



# PACLAND

## **Acoustical Study for Wal-Mart Cedar Hills, Utah**

February 16, 2007

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CLH Project # 071810



## Acoustical Study

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Date: **February 16, 2007**

Project: **Acoustical Study for Wal-Mart - Cedar Hills, UT / CLH# 071810**

This is an updated study to reflect the new revised preliminary site plan for the proposed retail store at Cedar Hills, Utah.

A visit was made to the proposed retail site in Cedar Hills, UT (May 31, 2003). The closest affected residential neighborhood is to the north of the property line.

Acoustical measurements were made at the Wal-Mart super store in Harrisville, UT to determine the acoustical environment around such a store. The equivalent Cedar Hills locations are shown on attached site drawing. The measurement locations chosen represent the following locations for the Cedar Hills site.

- A At the property line north of the parking lot.
- B At the property line north of the compressors.
- C At the property line north from the north east corner of the building.
- D At the midway point of the east property line. (Redwood Rd.)

No measurements were made at the south side of the parking lot as the these levels would be the same or less than the levels on the north side of the parking lot, except for any increase due to traffic noise along Cedar Hills Drive .

The acoustical measurements were made at four different times of the day during the period of June 3rd through June 5th. Measurement times corresponded to mid morning, mid afternoon, evening and late at night (2 to 3 am).

Additional acoustical measurements were made of a hydraulic trash compactor and of a delivery truck making a delivery to the back of the store during the early morning hours.



## Acoustical Study

The acoustical measurements were made using a GR precision sound level meter, which was calibrated at the R I Corporation lab before and after the tests were conducted.

The resulting data and analysis of the data as relating to the Cedar Hills site are presented in attached appendix A.

The overall facility was found to be relatively quiet. Most of the time the facility noise was less than the ambient neighborhood noise level.

The exception is the compressors on the north side of the building. Recommendations are included in appendix A for means to reduce this noise at the Cedar Hills site to also be equal to the ambient neighborhood noise level.

The noise from the trash compactor may increase the noise level on an intermittent basis. An analysis of compactor noise is presented in the appendix A along with a recommendation to reduce this noise at the Cedar Hills site.

The noise adjacent to the parking lot increased slightly during the afternoon and evening traffic buildup in the parking lot and by a one time event of a diesel powered pickup truck parking near the measurement location. This increase corresponded to a rise in the ambient neighborhood noise level during this same time. The net result is that the noise from the parking lot is rarely heard above the ambient noise of the area.

END OF STUDY



## Acoustical Study

### APPENDIX A

This appendix includes the acoustical measurement data taken at an existing Wal-Mart super store and an analysis of this data as related to the proposed site in Cedar Hills, UT. Measurements were taken at five locations around an existing store at Harrisville, UT. The data was taken at four different times during daytime and nighttime operations. The locations are designated A, B, C, D and E. The four times during the day when measurements were taken are mid morning, mid afternoon, evening and late at night. In addition, noise measurements were made of individual events observed during the testing times. The data taken at location E does not apply to the Cedar City site since the auto service bays are eliminated from the current plan.

All the data is 'A' weighted using the 'A' scale on the sound level meter. Numerous readings were taken at each of the five locations with the results expressed as 5 minute Leq. Leq is a standard unit for ambient community noise evaluation.

All the locations used in this report are referenced to similar Cedar Hills, UT. locations. See attached plot plan for the locations at the Cedar Hills site.

#### **LOCATION A** *North side of the parking lot*

The sound levels as measured at this location for the various times of the day are:

<u>Time of day</u>	<u>Leq</u>	<u>Max</u>
Mid morning	47	50 dBA diesel pickup truck near north side of parking lot.
Mid afternoon	52	61 dBA large semi-truck at high speed on nearby U S Highway 89.
Evening	52	54 dBA
Late Night	46	50 dBA cars starting up and driving through the parking lot.



## Acoustical Study

### Analysis

The increase in afternoon and evening noise by 5 to 6 dBA is due to the increase in the ambient noise in the neighborhood and not due to noise from the parking lot.

The ambient noise at night of 46 is very quiet with crickets chirping at the retention pond and light automobile/truck traffic from the surrounding area. With the night time temperature inversion sound from great distances could be heard.

The net result is that the noise from the parking lot is rarely heard above the ambient noise of the area. Also the new site has the main store entrance moved further from the north side of the parking lot which will result in more of the traffic in the parking lot moved to the center of the parking lot resulting in a further reduction of noise at this location.

### **LOCATION B** *Near the compressors*

**NOTE:** There is no sound treatment in the compressor enclosure as tested.

The sound level as measured at this location for the various times of the day are:

<u>Time of day</u>	<u>Leq</u>	<u>Max</u>
Mid morning	62	62 dBA
Mid afternoon	62	62 dBA
Evening	62	62 dBA
Late Night	59	59 dBA

### Analysis

The noise at this location is above the ambient noise level and the compressors for the refrigeration system are the main noise contributor. The compressors operate for twenty four hours each day. The lower late night noise, down by 3 dBA, is an indication that only ½ of the compressors are operating at this late hour.

The Cedar Hills store may have fewer or smaller compressors which would reduce the noise by about 1 dbA.



## Acoustical Study

Noise from the compressor area on the proposed store should be reduced by about 10 dBA to make it compatible with the ambient level of the area. The barrier wall at the north side of the Cedar Hills property combined with the addition of sound absorbing bat-like insulation lining in the interior north and south wall surfaces of the compressor enclosure will reduce the noise to approximately 50 dBA at the property line.

### **LOCATION C** North property line near the north east corner of store

The level sound as measured at this location for the various times of the day are:

<u>Time of day</u>	<u>Leq</u>	<u>Max</u>
Mid morning	50	54 dBA train whistle 1 mile away
Mid afternoon	47	48 dBA
Evening	53	58 dBA a car driving by on nearby residential street
Late Night	46	51 dBA a vendor truck making a delivery at the east side of the store

### Analysis

The morning and evening ambient levels were higher due mostly to increased vehicular traffic in the neighborhood.

**Note:** The Cedar Hills facility should have less noise at this location as the loading docks are open to the south and building walls will provide added shielding from noise generated along the east side of the building.

There is a further discussion of the trash compactor noise at the end of this appendix.



## Acoustical Study

### LOCATION D Mid point of the east property line (Redwood Rd.)

The sound as measured at this location for the various times of the day are:

<u>Time of day</u>	<u>Leq</u>	<u>Max</u>
Mid morning	53	60 dBA door on nearby house closing
Mid afternoon	52	60 dBA car driving by on the road
Evening	51	62 dBA pickup driving by on road
Late Night	41	43 dBA

#### Analysis

The only sounds heard at this location were from neighborhood sounds, traffic on local roads, birds in the trees, distant train whistles and aircraft flying through the area. Night time delivery to the back of the proposed store is calculated to be 45 dBA at this location based the distance from the building and upon the noise comparison measured from the vendor truck.

### TRASH COMPACTOR

The trash compactors are hydraulic powered. The main noise emanates from the hydraulic drive mechanism. Noise measurements were made of a typical trash compactor. The measured noise was 70 dBA at 90 feet away. The trash compactor location planned for the Cedar Hills site opens to the south and is only about 90 feet from the north property line. The main area of concern is the noise radiating to the residential area on the north.

#### Analysis

The noisiest end of the trash compactor is at the north end of the unit as this is where the hydraulic drive system is located. The high wall at the north end of the compactor bay will reduce the noise at the north property line to about 60 dBA. Next, look at the noise across Redwood Rd. The high wall at the east side of the trash compactor will reduce the noise by 10 dBA and the greater distance will reduce the noise an additional 10 dB. So the resultant noise across Redwood Rd. would be 50 dBA. The expected noise to the south across Cedar Hills Drive will have a noise reduction of 15 dBA for the added distance away for a level of 55 dBA





## **Acoustical Study**

It appears that all the compactor noise can be lowered to 50 dBA at the property line using a combination of installing sound absorbing panels on the walls in the northern part of the compactor bay and placing the proposed sound barrier wall near the property line.

END OF APPENDIX

