# Blue Ridge Research and Consulting

## Final Report

# Indian Point Energy Center
# Siren System Far Field Acoustic Testing
# April 2008

# Final Report

Prepared for:

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BRRC
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## Overview

Entergy contracted with Blue Ridge Research and Consulting, LLC (BRRC) to oversee the collection of siren sound levels and local weather data at 24 locations during two full system tests of Indian Point's new siren system along. The tests were conducted on the 15th and 16th of April, 2008. BRRC assisted Entergy with the selection of the measurement locations and the training of Entergy personnel who were responsible for the actual data collection.

Each measurement location had a Sound Level Meter (SLM) and a weather station. The SLMs were either Larson Davis Model 824s or Model 831s. Regardless of the model, each meter was set to measure and record one second Leq time histories. The weather stations were Kestrel Model 4500s set to record the wind speed, wind direction, temperature, humidity and barometric pressure every five seconds.

Each SLM was calibrated before the testing began, and a calibration tone was recorded on each meter before and after each test. The microphones were mounted on tripods at a height approximately five feet above the ground. The meters in general started recording data at least ten minutes before each test and continued recording data for at least ten minutes after the sirens finished sounding. The weather stations recorded data over that same time period and had their internal clocks synchronized with the SLMs. Complete data were collected at each site for both days, creating a total of 48 complete measurements. The complete measurement protocol is provided in Appendix A.

When the measured values were compared with the predicted values provided by ATI, the average difference for the data collected on April 15, 2008 was 0.2 dB and the average difference for the data collected on April 16, 2008 was -0.8 dB. The average of all of the data collected was -0.3 dB. This shows a good agreement with the predicted values.

### SLM Measurement Results

The SLMs were programmed to record slow weighted sound. Each meter was set to measure and record the C-weighted 1 second Leq, as well as the octave band and third octave band one second Leqs. The L10 for the center three minutes of each siren signal was calculated. Only the center three minutes were included to ensure that the sound from all surrounding sirens reached the microphone. Also, the regulations guiding the sounding of the siren system call for a sounding that is three to five minute in length, so using three minutes is still within the guidelines for this type of a system[1].

The three minute L10 was computed by two methods. The first was simply by computing the L10 based on the recorded C-Weighted levels. The second method was to compute the L10 by combining the measured sound from the 500 Hz and the 630 Hz third octave bands. These are the bands that contain most of the sound energy from the sirens so they represent a cleaner signal than the C-Weighted sound. The C-weighted sound levels include

[1] "Outdoor Warning Systems Guide," CPG 1-17, FEMA March 1980.

a wide range of frequencies that can have significant noise levels that do not contribute to the siren signal but none the less increase the measured noise. Table 1 and Table 2 provide the L10s as computed for sound levels recorded on April 15 and April 16. Included in these tables are the predicted results based on ATI's propagation model, provided to BRRC by Entergy[2].

The average difference between the measured values and the predicted values was 0.2 dB for the sounding on April 15, 2008, and -0.8 dB for the sounding on April 16, 2008. The average difference for all of the collected data was -0.3 dB. Based on these results as provided, this average difference shows an accurate prediction of the measured sound levels.

[2] E-mail correspondence with Mike Miele of Entergy, April 29, 2008.

**Table 1.** SLM Results from the Full Siren System Test on April 15, 2008

| Meter | Measured 630Hz + 500Hz L10 (dB) | Predicted Sound Level (dB)‡ | Measured Minus Predicted |
|---|---|---|---|
| Meter 01 | 82 | 73 | 9 |
| Meter 02 | 82 | 73 | 9 |
| Meter 03 | 76 | 70 | 6 |
| Meter 04 | 77 | 75 | 2 |
| Meter 05 | 89 | 77 | 12 |
| Meter 06 | 65 | 72 | -7 |
| Meter 07 | 72 | 71 | 1 |
| Meter 08 | 69 | 71 | -2 |
| Meter 09 | 74 | 70 | 4 |
| Meter 10 | 66 | 67 | -1 |
| Meter 11 | 53 | 55 | -2 |
| Meter 12 | 76 | 70 | 6 |
| Meter 13 | 68 | 73 | -5 |
| Meter 14 | 58 | 60 | -2 |
| Meter 15 | 64 | 65 | -1 |
| Meter 16 | 59 | 60 | -1 |
| Meter 17 | 75 | 74 | 1 |
| Meter 18 | 53 | 62 | -9 |
| Meter 19 | 59 | 70 | -11 |
| Meter 20 | 74 | 76 | -2 |
| Meter 21 | 70 | 70 | 0 |
| Meter 22 | 67 | 68 | -1 |
| Meter 23 | 72 | 77 | -5 |
| Meter 24 | 77 | 73 | 4 |

‡ Data provided by Entergy from ATI

**Table 2.** SLM Results from the Full Siren System Test on April 16, 2008

| Meter | Measured 630Hz + 500Hz L10 (dB) | Predicted Sound Level (dB)‡ | Measured Minus Predicted |
|---|---|---|---|
| Meter 01 | 86 | 72 | 14 |
| Meter 02 | 81 | 73 | 8 |
| Meter 03 | 74 | 70 | 4 |
| Meter 04 | 78 | 75 | 3 |
| Meter 05 | 69 | 70 | -1 |
| Meter 06 | 71 | 72 | -1 |
| Meter 07 | 71 | 71 | 0 |
| Meter 08 | 65 | 71 | -6 |
| Meter 09 | 69 | 70 | -1 |
| Meter 10 | 61 | 67 | -6 |
| Meter 11 | 53 | 55 | -2 |
| Meter 12 | 65 | 70 | -5 |
| Meter 13 | 64 | 73 | -9 |
| Meter 14 | 62 | 63 | -1 |
| Meter 15* | 56 | 65 | -9 |
| Meter 16* | 62 | 69 | -7 |
| Meter 17 | 73 | 74 | -1 |
| Meter 18* | 56 | 55 | 1 |
| Meter 19* | 63 | 71 | -8 |
| Meter 20 | 79 | 76 | 3 |
| Meter 21 | 67 | 70 | -3 |
| Meter 22 | 89 | 70 | 19 |
| Meter 23 | 72 | 77 | -5 |
| Meter 24 | 69 | 73 | -4 |

‡ Data provided by Entergy from ATI

* Results edited to remove outside noise.

Some of the data collected on April 16 had some extraneous noise during the siren sounding. To avoid this noise from interfering with the calculation of the L10 some adjustments to the standard calculation process were made. Meter 15 had an obvious intrusion into the siren signal during the first one minute of the sounding (noted in the notes as an aircraft), so that was excluded from the analysis. For Meter 16 an aircraft was also noted during the sounding, so the first one minute was skipped for the analysis. During the signal recorded by Meter 18 another aircraft was noted, increasing the noise level during most of the signal. Only the last 90 seconds were used to calculate the L10. Finally, the signal recorded by Meter 19 had extra noise during the last section of the signal, so the first three minutes were used without skipping the first 30 seconds as usual in order to avoid the extraneous noise.

**Meteorological Measurement Results**

The weather on both collection days had fairly low winds with little cloud cover and mild temperatures. The meteorological instruments collected the wind speed and direction, temperature, humidity, and barometric pressure every five seconds. From this data BRRC determined the average weather conditions during the test. The full four minutes of weather data were used to be consistent for every site and it represents the full weather conditions during the soundings. For temperature and humidity and wind speed this was accomplished by simply averaging the values during the sounding period. The same was true for the barometric pressure. However, that metric was so stable as to not warrant any statistical analysis. Also, the pressure sensor for the Meter 14 appears to have failed so no data on pressure is provided for that location. There is some variation from site to site of the barometric pressure. This variation is closely related to the elevation of that location and is less a function of the local weather conditions.

For the wind direction the problem is more difficult. Not only does the wind direction wrap around 360 degrees, averaging two directions does not necessarily provide a true direction where the wind came from. Instead, BRRC selected the median value, or the value that separates the higher half of the data from the lower half. Table 3 and Table 4 provide the complete results from these measurements, Together with some statistical measurements to help identify the variability. Note that for these tables a range of wind directions was denoted with a dash. For example, the Meter 01 on April 15$^{th}$ where the wind direction swung from 0 degrees to 135 degrees is written as 0-135. For cases where there were two distinct wind directions the slash symbol is used. 36/319 therefore means that the wind shifted between 36 degrees and 319 degrees. Finally, when the wind did not have any identifiable direction it is simply marked down as VAR for variable.

**Table 3**. Weather Station Results from the Full Siren System Test on April 15, 2008

| | Wind Direction (magnetic) | | Wind Speed (MPH) | | | Temperature (deg F) | | Relative Humidity (%) | | Atmospheric Pressure (kPa) |
|---|---|---|---|---|---|---|---|---|---|---|
| Meter | MEDIAN | STD | AVG | MAX | STD | AVG | STD | AVG | STD | AVG |
| Meter 01 | 0-135 | 100.8 | 3.0 | 6.5 | 1.2 | 49.3 | 1.2 | 29.1 | 0.6 | 99.8 |
| Meter 02 | 285-105 | 47.7 | 5.1 | 13.5 | 2.1 | 49.2 | 1.1 | 26.9 | 0.6 | 100.4 |
| Meter 03 | 311 | 20.9 | 7.4 | 11.5 | 2.1 | 47.5 | 0.5 | 31.2 | 0.8 | 101.5 |
| Meter 04 | 90-150 | 60.1 | 2.2 | 4.6 | 1.1 | 52.8 | 1.3 | 29.6 | 1.8 | 101.9 |
| Meter 05 | 325 | 23.6 | 5.6 | 10.7 | 1.7 | 48.4 | 0.5 | 27.5 | 0.7 | 101.2 |
| Meter 06 | VAR | 176.5 | 2.4 | 5.8 | 1.0 | 51.5 | 1.6 | 26.9 | 0.6 | 100.9 |
| Meter 07 | 284 | 44.5 | 2.7 | 4.6 | 1.1 | 51.8 | 1.3 | 19.7 | 0.6 | 101.5 |
| Meter 08 | 22 | 49.6 | 3.3 | 7.0 | 1.8 | 50.0 | 1.3 | 24.8 | 1.3 | 100.5 |
| Meter 09 | 36/319 | 46.1 | 2.2 | 4.8 | 1.1 | 50.3 | 1.1 | 26.8 | 0.5 | 101.5 |
| Meter 10 | 54 | 56.3 | 1.7 | 3.7 | 1.0 | 48.6 | 0.9 | 29.7 | 1.3 | 100.5 |
| Meter 11 | 166 | 35.2 | 3.4 | 6.0 | 1.2 | 47.4 | 0.6 | 31.9 | 0.5 | 100.2 |
| Meter 12 | 310 | 31.6 | 3.4 | 9.1 | 1.9 | 50.0 | 0.7 | 28.0 | 0.7 | 101.4 |
| Meter 13 | VAR | 129.5 | 2.0 | 5.9 | 1.2 | 51.5 | 1.3 | 28.6 | 0.6 | 100.5 |
| Meter 14 | 146 | 28.6 | 3.2 | 4.9 | 1.0 | 49.2 | 0.7 | 27.5 | 0.6 | -NA- |
| Meter 15 | 66/195 | 71.7 | 2.5 | 5.8 | 1.4 | 47.5 | 1.5 | 26.8 | 0.5 | 98.9 |
| Meter 16 | VAR | 98.8 | 2.6 | 5.5 | 1.7 | 49.5 | 1.3 | 25.7 | 0.7 | 99.5 |
| Meter 17 | 39 | 44.9 | 3.2 | 5.9 | 1.7 | 51.3 | 1.7 | 30.7 | 1.5 | 101.9 |
| Meter 18 | 75-150 | 99.3 | 3.7 | 7.1 | 1.7 | 47.3 | 1.4 | 28.5 | 1.1 | 98.7 |
| Meter 19 | 36 | 29.8 | 3.2 | 6.5 | 1.4 | 46.6 | 0.7 | 27.4 | 0.6 | 99.1 |
| Meter 20 | 113-339 | 94.4 | 1.9 | 4.7 | 1.2 | 50.3 | 1.7 | 26.5 | 1.3 | 99.4 |
| Meter 21 | 35 | 49.3 | 3.2 | 7.4 | 1.5 | 48.8 | 1.4 | 36.3 | 0.9 | 100.3 |
| Meter 22 | 63/265 | 83.3 | 2.6 | 5.7 | 1.4 | 45.2 | 1.1 | 33.4 | 0.8 | 98.5 |
| Meter 23 | 128 | 24.7 | 2.7 | 6.3 | 1.5 | 49.7 | 1.3 | 30.5 | 1.5 | 99.2 |
| Meter 24 | 270 - 90 | 43.2 | 3.8 | 9.5 | 1.8 | 49.3 | 0.6 | 31.3 | 0.5 | 101.7 |

**Table 4.** Weather Station Results from the Full Siren System Test on April 16, 2008

| | Wind Direction (magnetic) | | Wind Speed (MPH) | | | Temperature (deg F) | | Relative Humidity (%) | | Atmospheric Pressure (kPa) |
|---|---|---|---|---|---|---|---|---|---|---|
| Meter | MEDIAN | STD | AVG | MAX | STD | AVG | STD | AVG | STD | AVG |
| Meter 01 | 279 | 29 | 1.7 | 3.5 | 1.0 | 58.3 | 1.2 | 19.9 | 0.5 | 100.2 |
| Meter 02 | VAR | 95 | 1.7 | 5.4 | 1.3 | 57.9 | 1.9 | 21.9 | 1.4 | 100.8 |
| Meter 03 | 152 | 17 | 2.1 | 3.5 | 0.8 | 59.2 | 1.4 | 25.8 | 1.4 | 102.1 |
| Meter 04 | 85 | 9 | 3.2 | 5.8 | 1.0 | 56.9 | 0.6 | 20.8 | 0.8 | 102.2 |
| Meter 05 | 287 | 27 | 1.6 | 3.6 | 1.2 | 55.8 | 1.3 | 21.5 | 0.5 | 101.5 |
| Meter 06 | 176 | 46 | 1.6 | 3.8 | 1.2 | 58.9 | 2.3 | 25.0 | 1.9 | 101.2 |
| Meter 07 | 252 | 25 | 2.7 | 4.2 | 0.8 | 57.5 | 0.6 | 13.8 | 0.4 | 101.9 |
| Meter 08 | 49 | 33 | 2.7 | 6.4 | 1.4 | 56.9 | 1.1 | 15.7 | 0.6 | 100.8 |
| Meter 09 | 75-360 | 90 | 2.7 | 5.2 | 1.0 | 59.3 | 0.5 | 16.3 | 1.0 | 101.9 |
| Meter 10 | 275 | 30 | 1.5 | 3.9 | 1.1 | 56.9 | 1.0 | 22.2 | 0.5 | 100.9 |
| Meter 11 | 60-240 | 53 | 2.4 | 5.2 | 1.1 | 55.3 | 0.7 | 26.9 | 0.5 | 100.5 |
| Meter 12 | 27 | 39 | 1.5 | 4.3 | 1.1 | 58.4 | 1.7 | 18.3 | 0.7 | 101.8 |
| Meter 13 | 0-165 | 46 | 1.3 | 2.9 | 0.8 | 59.0 | 1.5 | 23.8 | 0.5 | 100.9 |
| Meter 14 | 139 | 7 | 2.1 | 5.4 | 1.0 | 56.8 | 0.4 | 24.6 | 1.1 | -NA- |
| Meter 15 | 200-300 | 47 | 2.8 | 6.5 | 1.6 | 54.8 | 0.7 | 22.4 | 0.6 | 99.2 |
| Meter 16 | 134 | 2 | 0.9 | 2.8 | 1.0 | 59.4 | 0.9 | 16.8 | 0.4 | 100.1 |
| Meter 17 | 300-60 | 29 | 1.9 | 3.9 | 0.9 | 59.6 | 2.1 | 23.3 | 1.0 | 102.2 |
| Meter 18 | 30-200 | 49 | 1.4 | 3.4 | 1.0 | 59.4 | 1.8 | 20.6 | 0.7 | 99.0 |
| Meter 19 | 90-300 | 76 | 2.6 | 4.6 | 1.1 | 53.7 | 0.6 | 18.4 | 0.4 | 99.5 |
| Meter 20 | 300-135 | 49 | 1.1 | 2.8 | 0.7 | 57.0 | 1.2 | 19.1 | 0.6 | 99.8 |
| Meter 21 | 256 | 20 | 3.1 | 4.8 | 0.8 | 56.2 | 0.5 | 26.1 | 0.7 | 100.7 |
| Meter 22 | 58 | 24 | 2.3 | 4.6 | 1.0 | 54.9 | 0.7 | 23.2 | 0.5 | 99.2 |
| Meter 23 | 90-210 | 45 | 1.8 | 4.4 | 1.0 | 59.8 | 1.3 | 19.8 | 1.1 | 99.5 |
| Meter 24 | 110 | 20 | 2.0 | 3.7 | 1.0 | 56.9 | 1.3 | 34.5 | 1.3 | 102.1 |

### Measurement Locations

An initial set of measurement locations were selected before the testing began. However, as the testers arrived at their locations they were asked to make reasonable assessments of the local ambient noise environment and decide if the needed to more. In addition, after reviewing some of the noise data collected on April 15, 2008 some of the measurement locations were moved to try and limit the background noise levels. Table 5 provides the complete Latitude and Longitude of the measurement sites for both days.

**Table 5.** Coordinates of the Measurement Locations

| | April 15, 2008 | | April 16, 2008 | |
|---|---|---|---|---|
| **Site** | **Latitude (decimal degrees)** | **Longitude (decimal degrees)** | **Latitude (decimal degrees)** | **Longitude (decimal degrees)** |
| Meter 01 | 41.33196 | -73.78555 | 41.33196 | -73.78555 |
| Meter 02 | 41.31934 | -73.85642 | 41.31939 | -73.85641 |
| Meter 03 | 41.31393 | -73.93043 | 41.30983 | -73.92823 |
| Meter 04 | 41.25121 | -73.94531 | 41.25136 | -73.94488 |
| Meter 05 | 41.16842 | -73.83306 | 41.16983 | -73.83111 |
| Meter 06 | 41.21783 | -73.79970 | 41.21698 | -73.79534 |
| Meter 07 | 41.26170 | -73.91910 | 41.26184 | -73.91908 |
| Meter 08 | 41.37214 | -73.85717 | 41.37214 | -73.85717 |
| Meter 09 | 41.42510 | -73.94748 | 41.42515 | -73.94743 |
| Meter 10 | 41.33949 | -73.91590 | 41.33940 | -73.91585 |
| Meter 11 | 41.33582 | -73.94310 | 41.33668 | -73.94069 |
| Meter 12 | 41.15904 | -73.93201 | 41.15904 | -73.93201 |
| Meter 13 | 41.15892 | -74.02097 | 41.15896 | -74.02107 |
| Meter 14 | 41.15454 | -74.10072 | 41.15262 | -74.09498 |
| Meter 15 | 41.21367 | -74.12081 | 41.21367 | -74.12077 |
| Meter 16 | 41.20102 | -74.05010 | 41.19719 | -74.05395 |
| Meter 17 | 41.22960 | -73.99584 | 41.22960 | -73.99590 |
| Meter 18 | 41.23944 | -74.06483 | 41.23097 | -74.06831 |
| Meter 19 | 41.28693 | -74.07508 | 41.28537 | -74.07615 |
| Meter 20 | 41.27780 | -74.11977 | 41.27780 | -74.11977 |
| Meter 21 | 41.32096 | -74.12333 | 41.32501 | -74.12525 |
| Meter 22 | 41.32031 | -74.08997 | 41.31567 | -74.08117 |
| Meter 23 | 41.35689 | -74.10032 | 41.35642 | -74.09908 |
| Meter 24 | 41.36626 | -73.96844 | 41.36626 | -73.96844 |

All Coordinates use the WGS 84 Datum

The proximity of a siren to a measurement location is crucial in understanding the propagation of sound. Therefore, BRRC has calculated the distance and heading to the nearest two sirens for each sound level meter. These results are provided in Table 6.

**Table 6. Distance and Heading for Each Meter Location to the Nearest Sirens.**

| April 15, 2008 | | | | April 16, 2008 | | | |
|---|---|---|---|---|---|---|---|
| Meter | Closest Siren | Distance (ft.) | Heading (Degrees Mag.) | Meter | Closest Siren | Distance (ft.) | Heading (Degrees Mag.) |
| Meter 01 | Siren 340 | 1555 | 168 | Meter 01 | Siren 340 | 1555 | 168 |
| | Siren 401 | 4602 | 315 | | Siren 401 | 4602 | 315 |
| Meter 02 | Siren 357 | 3024 | 336 | Meter 02 | Siren 357 | 3009 | 335 |
| | Siren 333 | 3159 | 71 | | Siren 333 | 3150 | 72 |
| Meter 03 | Siren 338 | 3964 | 302 | Meter 03 | Siren 328 | 3463 | 167 |
| | Siren 328 | 5060 | 164 | | Siren 338 | 5360 | 312 |
| Meter 04 | Siren 345 | 3048 | 59 | Meter 04 | Siren 345 | 2916 | 58 |
| | Siren 336 | 4076 | 298 | | Siren 336 | 4156 | 296 |
| Meter 05 | Siren 303 | 1518 | 254 | Meter 05 | Siren 303 | 2200 | 245 |
| | Siren 302 | 4831 | 182 | | Siren 302 | 5393 | 187 |
| Meter 06 | Siren 308 | 2423 | 169 | Meter 06 | Siren 308 | 2221 | 200 |
| | Siren 364 | 3742 | 327 | | Siren 364 | 4723 | 317 |
| Meter 07 | Siren 324 | 2121 | 133 | Meter 07 | Siren 324 | 2154 | 134 |
| | Siren 326 | 5113 | 326 | | Siren 326 | 5072 | 326 |
| Meter 08 | Siren 403 | 3057 | 240 | Meter 08 | Siren 403 | 3057 | 240 |
| | Siren 410 | 4049 | 348 | | Siren 410 | 4049 | 348 |
| Meter 09 | Siren 411 | 1658 | 253 | Meter 09 | Siren 411 | 1675 | 252 |
| | Siren 412 | 9829 | 130 | | Siren 412 | 9831 | 130 |
| Meter 10 | Siren 347 | 3865 | 177 | Meter 10 | Siren 347 | 3833 | 177 |
| | Siren 405 | 4993 | 350 | | Siren 405 | 5026 | 350 |
| Meter 11 | Siren 338 | 5836 | 178 | Meter 11 | Siren 338 | 6169 | 184 |
| | Siren 347 | 8016 | 108 | | Siren 347 | 7504 | 112 |
| Meter 12 | Siren 225 | 3529 | 276 | Meter 12 | Siren 225 | 3529 | 276 |
| | Siren 220 | 4813 | 188 | | Siren 220 | 4813 | 188 |
| Meter 13 | Siren 232 | 4156 | 154 | Meter 13 | Siren 238 | 4172 | 345 |
| | Siren 238 | 4192 | 344 | | Siren 232 | 4180 | 153 |
| Meter 14 | Siren 236 | 6025 | 53 | Meter 14 | Siren 236 | 5379 | 37 |
| | Siren 234 | 8502 | 82 | | Siren 234 | 7078 | 75 |
| Meter 15 | Siren 204 | 4304 | 7 | Meter 15 | Siren 204 | 4303 | 7 |
| | Siren 243 | 5565 | 203 | | Siren 243 | 5569 | 203 |
| Meter 16 | Siren 209 | 3233 | 233 | Meter 16 | Siren 209 | 1634 | 251 |
| | Siren 208 | 6256 | 144 | | Siren 208 | 5966 | 128 |
| Meter 17 | Siren 211 | 3503 | 57 | Meter 17 | Siren 211 | 3517 | 57 |
| | Siren 223 | 4026 | 219 | | Siren 223 | 4016 | 219 |
| Meter 18 | Siren 206 | 5902 | 118 | Meter 18 | Siren 244 | 4900 | 260 |
| | Siren 244 | 6971 | 236 | | Siren 206 | 6148 | 87 |
| Meter 19 | Siren 122 | 5326 | 224 | Meter 19 | Siren 122 | 4720 | 227 |
| | Siren 109 | 10365 | 197 | | Siren 109 | 9735 | 196 |
| Meter 20 | Siren 110 | 1825 | 161 | Meter 20 | Siren 110 | 1825 | 161 |
| | Siren 121 | 8211 | 262 | | Siren 121 | 8211 | 262 |
| Meter 21 | Siren 103 | 4012 | 8 | Meter 21 | Siren 103 | 2733 | 24 |
| | Siren 106 | 4866 | 237 | | Siren 106 | 5422 | 221 |
| Meter 22 | Siren 107 | 3220 | 90 | Meter 22 | Siren 107 | 1860 | 25 |
| | Siren 103 | 9549 | 296 | | Siren 108 | 12271 | 104 |
| Meter 23 | Siren 105 | 1231 | 211 | Meter 23 | Siren 105 | 1314 | 227 |
| | Siren 116 | 8321 | 3 | | Siren 116 | 8481 | 0 |
| Meter 24 | Siren 111 | 2766 | 26 | Meter 24 | Siren 111 | 2766 | 26 |
| | Siren 113 | 6422 | 186 | | Siren 113 | 6422 | 186 |

**Individual Measurements**

The following sections will provide the results from each individual measurement location in detail. For each location and each measurement day there will be an aerial photograph of the location (from Google Earth), the hand written data sheet for that site, a plot showing both the C-weighted time history and the combined 500Hz and 630Hz third octave band time history, and the time history of the wind speed and wind direction. For the wind direction, BRRC used the concept of a wrapped direction to produce some directions that have a negative heading. For example, if the wind direction swings from 359 degrees to 2 degrees, it looks better on a graph if that swing is actually from -1 degree to 2 degrees.

**Meter 01, April 15, 2008**

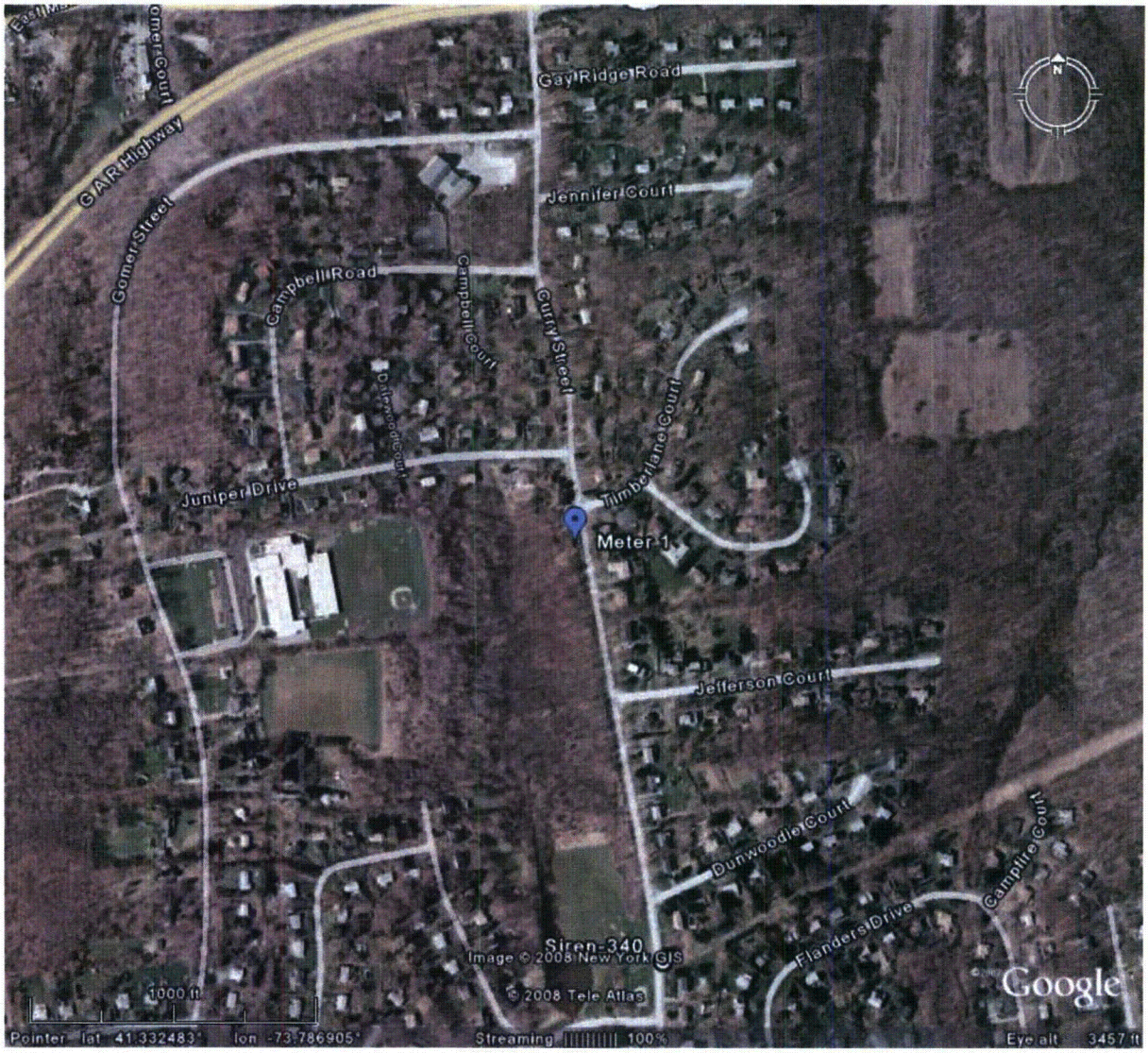



**Figure 1.** Aerial Photograph of Meter 1 Location, April 15, 2008.

SITE # 1

## Indian Point Siren Test Data Sheet

To be filled in be at the EOF by support staff

Date: 4/15/08 Time: _____

SLM Model: 831 SLM Serial Number: 1200 / weather 570055

Tester's Name: MJ

GPS Coordinates: 73° 47' 8" West 41° 19' 55" North

Checked Battery? (Yes) No

Checked Clock? (Yes) No

Memory Checked? (Yes) No

DOWNLOADED SLM ✓ WEATHER ✓

Calibration level before test: 94.0 dBC

30 second calibration tone recorded before test? (Yes) No

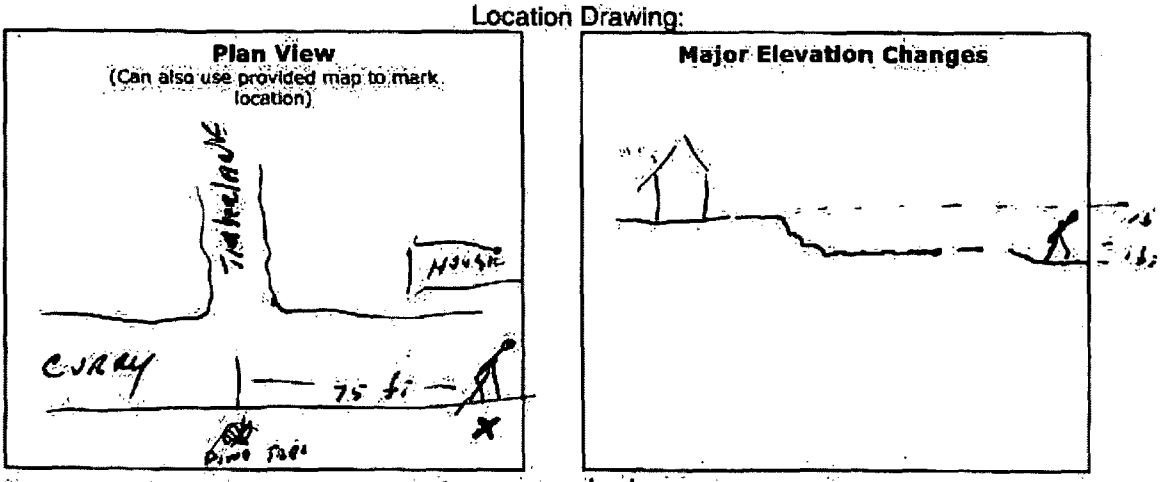
Calibration level after test: 94.0 dBC

30 second calibration tone recorded after test? (Yes) No

Calibrator Model: B+K 4231 Calibrator SN: 2575552

To be filled in be by the field crew at the site

Location Drawing:




Measurement Location description: Curry - Timberlane on curry

Microphone height: 5 ft. Wind Dir: 349 deg.

Photos Taken? (Yes) No Wind Spd: 4.1 mph

Meter Recording? (Yes) No Temp: 49.2 °F

Weather Station on and wind cover removed? (Yes) No

Ambient noise level before test: 63 dBC

Maximum level observed during the test: 86.4 dBC

Could you hear the sirens? (Yes) No

Ambient noise level after test: 57.3 / 51.6 dBC

Notes about test (including background noise and noise intrusions during the test):
TRAFFIC NOISE CARS AND TRUCKS - CROWS IN TREES

Tester's Signature: John Conroy

**Figure 2.** Data Sheet for Meter 1, April 15, 2008

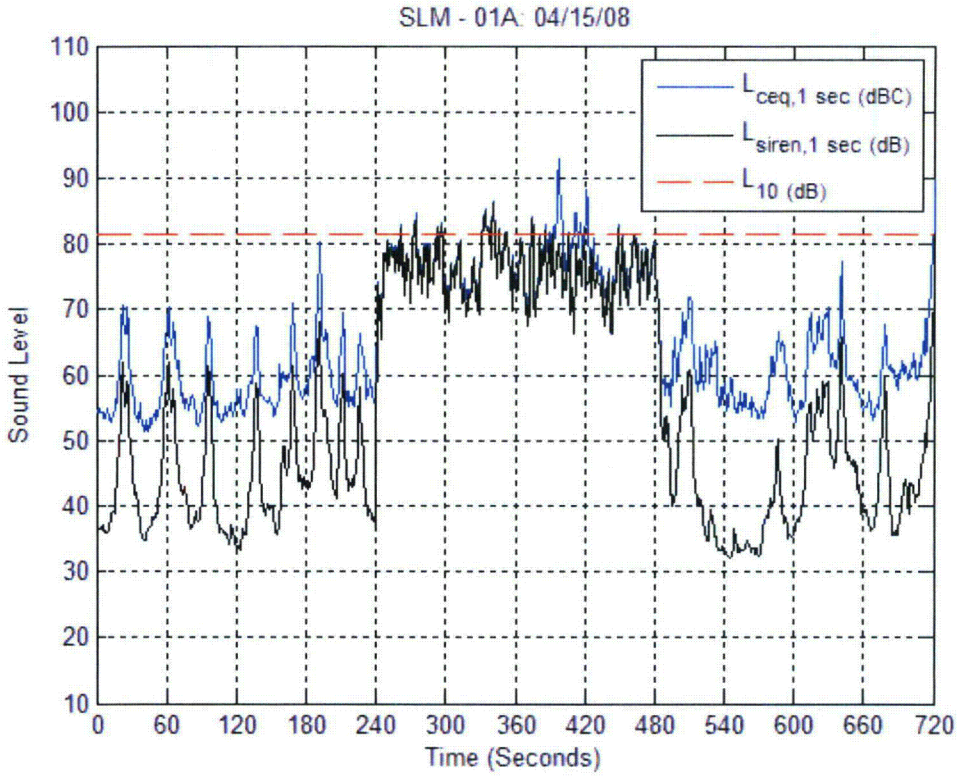



**Figure 3.** Time History Plot for Meter 1, April 15, 2008

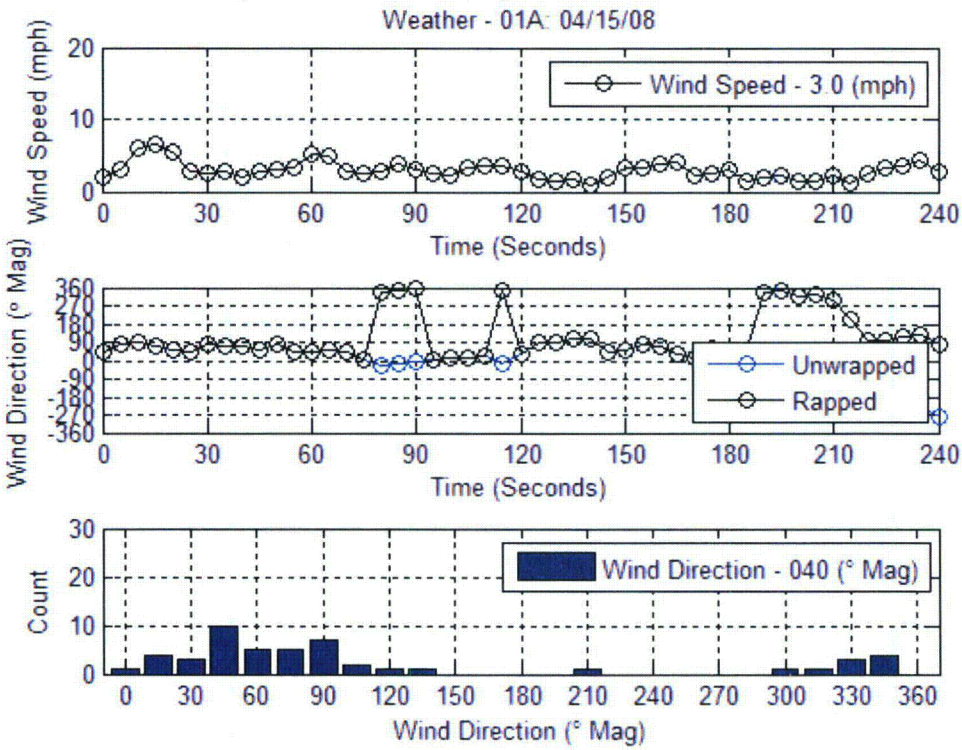



**Figure 4.** Weather Plots for Meter 1, April 15, 2008

**Meter 1, April 16, 2008**

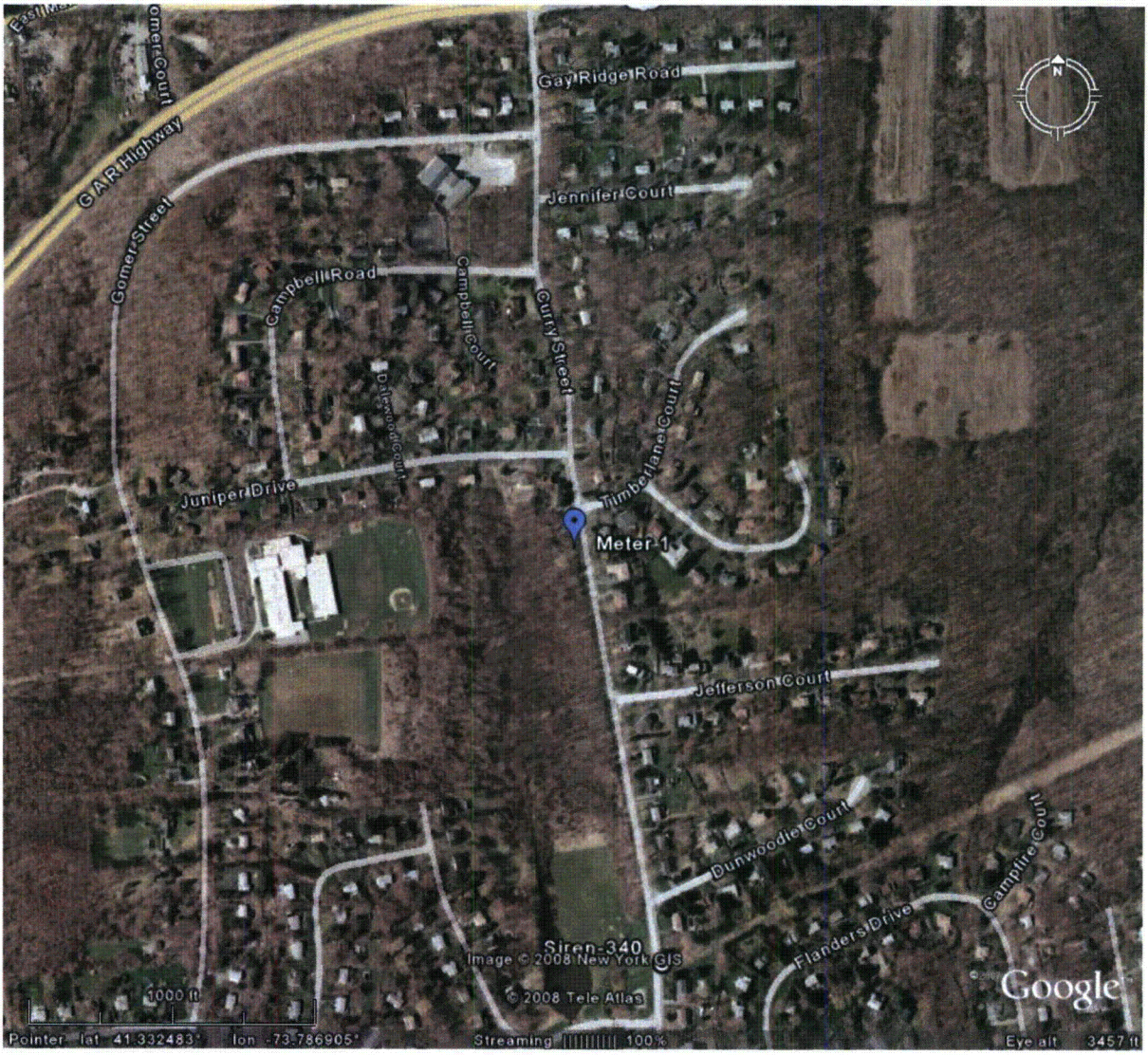



**Figure 5.** Aerial Photograph of Meter 1 Location, April 16, 2008.

SITE #1

**Indian Point Siren Test Data Sheet**

To be filled in by at the EOF by support staff

Date: 4/16/08 Time: 570055

SLM Model: 831 SLM Serial Number: 1200 \WEATHER

Tester's Name: MSI John Curry

GPS Coordinates: West North

Checked Battery? (Yes) No 105.2

Checked Clock? (Yes) No

Memory Checked? (Yes) No

DOWNLOADED SLM1/WEATHER1

Calibration level before test: 94.0 dBC

30 second calibration tone recorded before test? (Yes) No

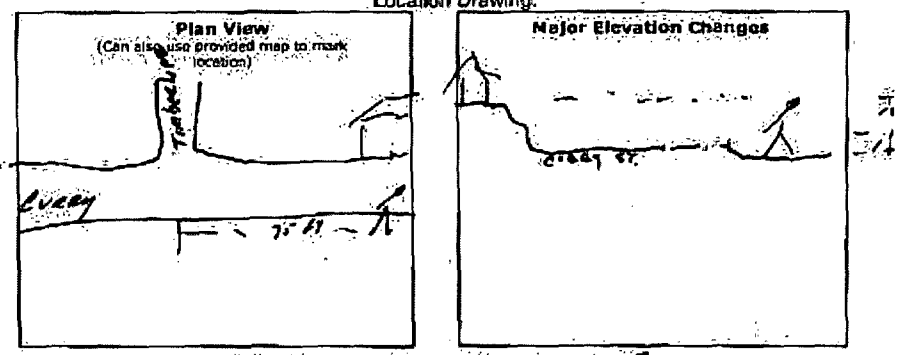
Calibration level after test: 94.0 dBC

30 second calibration tone recorded after test? (Yes) No

Calibrator Model: B&K 4231 Calibrator SN: 2575552

To be filled in be by the field crew at the site

Location Drawing:




Measurement Location description: Timberline + Curry

Microphone height: 5 ft. Wind Dir: 332 deg.

Photos Taken? (Yes) No Wind Spd: 2.1 mph

Meter Recording? (Yes) No Temp: 58.9 °F

Weather Station on and wind cover removed? (Yes) No

Ambient noise level before test: 48 dBC

Maximum level observed during the test: 84.8 dBC

Could you hear the sirens? (Yes) No

Ambient noise level after test: 47 dBC

Notes about test (including background noise and noise intrusions during the test):
QUIET BACKGROUND BIRDS + TRAFFIC ON CURRY ST
(SEE PINE SHOT)

Tester's Signature: John Curry

**Figure 6.** Data Sheet for Meter 1, April 16, 2008

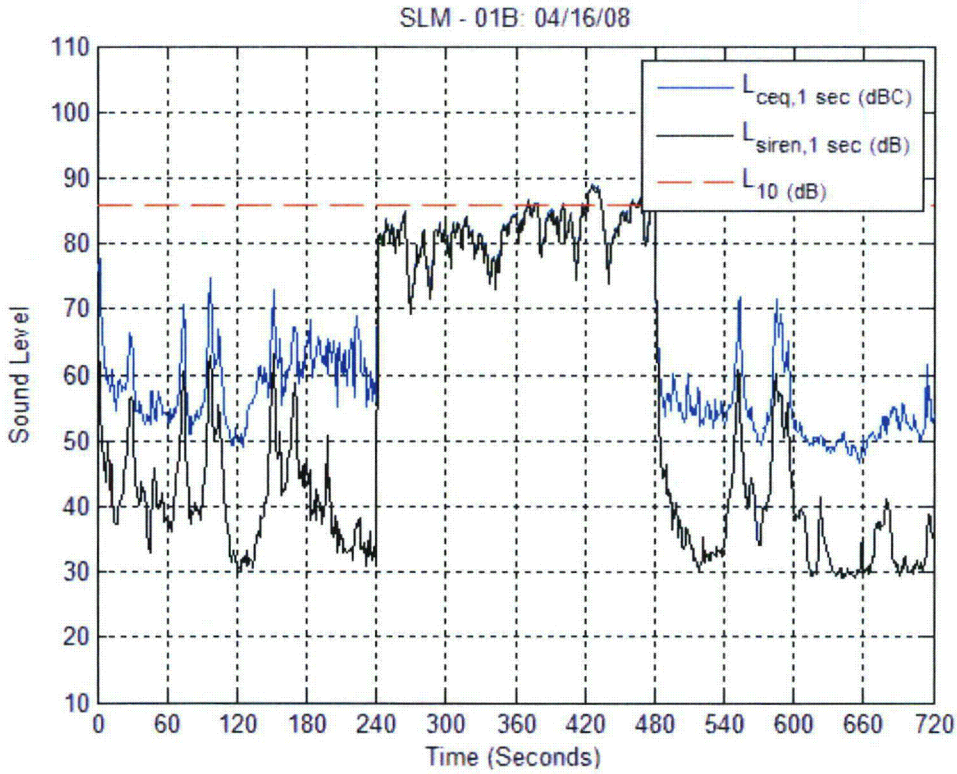



**Figure 7.** Time History Plot for Meter 1, April 16, 2008

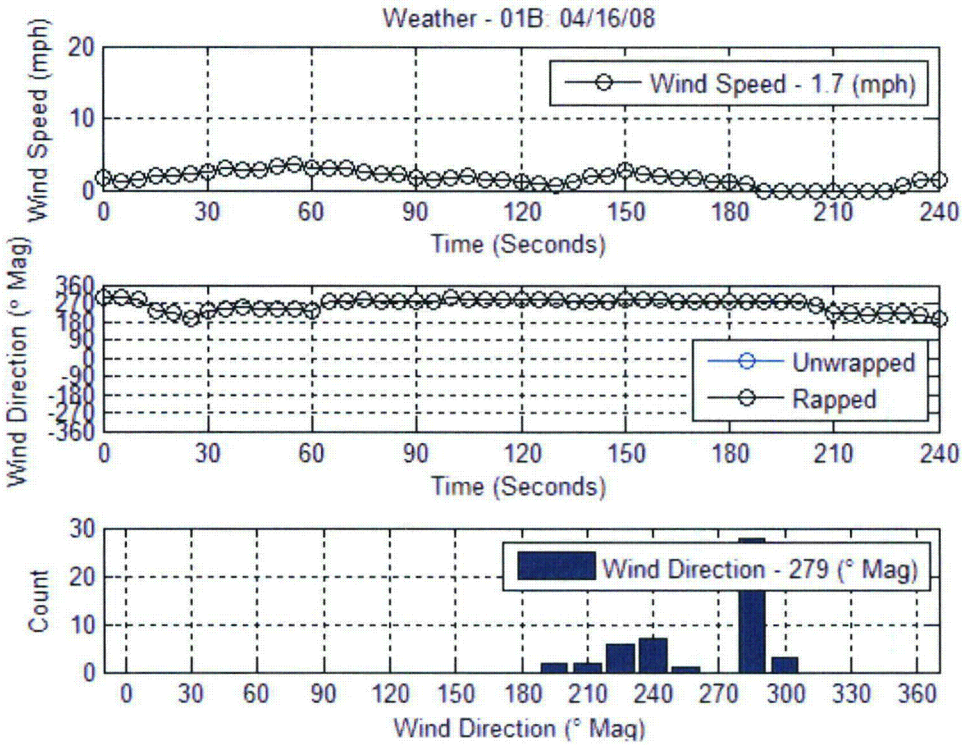



**Figure 8.** Weather Plots for Meter 1, April 16, 2008

**Meter 2, April 15, 2008**

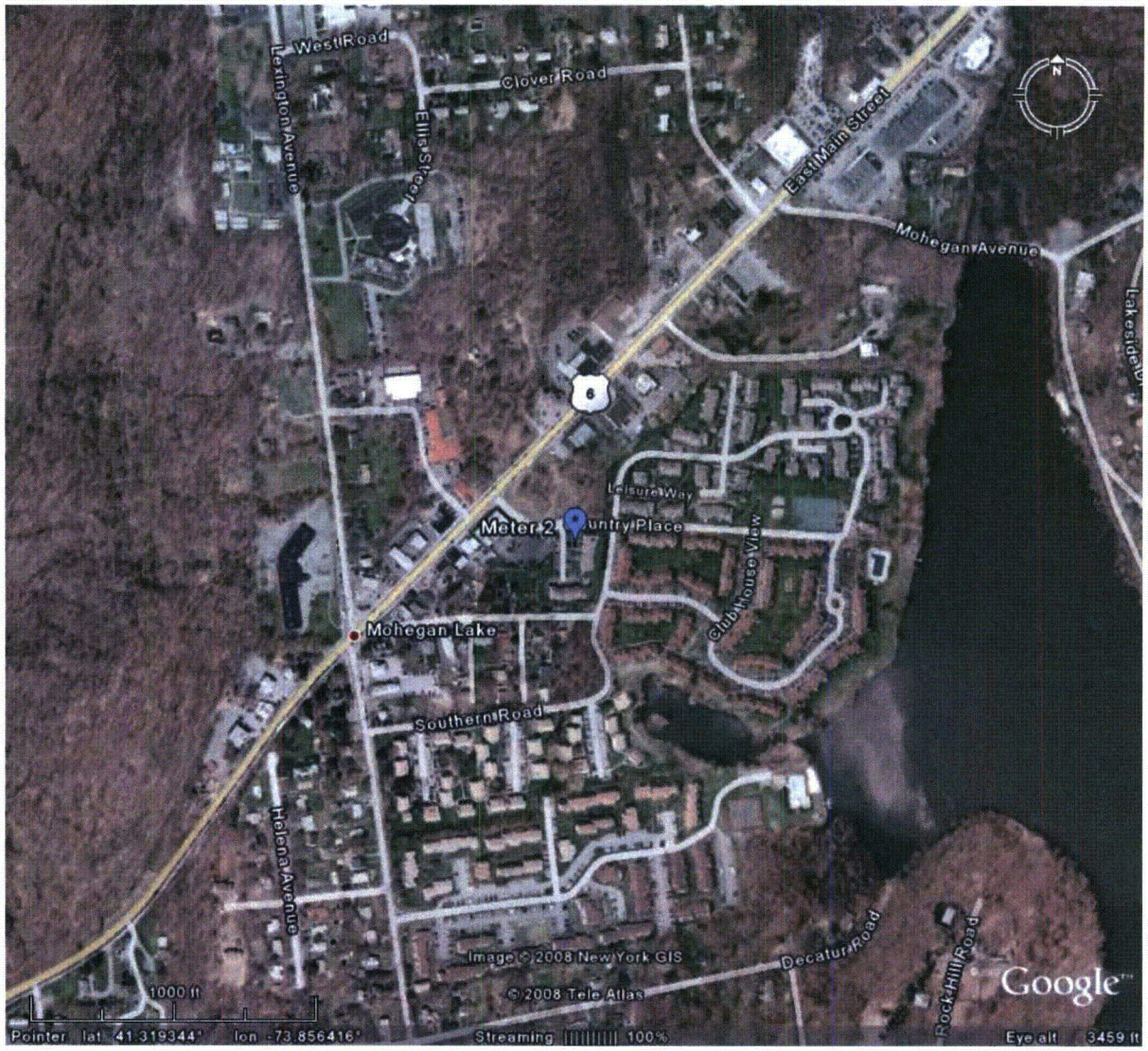



**Figure 9.** Aerial Photograph of Meter 2 Location, April 15, 2008.

**Indian Point Siren Test Data Sheet** SITE 2

To be filled in be at the EOF by support staff

Date: 4/15/08 Time: 7:15
SLM Model: 831 SLM Serial Number: 0001417 / weather 56.9 °F
Tester's Name: DOREEN COSTABILE
GPS Coordinates: 73° 51' 23" West 41° 19' 10" North
Checked Battery? Yes No
Checked Clock? Yes No
Memory Checked? Yes No
DOWNLOADED SLM // WEATHER
Calibration level before test: 94.0 dBC
30 second calibration tone recorded before test? Yes No
Calibration level after test: 94.0 dBC
30 second calibration tone recorded after test? Yes No
Calibrator Model: B&K 4231 Calibrator SN: 2592139

To be filled in be by the field crew at the site

Location Drawing:

| Plan View (Can also use provided map to mark location) | Major Elevation Changes |
|---|---|
| GRASSY AREA NEAR 14 COUNTRY PLACE | |

Measurement Location description: CORNER OF OLD FARM LANE & COUNTRY PLACE
Microphone height: 5 ft. Wind Dir: 341 NNW deg.
Photos Taken? Yes No Wind Spd: 3 mph avg.
Meter Recording? Yes No Temp: 50 °F
Weather Station on and wind cover removed? Yes No
Ambient noise level before test: 67.9 dBC HIGHEST
Maximum level observed during the test: 90.8 dBC
Could you hear the sirens? Yes No
Ambient noise level after test: 65 dBC
Notes about test (including background noise and noise intrusions during the test):
COULD NOT SET UP AT ORIGINAL LOCATION DUE TO CONSTRUCTION
CHAIN SAW IN THE DISTANCE
MOSTLY CAR TRAFFIC, OCCASIONAL TRUCK
5 CARS WENT BY DURING ALARM, BUT NOT DURING HIGHEST READING
Tester's Signature: Doreen Costabile

**Figure 10.** Data Sheet for Meter 2, April 15, 2008

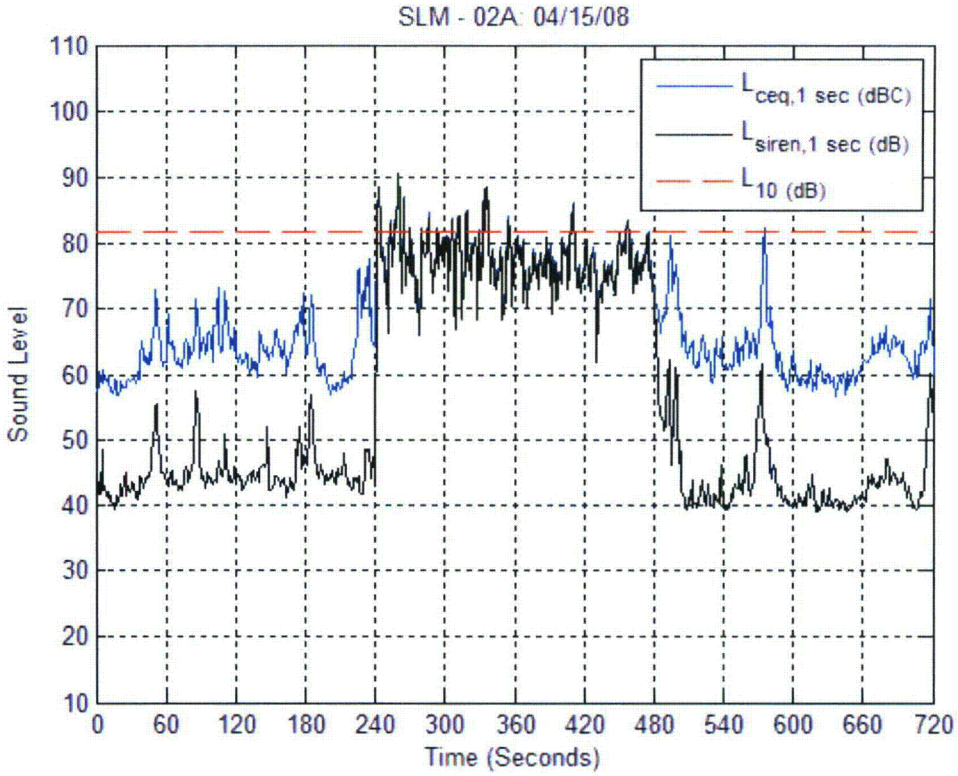



**Figure 11.** Time History Plot for Meter 2, April 15, 2008

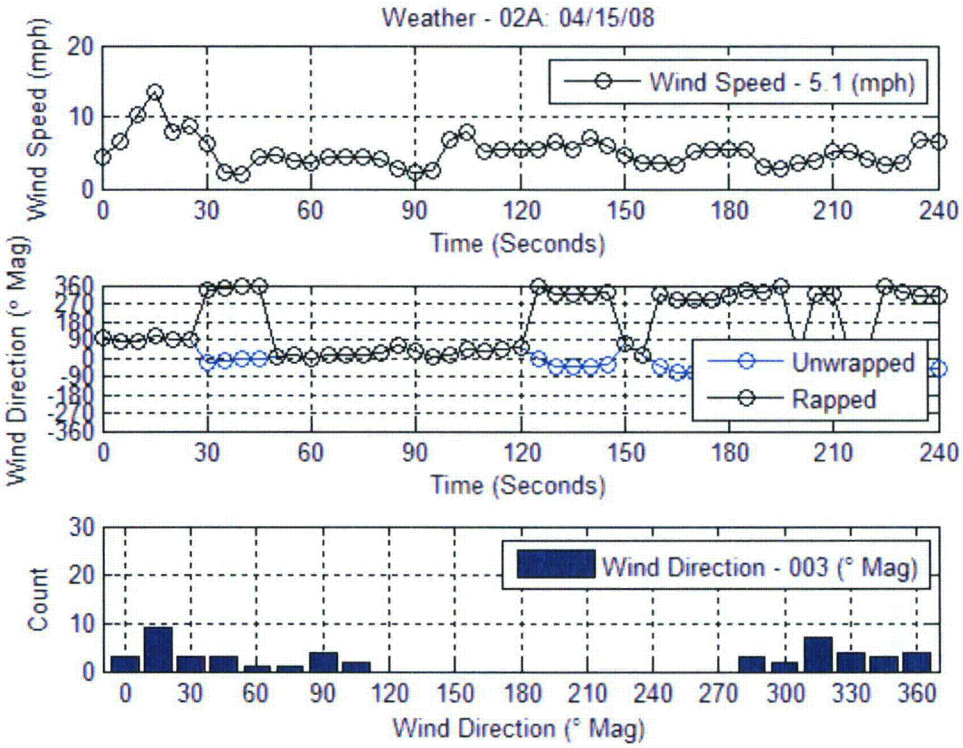



**Figure 12.** Weather Plots for Meter 2, April 15, 2008

**Meter 2, April 16, 2008**

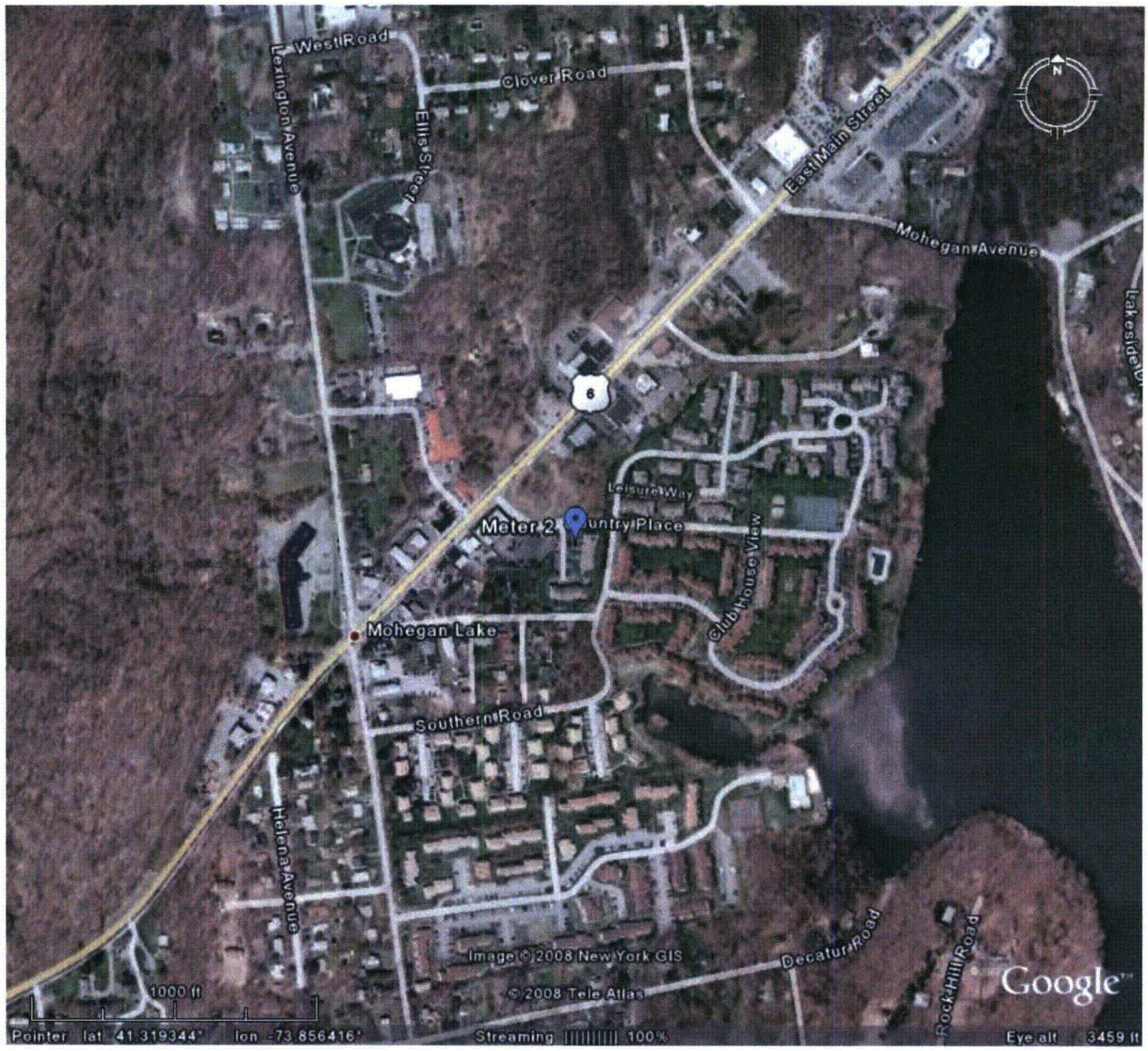



**Figure 13.** Aerial Photograph of Meter 2 Location, April 16, 2008.

SITE #2

## Indian Point Siren Test Data Sheet

----To be filled in be at the EOF by support staff----

Date: 4/16/08 Time: _____

SLM Model: 831 SLM Serial Number: 1417 \WEATHER 569908

Tester's Name: MJ \ DOREEN COSTABILE

GPS Coordinates: _____ West _____ North

Checked Battery? (Yes) No

Checked Clock? (Yes) No

Memory Checked? (Yes) No

DOWNLOADED SLM ✓ / WEATHER ✓

Calibration level before test: 94.0 dBC

30 second calibration tone recorded before test? (Yes) No

Calibration level after test: 94.0 dBC

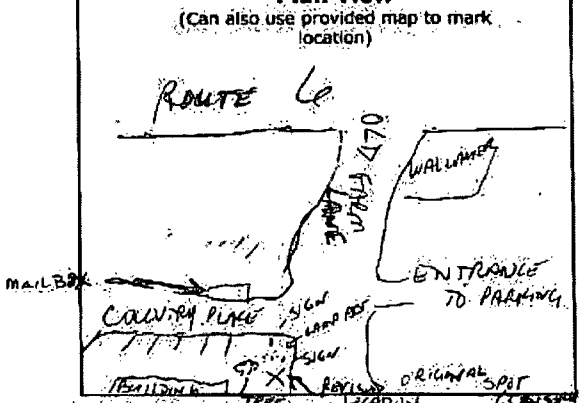
30 second calibration tone recorded after test? (Yes) No

Calibrator Model: B+K 4231 Calibrator SN: 2592139

----To be filled in be by the field crew at the site----

Location Drawing:

**Plan View**
(Can also use provided map to mark location)




**Major Elevation Changes**

Measurement Location description: CORNER OF COUNTRY PLACE AND OLD FARM LANE

Microphone height: 5 ft. Wind Dir: 340 NW deg.

Photos Taken? (Yes) No Wind Spd: 3.5 mph

Meter Recording? (Yes) No Temp: 58 °F

Weather Station on and wind cover removed? (Yes) No

Ambient noise level before test: 65 dBC

Maximum level observed during the test: 87.4 dBC

Could you hear the sirens? (Yes) No

Ambient noise level after test: 65 dBC

Notes about test (including background noise and noise intrusions during the test):
- WHEN METER SET TO RECORD, TRACTOR TRAILER CAME TO MAKE DELIVERY TO WALLAKER.
- WITHOUT CHAIN SAW IN THE DISTANCE FROM YESTERDAY AND NO TRAFFIC, AMBIENT NOISE LEVEL IS APPROX. 55
- OCCASIONAL CAR TRAFFIC
- 4 CARS PAST DURING TEST, NOT AT HIGHEST LEVEL

Tester's Signature: Doreen Costabile

- UPS TRUCK AND WALLAKER DELIVERY TRUCK OVER SIREN

**Figure 14.** Data Sheet for Meter 2, April 16, 2008

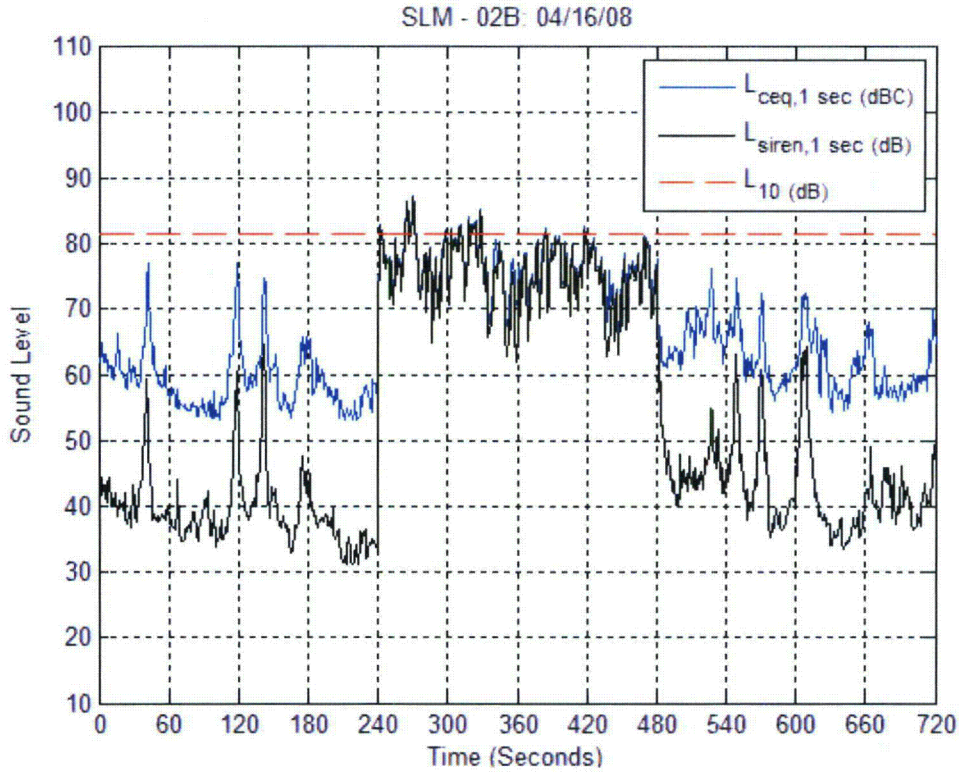



**Figure 15.** Time History Plot for Meter 2, April 16, 2008

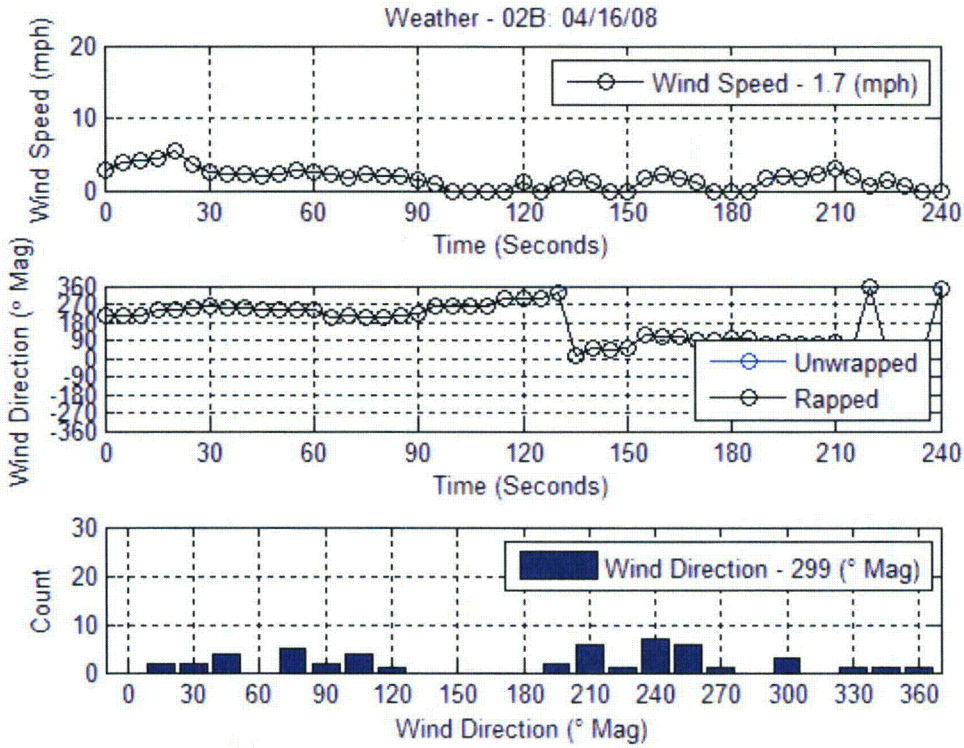



**Figure 16.** Weather Plots for Meter 2, April 16, 2008

**Meter 3, April 15, 2008**

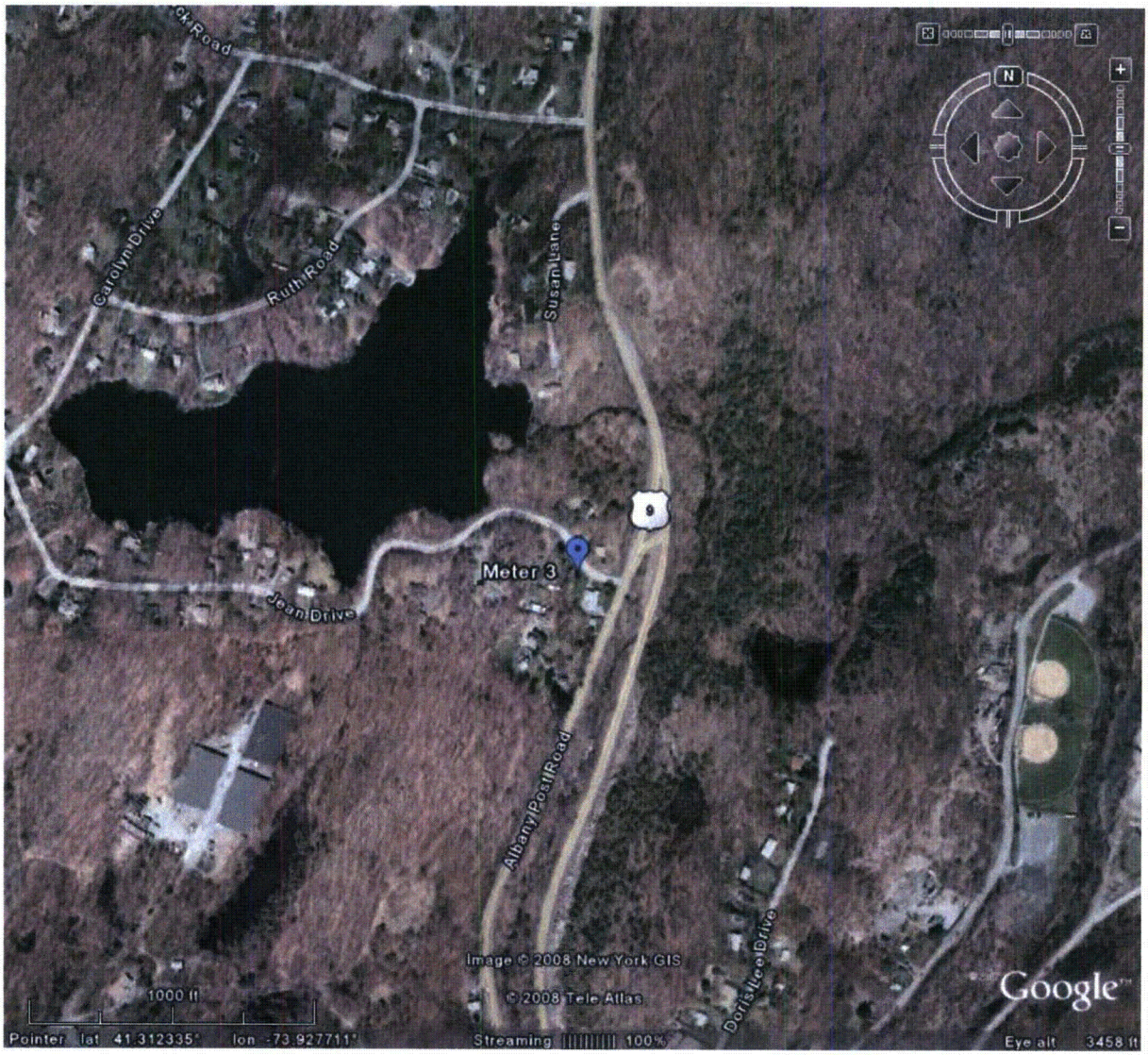



**Figure 17.** Aerial Photograph of Meter 3 Location, April 15, 2008.

## Indian Point Siren Test Data Sheet

To be filled in be at the EOF by support staff

Date: 4/15/08 Time: 7:13 am
SLM Model: 831 SLM Serial Number: 0001076 / weather 570050
Tester's Name:
GPS Coordinates: West North
Checked Battery? Yes No 92.9v
Checked Clock? Yes No
Memory Checked? Yes No
Calibration level before test: 94.0 dBC
30 second calibration tone recorded before test? Yes No
Calibration level after test: 94.0 dBC
30 second calibration tone recorded after test? Yes No
Calibrator Model: B&K 4231 Calibrator SN: 2592139

DOWNLOADED SLM / WEATHER 3

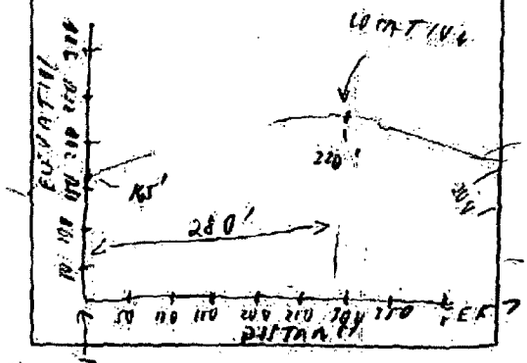
To be filled in be by the field crew at the site

Location Drawing:

**Plan View**
(Can also use provided map to mark location)

COORD
41° 18.85777 MINUTES
-73° 55.85191 MINUTES

**Major Elevation Changes**




Measurement Location description: TOP OF HILL
Microphone height: 5' ft.
Photos Taken? Yes No
Meter Recording? Yes No
Weather Station on and wind cover removed? Yes No
Ambient noise level before test: 65 dBC
Maximum level observed during the test: 83 dBC
Could you hear the sirens? Yes No
Ambient noise level after test: 65 dBC

Wind Dir: 301° deg.
Wind Spd: 3-8 mph
Temp: 42.8 °F

Notes about test (including background noise and noise intrusions during the test):
AMBIANT NOISE AT THIS LOCATION IS FROM TRAFFIC ON HWY 9

Tester's Signature: MIKE JEREY

**Figure 18.** Data Sheet for Meter 3, April 15, 2008

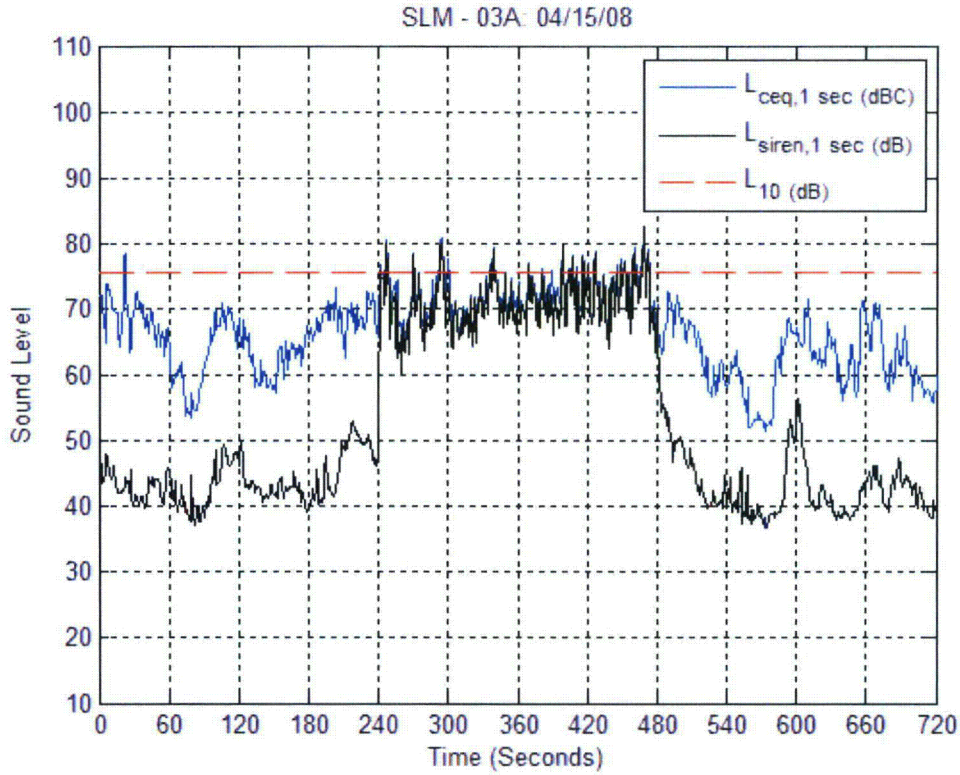



**Figure 19.** Time History Plot for Meter 3, April 15, 2008

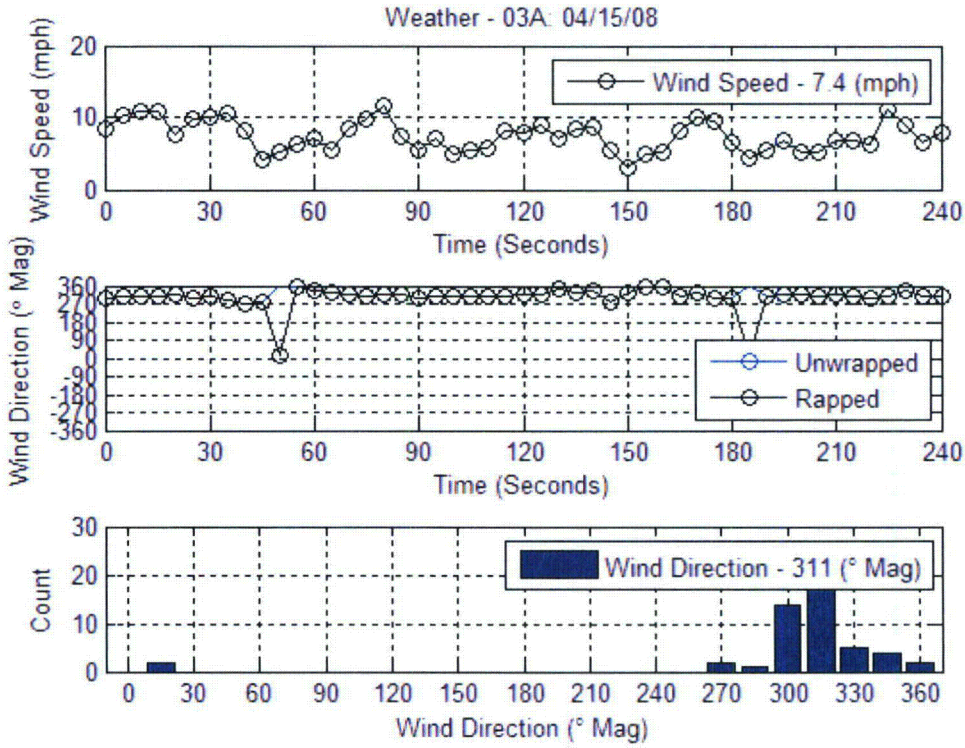



**Figure 20.** Weather Plots for Meter 3, April 15, 2008

**Meter 3, April 16, 2008**

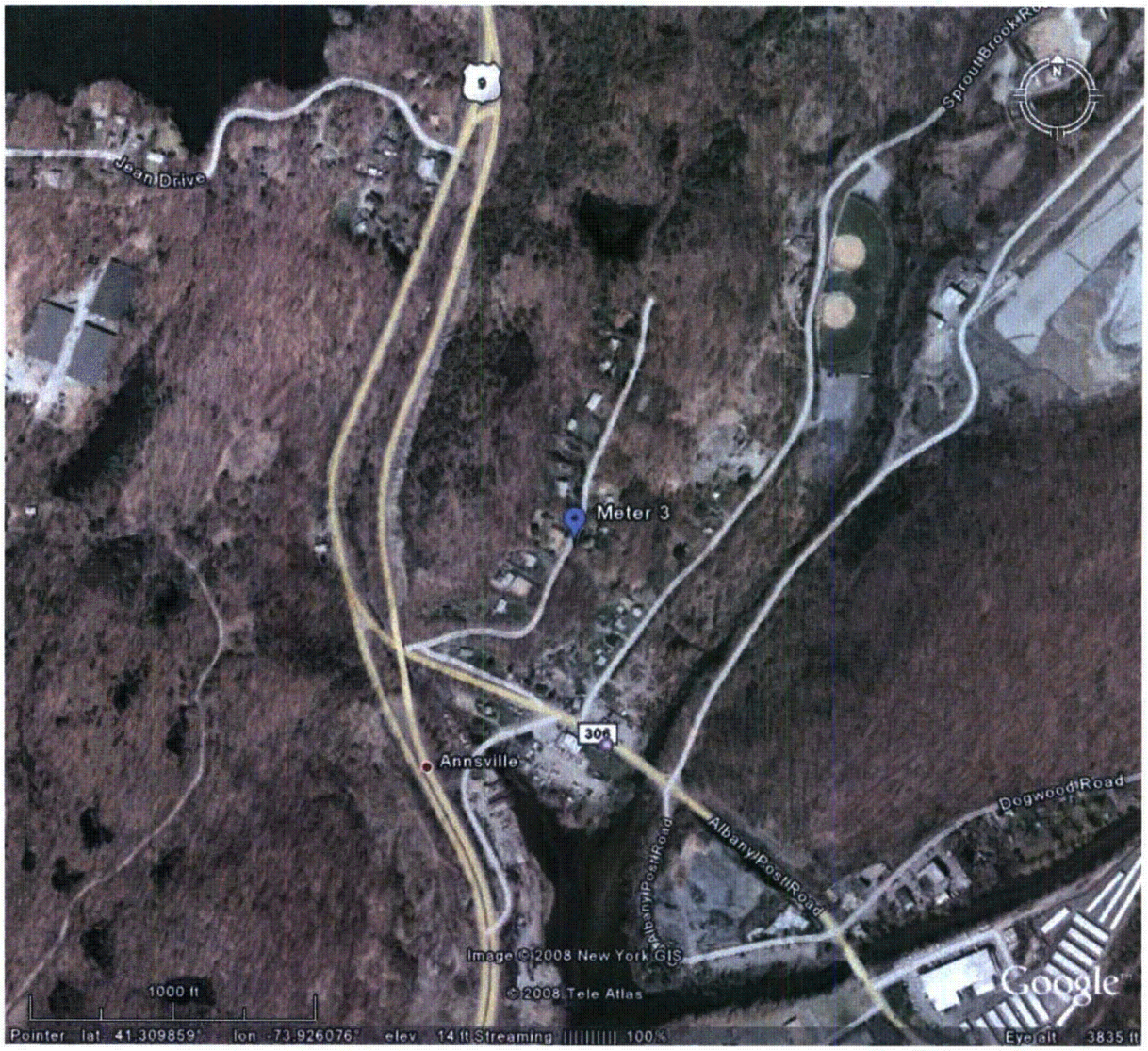



**Figure 21.** Aerial Photograph of Meter 3 Location, April 16, 2008.

SITE #3

**Indian Point Siren Test Data Sheet** NEW LOCATION

To be filled in be at the EOF by support staff

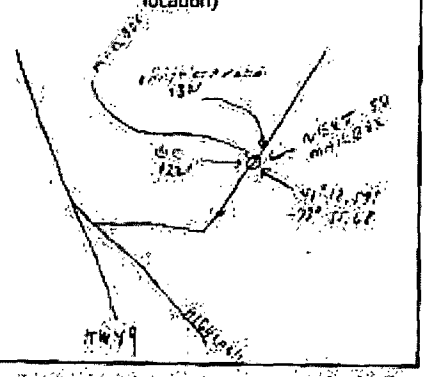
Date: 4/16/08 Time: 6:55 am
SLM Model: 831 SLM Serial Number: 1076 \ WEATHER 57005D
Tester's Name: MSJ
GPS Coordinates: _____ West _____ North
Checked Battery? Yes No
Checked Clock? Yes No
Memory Checked? Yes No
Calibration level before test: 94.0 dBC
30 second calibration tone recorded before test? Yes No
Calibration level after test: 94.0 dBC
30 second calibration tone recorded after test? Yes No
Calibrator Model: B+K 4231 Calibrator SN: 2572139

DOWNLOADED SLM ✓ \ WEATHER ✓

To be filled in be by the field crew at the site

Location Drawing:

**Plan View**
(Can also use provided map to mark location)




**Major Elevation Changes**

DOWNHILL IT GENTLY SLOPES UPWARD AT A 15° ANGLE. THE EQUIPMENT IS LOCATED 10 FEET FOR ELEVATION DRIVE OF 122

Measurement Location description: 41° 18.129, -73° 55.68 ELEVATION 122'
Microphone height: 5 ft. Wind Dir: 190° deg.
Photos Taken? Yes No Wind Spd: 3.5 mph
Meter Recording? Yes No Temp: 59 °F
Weather Station on and wind cover removed? Yes No
Ambient noise level before test: 58 dBC
Maximum level observed during the test: 78 dBC
Could you hear the sirens? Yes No
Ambient noise level after test: 58 dBC

AT POWERLINE

Notes about test (including background noise and noise intrusions during the test): AMBIENT NOISE IS MOSTLY DUE TO TRAFFIC NOISE ON 9. THERE IS ALSO SOME COMMERCIAL TRAFFIC ACTIVITY THAT CAN BE HEARD.

Tester's Signature: NICK TERRY

**Figure 22.** Data Sheet for Meter 3, April 16, 2008

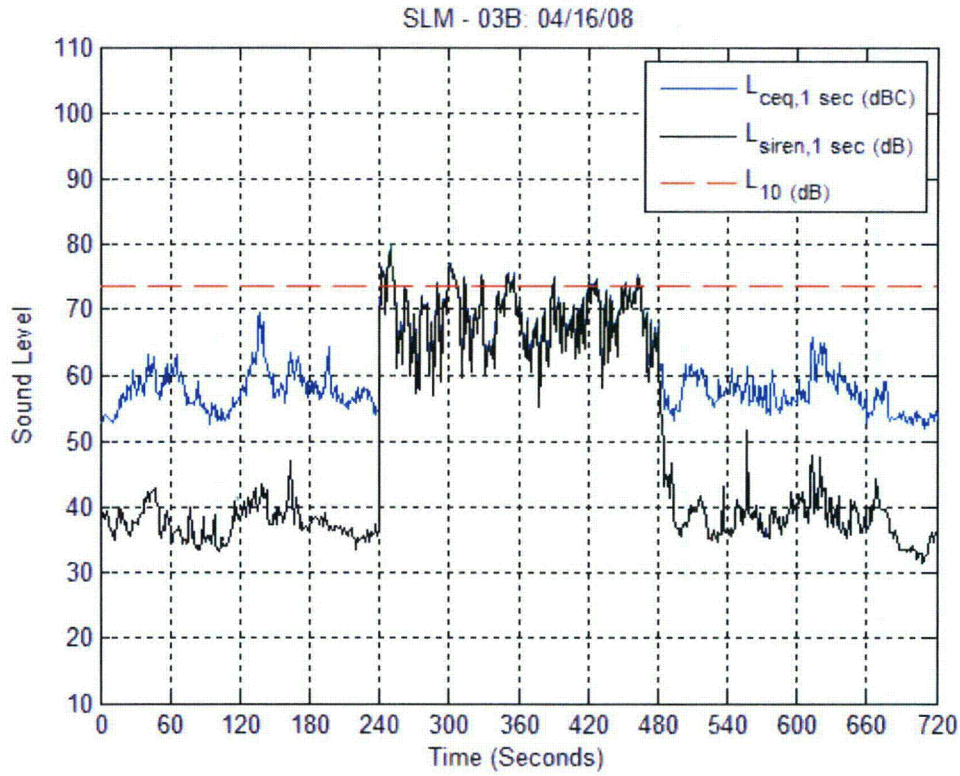



**Figure 23.** Time History Plot for Meter 3, April 16, 2008

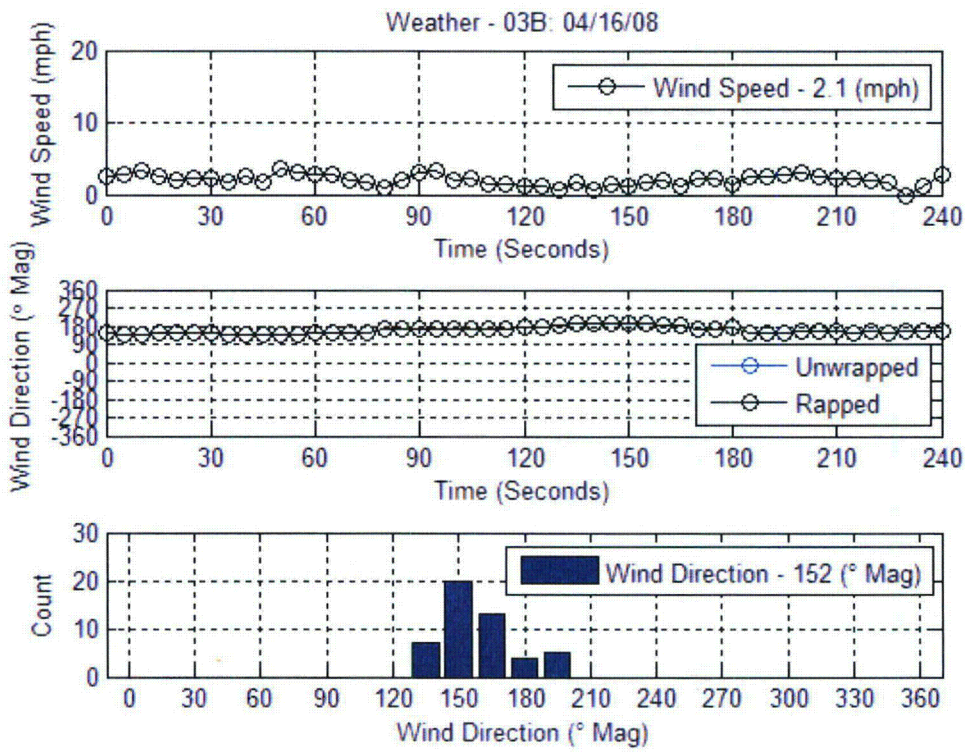



**Figure 24.** Weather Plots for Meter 3, April 16, 2008

**Meter 4, April 15, 2008**

**Figure 25.** Aerial Photograph of Meter 4 Location, April 15, 2008.

Town loaded weather & SLM = BII

## Indian Point Siren Test Data Sheet

To be filled in be at the EOF by support staff

Date: 4/15/08 Time: 6:45

SLM Model: 824 SLM Serial Number: 3125 / Weather 570073

Tester's Name:

GPS Coordinates: 73° 56' 43" West 41° 15' 04" North

Checked Battery? Yes No 95%

Checked Clock? Yes No

Memory Checked? Yes No 100%

Calibration level before test: 94.0 dBC

30 second calibration tone recorded before test? Yes No

Calibration level after test: 94.0 dBC

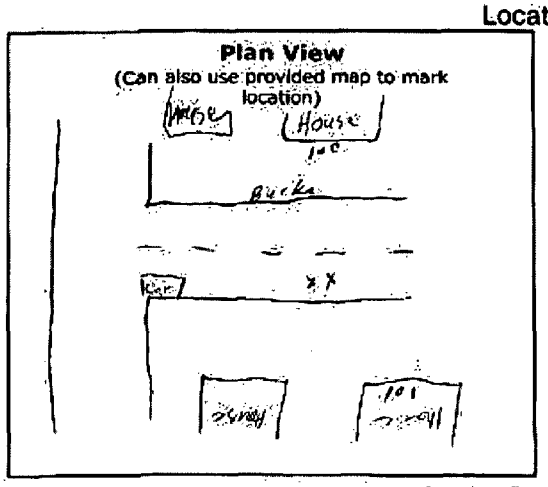
30 second calibration tone recorded after test? Yes No

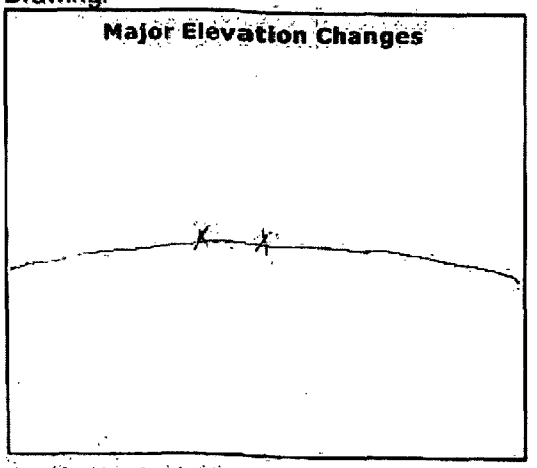
Calibrator Model: B&K 4231 Calibrator SN: 2592139

A

To be filled in be by the field crew at the site

Location Drawing:




Measurement Location description: To the front left of 101 Birch St.

Microphone height: 5 ft. Wind Dir: 260° deg.

Photos Taken? Yes No Wind Spd: 1.0 mph

Meter Recording? Yes No Temp: 53.4 °F

Weather Station on and wind cover removed? Yes No

Ambient noise level before test: 56.5 dBC

Maximum level observed during the test: 82 dBC

Could you hear the sirens? Yes No

Ambient noise level after test: 56.8 dBC

Notes about test (including background noise and noise intrusions during the test):

10:32 - Truck Noise 10:33 - Car Drove By

Tester's Signature:

**Figure 26.** Data Sheet for Meter 4, April 15, 2008

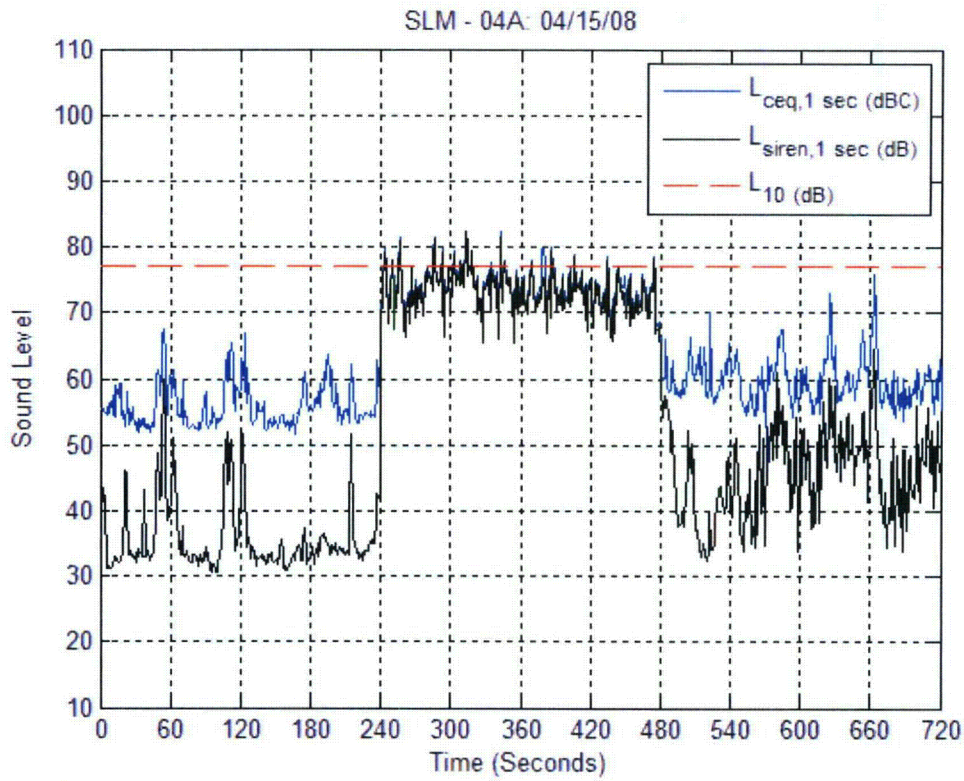



**Figure 27.** Time History Plot for Meter 4, April 15, 2008

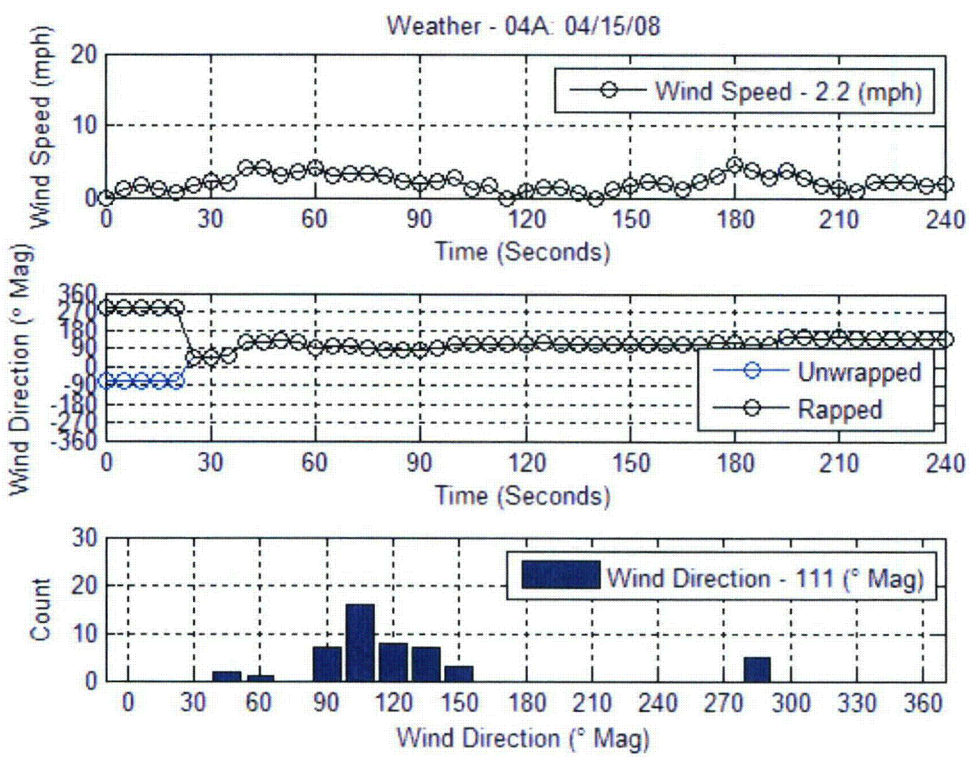



**Figure 28.** Weather Plots for Meter 4, April 15, 2008

**Meter 4, April 16, 2008**

**Figure 29.** Aerial Photograph of Meter 4 Location, April 16, 2008.

SITE #4

## Indian Point Siren Test Data Sheet

To be filled in be at the EOF by support staff

Date: 4/16/08 Time: _____

SLM Model: 824 SLM Serial Number: 3125 \WEATHER 570073

Tester's Name: MJ \

GPS Coordinates: _____ West _____ North

Checked Battery? Yes No

Checked Clock? Yes No

Memory Checked? Yes No

DOWNLOADED SLM \WEATHER ✓

Calibration level before test: 94.0 dBC

30 second calibration tone recorded before test? Yes No

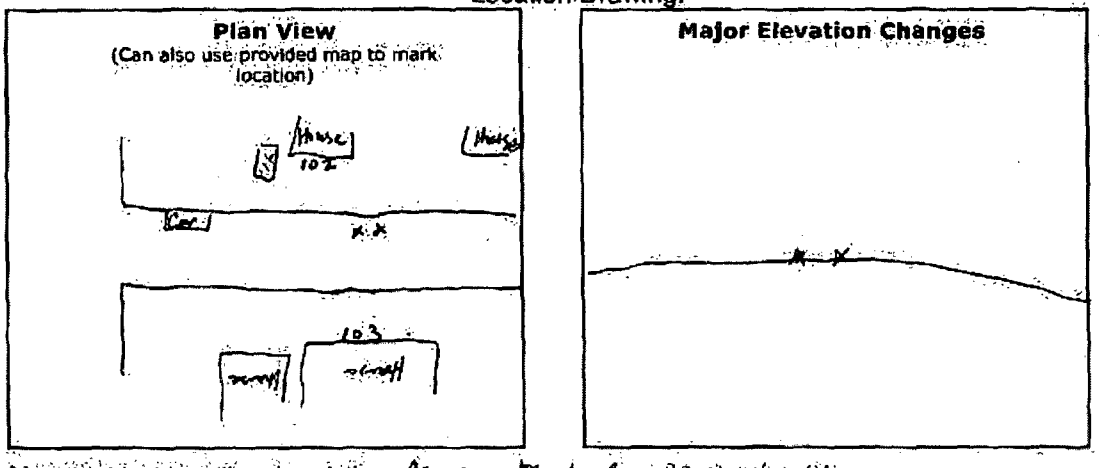
Calibration level after test: _____ dBC

30 second calibration tone recorded after test? Yes No

Calibrator Model: B&K 4231 Calibrator SN: 2592139

To be filled in be by the field crew at the site

Location Drawing:




Measurement Location description: Across street of 103 Burke St.

Microphone height: 5 ft. Wind Dir: 319 deg.

Photos Taken? Yes No Wind Spd: 0.3 mph

Meter Recording? Yes No Temp: 57.2 °F

Weather Station on and wind cover removed? Yes No

Ambient noise level before test: 58.2 dBC

Maximum level observed during the test: 81.9 dBC

Could you hear the sirens? Yes No

Ambient noise level after test: 59 dBC

Notes about test (including background noise and noise intrusions during the test):

10:32 Car drove by 10:38 [illegible] 10:39 Car drove by
10:28 – 10:38 Lawn mower in Background

Tester's Signature: Charles Cipriani

**Figure 30.** Data Sheet for Meter 4, April 16, 2008

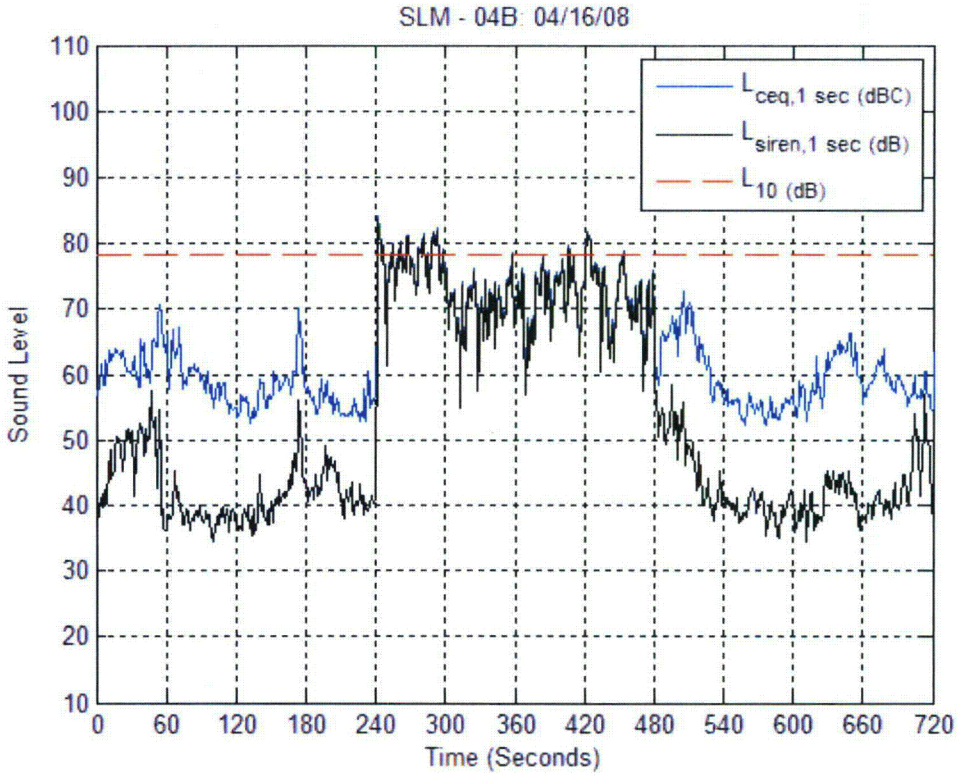



**Figure 31.** Time History Plot for Meter 4, April 16, 2008

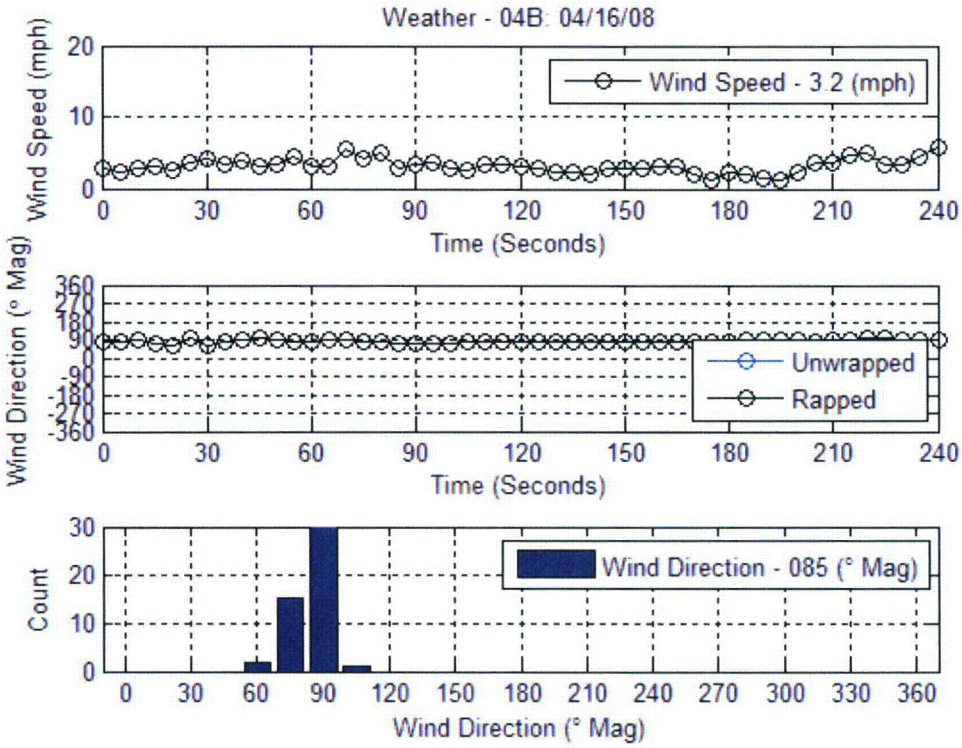



**Figure 32.** Weather Plots for Meter 4, April 16, 2008

**Meter 5, April 15, 2008**

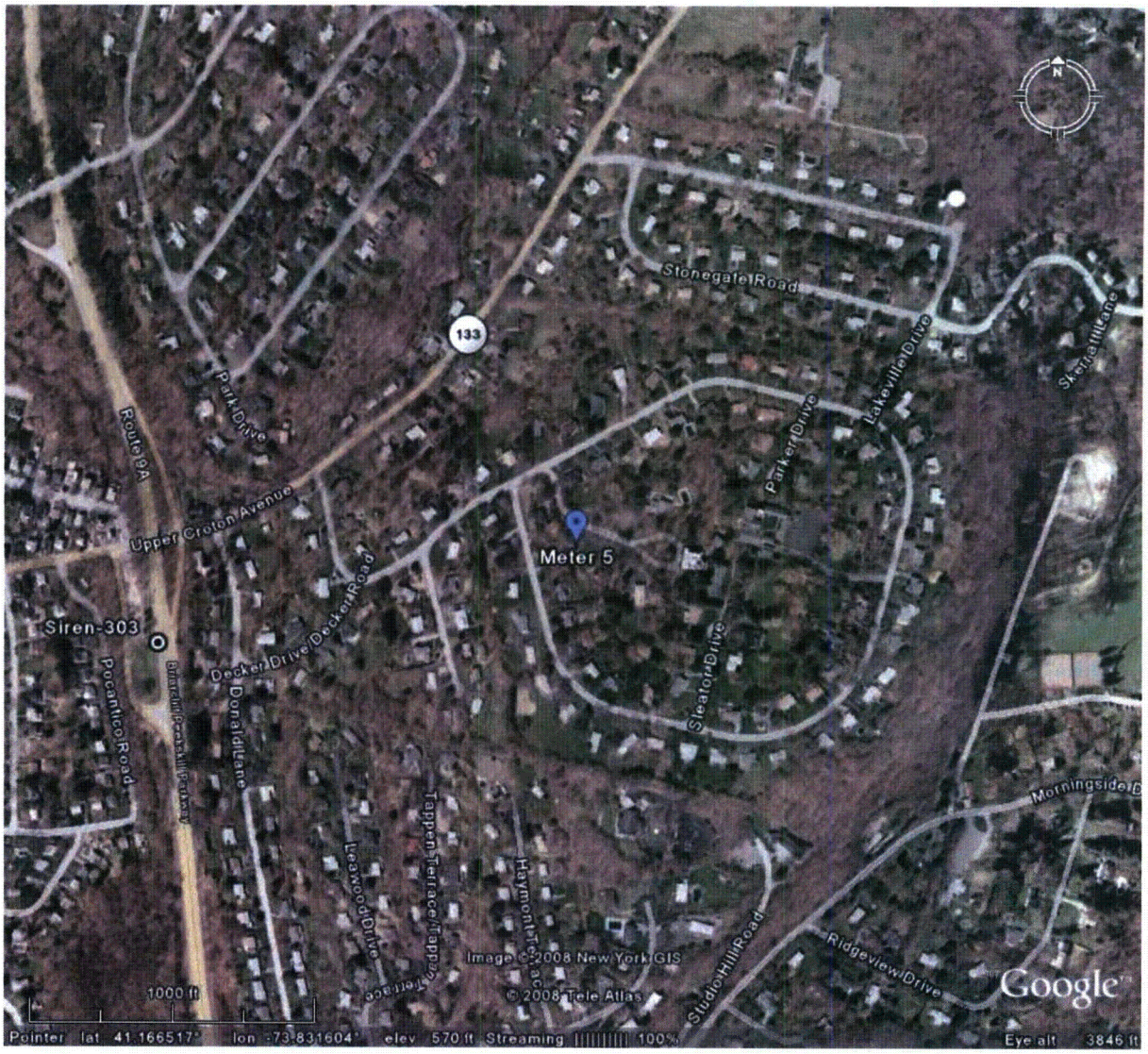



**Figure 33.** Aerial Photograph of Meter 5 Location, April 15, 2008.

Downloaded weather BJZ

## Indian Point Siren Test Data Sheet

(5)

----------To be filled in be at the EOF by support staff----------

Date: 4/15/08 Time: _____

SLM Model: 831 SLM Serial Number: 1418 / weather 569892

Tester's Name: MJ

GPS Coordinates: 73 49 59 West 41 16 6 North

Checked Battery? (Yes) No

Checked Clock? (Yes) No

Memory Checked? (Yes) No

DOWNLOADED SLM // WEATHER

Calibration level before test: 94.0 dBC

30 second calibration tone recorded before test? (Yes) No

Calibration level after test: 94.0 dBC

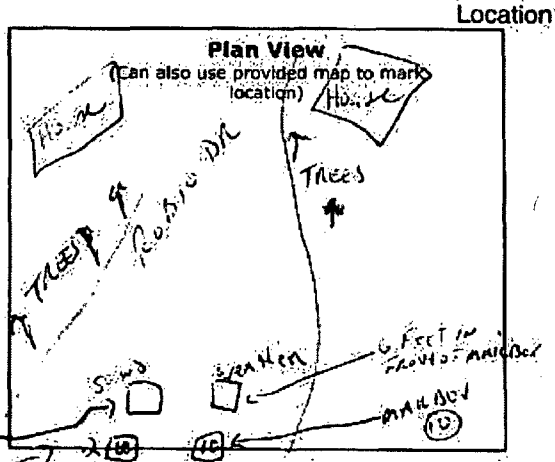
30 second calibration tone recorded after test? (Yes) No

Calibrator Model: B+K 4231 Calibrator SN: 2575552

----------To be filled in be by the field crew at the site----------

Location Drawing:

**Plan View**
(Can also use provided map to mark location)




**Major Elevation Changes**

GREY CAR IN PICTURES WAS MOVED WAS MY CAR.
ONLY NOISE IN AREA ARE BIRDS

NO MAJOR ELEVATION CHANGES
TAPPS WERE LEVEL

Measurement Location description: LEAD END OF IN FRONT OF MAILBOX 10 92

Microphone height: 5 ft.

Photos Taken? (Yes) No

Meter Recording? (Yes) No

Wind Dir: 7N deg.

Wind Spd: 2.0 mph

Temp: 8.6C °F

SI UNITS

Weather Station on and wind cover removed? (Yes) No

Ambient noise level before test: 58 dBC

Maximum level observed during the test: 95.1 dBC

Could you hear the sirens? (Yes) No

Ambient noise level after test: 62.1 dBC

Notes about test (including background noise and noise intrusions during the test):

BIRDS, WATER DRAIN DRIP,
OIL TRUCK DRIVE BY AT 24 MIN 10 SEC

Tester's Signature: _____

**Figure 34.** Data Sheet for Meter 5, April 15, 2008

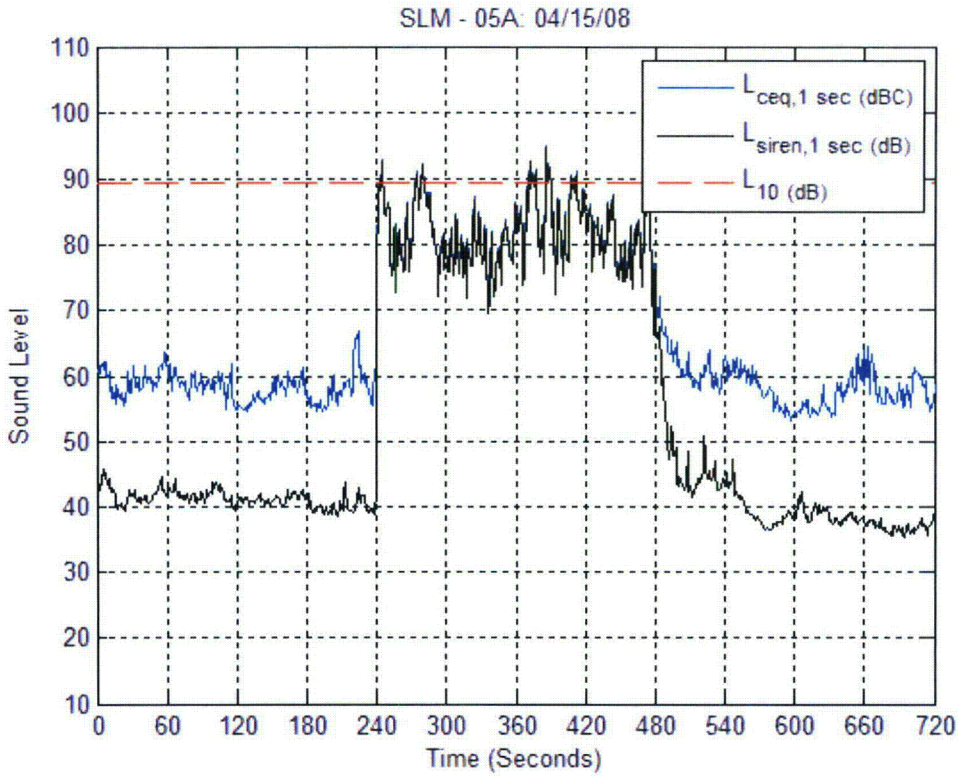



**Figure 35.** Time History Plot for Meter 5, April 15, 2008

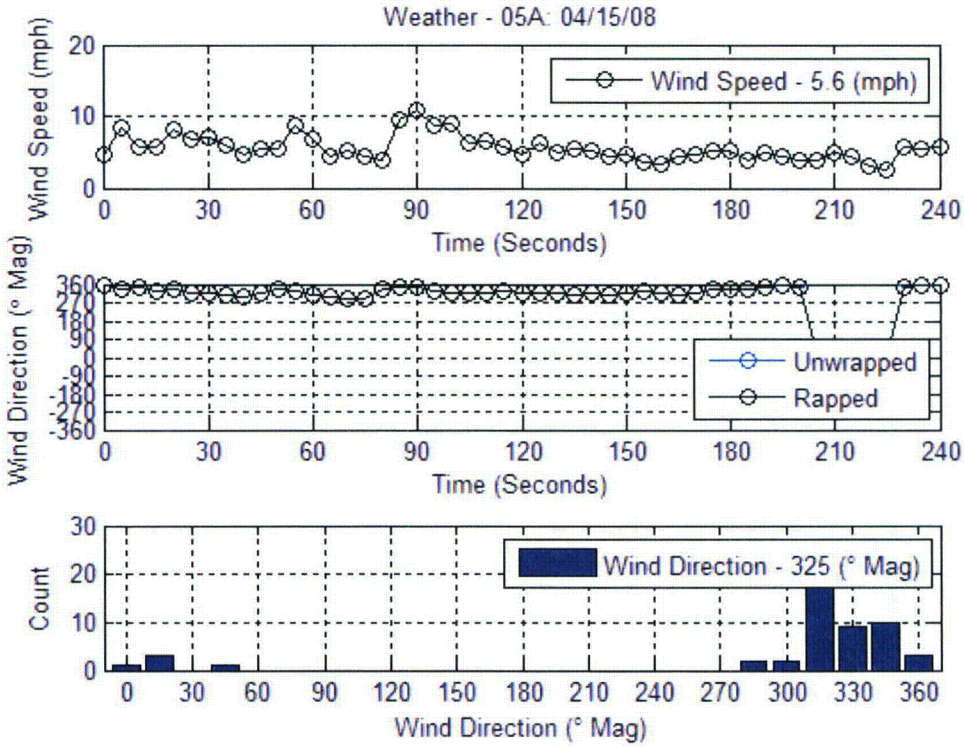



**Figure 36.** Weather Plots for Meter 5, April 15, 2008

**Meter 5, April 16, 2008**

**Figure 37.** Aerial Photograph of Meter 5 Location, April 16, 2008.

SITE #5

5

## Indian Point Siren Test Data Sheet

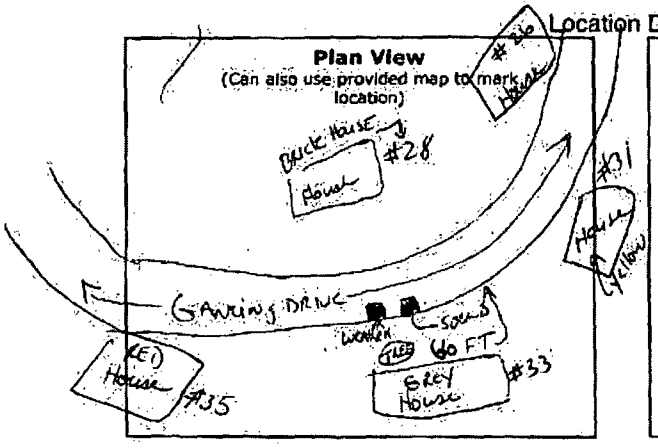
To be filled in be at the EOF by support staff

Date: 4/16/08 Time: S69892
SLM Model: 831 SLM Serial Number: 1418 \ WEATHER
Tester's Name: MJ \
GPS Coordinates: _____ West _____ North
Checked Battery? (Yes) No 5.2V
Checked Clock? (Yes) No
Memory Checked? (Yes) No
Calibration level before test: 94.0 dBC
30 second calibration tone recorded before test? (Yes) No
Calibration level after test: 94.0 dBC
30 second calibration tone recorded after test? Yes No
Calibrator Model: B&K 4231 Calibrator SN: 2575552

DOWNLOADED SLM ✓ \ WEATHER ✓

To be filled in be by the field crew at the site

Location Drawing:




**Major Elevation Changes**

Level Ground
Had to move to New Location
Lawn Mower is Area 100 ft
Away, no cell to Gaining Dr
Next to House #33

Measurement Location description: _____
Microphone height: 5 ft.
Photos Taken? (Yes) No
Meter Recording? (Yes) No
Weather Station on and wind cover removed? (Yes) No
Ambient noise level before test: 56 dBC
Maximum level observed during the test: 78.1 dBC
Could you hear the sirens? (Yes) No
Ambient noise level after test: 57 dBC

Wind Dir: 299 deg.
Wind Spd: 2.8 mph
Temp: 58 °F

Notes about test (including background noise and noise intrusions during the test):
People walk by at 10:28.45 sec plane flew over head 10:32.00
car drove by at 10:34.30 sec car drove by 10:35.20 bang noise at 10:37:30
very big noise 10:38:20
House being worked on 10:37:06
900 ft. away of [illegible]
car drove by
Tester's Signature: [signature]
AM started 10:40.57
@ 10:40.01 car drove by
cross street

**Figure 38.** Data Sheet for Meter 5, April 16, 2008

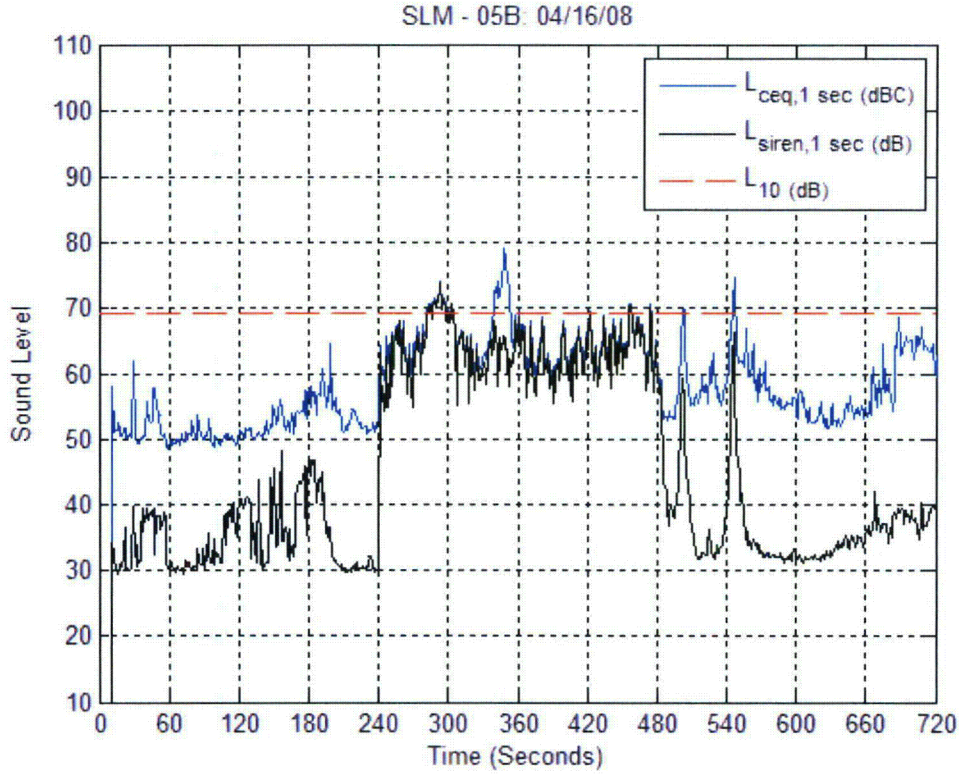



**Figure 39.** Time History Plot for Meter 5, April 16, 2008

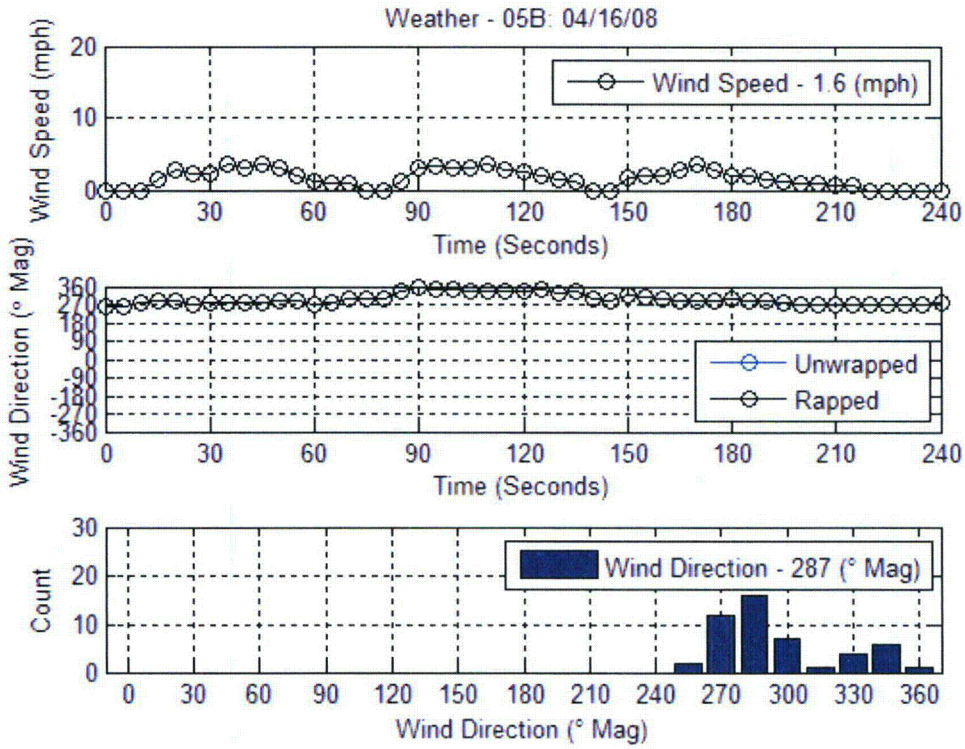



**Figure 40.** Weather Plots for Meter 5, April 16, 2008

**Meter 6, April 15, 2008**

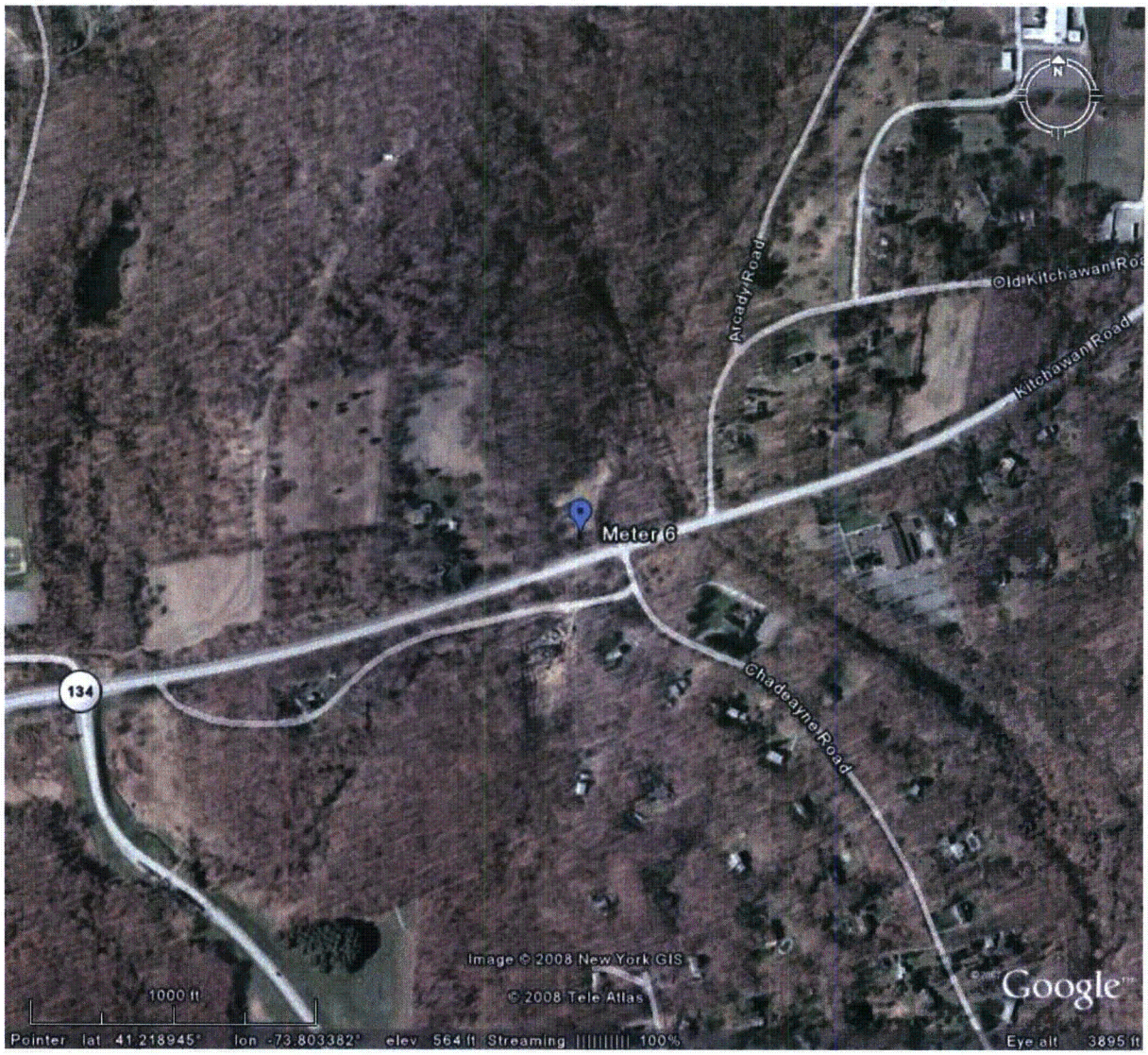



**Figure 41.** Aerial Photograph of Meter 6 Location, April 15, 2008.

SITE 6

## Indian Point Siren Test Data Sheet

To be filled in be at the EOF by support staff

Date: 4/15/08 Time: _____

SLM Model: 831 SLM Serial Number: ~~[illegible]~~ / weather 569917

Tester's Name: MSV 1197

GPS Coordinates: 73° 47' 59" West 41° 13' 9" North

Checked Battery? (Yes) No

Checked Clock? (Yes) No

Memory Checked? (Yes) No

DOWNLOADED SLM ✓ WEATHER ✓

Calibration level before test: 94.0 dBC

30 second calibration tone recorded before test? (Yes) No

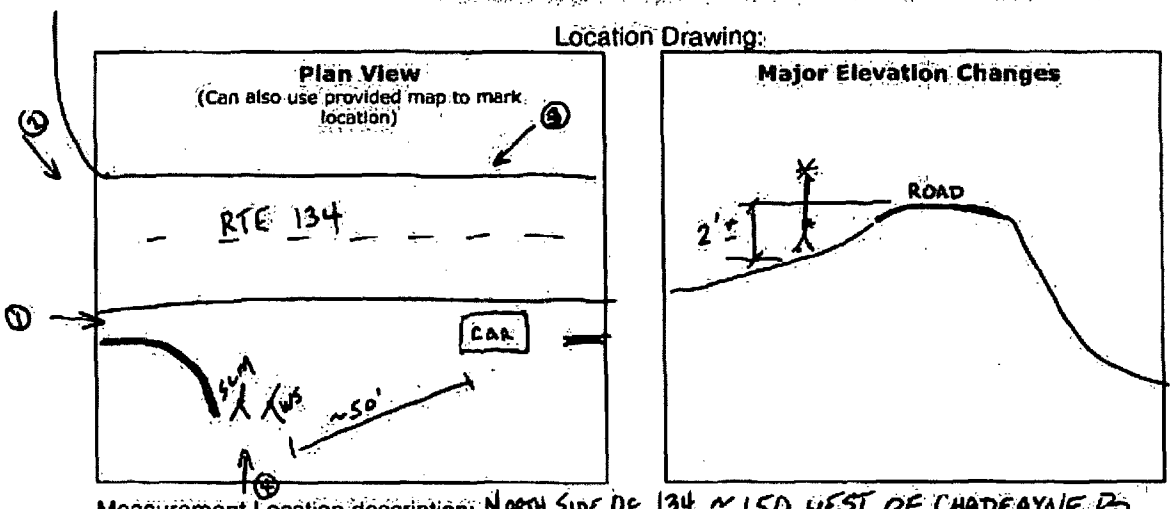
Calibration level after test: 94.0 dBC

30 second calibration tone recorded after test? (Yes) No

Calibrator Model: B&K 4231 Calibrator SN: 2575552

To be filled in be by the field crew at the site

Location Drawing:




Measurement Location description: NORTH SIDE OF 134 ~150 WEST OF CHADEAYNE RD.

Microphone height: 5' ft. Wind Dir: 10° deg.

Photos Taken? (Yes) No Wind Spd: 2.0 mph

Meter Recording? (Yes) No Temp: 53.7 °F

Weather Station on and wind cover removed? Yes No

Ambient noise level before test: 53.5 dBC HIGHER WHEN VEHICLES PASS (~70dB

Maximum level observed during the test: 71.8 dBC

Could you hear the sirens? (Yes) No

Ambient noise level after test: 56.3 dBC

Notes about test (including background noise and noise intrusions during the test):

Tester's Signature: Tim Garvey

TIM GARVEY

**Figure 42.** Data Sheet for Meter 6, April 15, 2008

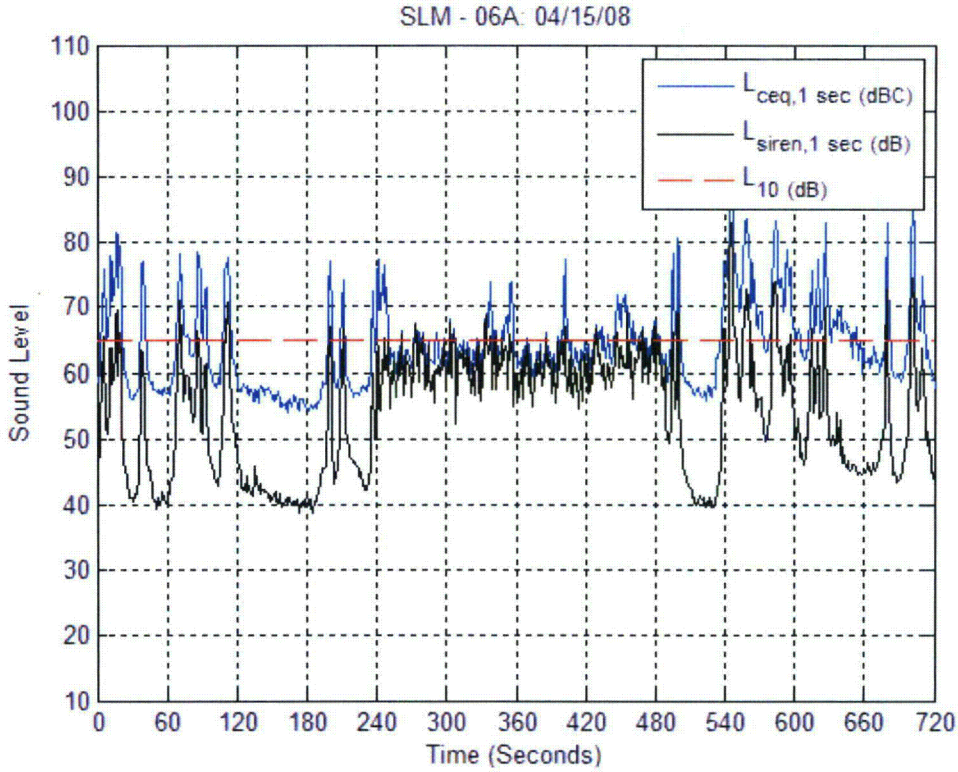



**Figure 43.** Time History Plot for Meter 6, April 15, 2008

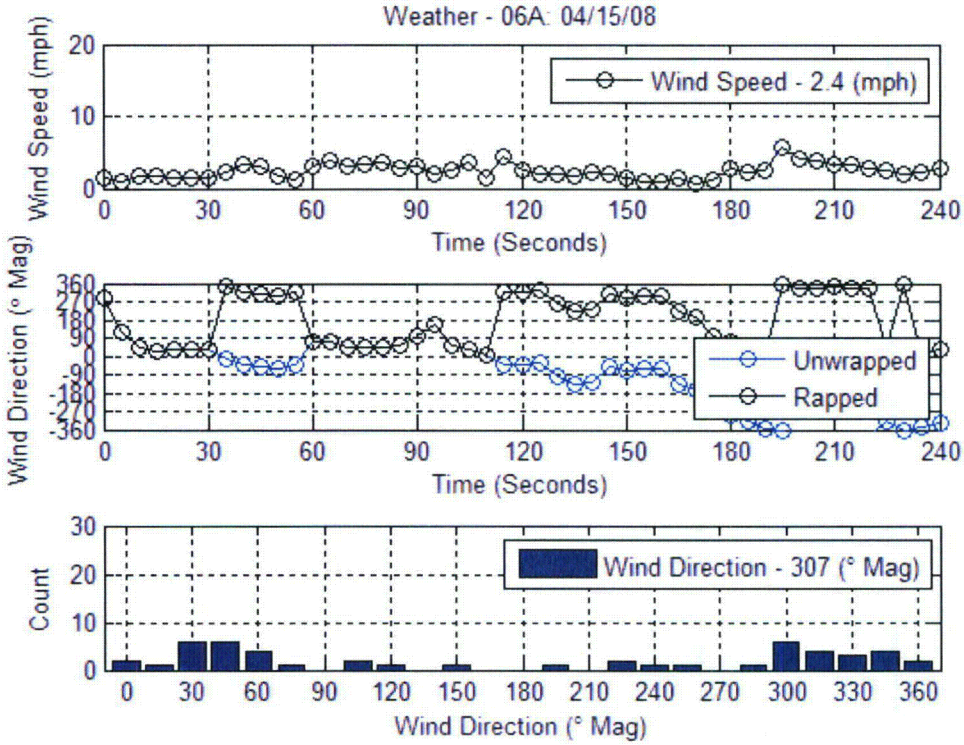



**Figure 44.** Weather Plots for Meter 6, April 15, 2008

**Meter 6, April 16, 2008**

**Figure 45.** Aerial Photograph of Meter 6 Location, April 16, 2008.

SITE #6

## Indian Point Siren Test Data Sheet

To be filled in be at the EOF by support staff

Date: 4/16/08 Time: _____ 569917 \ WEATHER

SLM Model: 831 SLM Serial Number: 1197

Tester's Name: MJ \

GPS Coordinates: _____ West _____ North

Checked Battery? (Yes) No 104.8%

Checked Clock? (Yes) No

Memory Checked? (Yes) No

DOWNLOADED SLM ✓ \ WEATHER ✓

Calibration level before test: 94.0 dBC

30 second calibration tone recorded before test? (Yes) No

Calibration level after test: 94.0 dBC

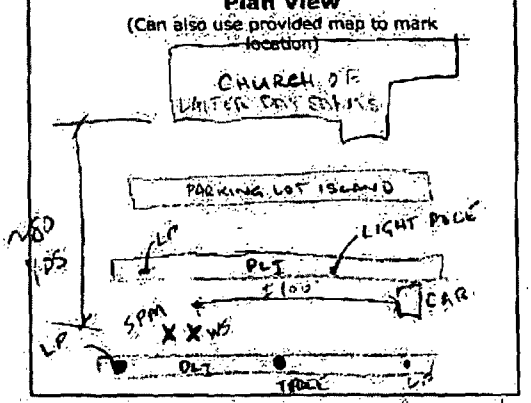
30 second calibration tone recorded after test? (Yes) No

Calibrator Model: B+K 4231 Calibrator SN: 2575552

To be filled in be by the field crew at the site

Location Drawing:

**Plan View**
(Can also use provided map to mark location)




**Major Elevation Changes**

PARKING LOT GENERALLY FLAT

Measurement Location description: PARKING LOT BEHIND CHURCH ON SOUTH SIDE OF RTE 134

Microphone height: 5-½" ft. Wind Dir: 87° deg.

Photos Taken? (Yes) No Wind Spd: 3.0 mph

Meter Recording? (Yes) No Temp: 57° °F

Weather Station on and wind cover removed? (Yes) No

Ambient noise level before test: 49.5 dBC

Maximum level observed during the test: 74.5 dBC

Could you hear the sirens? (Yes) No

Ambient noise level after test: 52. dBC

Notes about test (including background noise and noise intrusions during the test):

Tester's Signature: Tim Garvey (TIM GARVEY)

ONE PICTURE TAKEN BEFORE SITE 6 SHOT TAKEN.

**Figure 46.** Data Sheet for Meter 6, April 16, 2008

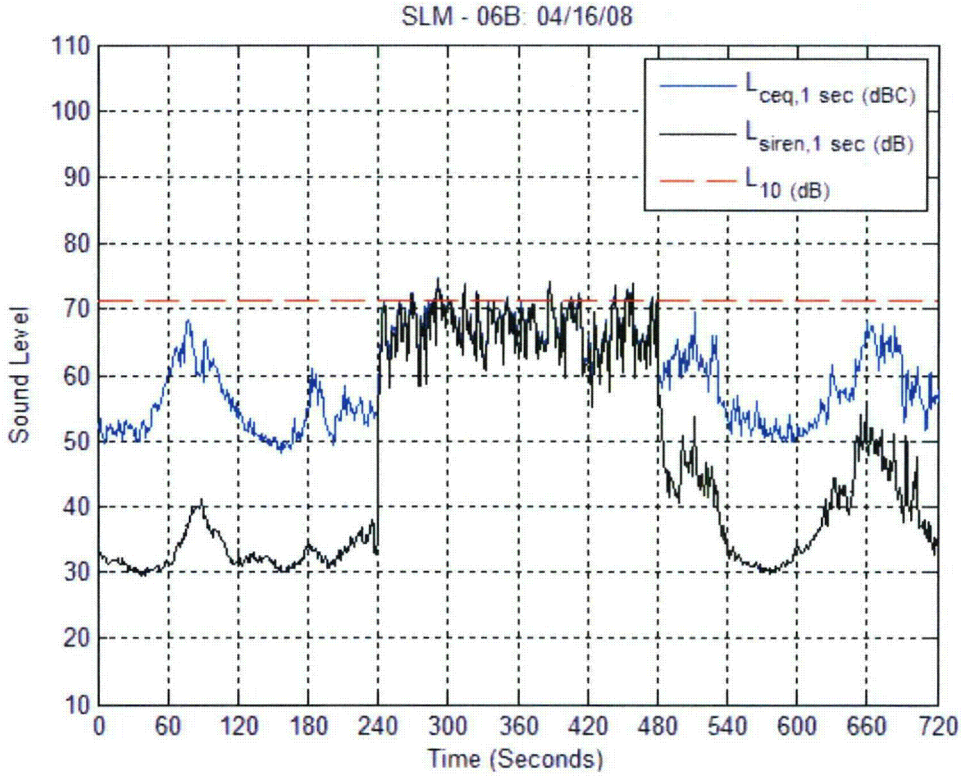



**Figure 47.** Time History Plot for Meter 6, April 16, 2008

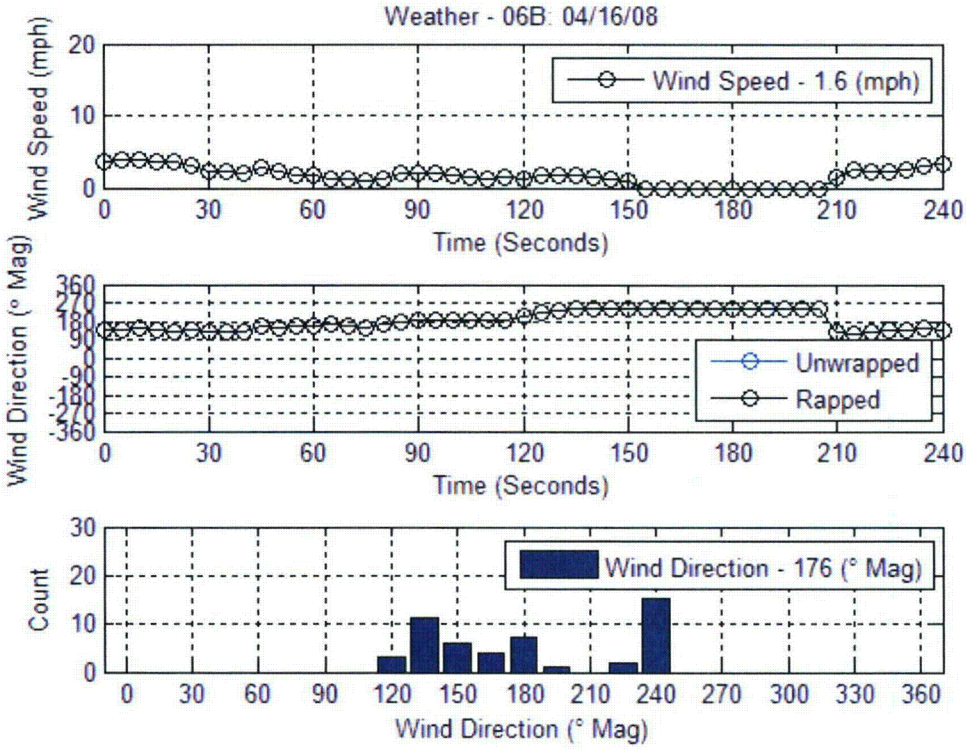



**Figure 48.** Weather Plots for Meter 6, April 16, 2008

**Meter 7, April 15, 2008**

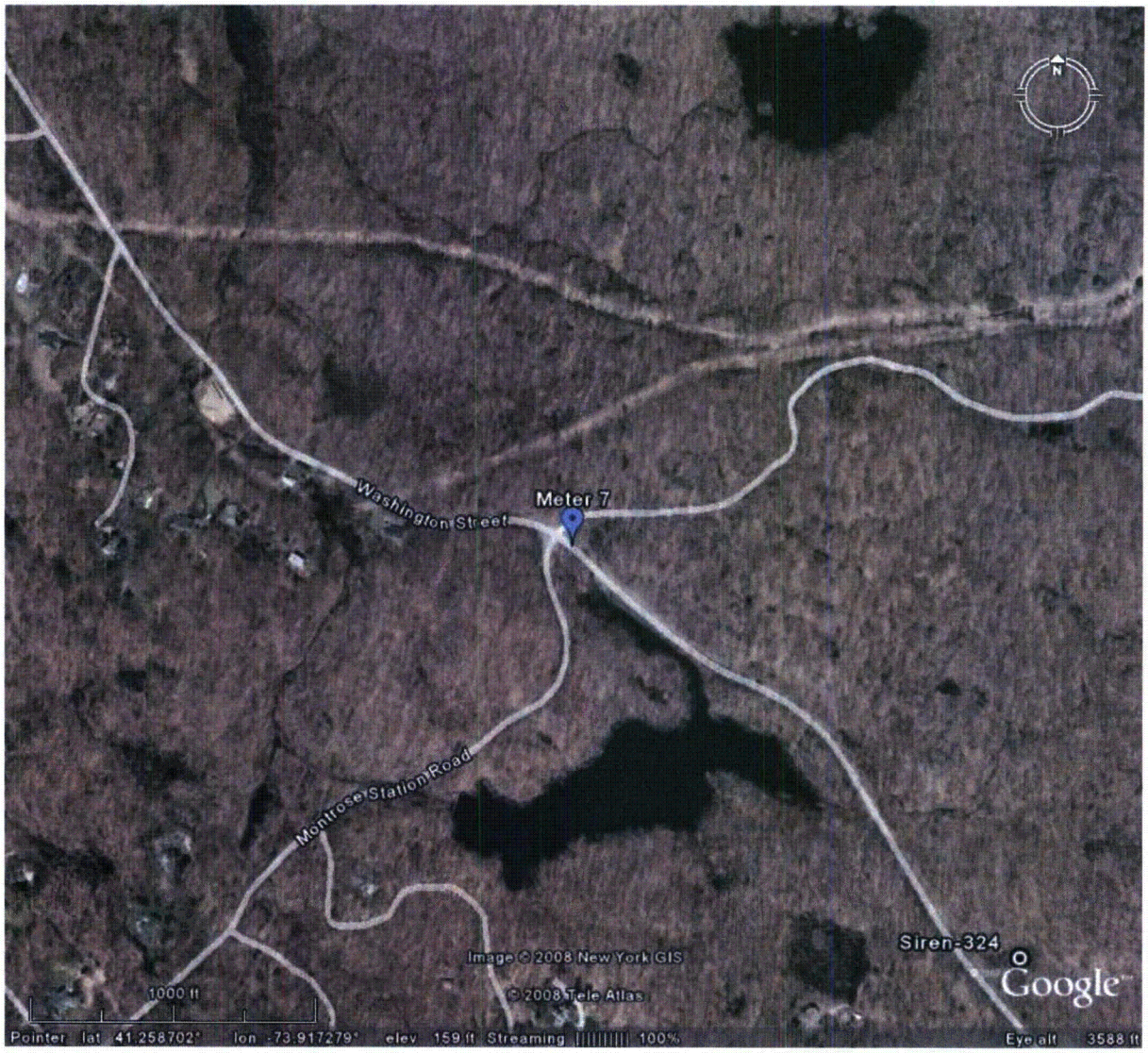



**Figure 49.** Aerial Photograph of Meter 7 Location, April 15, 2008.

7

## Indian Point Siren Test Data Sheet

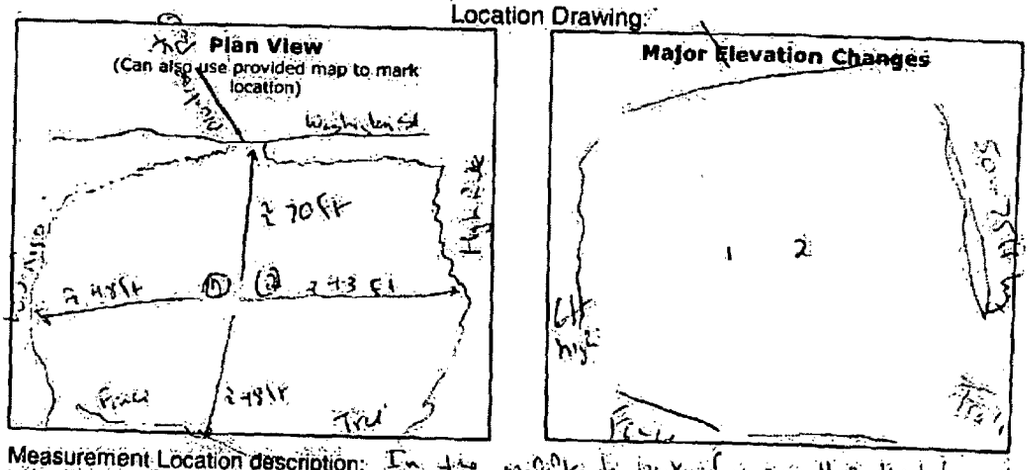
To be filled in be at the EOF by support staff

Date: 04/15/08 Time:
SLM Model: 824 SLM Serial Number: 824A3343 / weather 570067
Tester's Name: MJ
GPS Coordinates: 73° 55' 40.9" West 41 15 20.7 48" North
Checked Battery? (Yes) No 95%
Checked Clock? (Yes) No
Memory Checked? (Yes) No
Calibration level before test: 99.0 dBC
30 second calibration tone recorded before test? (Yes) No
Calibration level after test: 113.9 dBC
30 second calibration tone recorded after test? (Yes) No
Calibrator Model: B+K 4231 Calibrator SN: 2575552

weather & SLM downloaded 13:51
- clock hour is incorrect

To be filled in be by the field crew at the site

Location Drawing:




Measurement Location description: In the middle of a small picky lot road
Microphone height: 5.0" ft.
Photos Taken? (Yes) No
Meter Recording? (Yes) No
Weather Station on and wind cover removed? (Yes) No
Ambient noise level before test: ≈ 50.3 dBC
Maximum level observed during the test: ≈ 50.1 dBC
Could you hear the sirens? (Yes) No
Ambient noise level after test: ≈ 52.1 dBC

Wind Dir: 054 deg. swinging
Wind Spd: 21.4 mph
Temp: 52.4 °F

Approximately 1.4 mph
0.8 m/s

Notes about test (including background noise and noise intrusions during the test):
Road near rail road whistle before test

Tester's Signature:

**Figure 50.** Data Sheet for Meter 7, April 15, 2008

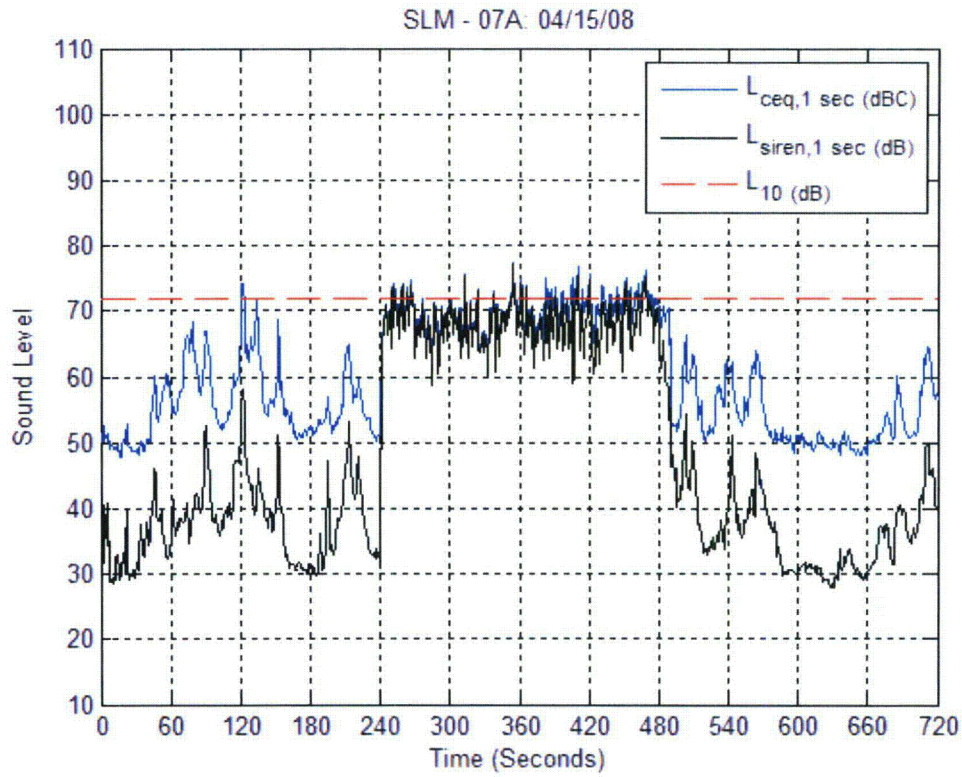



**Figure 51.** Time History Plot for Meter 7, April 15, 2008

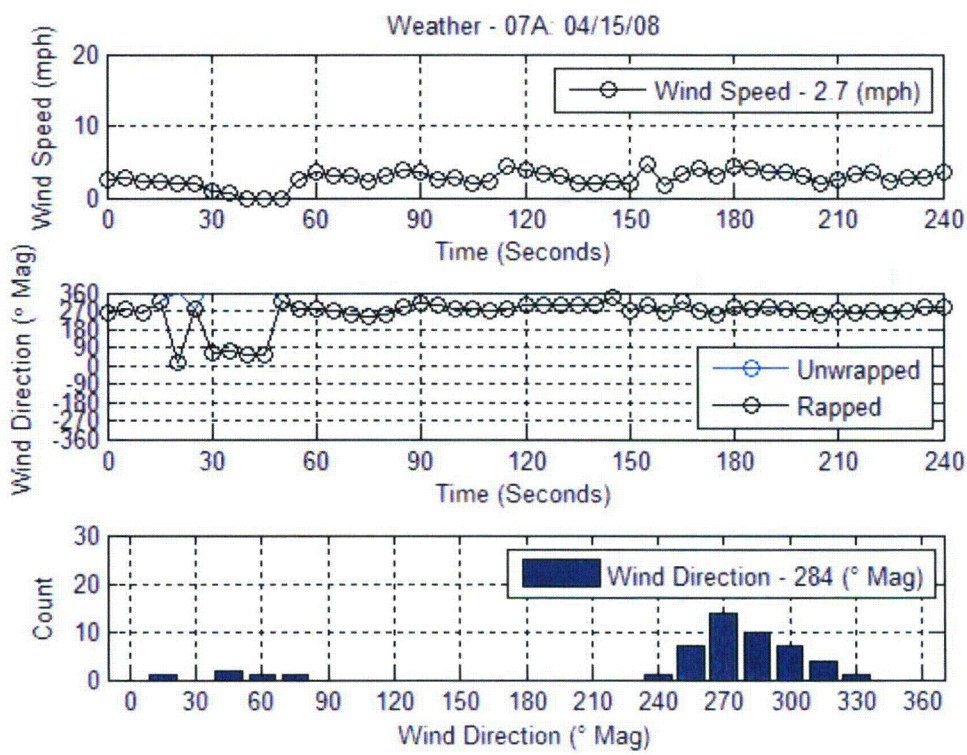



**Figure 52.** Weather Plots for Meter 7, April 15, 2008

**Meter 7, April 16, 2008**

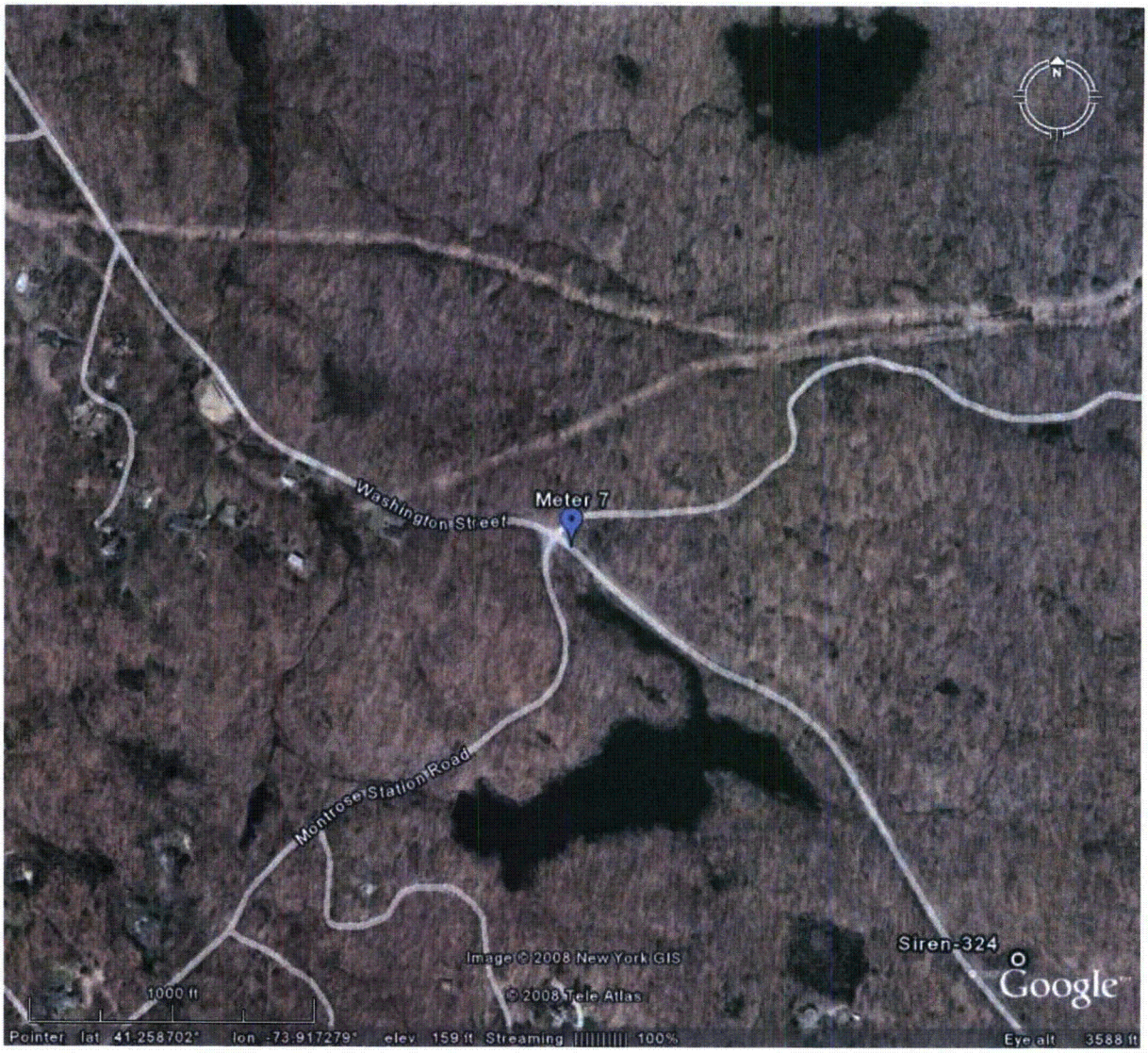



**Figure 53.** Aerial Photograph of Meter 7 Location, April 16, 2008.

Fred Ducimo

SITE #7

## Indian Point Siren Test Data Sheet

To be filled in be at the EOF by support staff

Date: 4/16/08 Time: 570067

SLM Model: 824 SLM Serial Number: 3343 \WEATHER

Tester's Name: MJ

GPS Coordinates: 73 55 145 West 41° 15 704 North

Checked Battery? (Yes) No 96%

Checked Clock? (Yes) No

Memory Checked? (Yes) No

DOWNLOADED SLM \WEATHER

Calibration level before test: 94.0 dBC

30 second calibration tone recorded before test? (Yes) No

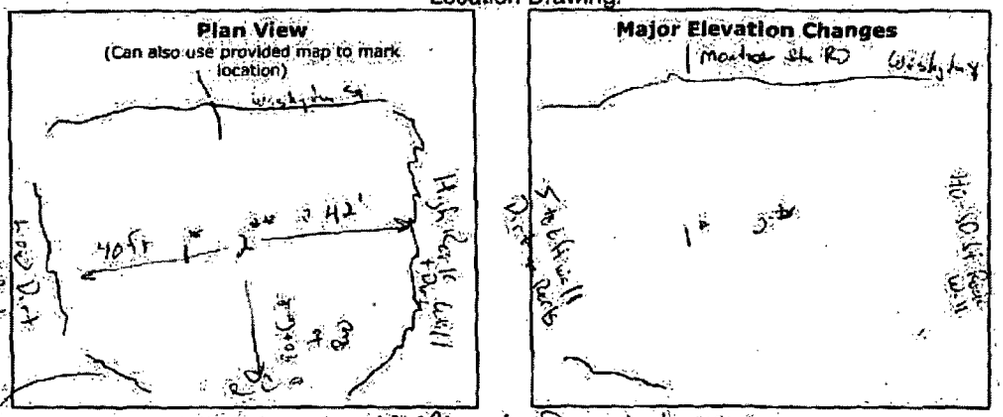
Calibration level after test: 94.0 dBC

30 second calibration tone recorded after test? (Yes) No

Calibrator Model: B+K 4231 Calibrator SN: 2575552

To be filled in be by the field crew at the site

Location Drawing:




Measurement Location description: Middle of Parking Lot

Microphone height: 5' 0" ft. Wind Dir: W deg.

Photos Taken? (Yes) No Wind Spd: 1.5 20 mph

Meter Recording? (Yes) No Temp: 57.1 °F

Weather Station on and wind cover removed? (Yes) No

1- Weather Station
2. Sound meter

Ambient noise level before test: 49.2 dBC

Maximum level observed during the test: 78.0 dBC

Could you hear the sirens? (Yes) No

AT 10:27 a fire siren sounded for 1 min

Ambient noise level after test: 54.5 dBC

Notes about test (including background noise and noise intrusions during the test):
At 10:27 a fire siren went off for about 60 seconds. The same thing at about 10:40.

Tester's Signature:

**Figure 54.** Data Sheet for Meter 7, April 16, 2008

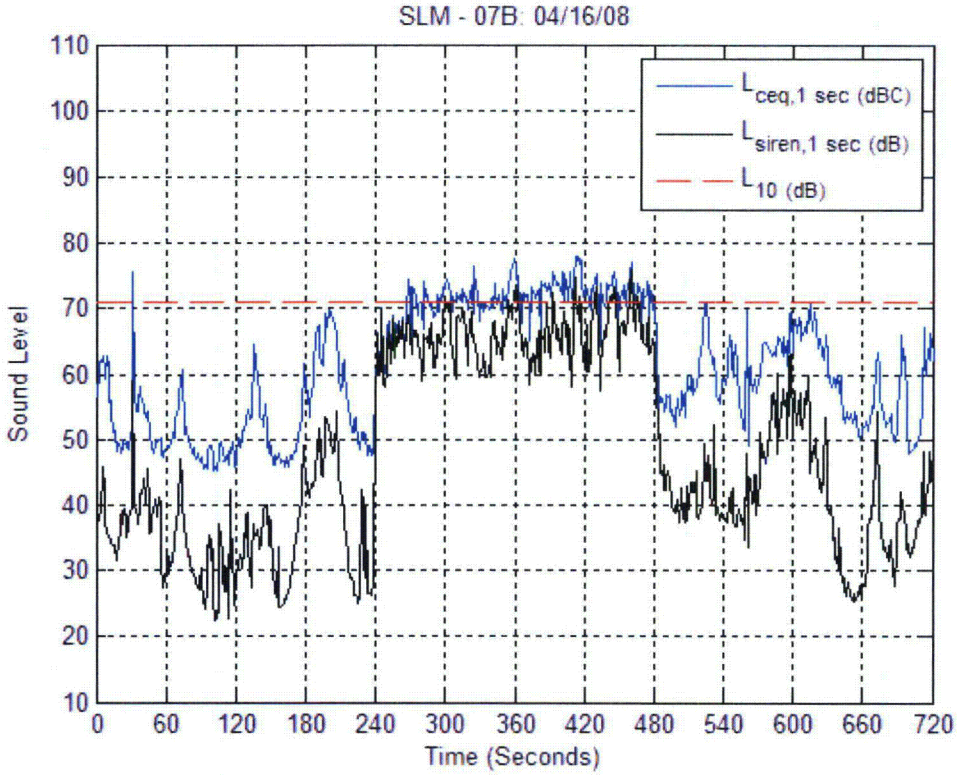



**Figure 55.** Time History Plot for Meter 7, April 16, 2008

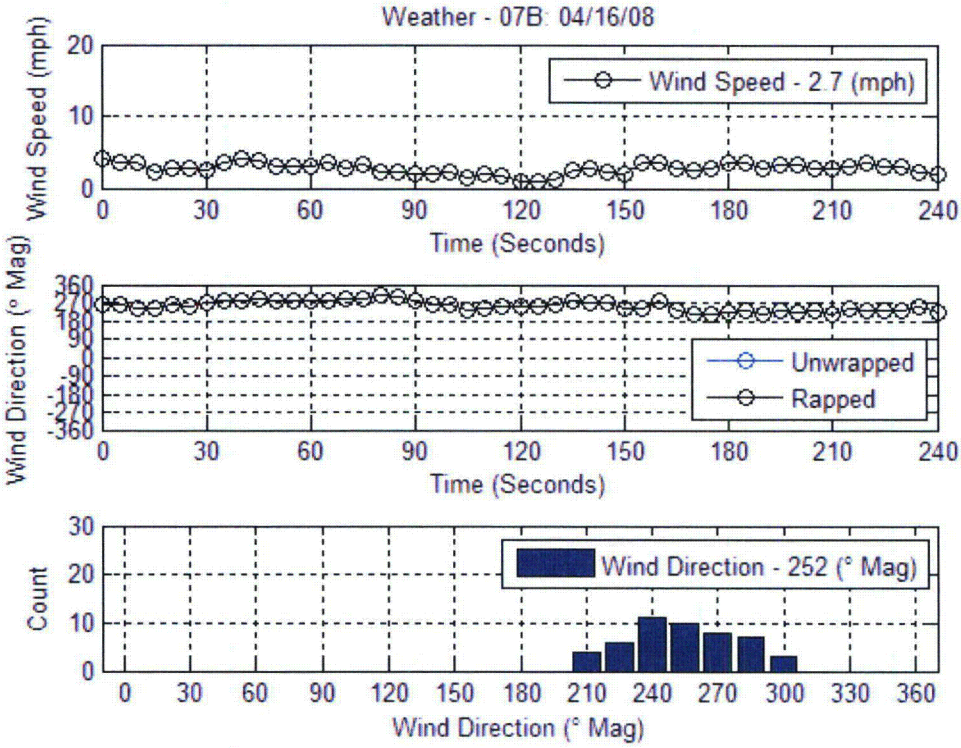



**Figure 56.** Weather Plots for Meter 7, April 16, 2008

**Meter 8, April 15, 2008**

**Figure 57.** Aerial Photograph of Meter 8 Location, April 15, 2008.

weather & SLM down loader BJI

## Indian Point Siren Test Data Sheet

To be filled in be at the EOF by support staff

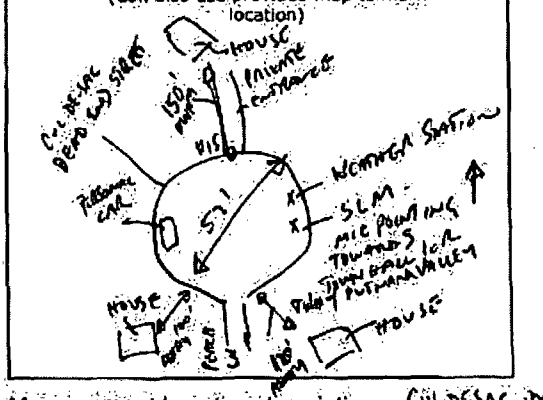
Date: 4/15/08 Time: 6:50 am
SLM Model: 824 SLM Serial Number: 3564 / weather 569916
Tester's Name: FRANK MADELLO
GPS Coordinates: 73° 51' 26" West 41° 22' 20" North
Checked Battery? Yes No 91 %
Checked Clock? Yes No
Memory Checked? Yes No 100 %
Calibration level before test: 94.0 dBC
30 second calibration tone recorded before test? Yes No
Calibration level after test: 94.0 13.9 dBC
30 second calibration tone recorded after test? Yes No
Calibrator Model: B&K 4231 Calibrator SN: 2592139

SITE #8

To be filled in be by the field crew at the site

Location Drawing:

**Plan View**
(Can also use provided map to mark location)




**Major Elevation Changes**
NONE-

Measurement Location description: CUL DE SAC DEAD END STREET; 30' from house driveway 15 Peach Lane.
Microphone height: 5' ft. Wind Dir: 45 NE deg.
Photos Taken? Yes No Wind Spd: 6 mph
Meter Recording? Yes No Temp: 49.4 °F
Weather Station on and wind cover removed? Yes No
Ambient noise level before test: 50 dBC
Maximum level observed during the test: 73 dBC
Could you hear the sirens? Yes No
Ambient noise level after test: 50 dBC

STARTED RECORDING @ ~10:20 AM
STOPPED RECORDING @ 10:

Notes about test (including background noise and noise intrusions during the test):
~~TRACK OF BIRDS [illegible]~~ NO SIGNIFICANT BACKGRD NOISE OTHER THAN SOME DISTANT BIRDS SINGING.

Tester's Signature: [signature] 4/15/08

**Figure 58.** Data Sheet for Meter 8, April 15, 2008

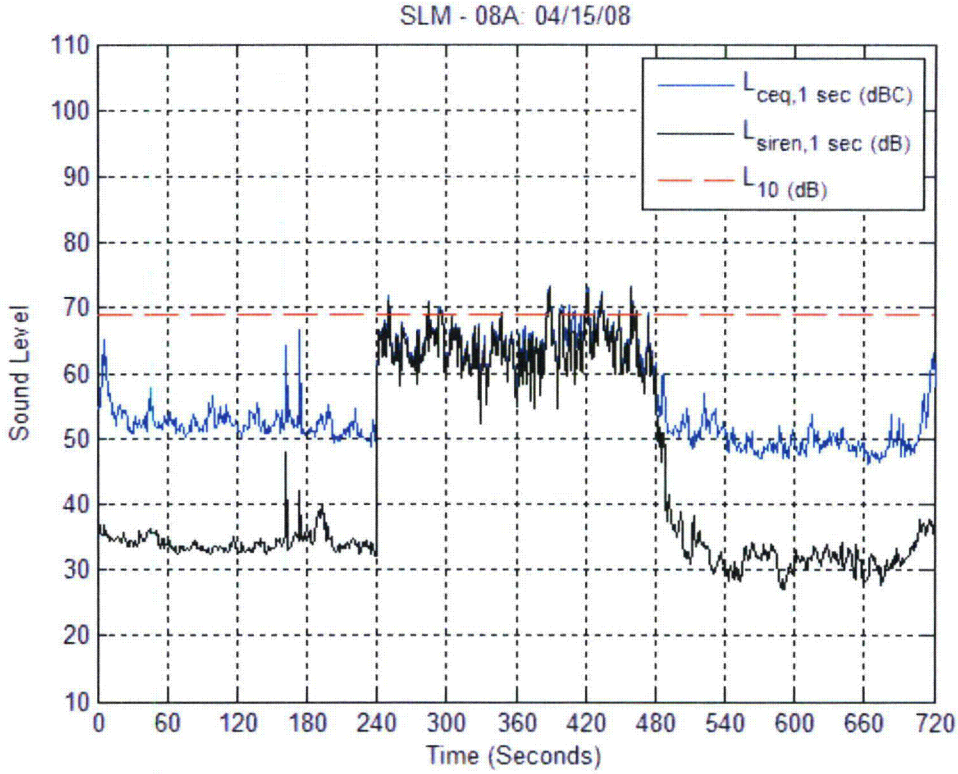



**Figure 59.** Time History Plot for Meter 8, April 15, 2008

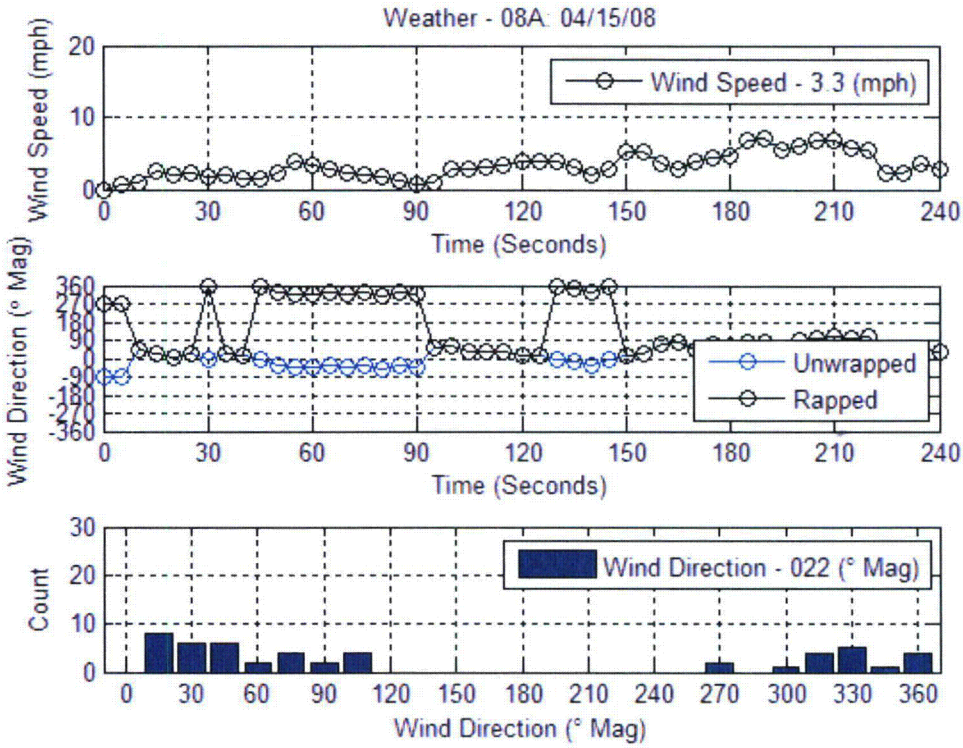



**Figure 60.** Weather Plots for Meter 8, April 15, 2008

**Meter 8, April 16, 2008**

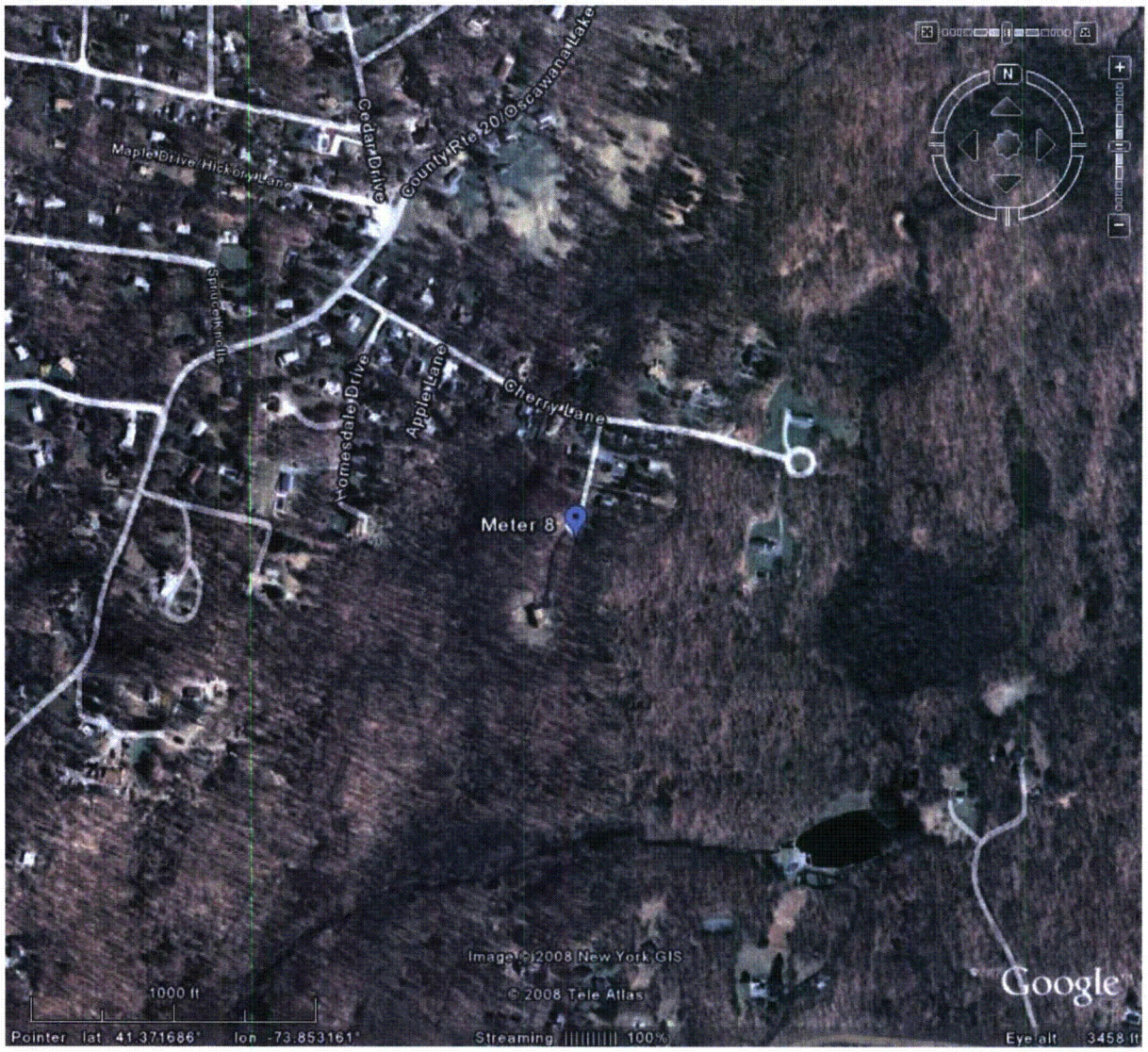



**Figure 61.** Aerial Photograph of Meter 8 Location, April 16, 2008.

SITE #8

**Indian Point Siren Test Data Sheet**

To be filled in be at the EOF by support staff

Date: 4/16/08 Time: 10

SLM Model: 824 SLM Serial Number: 3564 \ WEATHER

Tester's Name: MJ \ FRANK MADERO S69916

GPS Coordinates: _____ West _____ North

Checked Battery? Yes No

Checked Clock? Yes No

Memory Checked? Yes No

DOWNLOADED SLM \ WEATHER

Calibration level before test: 94.0 dBC

30 second calibration tone recorded before test? Yes No

Calibration level after test: 94.0 dBC

30 second calibration tone recorded after test? Yes No

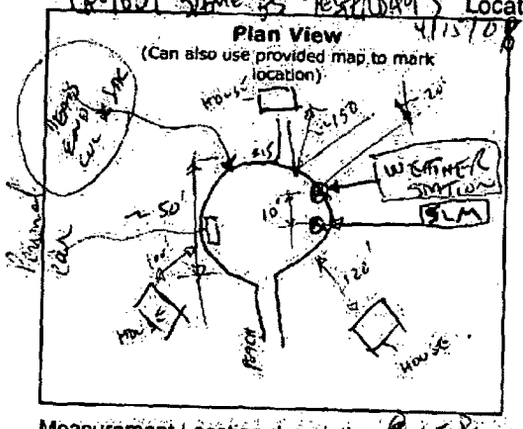
Calibrator Model: B+K 4231 Calibrator SN: 2597139

To be filled in be by the field crew at the site

LOOKS SAME AS YESTERDAY'S Location Drawing:

**Plan View**
(Can also use provided map to mark location)

4/15/08




**Major Elevation Changes**
NO CHANGES
SURFACE FIRMLY LEVELED

Measurement Location description: @ 15 PEACH LANE – SEE PLAN VIEW

Microphone height: 5 ft.

Photos Taken? Yes No

Meter Recording? Yes No

Weather Station on and wind cover removed? Yes No

Wind Dir: 273 W deg.

Wind Spd: 1.8 mph

Temp: 61 °F

CAUSE OF LOCATION DIR. DEG. CONSTANT SWIRLING APPARENT

WOUT PLANE → Ambient noise level before test: ~50 dBC

Maximum level observed during the test: 69 dBC

Could you hear the sirens? Yes No @ NO PLANE PASSES TIME = ALL SIREN

Ambient noise level after test: ~50 dBC

TEST STARTED @ 10:15 AM

TEST STOPPED @ 10:

SOME HAMMERING BY NEIGHBOR TOO

Notes about test (including background noise and noise intrusions during the test):
BIRDS SINGING IN THE BACKGROUND – SOME DOG BARKING – [illegible]
PLANE FLYING WHEN METER FIRST STARTED RUNNING – (LOW 60'S) @ 10:15 & 10:21

Tester's Signature: FMadero 4-16-08

PLANE FLEW OVER @ 10:33

FRANK MADERO.

NOTE: ROBERT KAISER FROM NRC WAS A TEST OBSERVER

**Figure 62.** Data Sheet for Meter 8, April 16, 2008

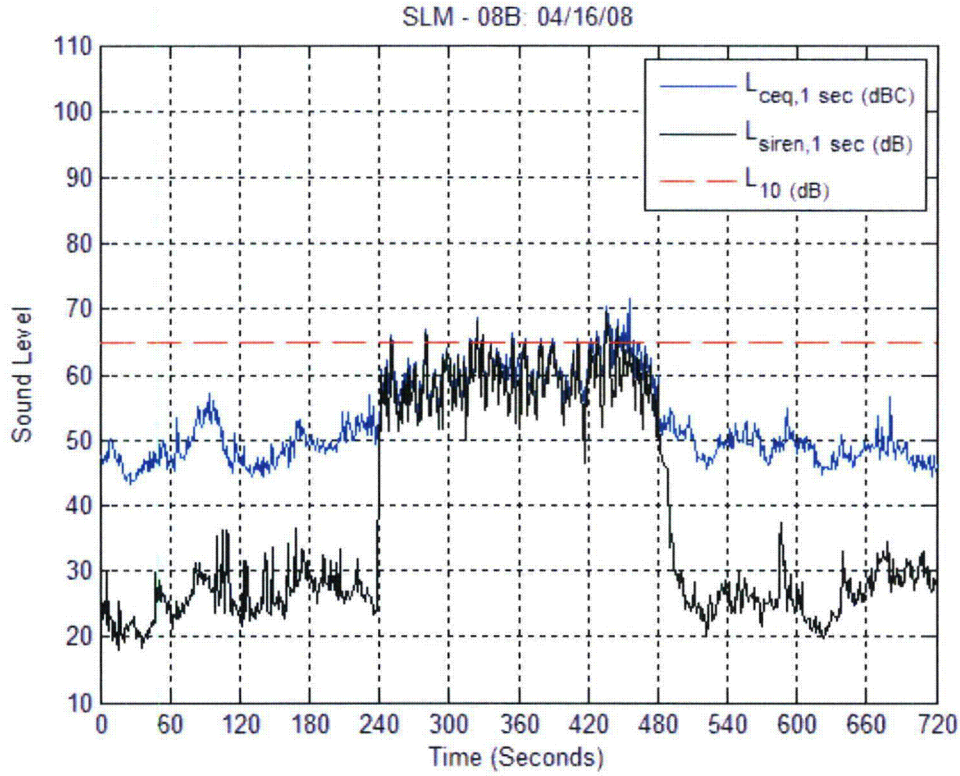



**Figure 63.** Time History Plot for Meter 8, April 16, 2008

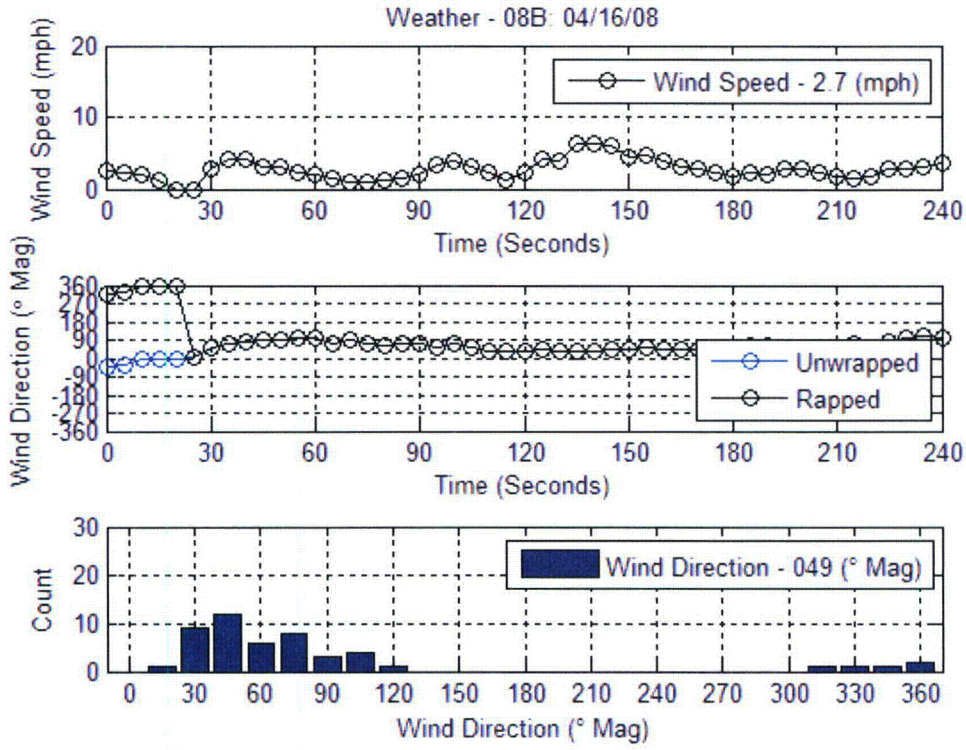



**Figure 64.** Weather Plots for Meter 8, April 16, 2008

**Meter 9, April 15, 2008**

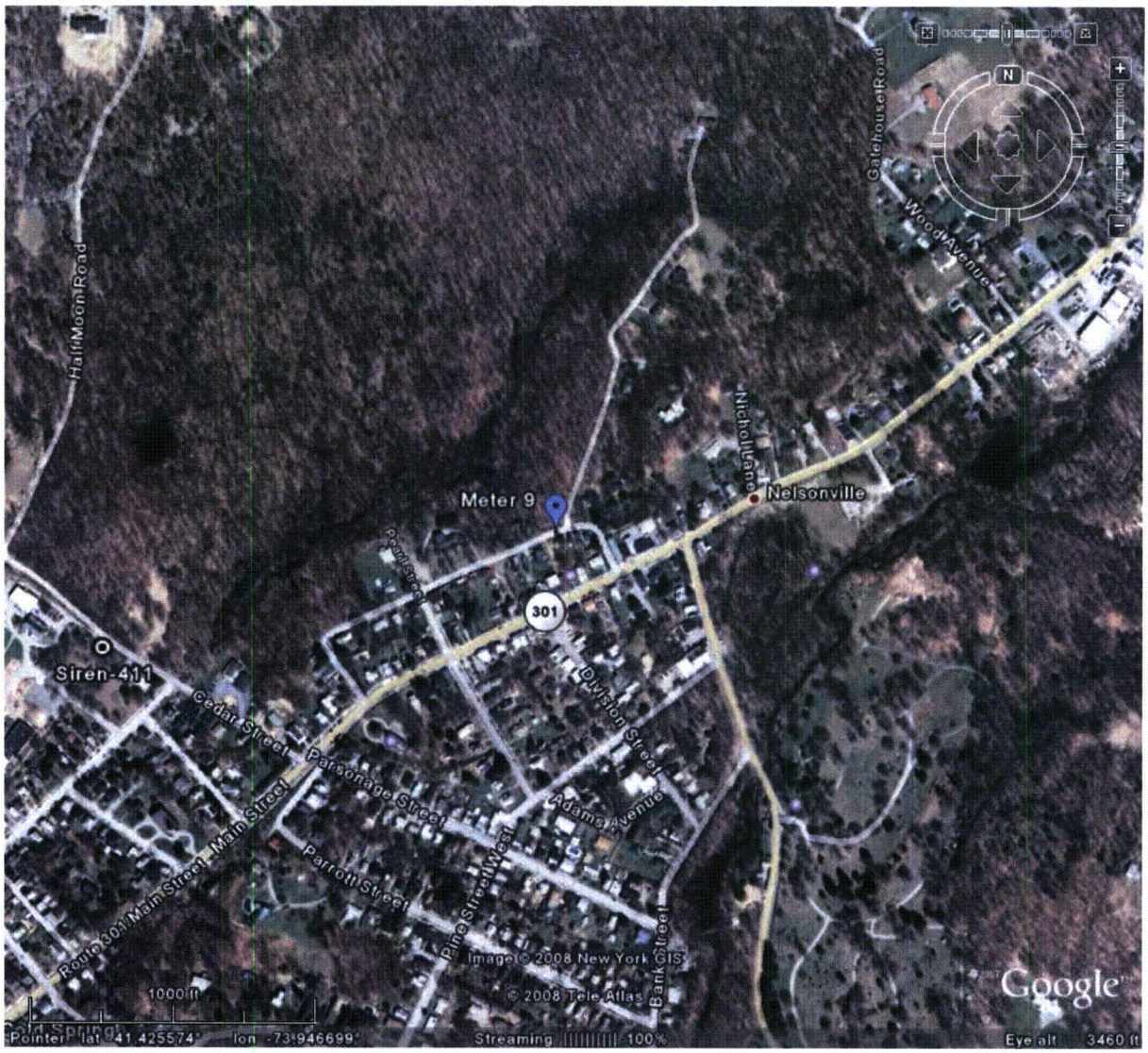



**Figure 65.** Aerial Photograph of Meter 9 Location, April 15, 2008.

SLM & weather downloaded BDI

Meter Site: 9

**Indian Point Siren Test Data Sheet**

To be filled in be at the EOF by support staff

Date: _____ Time: _____

SLM Model: 824 SLM Serial Number: 824A3562 / weather 57007

Tester's Name: Walter Graff

GPS Coordinates: 41° 25' 31" N ~~West~~ 73° 56' 51" ~~North~~ West

Checked Battery? Yes No 96%

Checked Clock? Yes No

Memory Checked? Yes No

Calibration level before test: 94.0 dBC

30 second calibration tone recorded before test? Yes No

Calibration level after test: 94.0 dBC

30 second calibration tone recorded after test? Yes No

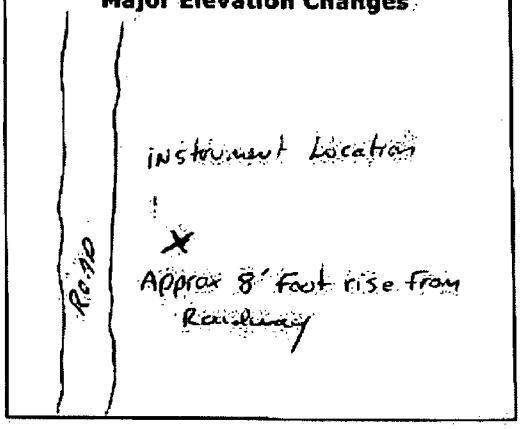
Calibrator Model: B&K 4231 Calibrator SN: 2592139

To be filled in be by the field crew at the site

Location Drawing:

**Plan View**
(Can also use provided map to mark location)

**Major Elevation Changes**




Measurement Location description: _____

Microphone height: 5' ft. Wind Dir: 338 deg.

Photos Taken? Yes No Wind Spd: 3.9 mph

Meter Recording? Yes No Temp: 49.1 °F

Weather Station on and wind cover removed? Yes No

Ambient noise level before test: [redacted] dBC

Maximum level observed during the test: _____ dBC

Could you hear the sirens? Yes No

Ambient noise level after test: 35.2 dBC

Notes about test (including background noise and noise intrusions during the test):

2 minutes into test Lady walking dog past Sy on roadway
Approx 8½ minutes after test (in the 10 minute window) dog walker returned on road

Tester's Signature: Walter Graff x 6637

**Figure 66.** Data Sheet for Meter 9, April 15, 2008

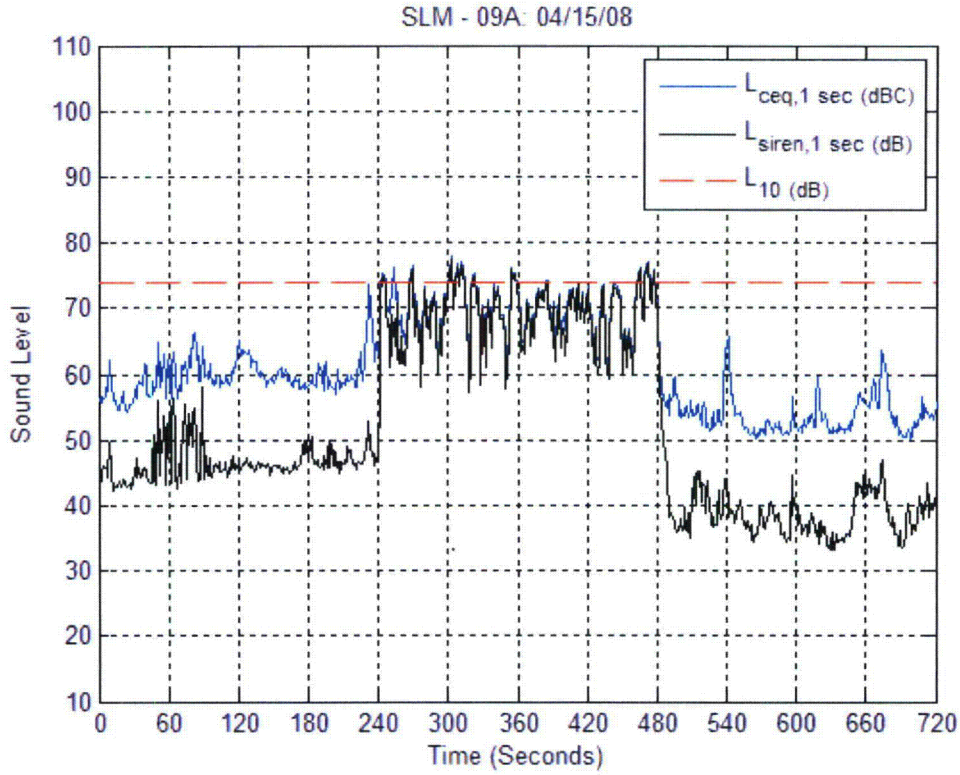



**Figure 67.** Time History Plot for Meter 9, April 15, 2008

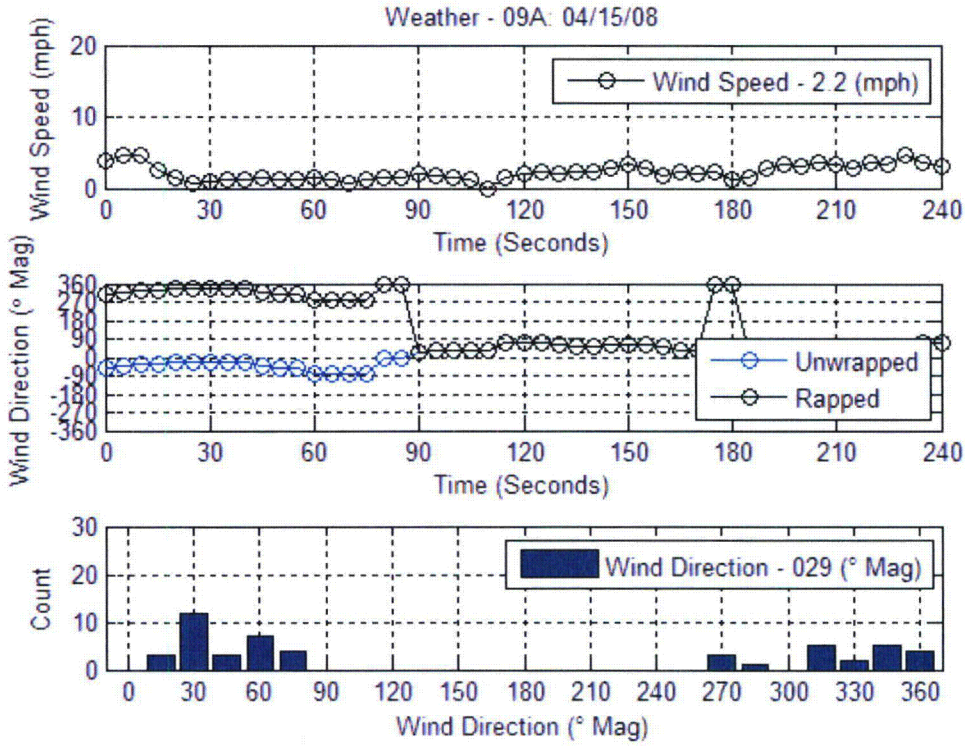



**Figure 68.** Weather Plots for Meter 9, April 15, 2008

**Meter 9, April 16, 2008**

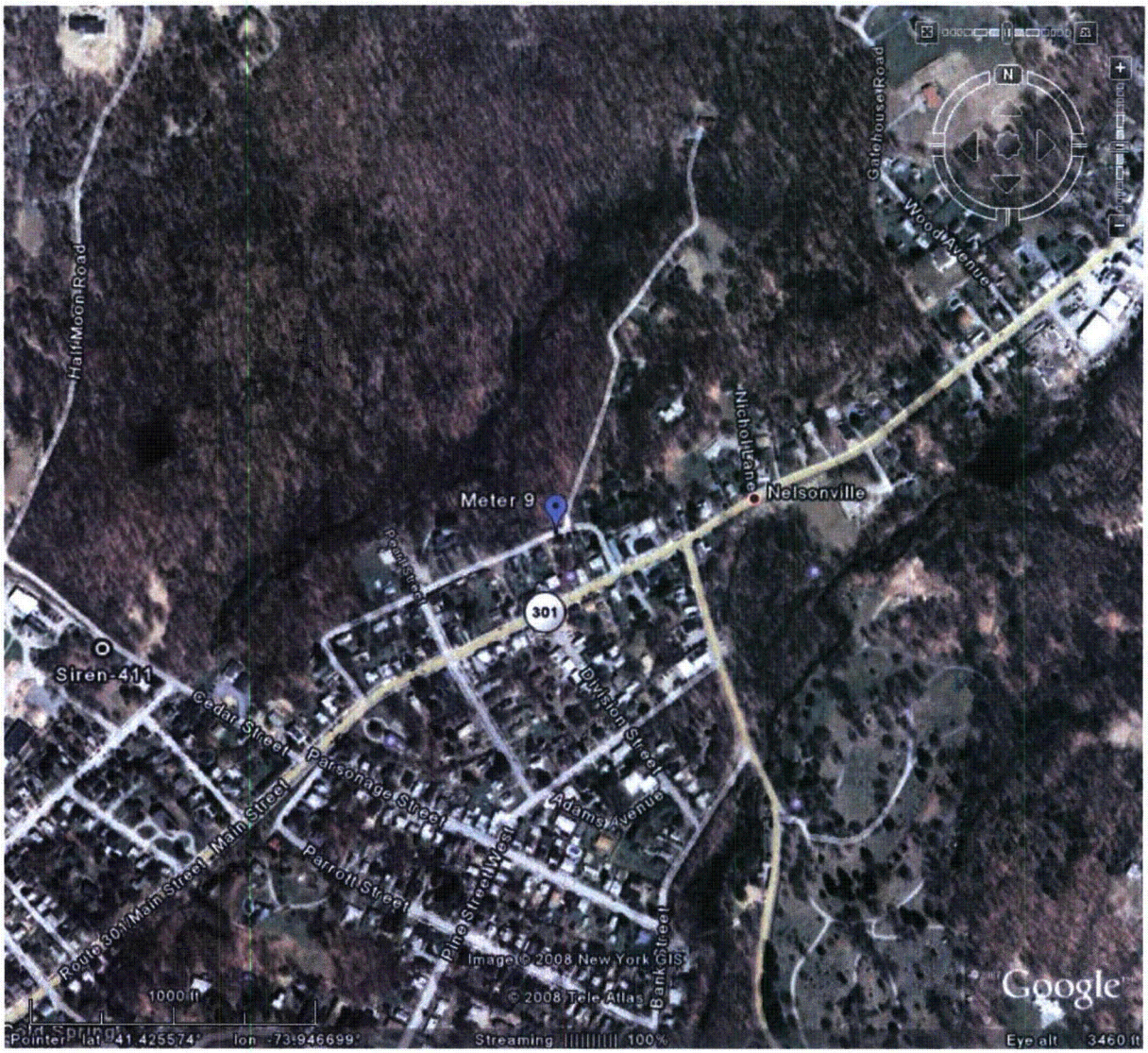



**Figure 69.** Aerial Photograph of Meter 9 Location, April 16, 2008.

SITE #9

## Indian Point Siren Test Data Sheet

To be filled in be at the EOF by support staff

Date: 4/16/08 Time: S70072

SLM Model: 824 SLM Serial Number: 3562 \ WEATHER

Tester's Name: MJ \

GPS Coordinates: _____ West _____ North

Checked Battery? (Yes) No 99%

Checked Clock? (Yes) No

Memory Checked? (Yes) No

DOWNLOADED SLM \ WEATHER

Calibration level before test: 94.0 dBC

30 second calibration tone recorded before test? (Yes) No

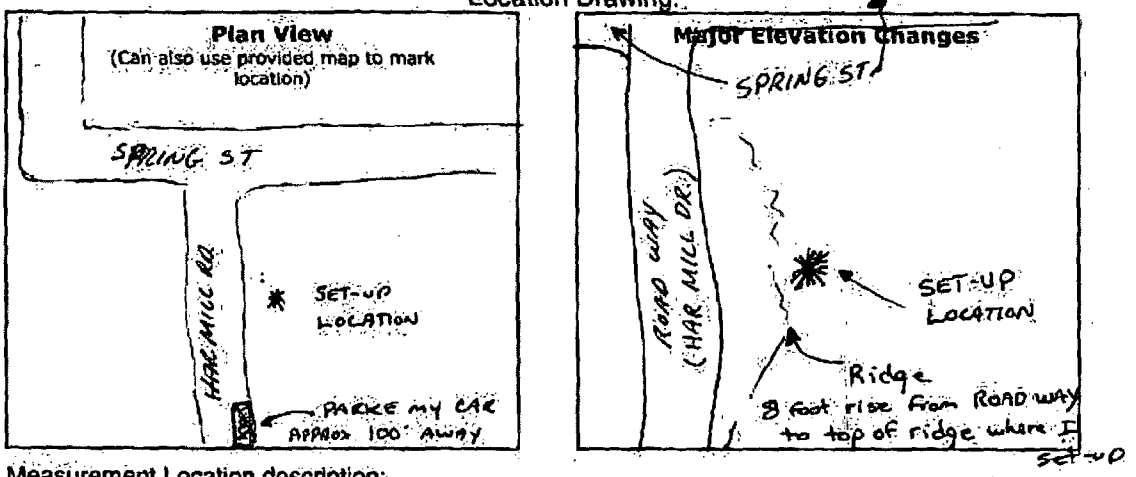
Calibration level after test: 94.0 dBC

30 second calibration tone recorded after test? (Yes) No

Calibrator Model: B+K 4231 Calibrator SN: 2575552

To be filled in be by the field crew at the site

Location Drawing:




Measurement Location description: _____

Microphone height: 5' ft.

Photos Taken? (Yes) No

Meter Recording? (Yes) No

Wind Dir: 37 deg. *

Wind Spd: 2.2 mph

Temp: 58.4 °F

Weather Station on and wind cover removed? (Yes) No

Ambient noise level before test: 52.6 dBC

Maximum level observed during the test: 70.6 dBC

Could you hear the sirens? (Yes) No

Ambient noise level after test: 57.2 dBC

* during test it read 216°

Notes about test (including background noise and noise intrusions during the test):

NOTE: Prior to Sirens sounding - could hear cars traveling on RTE 9D which is approx 75 yds from my set-up location.

Tester's Signature: Walter D Graff

**Figure 70.** Data Sheet for Meter 9, April 16, 2008

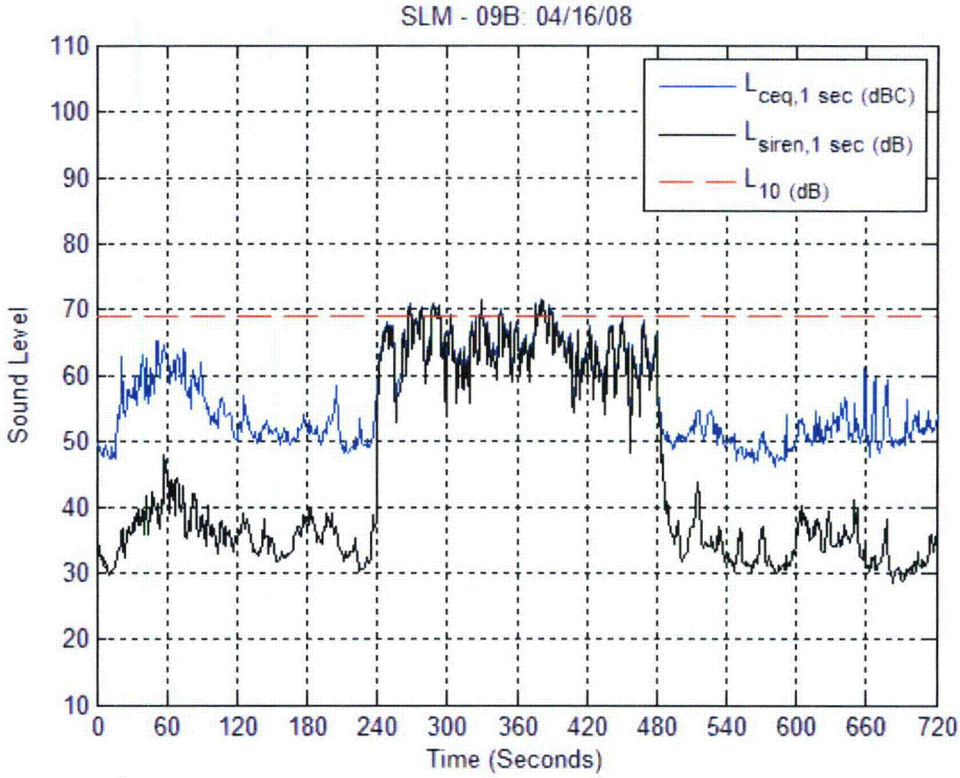



**Figure 71.** Time History Plot for Meter 9, April 16, 2008

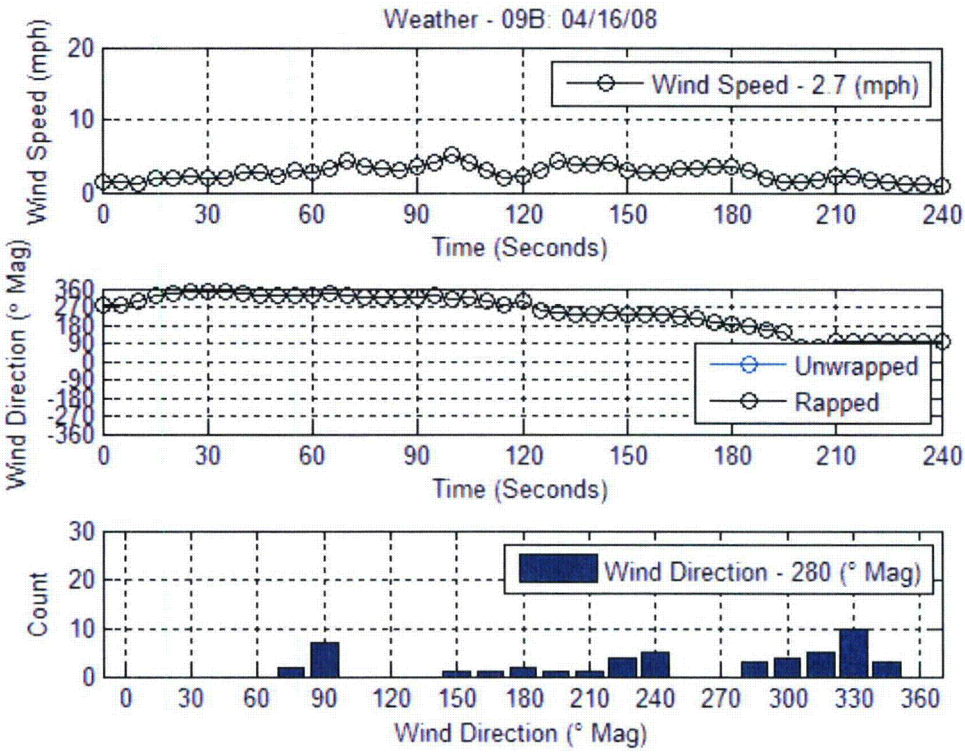



**Figure 72.** Weather Plots for Meter 9, April 16, 2008

**Meter 10, April 15, 2008**

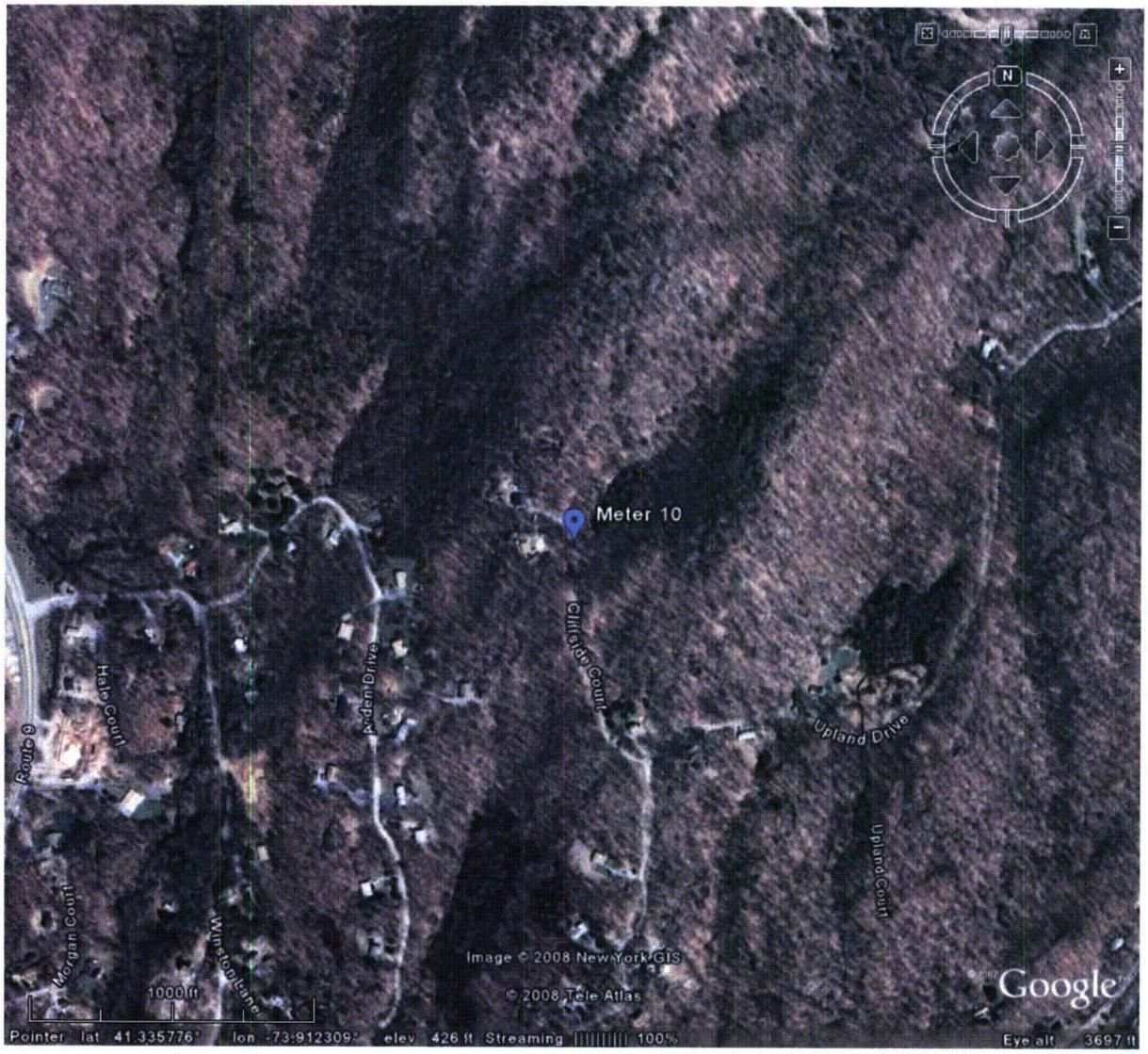



**Figure 73.** Aerial Photograph of Meter 10 Location, April 15, 2008.

All downloaded

#10

#10

## Indian Point Siren Test Data Sheet

To be filled in be at the EOF by support staff

Date: 4/15/08 Time:

SLM Model: 831 SLM Serial Number: 1306 / weather 569895

Tester's Name: MSI Jack Huber

GPS Coordinates: 73° 59' 57" West 41° 20' 28" North

Checked Battery? (Yes) No

Checked Clock? (Yes) No

Memory Checked? (Yes) No

DOWNLOADED SLM ✓ / WEATHER ✓

Calibration level before test: 94.0 dBC

30 second calibration tone recorded before test? (Yes) No

Calibration level after test: 93.8 dBC

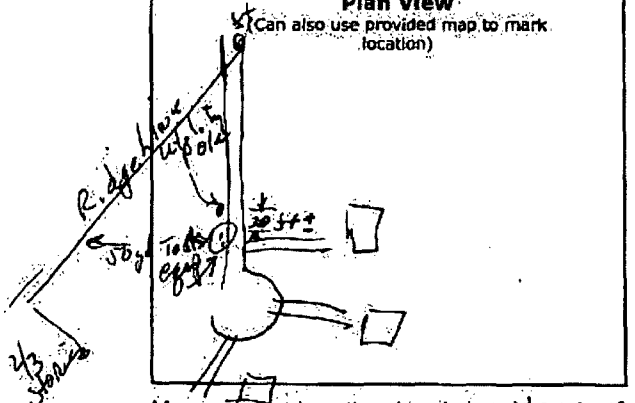
30 second calibration tone recorded after test? (Yes) No

Calibrator Model: B+K 4231 Calibrator SN: 2575552

To be filled in be by the field crew at the site

Location Drawing:

**Plan View**
(Can also use provided map to mark location)




**Major Elevation Changes**

Ridge about 50 yds east of test location. Elevation rises to 2 to 3 stories.

Measurement Location description: Near end of upland 30 ft ± from utility pole

Microphone height: 5 ft.

Photos Taken? (Yes) No

Meter Recording? (Yes) No

Wind Dir: 358 deg.

Wind Spd: 1.7 mph

Temp: 47.4 °F

10:30

Weather Station on and wind cover removed? (Yes) No

Ambient noise level before test: 46 dBC

Maximum level observed during the test: 73 dBC

Could you hear the sirens? (Yes) No

Ambient noise level after test: 49 dBC

Notes about test (including background noise and noise intrusions during the test):
wooded area – birds, wind chimes, distant road noise etc.

Tester's Signature:

**Figure 74.** Data Sheet for Meter 10, April 15, 2008

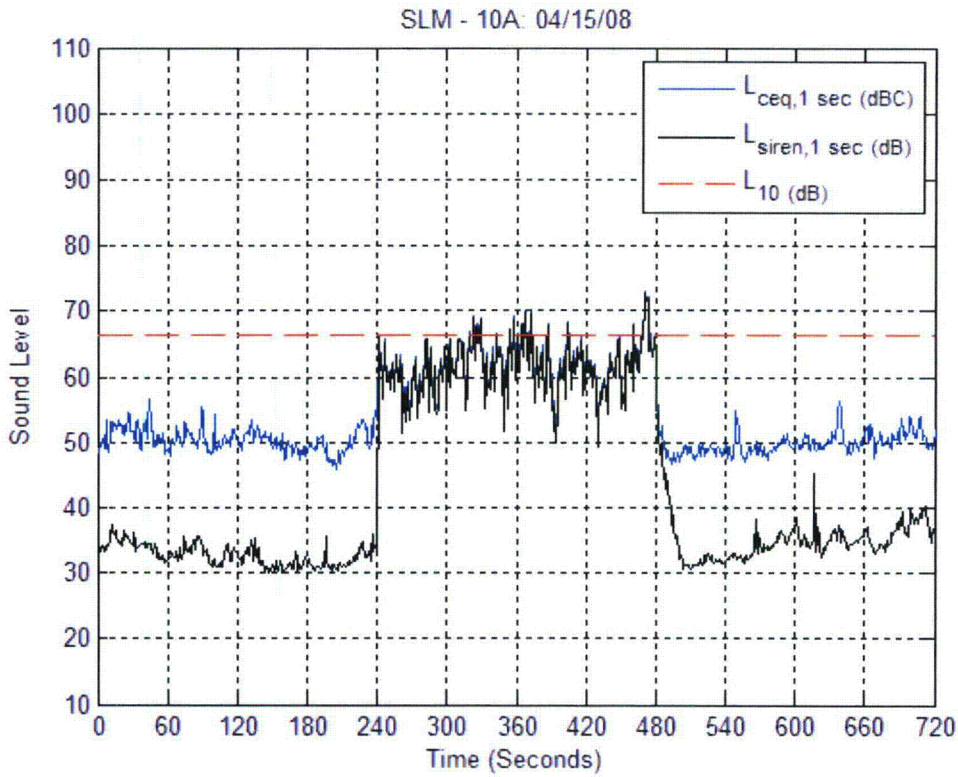



**Figure 75.** Time History Plot for Meter 10, April 15, 2008

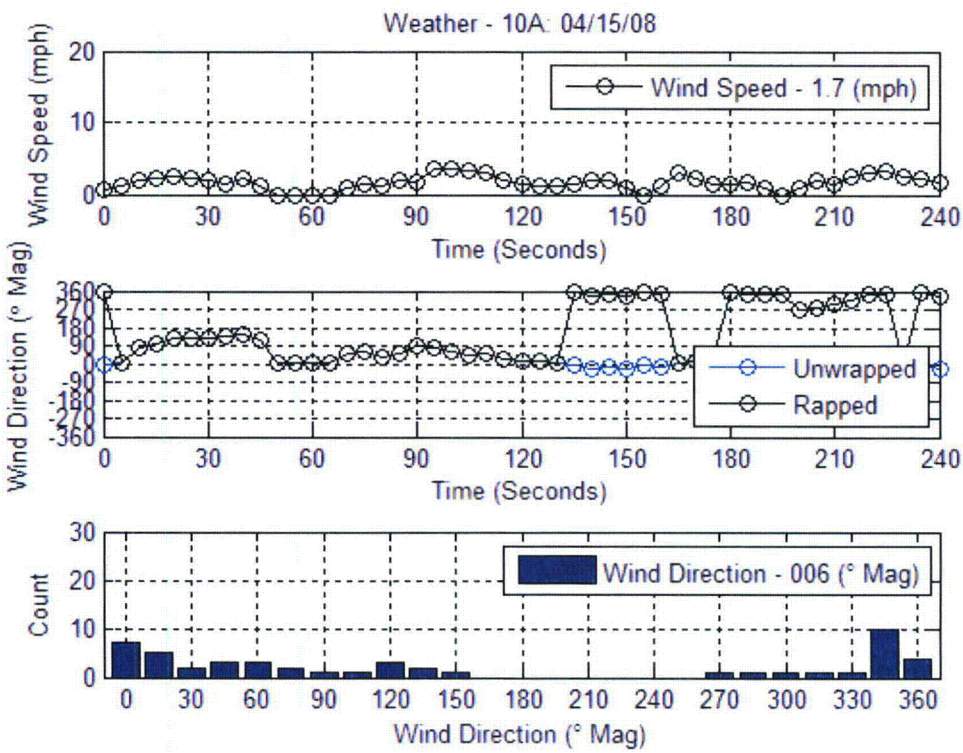



**Figure 76.** Weather Plots for Meter 10, April 15, 2008

**Meter 10, April 16, 2008**

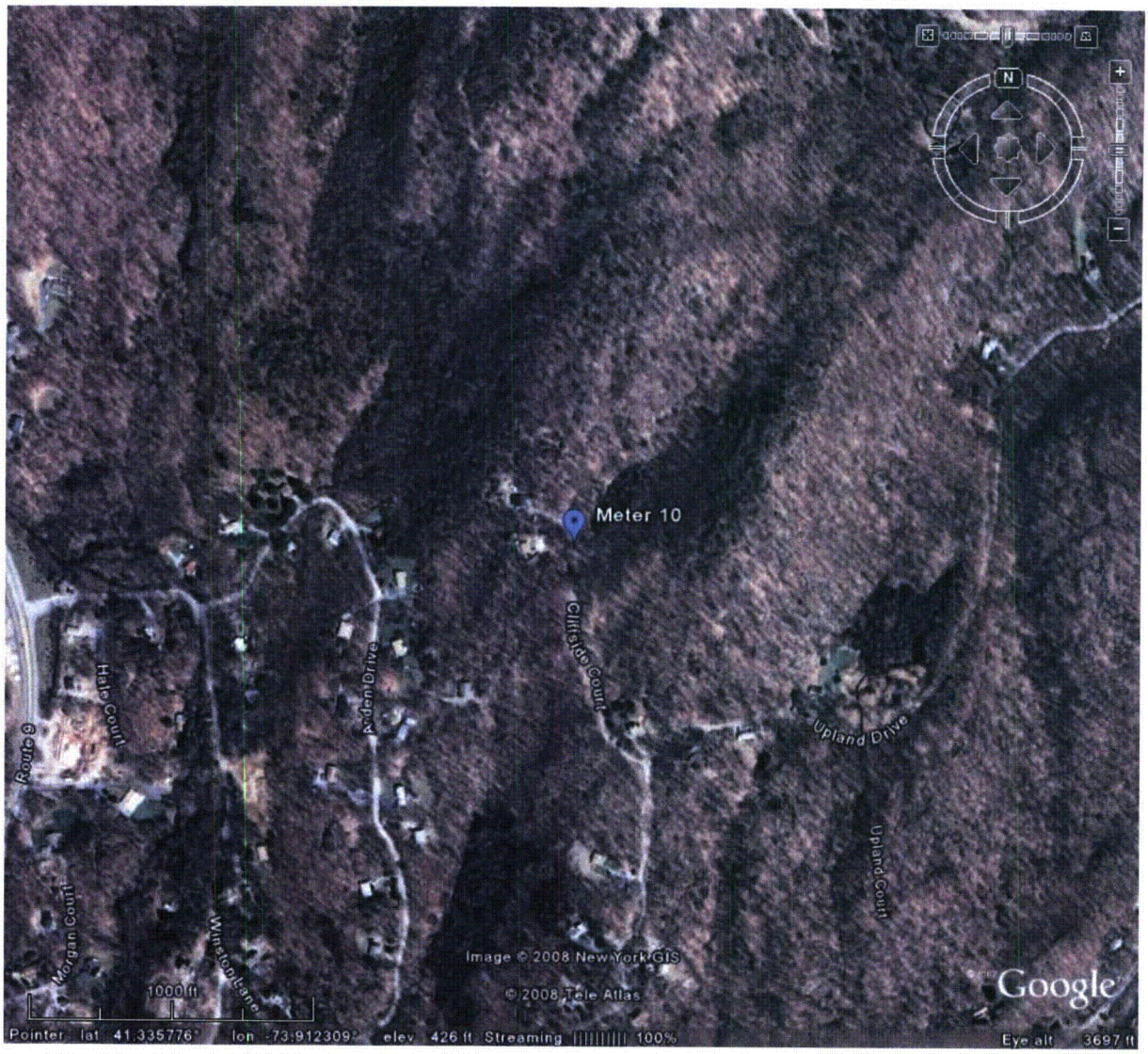



**Figure 77.** Aerial Photograph of Meter 10 Location, April 16, 2008.

SITE #10

## Indian Point Siren Test Data Sheet

To be filled in be at the EOF by support staff

Date: 4/16/08 Time: 569895

SLM Model: 831 SLM Serial Number: 1306 \WEATHER

Tester's Name: MJ\ Jack Huber

GPS Coordinates: _____ West _____ North

Checked Battery? (Yes) No 5.3V

Checked Clock? (Yes) No

Memory Checked? (Yes) No

DOWNLOADED SLM ✓ \WEATHER ✓

Calibration level before test: 94.0 dBC

30 second calibration tone recorded before test? (Yes) No

Calibration level after test: 94.0 dBC

30 second calibration tone recorded after test? (Yes) No

Calibrator Model: B+K 4231 Calibrator SN: 2575552

To be filled in be by the field crew at the site

Location Drawing:

**Plan View**
(Can also use provided map to mark location)

see attached google earth map

**Major Elevation Changes**

Ridge to the East Rises from the road to about 3 stories over 150 yds.

Measurement Location description: End of cliffs left - across street from end of dock @ #20

Microphone height: 5'0" ft.

Photos Taken? (Yes) No

Meter Recording? (Yes) No

Wind Dir: 290 deg.

Wind Spd: 1.1 mph

Temp: 55 °F

Weather Station on and wind cover removed? (Yes) No

Ambient noise level before test: 44 dBC

Maximum level observed during the test: 67 dBC

Could you hear the sirens? (Yes) No

Ambient noise level after test: 49 dBC

Notes about test (including background noise and noise intrusions during the test):
Wooded area, - birds, wind through trees, distant road noise. woodpecker after test
(OVER)

Tester's Signature: _____

**Figure 78.** Data Sheet for Meter 10, April 16, 2008

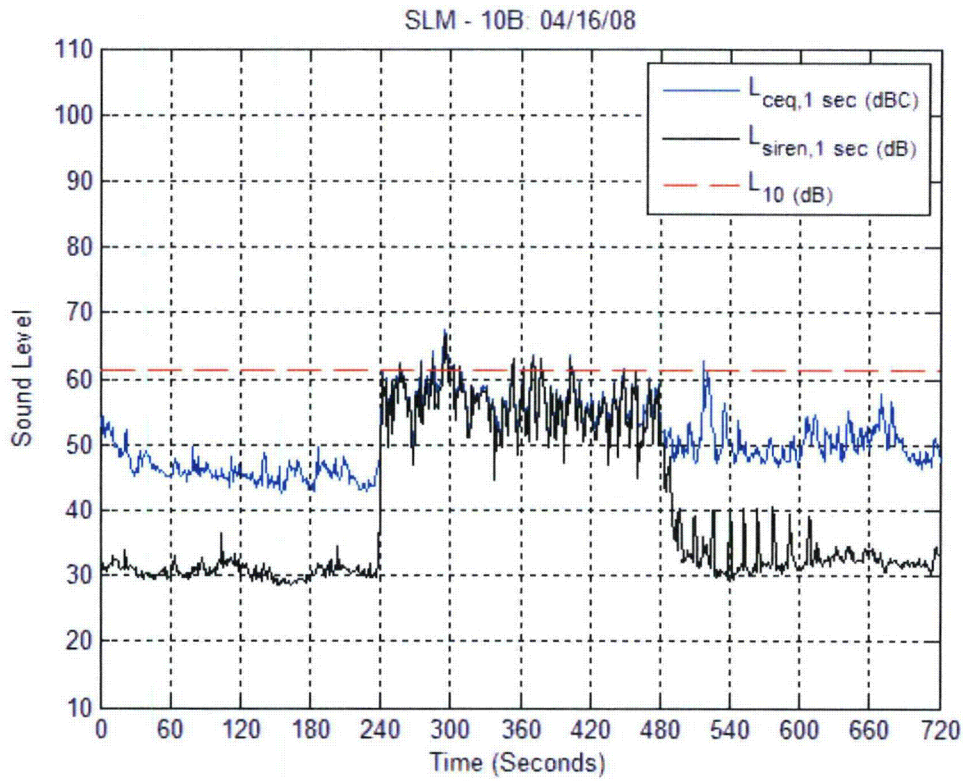



**Figure 79.** Time History Plot for Meter 10, April 16, 2008

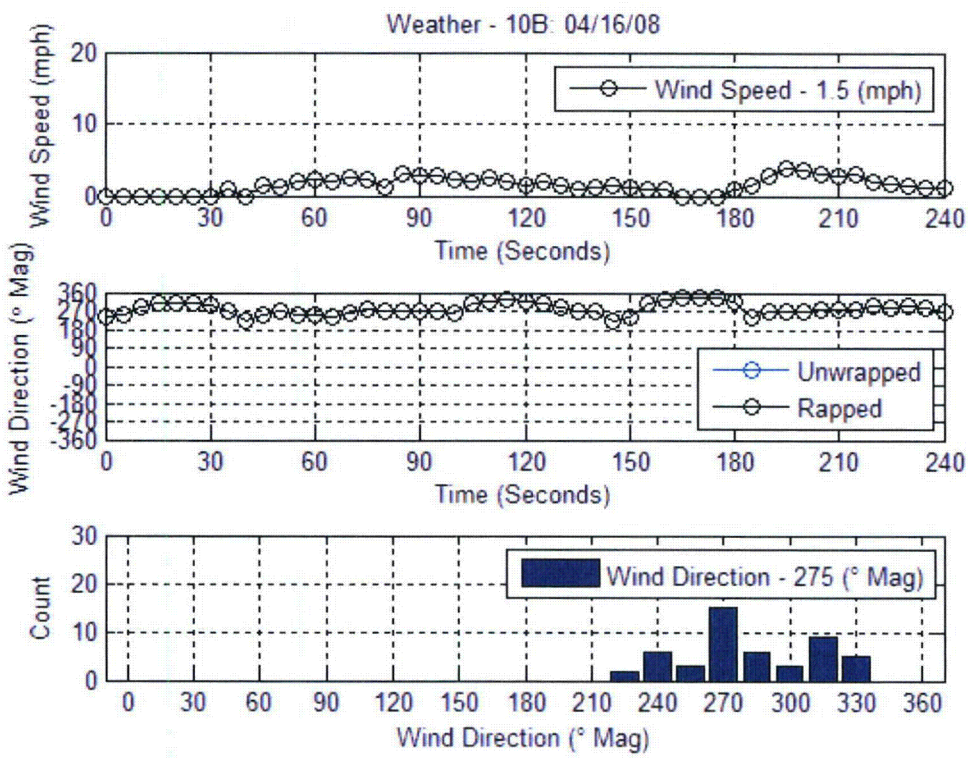



**Figure 80.** Weather Plots for Meter 10, April 16, 2008

**Meter 11, April 15, 2008**

**Figure 81.** Aerial Photograph of Meter 11 Location, April 15, 2008.

## Indian Point Siren Test Data Sheet

----------To be filled in be at the EOF by support staff----------

Date: _____ Time: _____

SLM Model: 824 SLM Serial Number: 824 A3729 / weather 570049

Tester's Name: _____

GPS Coordinates: 73° 56' 35" West 41° 20' 9" North

Checked Battery? Yes No 95%

Checked Clock? Yes No

Memory Checked? Yes No

Calibration level before test: 94.0 dBC

30 second calibration tone recorded before test? Yes No

Calibration level after test: 94.0 dBC

30 second calibration tone recorded after test? Yes No

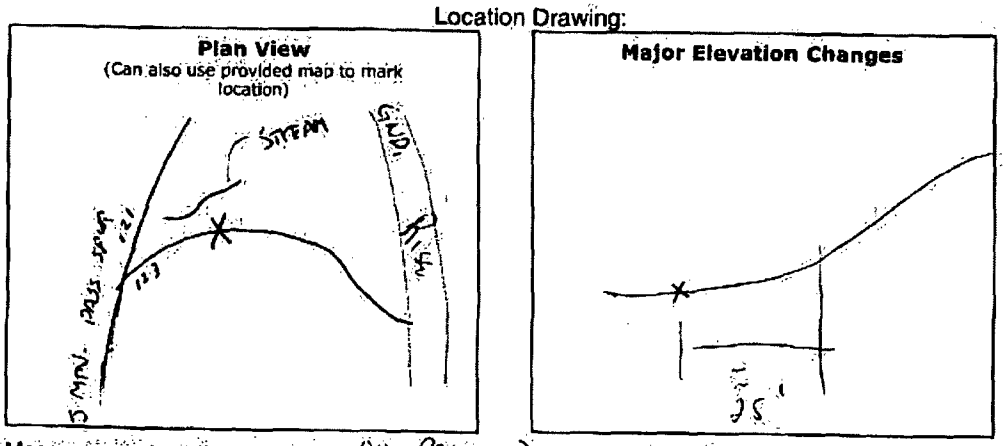
Calibrator Model: B&K 4231 Calibrator SN: 2552139

SLM & weather downloaded BII

SITE #11

----------To be filled in be by the field crew at the site----------

Location Drawing:




Measurement Location description: ON PRIVATE RD TO 123 S. MTN PASS SPUR

Microphone height: 5'-0" ft. Wind Dir: 107 deg. *

Photos Taken? Yes No Wind Spd: 2.5-5.0 mph

Meter Recording? Yes No Temp: 47 °F

Weather Station on and wind cover removed? Yes No

Ambient noise level before test: 47-49 dBC

Maximum level observed during the test: 56 dBC

Could you hear the sirens? Yes No

Ambient noise level after test: 46-48 dBC

* VARIABLE S - SE - SW

Notes about test (including background noise and noise intrusions during the test):

@ 10:22 & 10:26 - cyclist & dog passed by. Dog was barking

Tester's Signature: _____

* There was a babbling brook ~ 25' away from the instruments.

~ 10:39 cyclist & dog returned.

**Figure 82.** Data Sheet for Meter 11, April 15, 2008

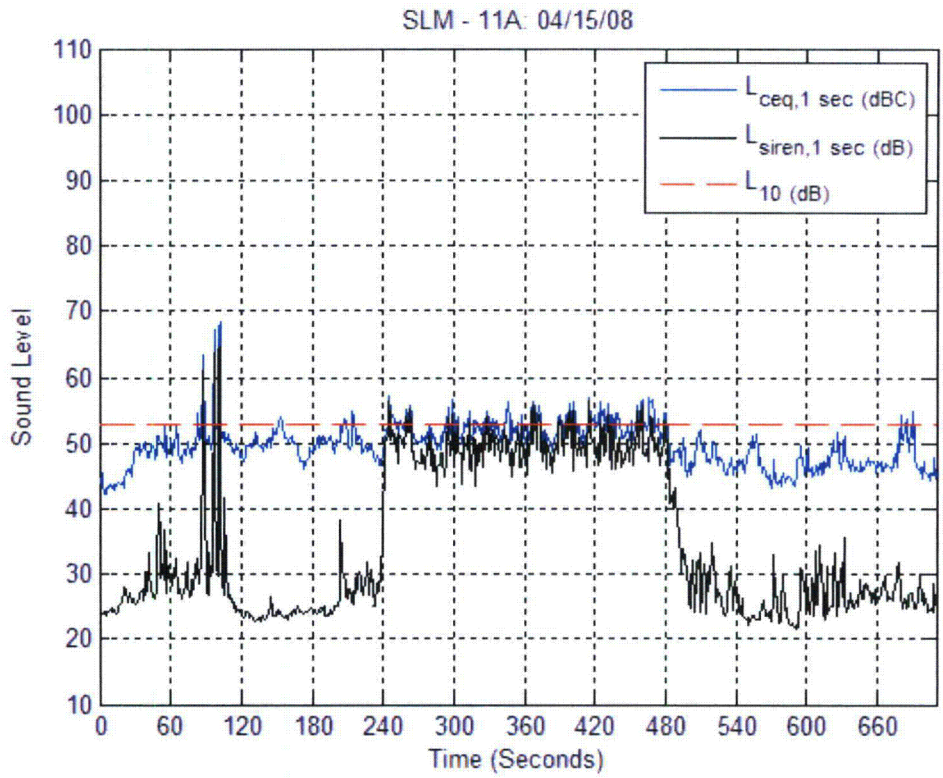



**Figure 83.** Time History Plot for Meter 11, April 15, 2008

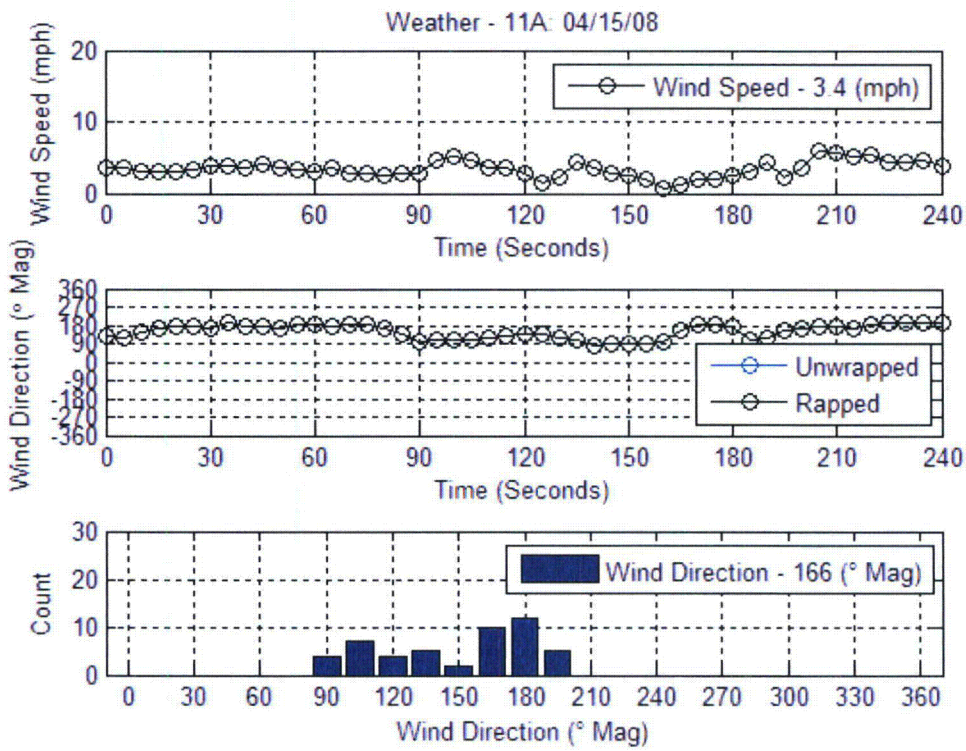



**Figure 84.** Weather Plots for Meter 11, April 15, 2008

**Meter 11, April 16, 2008**

**Figure 85.** Aerial Photograph of Meter 11 Location, April 16, 2008.

SITE #11

## Indian Point Siren Test Data Sheet

To be filled in be at the EOF by support staff

Date: 4/16/08 Time: _____

SLM Model: 824 SLM Serial Number: 3779 \WEATHER S70049

Tester's Name: MJ

GPS Coordinates: _____ West _____ North

Checked Battery? (Yes) No

Checked Clock? (Yes) No

Memory Checked? (Yes) No

DOWNLOADED SLM \ WEATHER

Calibration level before test: 94.0 (dBC)

30 second calibration tone recorded before test? (Yes) No

Calibration level after test: 94.0 dBC

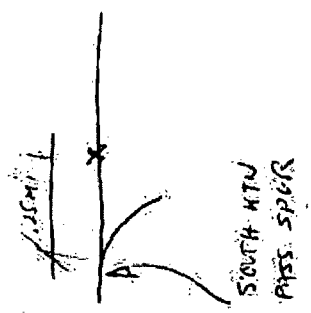
30 second calibration tone recorded after test? (Yes) No

Calibrator Model: B+K 4231 Calibrator SN: 2597139

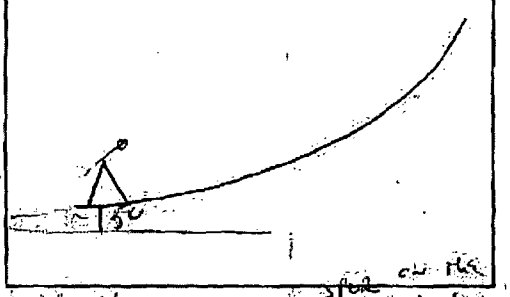
To be filled in be by the field crew at the site

Location Drawing:

**Plan View**
(Can also use provided map to mark location)




**Major Elevation Changes**




Measurement Location description: 1/4 mile Beyond the Y on SOUTH PASS SPUR WSW side of road

Microphone height: 5'10 ft. Wind Dir: 240 deg.

Photos Taken? (Yes) No Wind Spd: 3-5 mph

Meter Recording? (Yes) No Temp: 52.3 °F

Weather Station on and wind cover removed? (Yes) No

Ambient noise level before test: 46 dBC

Maximum level observed during the test: 56 dBC

Could you hear the sirens? (Yes) No

Ambient noise level after test: 45 dBC

Notes about test (including background noise and noise intrusions during the test):

NONE

Tester's Signature: _____

**Figure 86.** Data Sheet for Meter 11, April 16, 2008

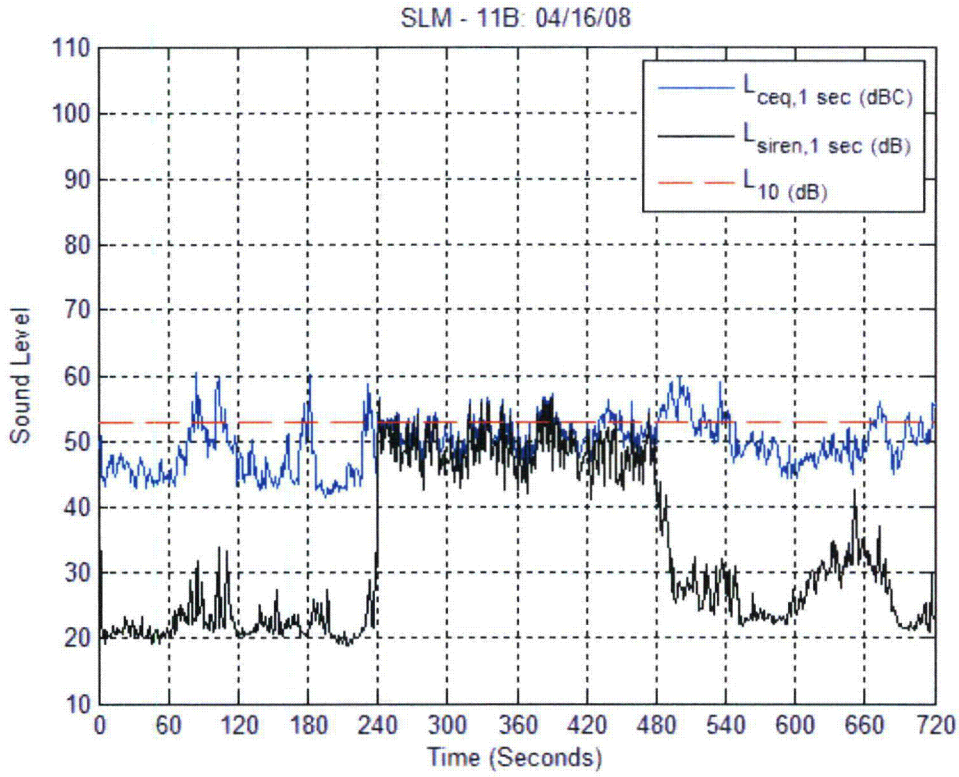



**Figure 87.** Time History Plot for Meter 11, April 16, 2008

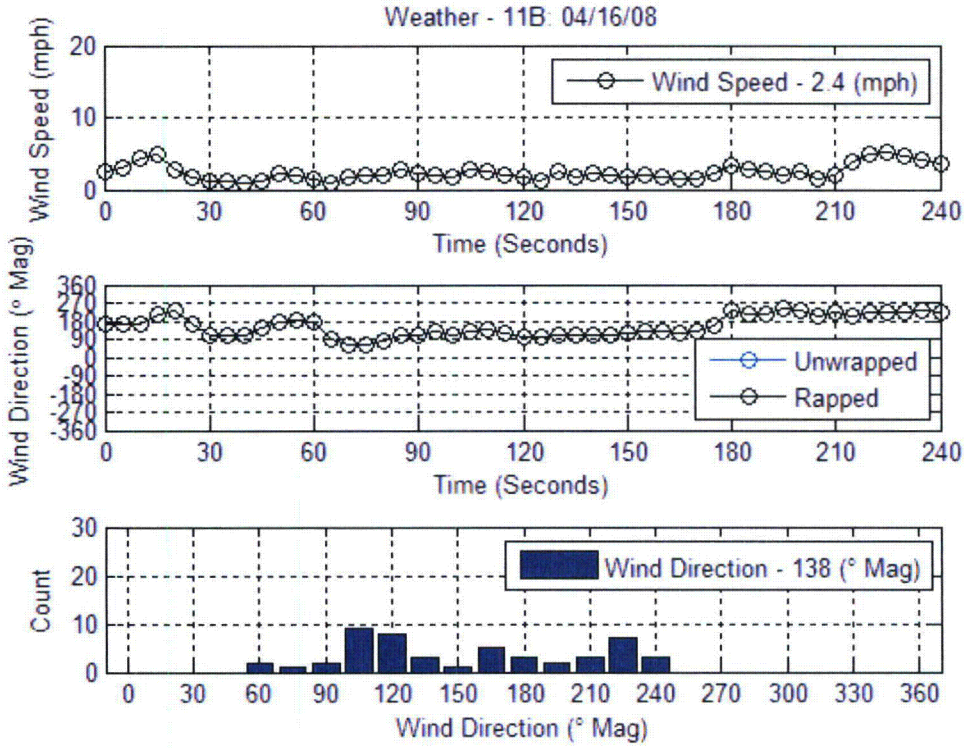



**Figure 88.** Weather Plots for Meter 11, April 16, 2008

**Meter 12, April 15, 2008**

**Figure 89.** Aerial Photograph of Meter 12 Location, April 15, 2008.

## Indian Point Siren Test Data Sheet

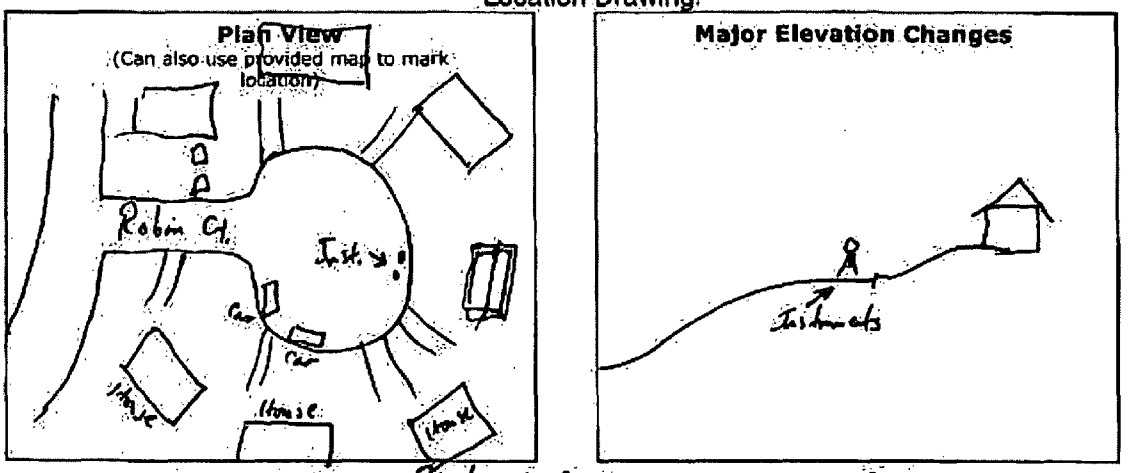
To be filled in be at the EOF by support staff

Date: 4/15/08 Time: 1020 - 1045
SLM Model: 831 Type Serial Number: 1057 / weather 569904
Tester's Name: Andrea Kinsey \ MJ
GPS Coordinates: 73.93195 / 73°55'55" West 41.15903 / 41° 9' 33" North Site 12
Checked Battery? (Yes) No 94.9%
Checked Clock? (Yes) No
Memory Checked? (Yes) No
Calibration level before test: 94.0 dBC
30 second calibration tone recorded before test? (Yes) No
Calibration level after test: 94.0 dBC
30 second calibration tone recorded after test? (Yes) No
Calibrator Model: B+K 4231 Calibrator SN: 2575552

DOWNLOADED SLM ✓ / WEATHER

To be filled in be by the field crew at the site

Location Drawing:




Measurement Location description: Back end of Robin Court at top of Cul-De-Sac
Microphone height: 5.0 ft. Wind Dir: 030 deg.
Photos Taken? (Yes) No Wind Spd: 4 mph
Meter Recording? (Yes) No Temp: 49 °F
Weather Station on and wind cover removed? (Yes) No
Ambient noise level before test: 65 dBC
Maximum level observed during the test: 85.1 dBC
Could you hear the sirens? (Yes) No
Ambient noise level after test: 66 dBC
Notes about test (including background noise and noise intrusions during the test):
Moved from primary location due to work crew digging up the street. Traffic noise observed coming from 9W and 303 throughout test. Road crew could be heard as background noise during test.
Tester's Signature:

**Figure 90.** Data Sheet for Meter 12, April 15, 2008

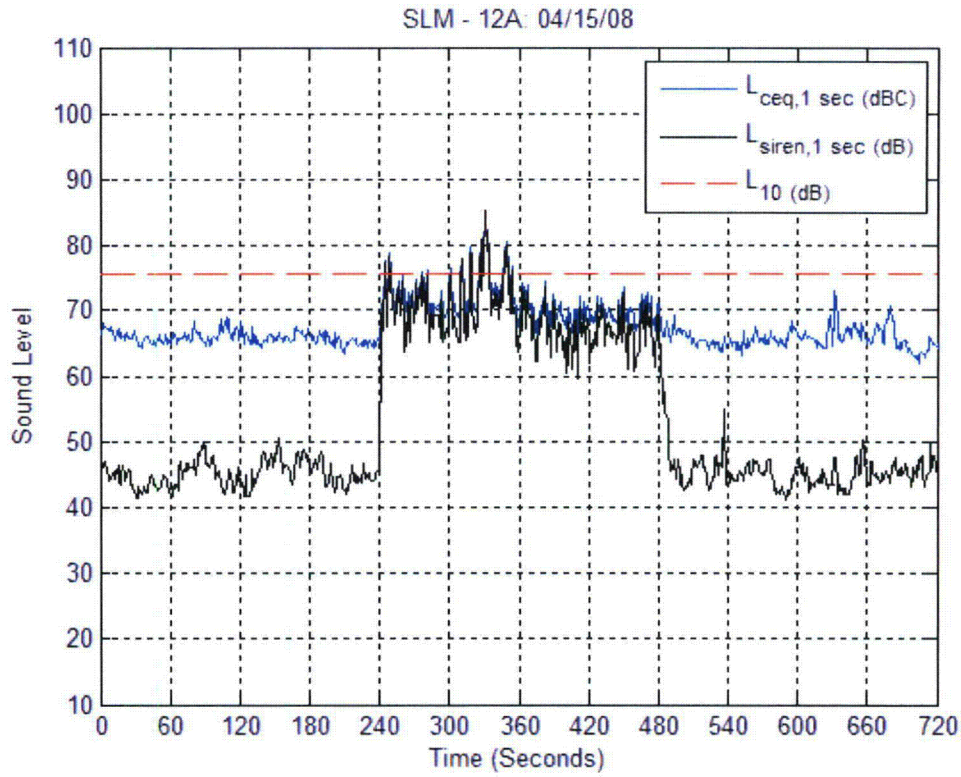



**Figure 91.** Time History Plot for Meter 12, April 15, 2008

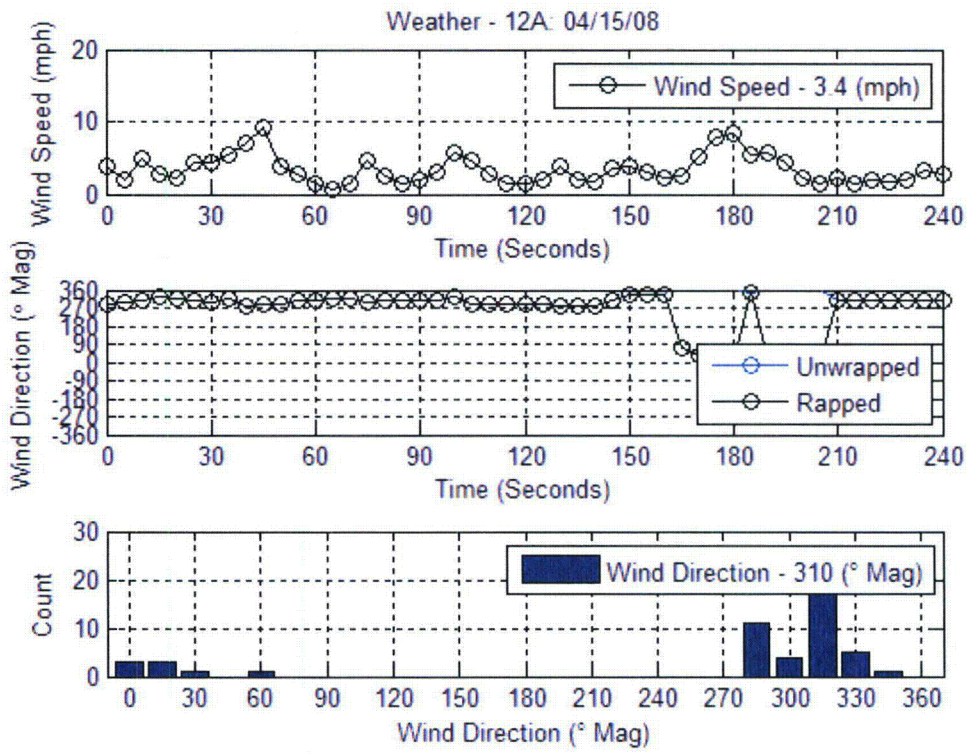



**Figure 92.** Weather Plots for Meter 12, April 15, 2008