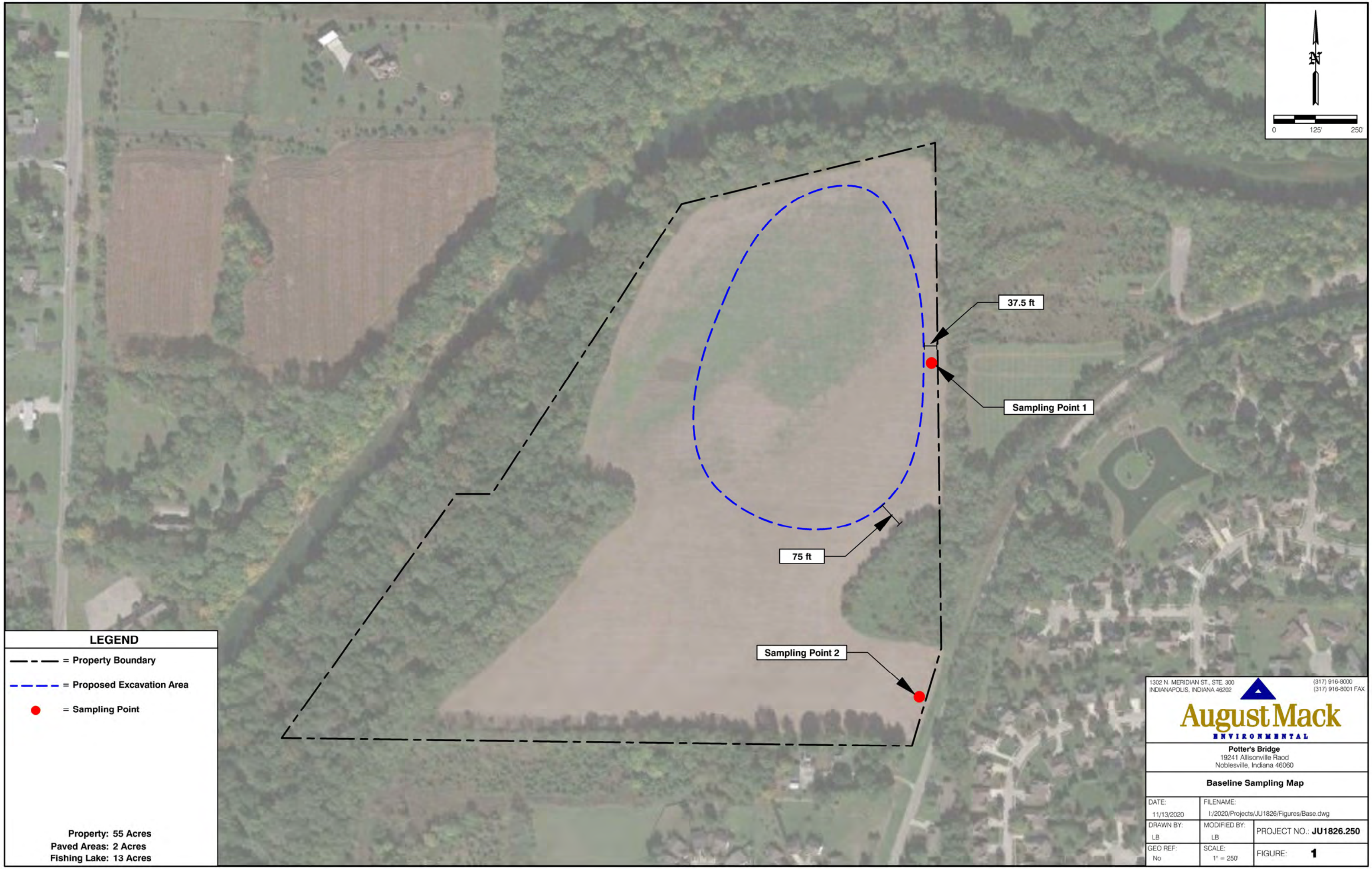
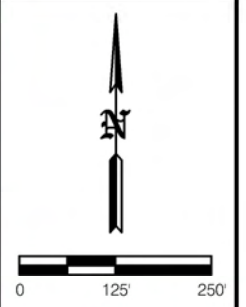
Anthony Henley  
Senior Compliance Manager



# ATTACHMENT A

## Figures





**LEGEND**

- = Property Boundary
- - - = Proposed Excavation Area
- = Sampling Point

Property: 55 Acres  
Paved Areas: 2 Acres  
Fishing Lake: 13 Acres

1302 N. MERIDIAN ST., STE. 300  
INDIANAPOLIS, INDIANA 46202 (317) 916-8000  
(317) 916-8001 FAX

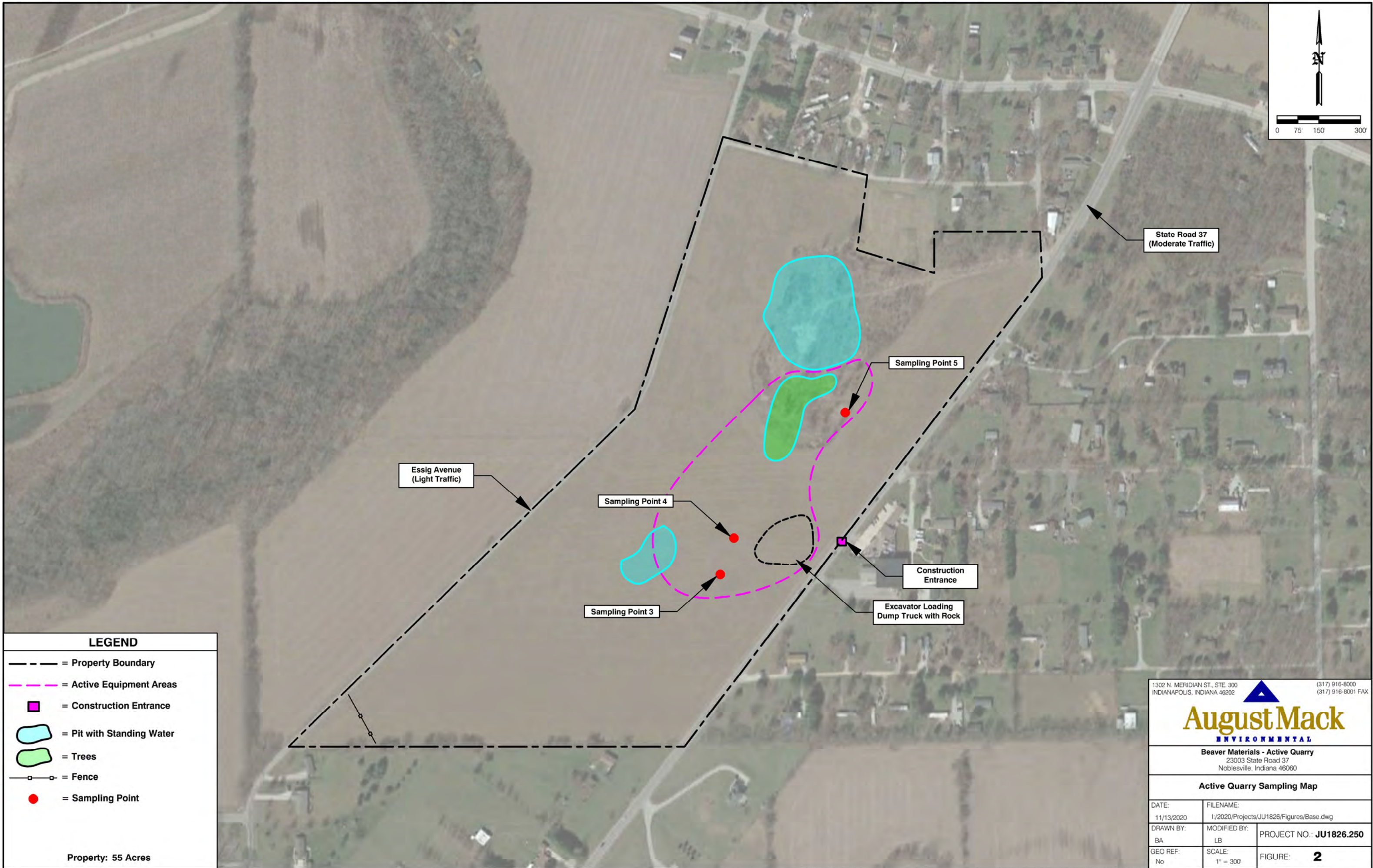
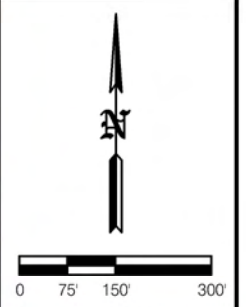
**August Mack**  
ENVIRONMENTAL

Potter's Bridge  
19241 Allisonville Road  
Noblesville, Indiana 46060

**Baseline Sampling Map**

|                     |                                                       |                                |
|---------------------|-------------------------------------------------------|--------------------------------|
| DATE:<br>11/13/2020 | FILENAME:<br>I:/2020/Projects/JU1826/Figures/Base.dwg |                                |
| DRAWN BY:<br>LB     | MODIFIED BY:<br>LB                                    | PROJECT NO.: <b>JU1826.250</b> |
| GEO REF:<br>No      | SCALE:<br>1" = 250'                                   | FIGURE: <b>1</b>               |





**LEGEND**

- = Property Boundary
- = Active Equipment Areas
- = Construction Entrance
- = Pit with Standing Water
- = Trees
- = Fence
- = Sampling Point

**Property: 55 Acres**

1302 N. MERIDIAN ST., STE. 300  
INDIANAPOLIS, INDIANA 46202 (317) 916-8000  
(317) 916-8001 FAX

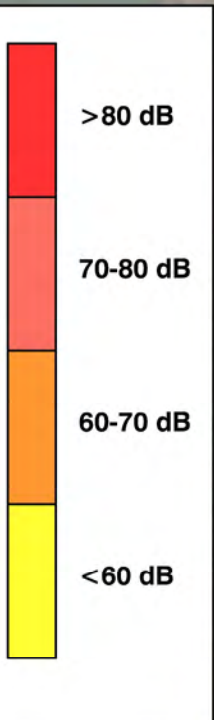
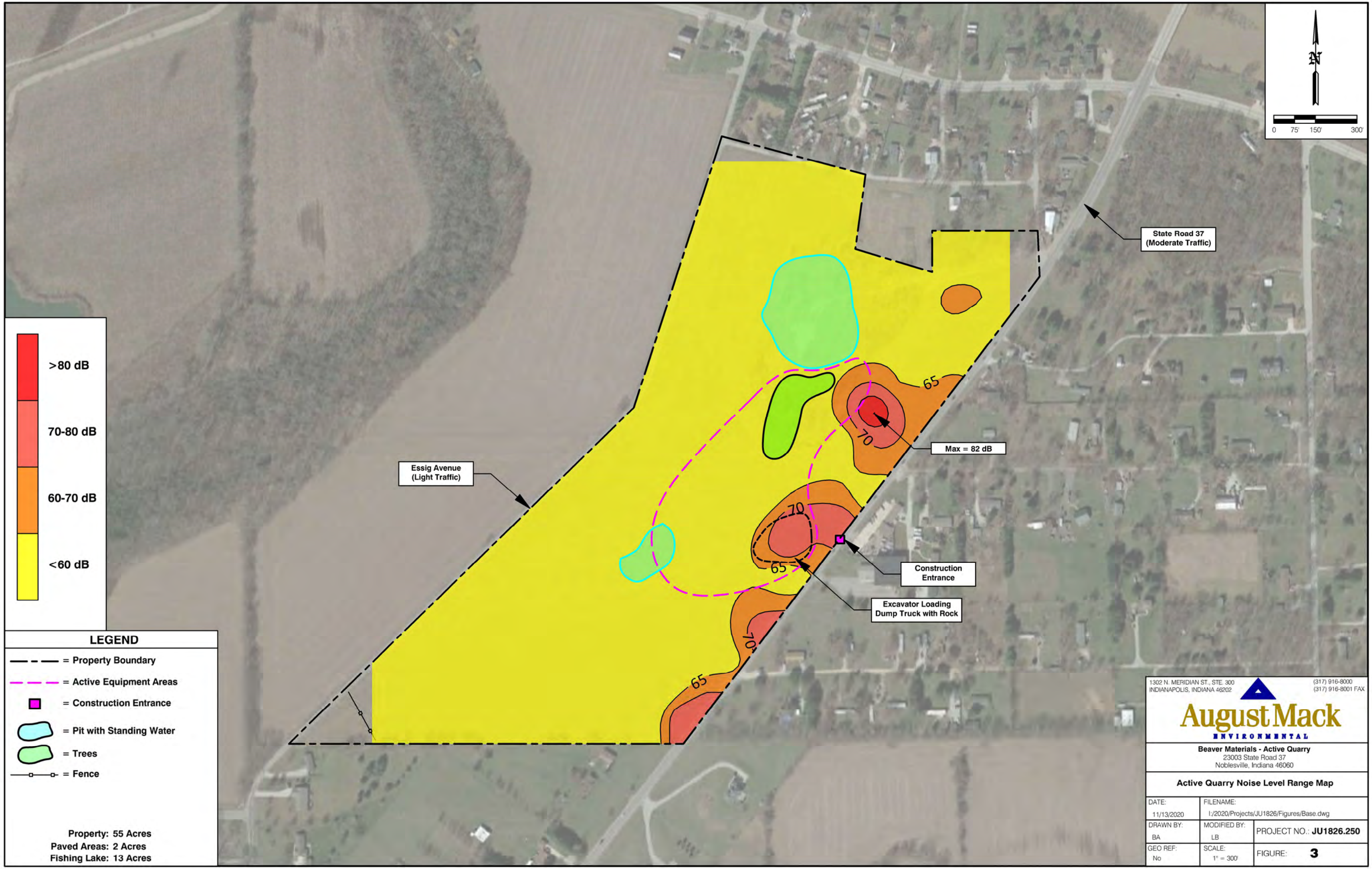
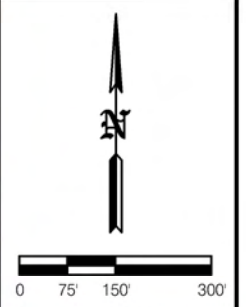
**August Mack**  
ENVIRONMENTAL

**Beaver Materials - Active Quarry**  
23003 State Road 37  
Noblesville, Indiana 46060

**Active Quarry Sampling Map**

|                                |                                                       |
|--------------------------------|-------------------------------------------------------|
| DATE:<br>11/13/2020            | FILENAME:<br>I:/2020/Projects/JU1826/Figures/Base.dwg |
| DRAWN BY:<br>BA                | MODIFIED BY:<br>LB                                    |
| GEO REF:<br>No                 | SCALE:<br>1" = 300'                                   |
| PROJECT NO.: <b>JU1826.250</b> |                                                       |
| FIGURE: <b>2</b>               |                                                       |





**LEGEND**

- = Property Boundary
- - - = Active Equipment Areas
- = Construction Entrance
- = Pit with Standing Water
- = Trees
- - - = Fence

Property: 55 Acres  
 Paved Areas: 2 Acres  
 Fishing Lake: 13 Acres

State Road 37  
(Moderate Traffic)

Essig Avenue  
(Light Traffic)

Max = 82 dB

Construction Entrance

Excavator Loading  
Dump Truck with Rock

1302 N. MERIDIAN ST., STE. 300  
 INDIANAPOLIS, INDIANA 46202 (317) 916-8000  
 (317) 916-8001 FAX

**August Mack**  
 ENVIRONMENTAL

Beaver Materials - Active Quarry  
 23003 State Road 37  
 Noblesville, Indiana 46060

**Active Quarry Noise Level Range Map**

|                                |                                                       |
|--------------------------------|-------------------------------------------------------|
| DATE:<br>11/13/2020            | FILENAME:<br>I:/2020/Projects/JU1826/Figures/Base.dwg |
| DRAWN BY:<br>BA                | MODIFIED BY:<br>LB                                    |
| GEO REF:<br>No                 | SCALE:<br>1" = 300'                                   |
| PROJECT NO.: <b>JU1826.250</b> |                                                       |
| FIGURE: <b>3</b>               |                                                       |

**ATTACHMENT B**

**Real-Time Sound Level Measurements**



# Sound Level Measurements

Baseline: Sampling Point 1

## Information Panel

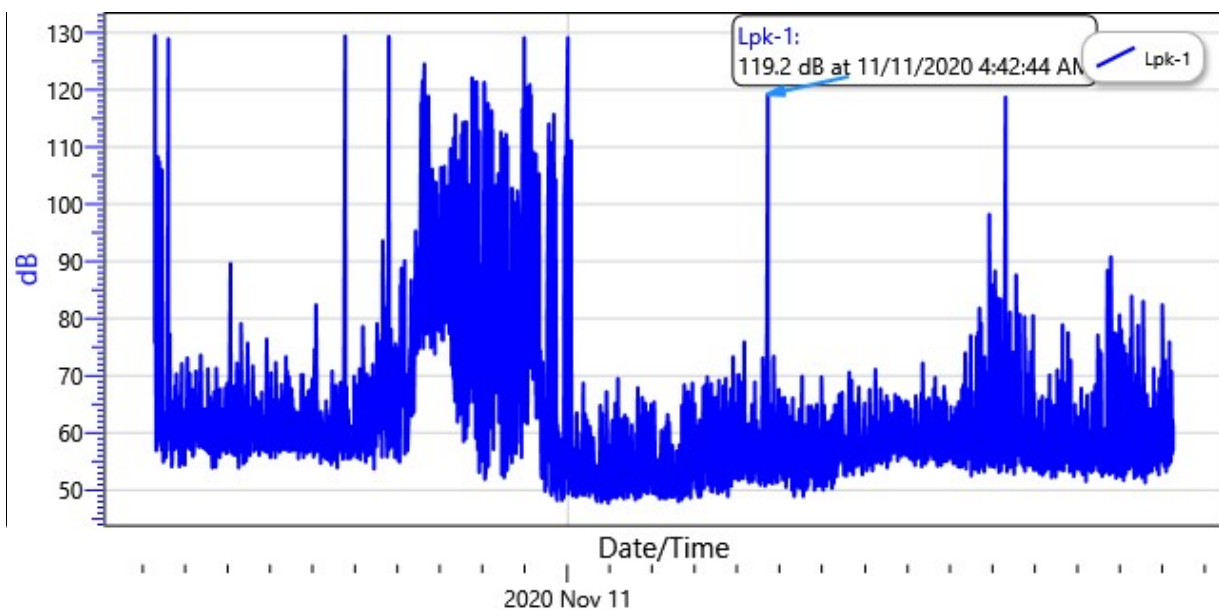
|                     |                       |
|---------------------|-----------------------|
| Name                | Sampling Point 1      |
| Start Time          | 11/10/2020 2:15:54 PM |
| Stop Time           | 11/11/2020 2:15:54 PM |
| Device Name         | BIF090005             |
| Model Type          | SoundPro DL           |
| Device Firmware Rev | R.13H                 |
| Run Time            | 1.00:00:00            |

## Summary Data Panel

| Description   | Meter | Value    | Description | Meter | Value   |
|---------------|-------|----------|-------------|-------|---------|
| CNEL          | 1     | 74.8 dB  | Lavg        | 1     | 61.7 dB |
| Lpk           | 1     | 129.5 dB | Lmin        | 1     | 34.6 dB |
| Exchange Rate | 1     | 4 dB     | Weighting   | 1     | A       |
| Response      | 1     | SLOW     | Bandwidth   | 1     | OFF     |

## Logged Data Chart

Sampling Point 1: Logged Data Chart





# Sound Level Measurements

Baseline: Sampling Point 2

## Information Panel

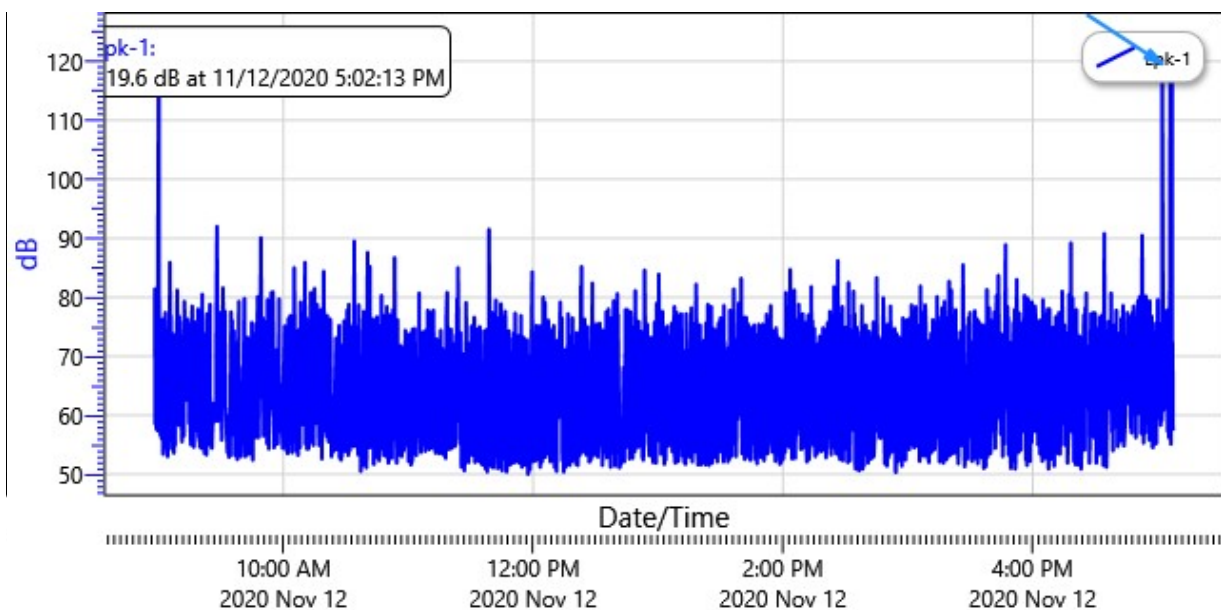
|                     |                       |
|---------------------|-----------------------|
| Name                | Sampling Point 2      |
| Start Time          | 11/12/2020 8:58:03 AM |
| Stop Time           | 11/12/2020 5:07:31 PM |
| Device Name         | BIH050001             |
| Model Type          | SoundPro DL           |
| Device Firmware Rev | R.13H                 |
| Run Time            | 08:09:28              |

## Summary Data Panel

| Description   | Meter | Value    | Description | Meter | Value   |
|---------------|-------|----------|-------------|-------|---------|
| CNEL          | 1     | 58.2 dB  | Lavg        | 1     | 53.2 dB |
| Lpk           | 1     | 124.6 dB | Lmin        | 1     | 36.6 dB |
| Exchange Rate | 1     | 4 dB     | Weighting   | 1     | A       |
| Response      | 1     | SLOW     | Bandwidth   | 1     | OFF     |

## Logged Data Chart

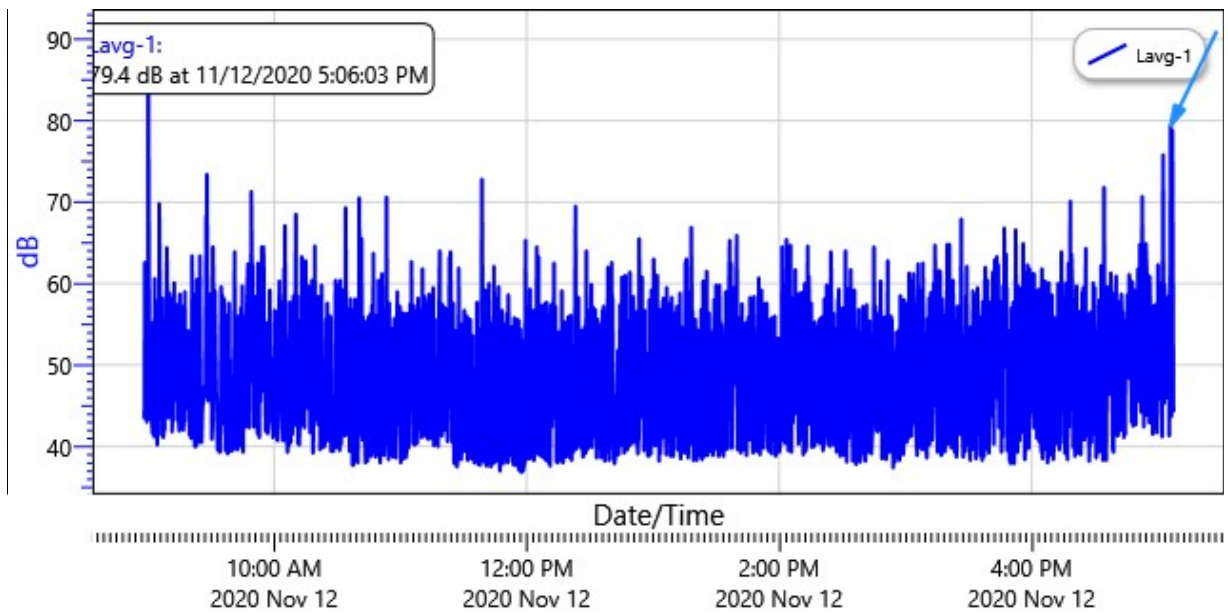
Sampling Point 2: Logged Data Chart





# Logged Data Chart

Sampling Point 2: Logged Data Chart



# Sound Level Measurements

Active: Sampling Point 4

## Information Panel

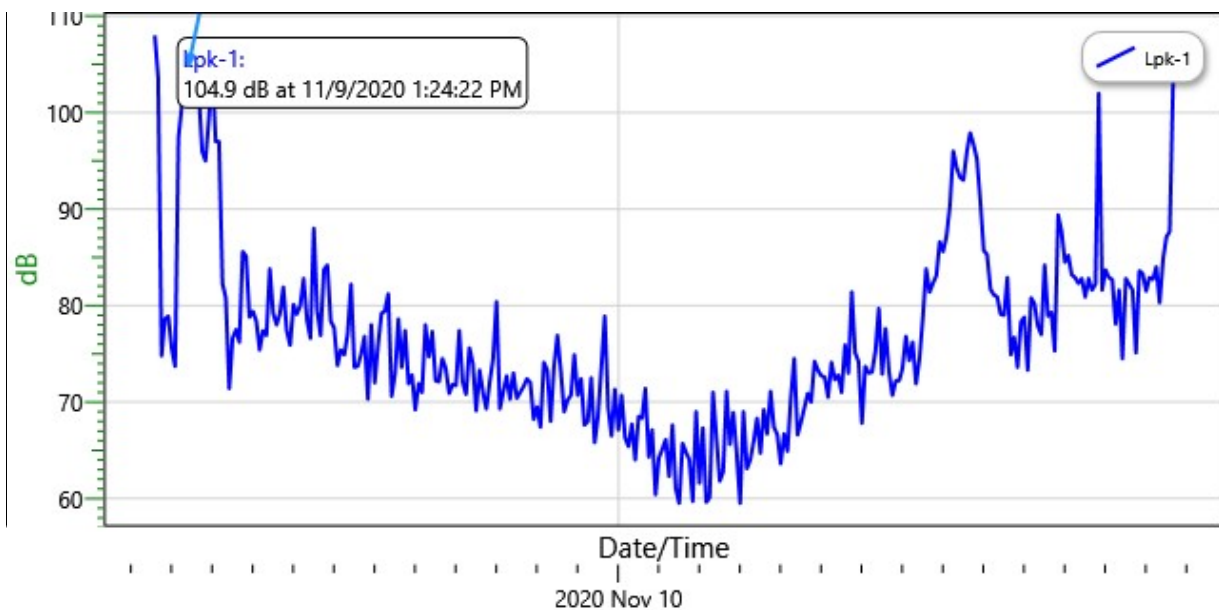
Name Sampling Point 4  
Start Time 11/9/2020 12:29:22 PM  
Stop Time 11/10/2020 1:42:07 PM  
Device Name BIH050004  
Model Type SoundPro DL  
Device Firmware Rev R.13H  
Run Time 1.01:11:13

## Summary Data Panel

| Description   | Meter | Value   | Description | Meter | Value   |
|---------------|-------|---------|-------------|-------|---------|
| CNEL          | 1     | 60.8 dB | Lavg        | 1     | 57.3 dB |
| Lpk           | 1     | 108 dB  | Lmin        | 1     | 44 dB   |
| Exchange Rate | 1     | 4 dB    | Weighting   | 1     | A       |
| Response      | 1     | SLOW    | Bandwidth   | 1     | OFF     |

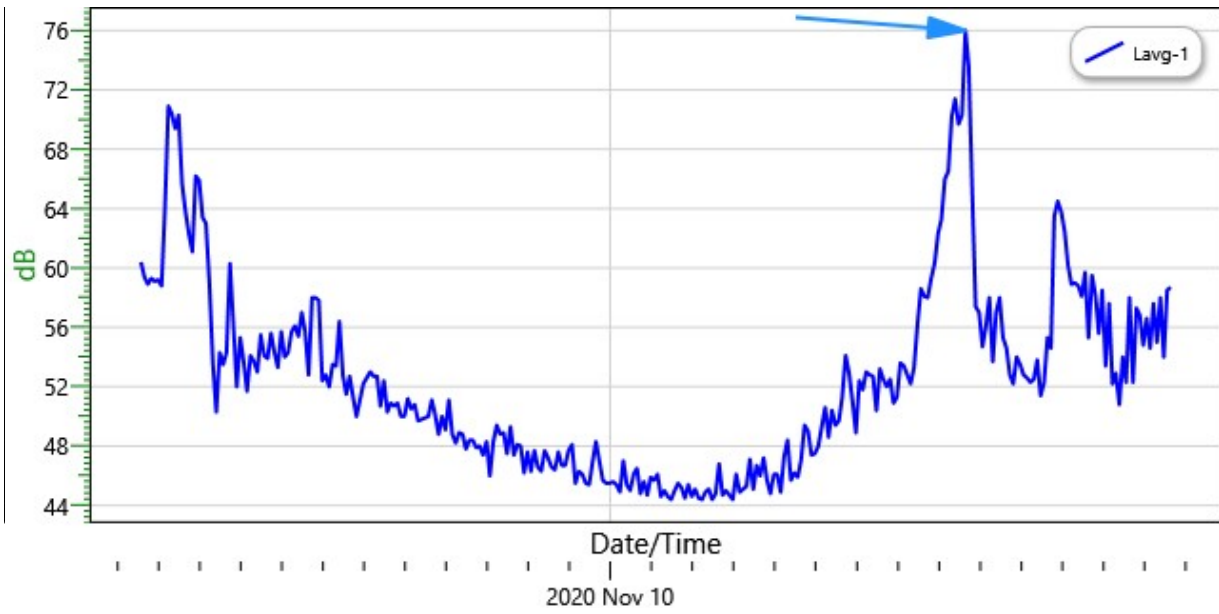
## Logged Data Chart

Sampling Point 4: Logged Data Chart



# Logged Data Chart

Sampling Point 4: Logged Data Chart



# Sound Level Measurements

Active: Sampling Point 5

## Information Panel

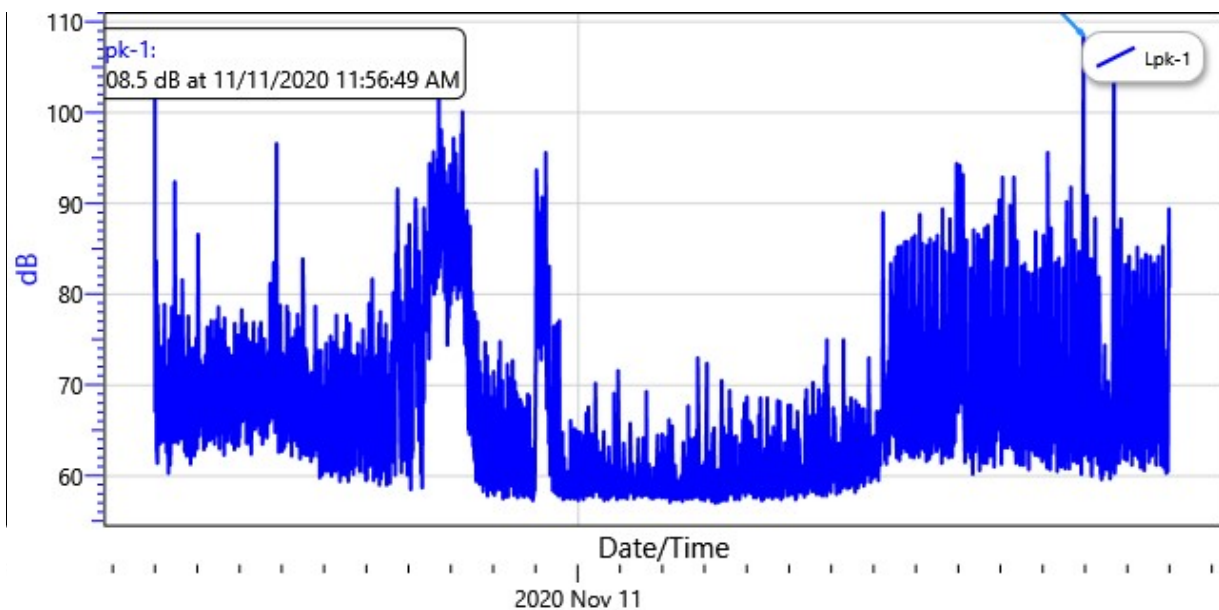
Name Sampling Point 5  
Start Time 11/10/2020 1:58:34 PM  
Stop Time 11/11/2020 2:04:10 PM  
Device Name BIH050003  
Model Type SoundPro DL  
Device Firmware Rev R.13H  
Run Time 1.00:00:07

## Summary Data Panel

| Description   | Meter | Value    | Description | Meter | Value   |
|---------------|-------|----------|-------------|-------|---------|
| CNEL          | 1     | 58.3 dB  | Lavg        | 1     | 53.9 dB |
| Lpk           | 1     | 108.5 dB | Lmin        | 1     | 43.6 dB |
| Exchange Rate | 1     | 4 dB     | Weighting   | 1     | A       |
| Response      | 1     | SLOW     | Bandwidth   | 1     | OFF     |

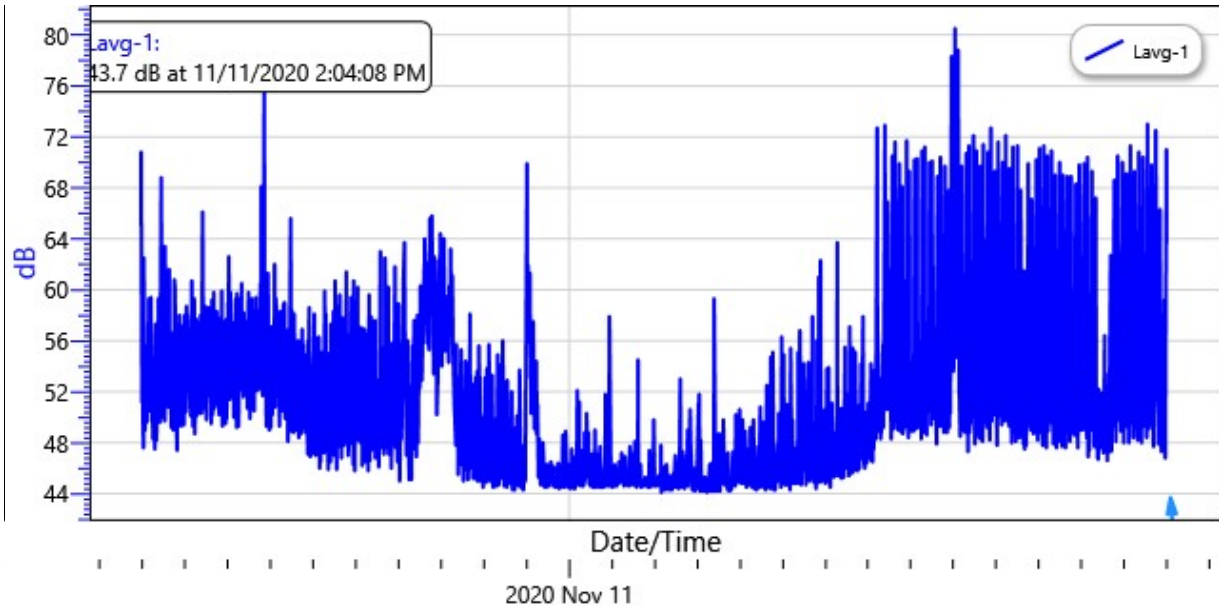
## Logged Data Chart

Sampling Point 5: Logged Data Chart



# Logged Data Chart

Sampling Point 5: Logged Data Chart



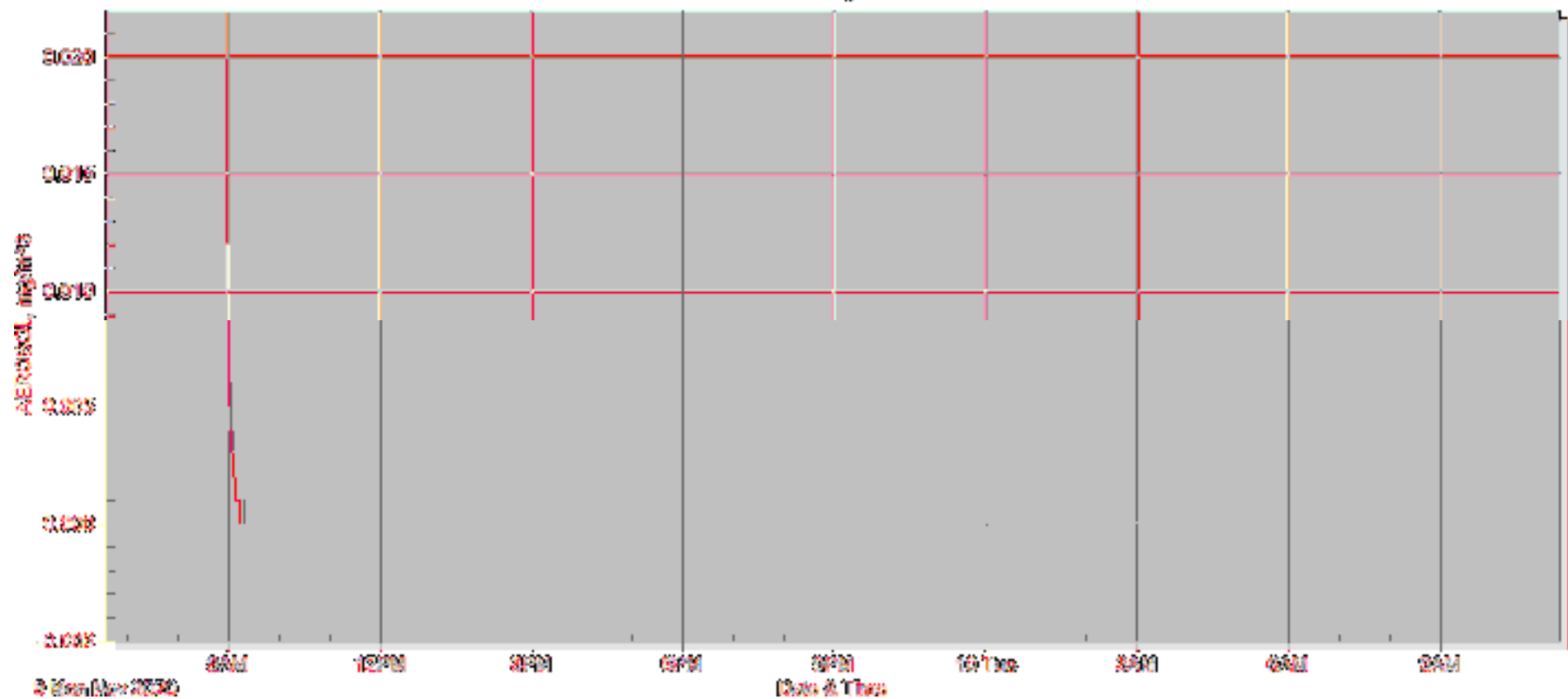
**ATTACHMENT C**

**Real-Time Fugitive Dust Measurements**

# Baseline: Sampling Point 1

| Instrument     |             | Data Properties         |            |
|----------------|-------------|-------------------------|------------|
| Model          | DustTrak II | Start Date              | 11/09/2020 |
| Instrument S/N | 8530092805  | Start Time              | 08:57:30   |
|                |             | Stop Date               | 11/10/2020 |
|                |             | Stop Time               | 08:57:30   |
|                |             | Total Time              | 1:00:00:00 |
|                |             | Logging Interval        | 5 seconds  |
| Statistics     |             |                         |            |
|                |             | AEROSOL                 |            |
| Avg            |             | 0.000 mg/m <sup>3</sup> |            |
| Max            |             | 0.020 mg/m <sup>3</sup> |            |
| Max Date       |             | 11/09/2020              |            |
| Max Time       |             | 08:57:35                |            |
| Min            |             | 0.000 mg/m <sup>3</sup> |            |
| Min Date       |             | 11/09/2020              |            |
| Min Time       |             | 09:12:10                |            |
| TWA (8 hr)     |             | 0.000                   |            |
| TWA Start Date |             | 11/09/2020              |            |
| TWA Start Time |             | 08:57:30                |            |
| TWA End Time   |             | 08:57:30                |            |

### Magnitude Count Measurements Reference Sampling Point 3

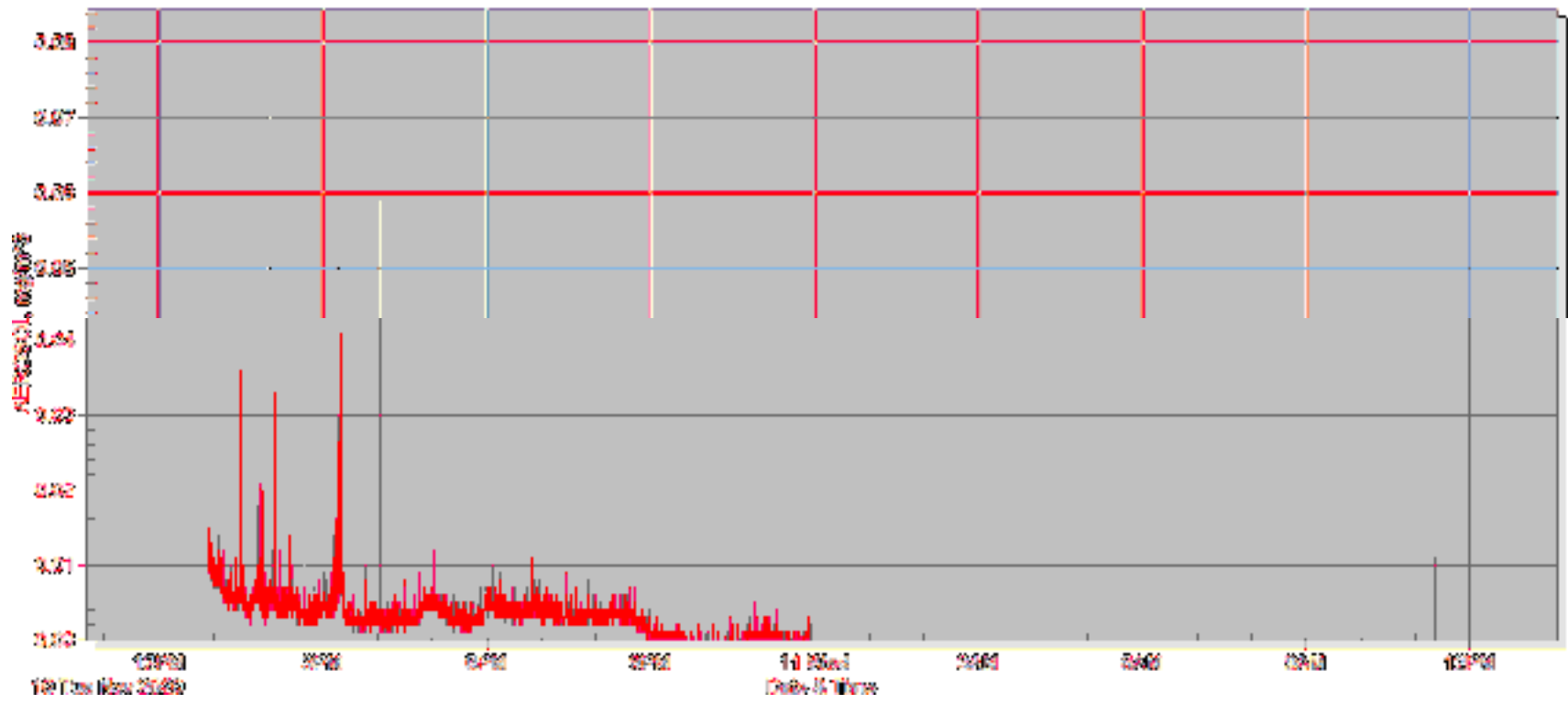




# Baseline: Sampling Point 2

| Instrument     |             | Data Properties         |            |
|----------------|-------------|-------------------------|------------|
| Model          | DustTrak II | Start Date              | 11/10/2020 |
| Instrument S/N | 8530092801  | Start Time              | 12:54:22   |
|                |             | Stop Date               | 11/10/2020 |
|                |             | Stop Time               | 23:54:52   |
|                |             | Total Time              | 11:00:30   |
|                |             | Logging Interval        | 5 seconds  |
| Statistics     |             |                         |            |
|                |             | AEROSOL                 |            |
| Avg            |             | 0.003 mg/m <sup>3</sup> |            |
| Max            |             | 0.077 mg/m <sup>3</sup> |            |
| Max Date       |             | 11/10/2020              |            |
| Max Time       |             | 14:00:47                |            |
| Min            |             | 0.000 mg/m <sup>3</sup> |            |
| Min Date       |             | 11/10/2020              |            |
| Min Time       |             | 20:55:47                |            |
| TWA (8 hr)     |             | 0.000                   |            |
| TWA Start Date |             | 11/10/2020              |            |
| TWA Start Time |             | 12:54:22                |            |
| TWA End Time   |             | 23:54:52                |            |

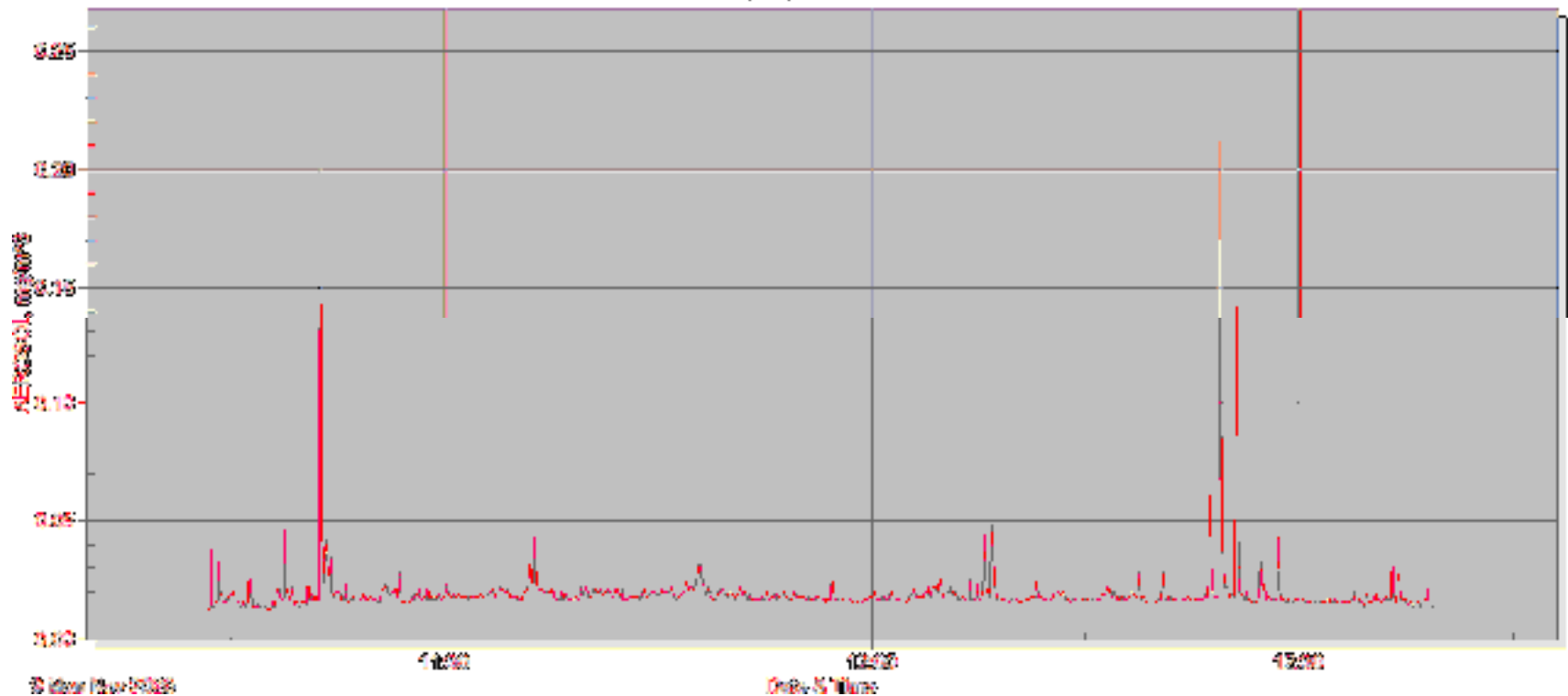
Positive Cross Measurements  
Gardner South Shaft



# Active Quarry: Sampling Point 3

| Instrument     |             | Data Properties         |            |
|----------------|-------------|-------------------------|------------|
| Model          | DustTrak II | Start Date              | 11/09/2020 |
| Instrument S/N | 8530165013  | Start Time              | 11:13:20   |
|                |             | Stop Date               | 11/09/2020 |
|                |             | Stop Time               | 12:39:30   |
|                |             | Total Time              | 0:01:26:00 |
|                |             | Logging Interval        | 5 seconds  |
| Statistics     |             |                         |            |
|                |             | AEROSOL                 |            |
| Avg            |             | 0.019 mg/m <sup>3</sup> |            |
| Max            |             | 0.245 mg/m <sup>3</sup> |            |
| Max Date       |             | 11/09/2020              |            |
| Max Time       |             | 11:21:15                |            |
| Min            |             | 0.012 mg/m <sup>3</sup> |            |
| Min Date       |             | 11/09/2020              |            |
| Min Time       |             | 11:13:30                |            |
| TWA (8 hr)     |             | 0.003                   |            |
| TWA Start Date |             | 11/10/2020              |            |
| TWA Start Time |             | 11:13:20                |            |
| TWA End Time   |             | 12:39:30                |            |

Fluorescence Titration: *Staphylococcus aureus*  
Growth Curve: 100% to 100%



# Active Quarry: Sampling Point 4

| Instrument     |             | Data Properties         |            |
|----------------|-------------|-------------------------|------------|
| Model          | DustTrak II | Start Date              | 11/09/2020 |
| Instrument S/N | 8530165013  | Start Time              | 12:42:47   |
|                |             | Stop Date               | 11/10/2020 |
|                |             | Stop Time               | 12:42:47   |
|                |             | Total Time              | 1:00:00:00 |
|                |             | Logging Interval        | 5 seconds  |
| Statistics     |             |                         |            |
|                |             | AEROSOL                 |            |
| Avg            |             | 0.022 mg/m <sup>3</sup> |            |
| Max            |             | 1.310 mg/m <sup>3</sup> |            |
| Max Date       |             | 11/09/2020              |            |
| Max Time       |             | 14:55:57                |            |
| Min            |             | 0.013 mg/m <sup>3</sup> |            |
| Min Date       |             | 11/09/2020              |            |
| Min Time       |             | 12:44:12                |            |
| TWA (8 hr)     |             | 0.022                   |            |
| TWA Start Date |             | 11/09/2020              |            |
| TWA Start Time |             | 12:42:47                |            |
| TWA End Time   |             | 12:42:47                |            |

Flighted Time Measurements  
At Sea County Sheriff's Office

