



CITY OF HIGH POINT
NORTH CAROLINA
PLANNING AND DEVELOPMENT DEPARTMENT

"SHAPING A MORE LIVABLE HIGH POINT"

February 20, 2003

To: Honorable Mayor & City Council
From: G. Lee Burnette, AICP, Director
Subject: **Wyle Noise Criteria and Land Use Guidelines Report**

The city contracted with Wyle Laboratories (Wyle), acoustical consultants, to analyze the nighttime flight noise effects from the proposed air cargo facility and third runway at Piedmont Triad International Airport on High Point and its residents. The consultant was also asked to recommend a strategy to mitigate any negative effects. Wyle's report is attached and their findings and recommendations are summarized as follows:

Wyle's study first considered whether the day-night level (DNL) contour is the most appropriate way to measure and report sound levels generated from the flights associated with the proposed cargo hub and runway. DNL contours, usually the 65 DNL contour, have been historically used throughout the country. This measure is the one generally used around airports by the Federal Aviation Administration (FAA) when determining which neighboring residents will be compensated for noise impacts with federal funds.

However, the Wyle report notes that DNL contours are determined by the average noise levels over a 24-hour period and thus may under-represent the effects of nighttime flight operations. Flights generated by the cargo hub will take place at night over north High Point, when most residents will be asleep. The report concludes that estimating and mitigating the effects of aircraft noise would be more accurate and effective if the program were based on the number of individual nighttime noise occurrences above certain benchmark noise levels. This noise measurement method is termed "Number of Events Above," or NA.

Based upon the NA method, the study defined a noise impact area where the proposed nighttime aircraft noise events on a typical night can affect sleep. In this noise impact area under existing conditions, 2 percent and greater of the population will experience various levels of sleep disturbance (i.e. delaying the onset of sleep, changes in stages of sleep, or waking up). It is impossible to eliminate sleep disturbance because factors other than aircraft noise can attribute to sleep disturbance (i.e., personal needs, indoor noise sources, etc.) However, there are steps that can be taken to reduce the number of people experiencing sleep disturbance due to aircraft noise.

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Wyle recommends minimizing sleep disturbance to insignificant levels by various noise mitigation strategies that would be implemented through land use regulations, in particular a zoning overlay district. The district would have 4 different zones, based upon the impacted area's sound exposure level, and would have the following characteristics:

- **Zone 1** is expected to have one or more aircraft noise events with a sound exposure level (SEL) above 90 decibels (dB) during a typical night where research indicates more than 3 percent of the population will likely experience sleep disturbance. For the most part, no new residential uses would be allowed and additions to existing residences would be required to have sound insulation to achieve an interior sound reduction of 30 decibels (dB). Disclosure of potential over-flight noise exposure levels would be required for all land uses.
- **Zone 1A** is a special area within Zone 1 where new residential uses would be allowed because the area contains several existing residential developments and is within the Oak Hollow Lake watershed critical area, where significant nonresidential development would not be appropriate for water quality purposes. New residences and additions to existing residences would be required to have additional sound insulation to achieve sound reduction of 30 dB. New subdivisions in this zone would be required to grant an aviation easement permitting over-flights. Disclosure of potential over-flight noise exposure levels would be required for all land uses.
- **Zone 2** is expected to have no more than two aircraft noise events with an SEL greater than 85 dB. New subdivisions in this zone would be required to grant an aviation easement permitting over-flights. The report also recommends that new residences be required to have sufficient ventilation and central air conditioning to allow windows to be closed year round, thus permitting a windows closed environment reducing noise exposure levels. Disclosure of potential over-flight noise exposure levels would be required for all land uses.
- **Zone 3** is expected to have five aircraft noise events with an SEL greater than 80 dB decibels. Research indicates that less than 2 percent of the population would experience some sleep disturbance in this area. A window-closed environment will reduce this percentage. Disclosure of potential over-flight noise exposure levels would be required for all land uses.

The study's sound exposure level measurements are calculated based upon the interior sound level within a residence with the windows opened during nighttime flight events. With these recommended noise mitigation measures, the number of people that will experience sleep disturbance from these nighttime noise events will be significantly reduced.

Using land use regulations to establish noise mitigation measures can be very effective in protecting new construction. However, land use regulations cannot effectively address noise mitigation for existing residences. Therefore, the city's ability is limited in taking any independent steps to mitigate noise impacts for existing residences.

Nonetheless, Wyle states that should the city adopt these recommended mitigation measures as the city's local standards for protection, then these standards would be recognized as part of the proposed Federal Aviation Regulations Part 150 Noise Compatibility Study. That study could include a federally funded measure to provide sound insulation improvements in existing residences beyond the 65 DNL contour as planned.

The staff recommends the following actions pursuant to the recommendations within this report.

1. **Select a Mitigation Strategy.** The staff recommends that the City Council consider the Wyle report and decide upon an appropriate noise mitigation strategy. The staff recommends the strategy recommended by the Wyle report.
2. **Amend City's Land Use Plan.** The staff recommends that City Council revise the city's adopted Land Use Plan to apply the Council's selected strategy. This action would be accomplished through a land use plan amendment with public hearings before the Planning & Zoning Commission and City Council.
3. **Amend Land Use Regulations.** The staff recommends that City Council revise the current Airport Overlay District contained in the Development Ordinance to implement the Council's selected strategy. This will be accomplished through a text amendment to the Development Ordinance and a zoning map amendment to the city's Official Zoning Map, which also would necessitate a public hearing before the Planning & Zoning Commission and City Council.
4. **No New Residential Proposals in Zones 1, 1A & 2.** The staff recommends that no new residential development proposals (annexations & rezonings) be considered by the city within Zones 1, 1A & 2 until the city's regulations are adopted. It would be appropriate to address any existing annexation or zoning requests under current consideration within this area (i.e. Ashton Oaks, LLC).

The staff recommends the City Council & Planning & Zoning Commission hold a special joint public hearing to allow public comments on both the amendments to the Land Use Plan and development regulations. Thereafter, the Council and Commission could consider the amendments at their respective regular meetings. Also, staff recommends a public open house session prior to the hearing where staff could explain the proposed changes to the public. This process would be similar to the one implemented in 1999 when the city adopted the Randleman Lake Watershed regulations.

Please note that Wyle is finalizing a construction guide that will provide construction standards and measures that will explain how new construction can meet the recommended noise reduction requirements in the different zones. The construction information will be forwarded to Council once it is completed.

In addition to Wyle's report, the principal consultant for this study has provided a copy of his article entitled "The Compatible Land Use-Noise Challenge," which emphasizes the need for adequate public disclosure and notes the benefits a locally adopted standard may have for existing residences within a noise impact area.

Cc: Strib Boynton, City Manager
Pat Pate, Assistance City Manager
Fred Baggett, City Attorney

Attachments: Wyle Report
Article—The Compatible Land Use-Noise Challenge
Proposed zone boundary maps