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To Ernest Gubry/AGL/FAA@FAA
cc
bcc
Subject OSU Noise Analysis Scope of Work

Ernie - It was good to see you the other day. Hope it was productive for your. I forgot to give you a copy of the draft scope of services for the proposed noise analysis. It is attached for your files.

See you again soon,

Doug

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Wyle - Noise Scope of Services (2).doc

Proposal for Noise Analysis in Support of an Environmental Assessment for Ohio State University Airport/Don Scott Field

Wyle 580.03.165

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Introduction

The extension of runway 9L/27R was originally recommended in the Ohio State University/Don Scott Field (OSU) 1991 Master Plan, and the current Master Plan Update. While the Environmental Assessment (EA) must focus on purpose and need, alternatives to, and potential environmental impacts of the proposed runway extension, the noise analysis need only focus on the changes in noise impacts that will result from the preferred runway extension alternative and the other "build" alternatives under consideration in the EA.

The Scope of Services requested encompasses all of the noise analysis requirements of the National Environmental Policy Act (NEPA) as implemented in FAA Orders 5050.4 and 1050.1D, and most of the requirements of Federal Aviation Regulation, Part 150 as well. In fact, should the results of this study show that the runway extension project will have noise impacts that potentially qualify for mitigation with Federal funding under Part 150, OSU may choose to consider requesting a study grant to perform a Part 150 Noise Compatibility Study that will build on the results of this study and qualify for Federal funding to mitigate those impacts. Subtask 5.5 specifically requests that measures such as sound insulation and acquisition be described if this study shows that the build alternative ultimately selected may have significant noise impacts. Should this occur, immediate initiation of a Part 150 study should be considered by OSU, first to take maximum advantage of the noise analysis in this study, which will minimize cost, but more importantly to make a commitment to the community to mitigate the impacts of the runway extension as soon as possible using Federal funding that is set aside for these purposes. A Part 150 study may be proposed as a mitigation measure in an EA or EIS.

Historically, only a few Part 150 studies have been proposed as EA or EIS mitigation measures. This came about because some airport operators who were proposing major airport development projects voluntarily committed to accomplishment of a Part 150 study as supplemental noise mitigation for the project. FAA guidance is that an airport operator's commitment, within the NEPA context, to undertake and implement a Part 150 study should not be discouraged because Part 150 programs have produced measurable noise benefits. However, as stated by FAA in the FICON report, simply to state in a NEPA document that a Part 150 study will be done and implemented does not constitute substantive mitigation of a specific airport development proposal, because FAA cannot predict with certainty the recommendations that will result from the study and be approved. To the extent that the FAA seeks to include substantive mitigation commitments in a NEPA document, more solid and specific commitments are required. The FAA has, in some cases,

combined specific mitigation commitments and a Part 150 study. In these cases, the NEPA document commits to certain specific noise mitigation and, in addition, indicates that a Part 150 study will be done with the goal of achieving more mitigation. The NEPA document may also commit to specific noise mitigation and indicates that the priorities or timing of the mitigation will be refined in a Part 150 study.

By statute, Part 150 is a voluntary program. In all cases in which a Part 150 study has been integrated into NEPA mitigation, it has been a voluntary decision, with FAA concurrence, by the airport operator with respect to Part 150. However, once a Part 150 study has been included in a NEPA document as one of the mitigation commitments, the FAA and the airport operator accept the responsibility to see that it is carried out. If an airport operator volunteers to undertake a Part 150 study as part of NEPA mitigation when an airport development project includes impacts between DNL 60 and 65 dB, the scope of the Part 150 study would include noise sensitive areas between DNL 60-65 dB that were identified in the EA/EIS as having an increase of DNL 3 dB or more due to the proposed project. The scope of the Part 150 study should be explicitly committed to in the NEPA document. Subtask 5.4 specifically requires analysis in the event any DNL increases of 1.5 dB or more inside the DNL 65 dB contour to determine if any increases of DNL 3 dB or more will occur in the DNL 60-65 contour. Thus it appears that OSU has considered the possibility of committing to a Part 150 study as a potential mitigation measure for the runway extension project. Of course none of this will be necessary unless the preferred alternative has noise impacts that must be mitigated.

Wyle's proposal to perform all of the tasks specified in your Scope of Services is presented in the following sections.

Proposed Project Plan

1.0 - Project Mobilization Activities

The Wyle Project Manager will travel to the designated site for the project kick-off meeting with members of the OSU Airport staff, the DLZ team, FAA staff and Port Columbus International Airport ATCT representatives, to discuss and plan the project methodology and to identify specific issues to be addressed. This meeting will be scheduled as soon as possible after contract formalization. Any additional coordination conducted under this task will take place via telephone conference to preserve cost.

2.0 - Inventory/Data Collection

While traveling to OSU for the kick-off meeting, Wyle will also arrange to collect some data to be used in the creation of INM input files. The data will be collected from existing sources including the current Master Plan and local airport, county and FAA officials.

Subtask 2.1 - Airport Operating Characteristics

Wyle will conduct a survey of OSU Airport's general operating characteristics to include runway layout type of airport operations, type of aircraft, standard operating procedures, noise sensitive areas around OSU, etc. Default INM runway ends will be verified with the latest published Airport Layout Plan (ALP). Runway utilization, flight tracks, and flight track utilization will be determined through radar data analysis. Wyle developed our Noise Data Acquisition and Display System (NDADS) software to aid in the development of flight track and associated operational parameters, which would be used under this sub-task. NDADS makes it possible to use real air traffic control radar data to derive flight tracks, flight profiles, and runway and flight track utilization by time of day, in an efficient manner. As part of this sub-task the derived flight tracks will be prepared for INM input, which will be presented to local FAA staff for approval.

We recommend a radar data sample of one week (7 days) to derive representative flight tracks and associated data. Since Task 3.0 also requires radar data we recommend using radar data for the period noise monitoring will be conducted, but only IF that period of time will reflect flight tracks applicable to the Existing Baseline study period. The raw radar data should include as a minimum: location of the aircraft (x, y) in reference to the radar site or airport reference point, specific aircraft type (i.e. Lear25, C172), altitude (z), time of day, and runway if available.

Annual operations and fleet mix for the Existing Baseline as well as the Future (2007) Baseline/No-Action Conditions will be provided by OSU staff.

Subtask 2.2 - Study Area Mapping

This task will include collecting available relevant geographical data to be incorporated into a study-specific Geographic Information System (GIS) database. This database, residing on the ArcGIS 8x Platform, will be used to prepare base maps of the study area; features displayed will include the airport facilities, sensitive noise receptors, and roads for the study area. Wyle will build this database and base map to maximize flexibility so that it may be drawn upon for cartographic output throughout the duration of the project. While this task will likely require gathering existing data from the potential sources, including the Franklin County auditor's office, The Ohio State University, and other local jurisdictions, Wyle does not expect that field data collection and surveying will be necessary. However, field checking of this data may be necessary and will be completed by the OSU Airport staff. Wyle will provide the final GIS database for the study program as ESRI Shape files accompanied by FGDC-compliant metadata. Maps will be provided in Adobe Acrobat PDF (*.pdf) format.

3.0 - Noise Measurement Program

Subtask 3.1 - Program Design

Wyle will design a noise measurement program in consultation with OSU staff that will focus on single-event noise levels, which will be correlated with specific aircraft flight data collected from a sample of radar data for the measurement period, on-site observations and from any other available flight track data. INM input parameters regarding actual flight characteristics of aircraft using the airport will be adjusted if necessary to insure sufficient accuracy in the resulting noise contours. Adjustments to the INM standard departure profiles will be in the form of substituting a departure stage-length with a more suitable departure stage-length, based on the comparison of the modeled versus measures single event noise levels. It is Wyle understands that the measurement program is for model validation purposes, and that no community noise monitoring for other purposes is envisioned.

To collect the necessary data, Wyle will monitor at up to ten (10) sites using portable noise monitoring equipment in close proximity to each runway end. Noise monitoring for verifying INM accuracy to local conditions must be conducted close-in where there is the least deviation between the modeled and actual flight tracks and where wind and other weather conditions do not create signification deviations on a single event basis. Specific site locations to meet these parameters will be determined by the Wyle acoustician in the field. General locations that meet these parameters will be identified prior to entering the field. As stated in the solicitation, OSU staff will be responsible for obtaining permissions for sites that require it and for alerting local jurisdictions and law enforcement of the presence of the noise consultant staff in the area. Three or four close-in sites are generally sufficient for model calibration purposes; thus, six or seven monitoring sites at locations more distant from the airport, perhaps at noise sensitive locations, are envisioned.

Set-up and calibration of the noise monitors will be completed by Wyle prior to shipment to the site to insure functionality and to set the input parameters and otherwise prepare the monitors for the field. Wyle will use exceedance levels to identify aircraft events, which will also be correlated to radar data to achieve a higher confidence level in the results.

Subtask 3.2 - Noise Measurement Program

A Wyle acoustician will be in the field monitoring for three (3) days consecutively. We will consult with OSU staff as to which days of the week the level of operations is highest to ensure collection of all aircraft types operating at OSU. Single event noise levels (SEL and Lmax) will be collected in addition to the ambient noise level at all sites (no DNL analysis is anticipated).

Subtask 3.3 - Comparison with INM Data Libraries

Wyle staff members will analyze radar data for the monitoring period, select aircraft of interest based on consultation with OSU staff (for example top 10 noisiest aircraft), and isolate radar flight tracks. Based on time of radar data and proximity to a site, we will look at measurement data to verify if a noise event registered. If so, we will note the measured single event level and model the isolated flight track with the appropriate aircraft in INM. We will then compare the resulting values, and if measured versus modeled single event value is greater than +/- 3 dB we will determine if any adjustments to the INM standard departure profile input files are appropriate.

4.0 - Existing Baseline Noise Analysis

Subtask 4.1 - Prepare INM Input Data

All data collected in preceding tasks will be compiled into INM input files. A copy of the input files will be provided to OSU staff for review prior to running the model. Wyle will also perform an internal QC check of the input files prior to running the model.

Subtask 4.2 - Prepare Existing Baseline Noise Contour

INM version 6.1 will be used to generate the 60-75 dB DNL contours (in 5 dB increments). To ensure the highest quality contours, non-standard refinement and tolerance settings in INM (i.e. a refined grid) may be used.

Subtask 4.3 - Prepare Existing Baseline Grid Point Analysis

Wyle will perform a detailed grid point analysis at up to ten (10) sites as selected by OSU staff. For each of the identified sites tables listing DNL, LMAX, SEL, and TA-65 will be generated. In addition we will provide the top contributors to the DNL, and the top contributors based on SEL.

Subtask 4.4 - Conduct Impact Analysis for Existing Baseline Noise Contour

Wyle will perform an impact analysis for the Existing Baseline noise contour. This analysis will use population, housing, and other variables as specified from the US Census 2000 summary and GIS data sets. This task entails gathering Block-level US Census 2000 data and synthesizing it with the Census Bureau's Summary File 1 (SF1) tabular files and TIGER/Line geographical data sets. Impact acreages will be calculated as the number of off-site land acres within each modeled noise contour. Population impact estimates for each modeled noise contour will be calculated as the population in each block area intersecting a given noise contour area, multiplied by the percentage overlap between the two areas. Housing unit counts will also be calculated using this 'geometric proportion' method. Note that where a block is contained completely by the noise contour, the percentage overlap will be calculated at 100%, ensuring the inclusion of the entire block population. Intrinsic to this method is the assumption that populations are distributed regularly within census blocks. Any accuracy lost through such assumptions is offset by the high degree of accuracy achieved through calculations based on the census block, the smallest indivisible geographical unit of census tabulation. The analysis can be made even more accurate with the inclusion of additional geographical data, such as land use boundaries and aerial imagery, which can be used to constrain populations to areas known to contain residential units. All geographical operations and analyses will be performed on the ESRI ArcGIS 8x platform.

Subtask 4.5 - Prepare Future (2007) Baseline/No-Action Noise Contours

Using the forecasts of activity and fleet mix for 2007 in Task 2, Wyle will produce noise contours at 60, 65, 70, and 75 DNL for the Future (2007) Baseline/No-Action condition. Only the total number of operations will change. Runway, flight tracks, and distribution will remain as under the Existing Baseline condition.

Subtask 4.6 - Prepare Future (2007) Baseline/No-Action Grid Point Analysis

Wyle will perform the same grid point analysis at up to ten (10) sites exactly as described in Subtask 4.3 above.

Subtask 4.7 - Conduct Impact Analysis for Future (2007) Baseline/No-Action Noise Contour

Wyle will conduct an impact analysis of the modeled future (2007) baseline/No-Action Noise Contours, applying a geographical analysis as detailed in the explanation of Subtask 4.4.

5.0 - Alternatives Noise Analysis

The EA includes three (3) "build" alternatives that will require noise analysis. Each of these alternatives will be assessed for the Future (2007) condition using the methodology outlined in the subtasks below.

Subtask 5.1 - Prepare Alternatives INM Input Data

The annual number of operations and fleet mix as compiled for the Future (2007) Baseline/No Action conditions will be used for up to three (3) alternatives. Possible Alternatives are runway layout changes, runway utilization changes, and flight track and/or flight track utilization changes. Wyle staff will discuss with OSU Airport staff and the ATCT personnel alternative runway end utilization percentages for each alternative and any changes to that may occur to the location of existing flight paths or the usage of the flight tracks due to lengthening a runway. These changes will be discussed with OSU Airport Staff and ATCT personnel prior to modeling.

Subtask 5.2 - Prepare Alternatives Noise Contours

Wyle will produce noise contours at 60, 65, 70, and 75 DNL for each of the three (3) alternatives using the INM input data prepared in the previous task; i.e., the annual number of operations and fleet mix as compiled for the Future (2007) Baseline/No Action conditions.

Subtask 5.3 - Prepare Alternatives Grid Point Analysis

Wyle will perform the same grid point analysis as described in subtasks 4.3 for each of the alternatives, and will include comparison tables of all cases (Existing Baseline, Future (2007) Baseline/No-Action, and the three alternatives).

Subtask 5.4 - Conduct Impact Analysis for the Alternatives Noise Contours

Wyle will perform the same GIS population analysis as described in Subsection 4.4 above for each alternative.

Noise contours of each Alternative condition will be compared to the Future (2007) Baseline/No Action 65 db DNL contour. In the event that an Alternative condition indicates a 1.5 dB DNL increase over a populated area within the 65 dB DNL contour, the increase will be quantified in terms of the noise level, and the number of homes and people affected.

Subtask 5.5 - Prepare Abatement/Mitigation Measures

Analysis of up to three (3) noise abatement flight tracks is included in this proposal. Proposed flight tracks will be coordinated with the ATCT, FAA, and OSU staff to insure safety and feasibility.

Once the flight tracks have been approved, noise analysis will be performed in a similar fashion as described above for the Existing Baseline, Future (2007) Baseline/No-Action, and Alternative conditions. Noise contours will be generated for each of the three abatement conditions, as well as grid point analysis (again as described earlier).

6.0 - Documentation

Subtask 6.1 - Environmental Assessment Documentation

Wyle will prepare the documentation of the noise analysis in a format that will satisfy FAA Orders 5050.4A and 1050.1D. The documentation will provide the reader the methodology, input data, results, and coordination that were conducted for the analysis. This will include narrative, tables and graphs, and a Noise Exposure Map (NEM) and other graphics. The NEM will be formatted as and ANSI D/E size wall map showing the full extent of the noise footprint in relation to a detailed rendering of the base map developed in subtask 2.2.

Subtask 6.2 - Meeting Graphics

Wyle will provide public meeting graphics to support the noise analysis. This will include up to 15 boards, detailing the methodology, input data, and results of the noise analysis. Electronic versions of these graphics will be made available if needed for a PowerPoint presentation or website.

Subtask 6.3 - Noise Exposure Map Update Documentation

In addition to the documentation for the EA, Wyle will format with a brief narrative for submission to the FAA the Existing Baseline and the Future "with project" noise contours as Noise Exposure Maps (NEMs). While this documentation will be based almost entirely on the data collected for the EA, it will be supplemented as necessary to comply with all the requirements of FAA's NEM checklist.

7.0 - Public Involvement

Subtask 7.1 - Technical Advisory Committee Meetings

The Wyle project manager will participate in two (2) Technical Advisory Committee (TAC) meetings to discuss noise issues and make a presentation if necessary.

Subtask 7.2 - Public Workshops/Hearing

The Wyle project manager will participate in two (2) Public Workshops/Hearings throughout the study to discuss noise issues and make a presentation if necessary. Our cost proposal assumes two trips to attend a TAC meeting and a Public Workshop/Hearing on the same or consecutive days in order to minimize costs.

8.0 - Project Management

This task will involve the day-to-day management of the noise analysis, including the technical assignments as well as contracting, billing, and consultant coordination issues.