



Date: 1/18/10  
To: **Peter Lowitt, AICP Director**  
Cc: Neil Angus  
From: Doug Sheadel,  
RE: Summary of the Monitoring Protocol Review

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The purpose of this memo is to summarize the technical supporting data that went into the development of the Long Term Monitoring Protocol adopted by the DEC on December 3, 2009.

The Long Term Monitoring Protocol was developed over a period of about 6 months. The facility produced approximately 51 dBA at R1 in the absence of gas deliveries before the mitigation efforts commenced. By early June, the nighttime levels at R1 were at 45 dBA or above while gas deliveries remained at 55 dBA or above. After the first reductions were the result of the first set of mitigation features including individual blower enclosures installed on the VOC main blowers. Through June and July, 2009, the major Evergreen Noise Mitigation components were being installed. They included noise barrier walls around the Dust Collection System and around the VOC treatment area. By July 17, Nighttime levels dropped to 43 dBA. By July 20, Nighttime levels dropped to 42 dBA. Significant elevated sources in the VOC area had been fitted with silencers. While there remained some outstanding mitigation commitments by Evergreen Solar, such as the permanent gas delivery pumps, the bulk of the mitigation treatment was in place. All attended compliance measurements were made by Cavanaugh Tocci Associates (CTA) and witnessed by Modeling Specialties and DEC staff, confirmed by independent measurements by Modeling Specialties. On July 25, the first compliant nighttime level at 38 dBA was measured. Over the Labor Day weekend, measurements were made from noon till 6:00 pm on September 5<sup>th</sup> through 7<sup>th</sup>. Five 20 minute samples on the 5<sup>th</sup> were measured to be in compliance. Fourteen samples (all except 4) were measured to be in compliance on September 6<sup>th</sup>. On September 7<sup>th</sup>, all measured samples between noon and 6:00 pm were in compliance with the nighttime limit. Based on compliance measurements made on September 13, levels reached as low as 36 dBA for individual samples. Many were at 38 dBA., meeting the nighttime criteria at R1.

As part of their report regarding the July 25 testing, CTA introduced the first language addressing how a long term monitoring protocol to address the requirements of the DEC Resolution Condition 2 and 7. As the protocol developed and a long series of compliance evaluations were attempted by CTA and witnessed by Modeling Specialties, most of which were dominated by sound from sources other than Evergreen, the use of nearby monitors was proposed. Two microphones (R5 and R7) were installed by CTA at separate reference locations (light poles) representing the VOC area and Cooling Tower area because no single microphone location could reliably represent the whole facility. The possible benefit of even more microphones was evaluated Modeling Specialties on behalf of the DEC, but were dismissed Modeling Specialties because the major Evergreen noise sources formed two logical groups that could easily be captured by two. The protocol came into its near-final form in early October and was distributed to all interested parties for comment. Evergreen had proposed VOC area sound levels of up to 62.5 dBA at R5. A technical calculation of the "Delta" (difference between the R1 and R5 microphones) was presented by CTA and reviewed Modeling Specialties. Modeling

Specialties concluded that the methodology was technically sound and consistent with typical propagation calculation methods. However, by this time, there were already several data points where compliance had been achieved at R1 (October 3, 4, 13, 26, 31 and November 29) while the R5 and R7 monitors were in place. The corresponding sound level at R5 was generally between 59 and 61 dBA during those times of compliance. The data summary for November 28 and 29 are shown in Attachment 1 and 2. The graphs show that the R5 and R7 monitored levels remain very steady through modest fluctuations in the ambient levels. The November 29 and 30 graph shows several wind and aircraft events however, that do affect the levels of R7. Modeling Specialties recommended changing the Delta value to reflect the actual measured data record, instead of using calculations which EGS proposed. In this way, the simultaneous levels measured at R1 and the elevated reference microphones demonstrated the propagation relationship on a real time basis, removing the doubt left from technical calculations and eliminating the need for conservative margins. The resulting levels measured at R5 and R7 are stable representatives of the sound emitted from Evergreen sources and are affected only by a few significant area ambient sources. This stability allows the compliance of Evergreen sources to be evaluated on a more consistent basis than is possible at the distant receptor R1.

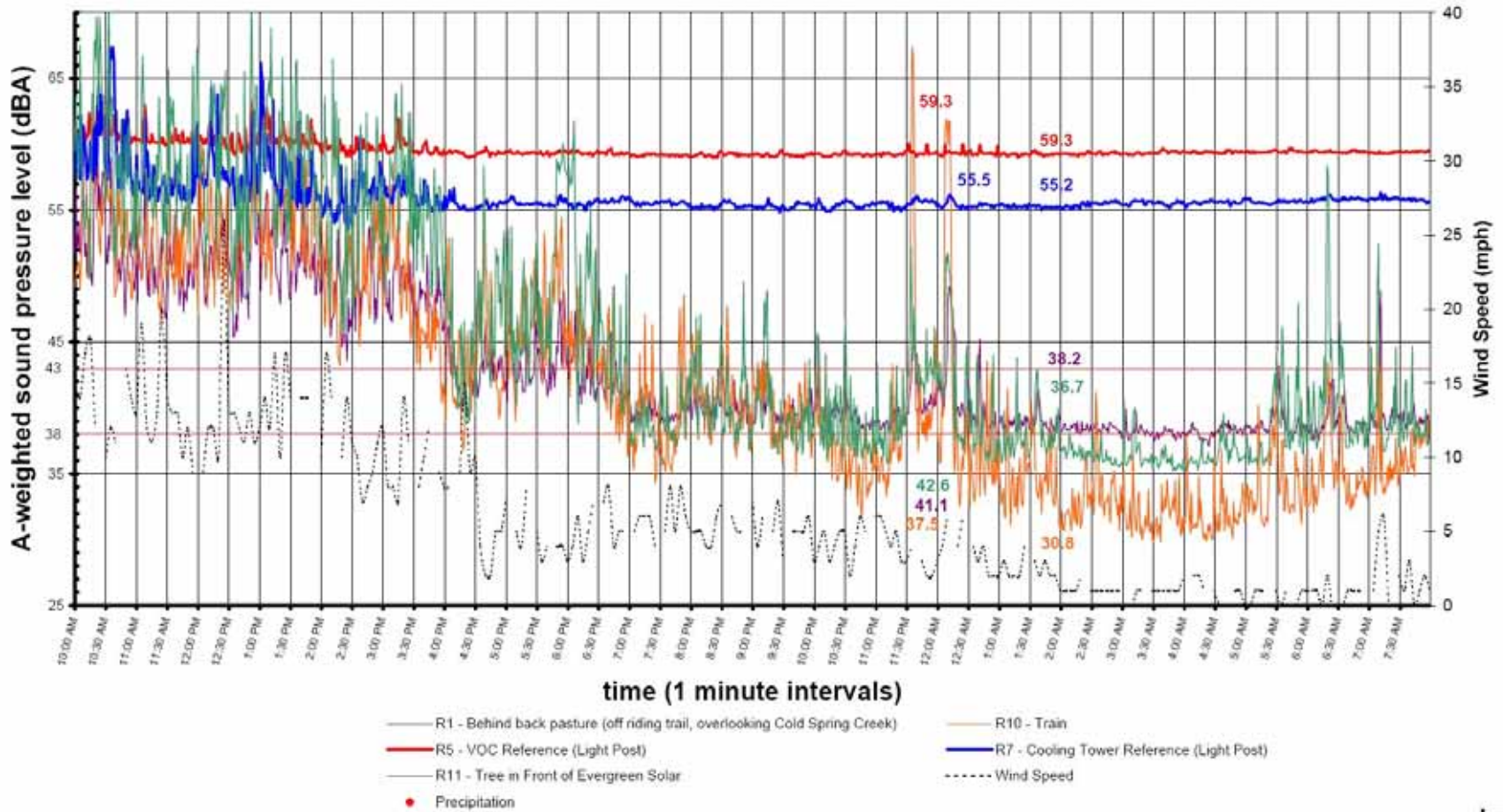
The documented structure of the protocol methodology and the use of actual measured data vs. calculations and subsequent revisions to the protocol were key to my recommendation for approving the protocol. For these reasons, my conclusion regarding the Long Term Monitoring Protocol submitted by Evergreen Solar was that it correctly handled the calculation of source data, for the purpose of evaluating and documenting the long term noise compliance of the Evergreen facility. I believe there was sufficient data to establish a clear relationship between the reference monitors and the compliance location R1. On December 3, 2009, Modeling Specialties recommended adoption.

Sincerely,  
Modeling Specialties,

A handwritten signature in black ink that reads "Douglas L. Sheadel". The signature is written in a cursive, slightly slanted style.

Douglas L. Sheadel  
Principal Scientist

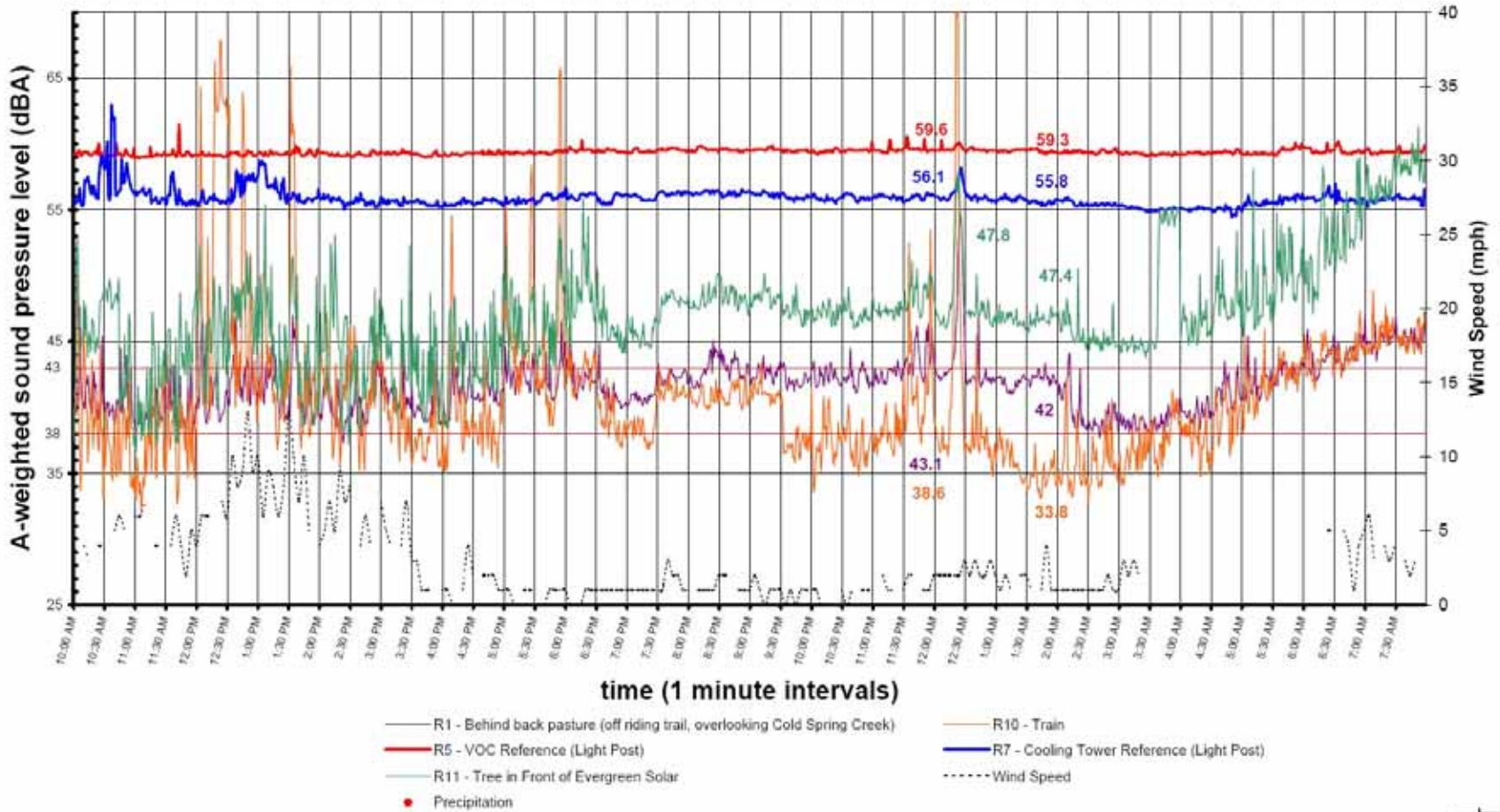
Evergreen Solar - A-weight sound pressure levels (L90)  
November 28, 2009 - November 29, 2009



Attachment 1: Summary of Sound Levels on November 28 and 29, 2009:

Evergreen Solar - A-weight sound pressure levels (L90)

November 29, 2009 - November 30, 2009



Attachment 2: Summary of Sound Levels on November 29 and 30, 2009

