Well here are the results of the sound study which basically shows that the facility remains out of compliance with the PUC permit.

You will note one spike where a helicopter flies overhead. This registers between 65 and 70 dBA at approx. 1 AM briefly. You will also note that after the helicopter passes the noise level from the AC-DC-AC site continues at or above this level from 3AM to approx. 7AM. In essence the noise from 3AM to 7AM is as loud or louder than a helicopter hovering overhead for this entire period of time. Who would want to sleep under a hovering helicopter? (no answer required)

I realize that the AC-DC-AC site is in the County but what doe it take for the City to adopt a sound ordinance? I think we need one for both the City and County. It would be good to use the same criterion for both entities. It makes good sense for future planning as the City grows. How does one get the ball rolling on this idea?

As always, thanks for your help.

All the best,

Mike

Burns & McDonnell

Date: October 6, 2004

To: Jim Miller
Basin Electric Power Cooperative

From: Burns & McDonnell

Re: 30-Hour Noise Study

Burns & McDonnell Engineering Company Inc. (Burns & McDonnell) was contracted by Basin Electric Power Cooperative (BEPC) to conduct a 30-hour noise study for the existing DC Tie station located in Rapid City, South Dakota. The purpose of this study was to identify and quantify any unusual noise spikes that might be produced by the DC Tie station while in operation over a long period of time. One point on the north facility fenceline was chosen for the test due to high reading measured at that location in earlier tests. This point will represent a worst case scenario. The data collected during the 30 hour test shows no unusual noise spikes produced by the DC Tie station.

The noise monitoring microphone was mounted on a tripod on the north side of the DC Tie station just north of the fence at 1.5 meter above ground level and pointed towards the DC Tie Station. It is important to mention that when conducting noise compliance testing at the DC Tie station, a sweeping microphone method will be used to eliminate the effect of standing waves. The sweeping microphone method would likely produce slightly different values, but is neither practical nor necessary for the purpose of this test.

During the 30 hour test period, operation at the facility varied from no power transfer and fully de-energized to market load 50 MW, 100 MW, and 200 MW of power transfer. Meteorological conditions were favorable for most of the testing period, with only a few periods of higher speed winds during the daytime hours.

Burns & McDonnell personnel started taking the continuous noise measurements on August 23, 2004, at approximately 6 PM. The measurement point chosen for this study is located on the north facility fenceline, just east of the transformer. Figure 1 is a plot of the facility with the measurement point location shown. The noise meter was setup to record one-minute L_{eq} average measurement samples that were then logged for the next 30 hours (1,806 total measurements). At

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least one Burns & McDonnell representative was stationed by the meter throughout the entire 30-hr period. The representative took note of any extraneous noises in the area that would be captured by the meter. The loudest extraneous noises were associated with aircraft flying over the site. A complete list of all noise levels monitored can be found in Appendix A. The appendix includes notes for any extraneous noises present during the measurement period, and also includes sporadic noises from on-site equipment. The noise occurrences are listed next to the associated time period in which they were experienced. The representative also monitored meteorological conditions frequently, and noted any changes in wind velocity or air temperature.

Analysis of the data acquired demonstrates that sound pressure level changes occur simultaneously to changes in loading on the facility. Figure 2 is a plot showing the varying sound pressure levels (L_{eq}, dBA) versus time. It is noted on the plot where operational changes occurred.

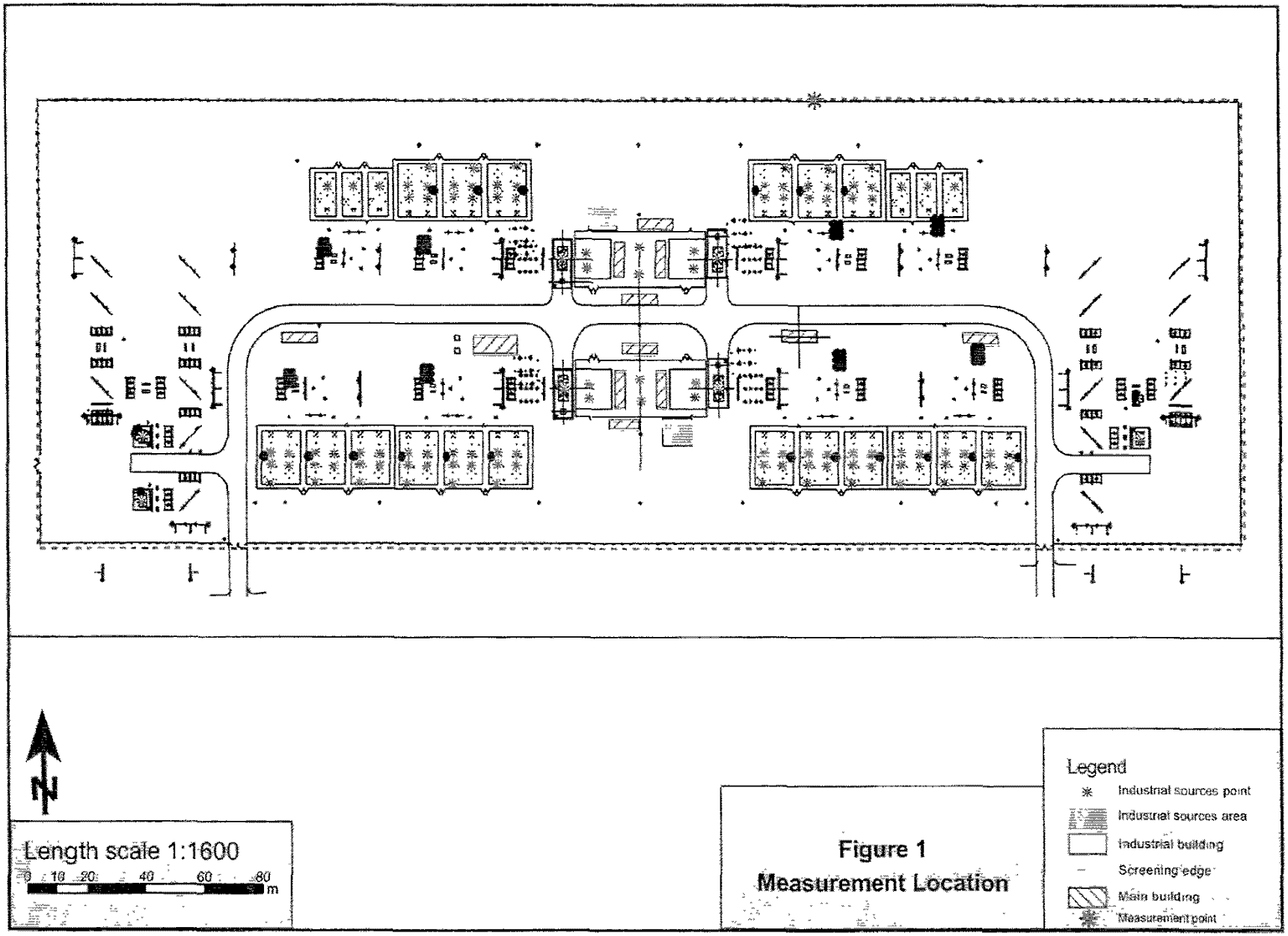
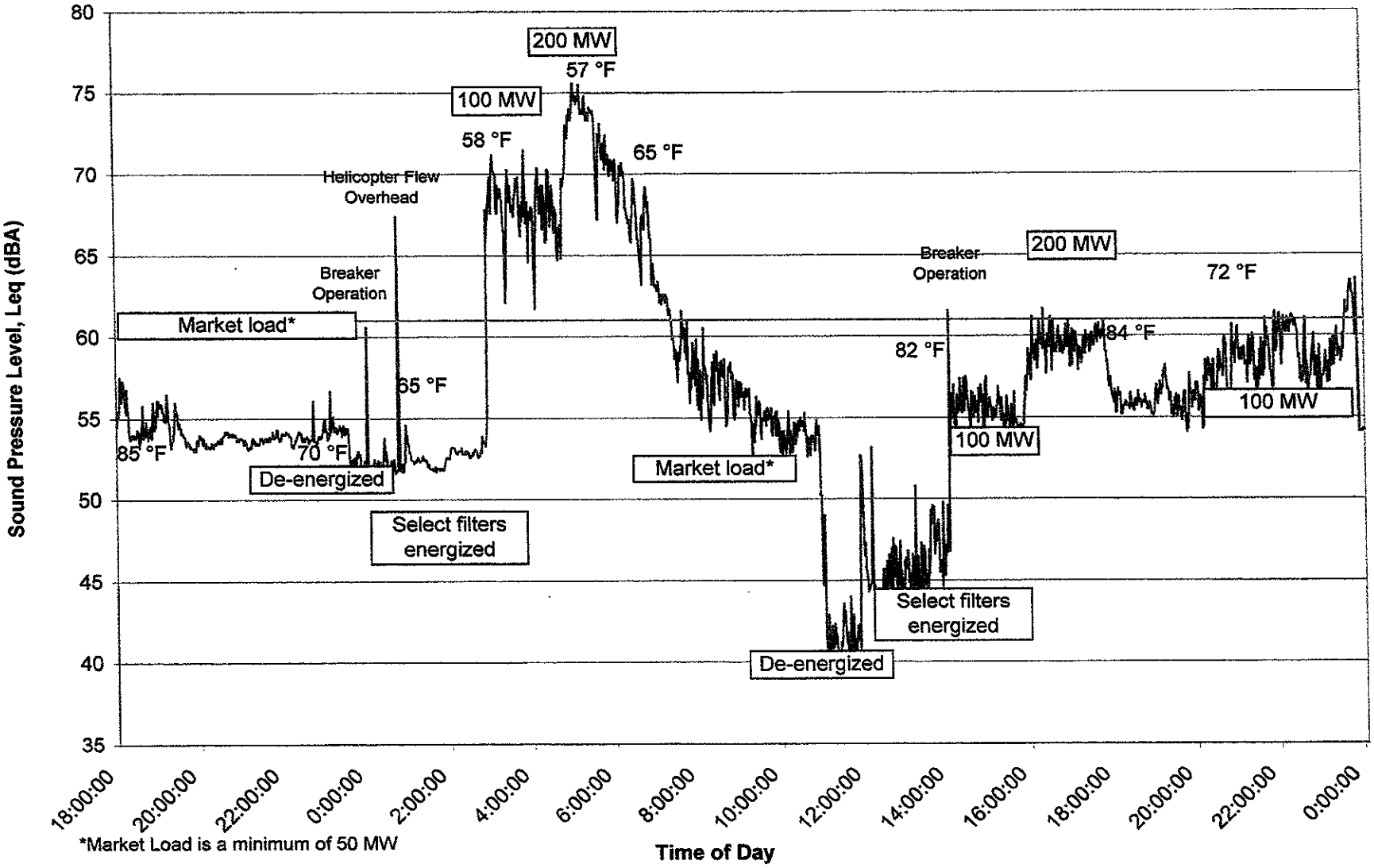

Length scale 1:1600
0 10 20 40 60 80 m
Figure 1
Measurement Location
Legend
Industrial sources point
Industrial sources area
Industrial building
Screening edge
Main building
Measurement point

Figure 2: 30-Hour Noise Study



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