

## Real noise abatement costs to achieve 46 dBA or lower

|               | Major Noise Source(s)              | Noise Abatement Activities   | Cost (\$U.S.)           | Pre-Noise-Abatement                                 |   | Post-Noise- Abatement                               |   |
|---------------|------------------------------------|--|-------------------------|---|---|---|---|
|               |                                    |  |                         | Actual dBA measured at x feet from the noise source | dBA calculated for 350 feet from noise source | Actual dBA measured at x feet from the noise source | dBA calculated for 350 feet from the noise source |
| <b>CASE 1</b> | 325 HP engine                      | engine exhaust silencer, acoustic ventilation on existing building (retrofit)                        | <b>12,800</b>           | 42 dBA at 1525'                                     | 54 dBA at 350'                                | 33 dBA at 1525'                                     | <b>45.8 dBA at 350'</b>                           |
| <b>CASE 2</b> | 400 HP engine, 7-foot cooler fan   | acoustic ventilation, engine air intake silencer (retrofit)  | <b>12,000</b>           | Unknown   | Unknown                                       | 40 dBA at 656'                                      | <b>46 dBA at 350'</b>                             |
| <b>CASE 3</b> | 411 HP engine, 7-foot cooler fan   | acoustic ventilation, cooler silencing, engine intake and exhaust silencer (retrofit)                | <b>50,000</b>           | 43 dBA at 2130'                                     | 59 dBA at 350'                                | 47 dBA at 164'                                      | <b>40.4 dBA at 350'</b>                           |
| <b>CASE 4</b> | 200 HP engine                      | acoustical enclosure, ventilation (overall costs depends on number of doors, windows, and skylights) | <b>24,000 to 40,000</b> | 88 dBA at 10'                                       | 57 dBA at 350'                                | 40 dBA at 115'                                      | <b>30 dBA at 350'</b>                             |
| <b>CASE 5</b> | 100 HP engine                      | acoustical enclosure with ventilation (new)  | <b>60,000</b>           | Unknown   | Unknown                                       | 42 dBA at 50'                                       | <b>25 dBA at 350'</b>                             |
| <b>CASE 6</b> | 1478 HP engine, 13-foot cooler fan | acoustical enclosure (22' x 34') with ventilation, engine silencing, cooler                          | <b>145,000</b>          | 52 dBA at 1181'                                     | 63 dBA at 350'                                | <20 dBA at 1181'                                    | <b>&lt;31 dBA at 350'</b>                         |
| <b>CASE 7</b> | Two 1350 HP engines                | acoustical enclosure, not sure what else (new)   | <b>120,000</b>          | Unknown   | Unknown                                       | 65 dBA at 5'  | <b>28 dBA at 350'</b>                             |

**Sources:** Acoustical consulting firms from New Mexico, Colorado and Alberta (all work in Colorado)

### Method for calculating dBA at 350 feet from noise source:

$$\text{dBA at 350} = \text{dBA at initial location} - 20 \log_{10} \left( \frac{\text{distance from noise source to 350 feet}}{\text{distance from noise source to initial location}} \right)$$

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$$\text{dBA at 350} = \text{dBA at initial location} - 20 \log_{10} \left( \frac{\text{distance from noise source to initial location}}{\text{distance from noise source to new location (i.e., 350 feet)}} \right)$$

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