
5.21 ENVIRONMENTAL JUSTICE

This section presents the environmental justice analysis of the potentially affected minority population and low-income households, and the public outreach initiated by the FAA to address environmental justice concerns for the proposed alternatives under consideration.

5.21.1 Background and Methodology

The following is a description of the regulatory context (including Federal and State requirements), thresholds of significance, and methodologies.

5.21.1.1 Regulatory Context

Executive Orders and DOT Orders

Executive Order (EO) 12898,¹ issued in 1994, requires each Federal agency to include environmental justice as part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse impacts of its programs, policies, and activities on minority and/or low-income populations. The U.S. DOT issued the final DOT Order in 1997, DOT Order 5610.2, *Environmental Justice in Minority Populations and Low-Income Populations*. The DOT Order establishes how DOT and its operating administrations will integrate EO 12898 with existing regulations and guidance. It states it is the policy of DOT to promote the principles of environmental justice through the incorporation of those principles into existing agency programs, policies, and activities.² The Order goes on to state it is DOT's policy to promote the principles of environmental justice by fully considering them throughout the planning and decision-making processes in the development of programs, policies, and activities, using the principles of NEPA, Title VI, the Uniform Act and other applicable DOT statutes, regulations and guidance. The DOT Order states:

...activities that will have a disproportionately high and adverse effect on minority or low-income populations will only be carried out if further mitigation measures or alternatives that would avoid or reduce the disproportionately high and adverse effect are not practicable. In determining whether a mitigation measure or an alternative is "practicable", the social, economic (including costs) and environmental effects of avoiding or mitigating the adverse effects will be taken into account. ...Activities that will have a disproportionately high and adverse effect on populations protected by Title VI will only be carried out if (a) a substantial need for the program, policy, or activity exists, based on the overall public interest and (2) alternatives that would have less adverse effects on protected populations (and still satisfy the need identified in subparagraph (1) above), either (i) would have other adverse social, economic, or environmental or

¹ Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Population and Low-Income Populations, February 11, 1994.

² U.S. Department of Transportation Order 5610.2, Environmental Justice in Minority Populations and Low-Income Populations, December 10, 1997.

human health impacts that are more severe, or (ii) would involve increased costs of extraordinary magnitude.

Additional guidance for implementing EO 12898 within the NEPA process is contained in CEQ's *Environmental Justice: Guidance Under the National Environmental Policy Act*.

The FAA also considers EPA's "*Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses*" to the extent that is consistent with the DOT Order. The EPA defines environmental justice as:

the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.³

State of Illinois Regulations

The Illinois Environmental Protection Agency (IEPA) oversees a number of Federal environmental programs and policies in the State of Illinois. This includes implementation of environmental justice policies. As a means of ensuring environmental justice compliance, IEPA has drafted an interim environmental justice policy,⁴ which seeks public and private commitment to include the following goals:

- to ensure that communities are not disproportionately impacted by degradation of the environment or receive a less than equitable share of environmental protection and benefits;
- to strengthen the public's involvement in environmental decision-making, including permitting and regulation, and where practicable, enforcement matters;
- to ensure that Agency personnel use a common approach to addressing environmental justice issues; and
- to ensure that the IEPA continues to refine its environmental justice strategy to ensure that it continues to protect the health of the citizens of Illinois and its environment, promotes environmental equity in the administration of its programs, and is responsive to the communities it serves.

A representative from IEPA was in attendance at the first formal environmental justice outreach meetings conducted by FAA. Such participation and follow-up has allowed this Agency to stay in touch with this component of the project. In addition, both U.S. Environmental Protection

³ Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses, April 1998; Website:
http://www.abanet.org/irr/committees/environmental/epa_guidance.doc.

⁴ Interim Environmental Justice Policy. Illinois Environmental Protection Agency, Website:
<http://www.epa.state.il.us/environmental-justice/policy.html>

Agency (USEPA) and IEPA are cooperating agencies in the preparation of the EIS, affording those Agencies significant involvement as this EIS has been prepared.

5.21.1.2 Thresholds of Significance

FAA Order 1050.1E states the following with regard to environmental justice significant thresholds: "Disproportionately high and adverse human health or environmental effects on minority and low-income populations may represent a significant impact."

5.21.1.3 Definitions

Minority Population

A minority person is defined as an individual who is a member of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. According to the US DOT Order, minority populations mean any readily identifiable groups of minority persons that live in geographic proximity. CEQ guidance states that minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.⁵ The term "affected area" was defined as that area on which the proposed project will or may have an effect.⁶

In identifying minority communities, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals (such as migrant workers or Native American), where either type of group experiences common conditions of environmental exposure or effect. The selection of the appropriate unit of geographic analysis may be a governing body's jurisdiction, a neighborhood, census tract, or other similar unit that is to be chosen so as to not artificially dilute or inflate the affected minority population. A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds.

Low-income population

DOT Order 5610.2 defines "low-income persons" as those whose "median household income is below the United States Department of Health and Human Services (DHHS) poverty guidelines."⁷ The federal definition of poverty level varies by the size of family and number of related children under the age of 18 years. Average poverty thresholds in 2000 ranged from \$9,310 for a one-person household, to \$25,210 for households with nine or more family

⁵ Environmental Justice: Guidance under the National Environmental Policy Act. Council on Environmental Quality, p.25, December 10, 1997. Website: <http://ceq.eh.doe.gov/nepa/regs/EJ/justice.pdf>.

⁶ Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses, April 1998, page 17.

⁷ Environmental Justice in Minority Populations and Low-Income Populations. US Department of Transportation Order 5610.2, Federal Register: (Volume 62, Number 72), Pages 18377-18381, April 15, 1997.

members.⁸ In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect.⁹

Definitions Used in this EIS

The U.S. Census Bureau gathers minority data based on the following definition: minorities are individuals who are a member of one of the following population groups: Black (not of Hispanic origin), Hispanic, Asian, American Indian or Native Alaskan. As such, Census minority figures include both racial and ethnic minorities. Since the Census collects separate data on Hispanic populations in addition to data on minority populations, the demographics analysis addresses minority and Hispanic populations separately. For the unit of geographical analysis, block and block group level data from the 2000 U.S. Census was used.

Low-income populations were identified using the annual statistical poverty thresholds developed by the U.S. Census Bureau.¹⁰ Consistent with the DOT Order 5610.2, "low-income persons" were defined as those whose "median household income is below the DHHS poverty guidelines."¹¹ The federal definition of poverty level varies by the size of family and number of related children under the age of 18 years. Average poverty thresholds in 2000 ranged from \$9,310 for a one-person household, to \$25,210 for households with nine or more family members. To provide a more inclusive definition consistent with other EIS methodologies¹² and account for the higher cost of living of the Chicago region compared to the nation as a whole, this EIS used a low-income threshold of 150 percent of the poverty level for an average household size (number of individuals in the residence) of 3.79 people. Under DHHS poverty guidelines, the poverty level for a household of 3.79 is \$20,512. Therefore, applying a 150 percent factor, an income of \$30,768 serves as the low-income threshold for the average household size. For the unit of geographical analysis, block and block group level data from the 2000 U.S. Census was used.

Disproportionately High and Adverse Impacts

A "disproportionately high and adverse effect on minority and low-income populations" is defined as an adverse effect that: "(1) is predominantly borne by a minority population and/or low-income population; or (2) will be suffered by the minority population and/or low-income

⁸ CEQ guidelines state that low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the U.S. Census Bureau Current Population Reports, Series P-60 on Income and Poverty. FAA Order 1050.1E permits use of whichever poverty value is most appropriate.

⁹ Environmental Justice: Guidance under the National Environmental Policy Act. Council on Environmental Quality, p.25, December 10, 1997. Website: <http://ceq.eh.doe.gov/nepa/regs/EJ/justice.pdf>.

¹⁰ Environmental Justice: Guidance under the National Environmental Policy Act. Council on Environmental Quality, Website: <http://www.whitehouse.gov/CEQ/>, p.25, December 10, 1997. Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses. U.S. EPA, April 1998.

¹¹ Environmental Justice in Minority Populations and Low-Income Populations. US Department of Transportation Order 5610.2, Federal Register: (Volume 62, Number 72), Pages 18377-18381, April 15, 1997.

¹² Final Environmental Impact Statement: Logan Airside Improvements Planning Project." EIS No. 010084. 2002. Vol. 1, p.2-25, Federal Aviation Administration.

population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or low-income population."¹³ The DOT Order also states that "[i]n making determinations regarding disproportionately high and adverse effects . . . mitigation and enhancement measures. . . and all offsetting benefits to the affected minority and low-income population may be taken into account . . ."

5.21.1.4 Methodologies

General

Exhibit 5.21-1 describes the environmental justice process and its two primary components, including public outreach and analysis. The outreach is intended to encourage public participation in the EIS process and to inform and engage affected minority population and low-income households. Information gathered from the outreach is used to guide the analysis. Scoping and preliminary analysis conducted for this EIS indicated that noise and social impacts associated with the Build Alternatives have the potential to cause a disproportionately high and adverse impact on minority and/or low-income populations. Public outreach was initiated to assist in identifying specific environmental justice concerns and a detailed environmental justice analysis was prepared as part of this EIS to assess potential environmental justice impacts. Communication with the residents and stakeholders via community outreach and professional judgment and experience of the preparers of this EIS provided qualitative factors for use along with quantitative data to guide the environmental justice analysis. The quantitative data presented are based on 2000 U.S. Census data using Geographic Information System (GIS) technology to analyze impacts at a census block level where the data are available.

The EIS analysis determines whether environmental justice criteria impacts will occur and assists in developing mitigation strategies. For social impacts, the minority population and low-income households within the proposed acquisition and relocation areas under the Build Alternatives were identified. For noise impacts, the minority population and low-income households (a) within the 65 DNL and higher contours under the No Action and Build Alternatives and (b) within the 65 DNL and higher contours that would experience a DNL 1.5 dB or greater noise increase under the Build Alternatives were identified.

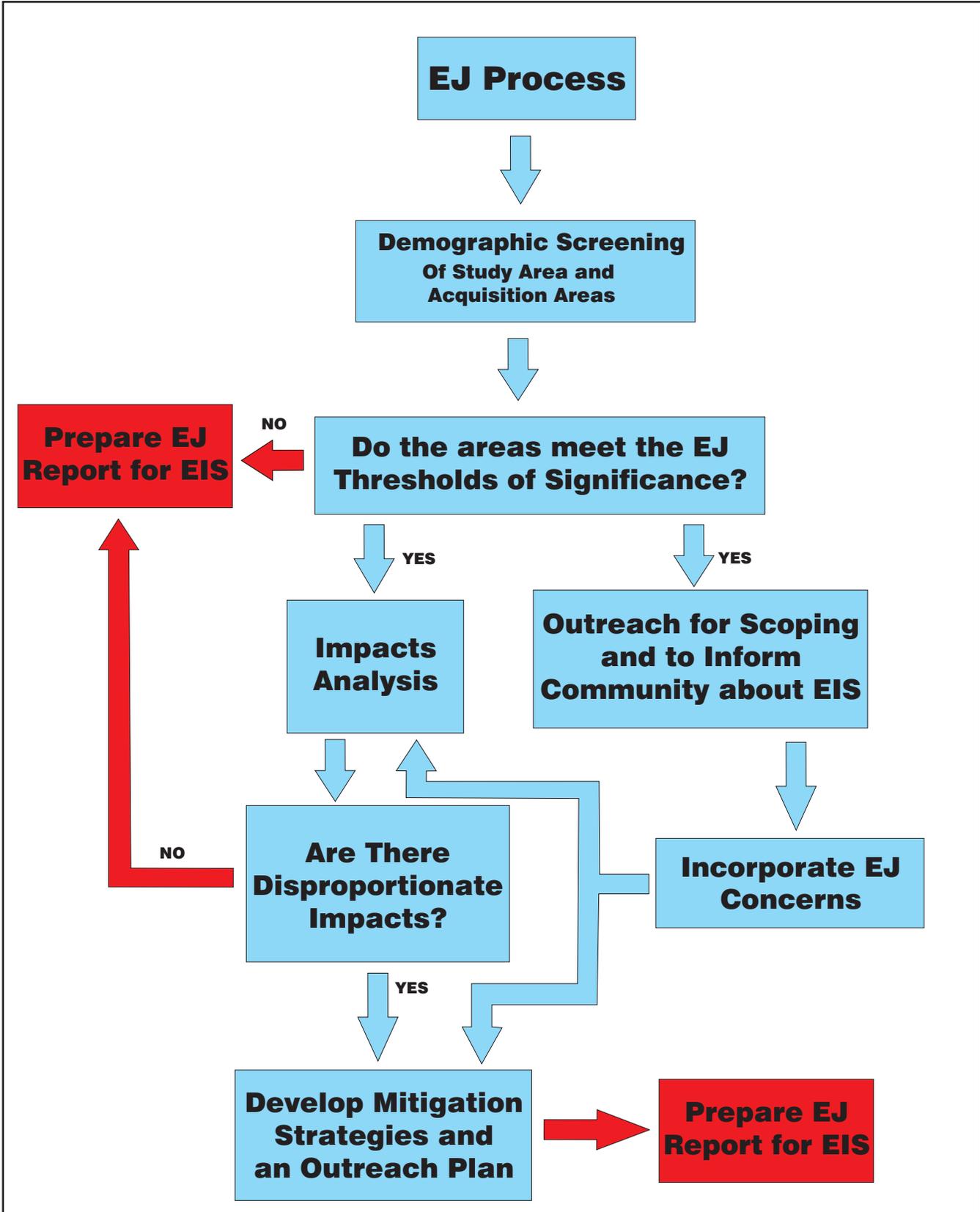
In development of the Final EIS, analysis of surface transportation and air quality impacts were also evaluated in relation to environmental justice considerations.

Public Outreach

Outreach efforts for this study were guided by a qualitative assessment of the project area, interaction with community residents, and quantitative analysis of census data. Using this information about the community, outreach team members were chosen to reflect the primary cultural make-up of area residents. The multi-cultural, multi-lingual team included both men

¹³ US Department of Transportation Order 5610.2, Federal Register: (Volume 62, Number 72), Pages 18377-18381, April 15, 1997.

and women to accommodate cultural sensitivities in order to maximize communication between the team and community residents.



Source: Prepared by Crawford, Murphy and Tilly, Inc. [TPC] 2004



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Environmental Justice Process

► Exhibit 5.21-1

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Exhibit 5.21-2 shows a concept map of the five-stage process that guided the public outreach plan. The model emphasizes continuous improvement and incorporates integrated feedback mechanisms to allow adjustments that will result in a process that targets the community's varied and dynamic needs.

The Outreach Session Information-Gathering Process components are presented below:

- **Inputs:** Data-gathering, key stakeholders' feedback, small-group meetings, summaries of meetings, logistics, and planning for the public meetings.
- **Implementation:** Public meetings; this stage of the outreach is concerned with troubleshooting, note-taking, facilitation and ensuring that attendees feel free to participate, ask questions and articulate their concerns.
- **Outputs:** Categorizing new information and data gained during the implementation stage and developing action items needed for the next meeting(s).
- **Outcomes:** Analyzing output data and evaluating the inputs and implementation of the small-group and public meetings and the quality of overall outreach. Included in this stage is an opportunity for stakeholder feedback.
- **Learning:** Integrating what was learned into the process to improve upon preparation (inputs) and outreach activities (implementation) to maximize public participation and guide the environmental justice analysis.

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Start Here



Inputs

- Qualitative data collection from small group meetings
- Public meeting preparation



Implementation

- Public Meetings: May 23 and August 29



Outputs

- Categorizing new information and data
- Developing action items



Learning

- Integrating what we learned to improve inputs and implementation



Outcomes

- Analyzing output data
- Evaluating inputs and implementation



Source: Prepared by Crawford, Murphy, and Tilly Inc. [TPC], 2004.

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**Environmental Justice Outreach Session
Information-Gathering Process**

► Exhibit 5.21-2

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Both Federal and State environmental justice policies stress that early and ongoing public outreach is a vital component of the environmental justice process. These activities establish trust and open dialogue with community members. The strategy utilized for effective public participation included the following activities:

- A survey was conducted by the FAA's Third Party Contractor (TPC) to assess community awareness of the EIS process. These paper surveys asked questions concerning family size, ethnic background, languages spoken in the home, years of residence, annual household income, employed household members, place of employment, schools attended by children, place of worship, primary businesses frequented, and owner/renter status. These two-page surveys were distributed in the proposed acquisition area to approximately 300 residences and businesses. The surveys were prepared in English and Spanish. Copies of the survey and survey results are included in **Appendix P, Environmental Justice**.
- On May 23, 2004, the FAA held its first environmental justice public meeting. The meeting was publicized through flyers posted in local businesses within and adjacent to the proposed acquisition area. These flyers, in English and Spanish, were also made available to residents within the acquisition area. In addition, personal letters were mailed to key stakeholders and announcements were made during mass at St. Alexis Church. Over 110 residents living in and around the acquisition area attended the meeting. This session was held at the Cascade Banquet Hall, a location community members identified as local, convenient, and accessible. After this meeting, attendees demonstrated their commitment to the process by participating in small-group meetings and recruiting other residents to participate.
- Over 30 small-group meetings conducted by TPC were held at various businesses and residences located in the acquisition area. These meetings ranged in size from 2 to over 30 residents. Residents offered to host these meetings at their homes, and some meetings were held in the Hamilton Townhome Association Office. These meetings were conducted in the evening to enable the greatest number of residents to attend.
- Collaboration with individuals, institutions, and organizations in the acquisition area was conducted to educate the public about potential environmental impacts and enhance public involvement.
- All meetings were conducted in both English and Spanish and all appropriate documents were translated into Spanish. Upon requests by the community, some documents were also translated into Hindi and Urdu. The translation of these documents into the appropriate languages helped residents obtain current and detailed information on the EIS process, including the Build Alternatives being assessed.
- A second environmental justice outreach meeting was held on August 29, 2004 at St. Alexis Church in Bensenville. The meeting was publicized through flyers posted in local businesses within, and adjacent to, the proposed acquisition area. These flyers, in English and Spanish, were also made available to residents within the proposed acquisition area. In addition, personal letters were mailed to key stakeholders and flyers

were distributed to parishioners at St. Alexis Church. Ninety residents attended to obtain information and ask questions of FAA officials.

- A third environmental justice outreach meeting was held on March 6, 2005 at St. Alexis Church in Bensenville. Similar to the previous outreach meeting, flyers were posted in local businesses within, and adjacent to, the proposed acquisition area to publicize the meeting. These flyers, in English and Spanish, were also made available to residents within the proposed acquisition area. In addition, personal letters were mailed to key stakeholders and flyers were distributed to parishioners at St. Alexis Church. Over fifty residents attended to obtain information, submit comments on the Draft EIS, and ask questions of FAA officials.

Detailed documents regarding the outreach are located in **Appendix P, Environmental Justice**.

5.21.2 Baseline Demographic Conditions

This section describes existing conditions for minority population and low-income households within the study area as defined below. Baseline characteristics serve as a point of reference for comparing projected impacts for each alternative.

In this particular analysis, the most reliable information is available throughout the 2000 U.S. Census. This data contains the most recent information on minority and low-income populations. However, correlating the most detailed Census Block information with the proposed 65 DNL and higher noise contours results in an overestimation of the number of people contained within that contour. This is because the Census Blocks that intersect with the 65 DNL noise contour cover an area that is larger than the contour itself. It is the intersection of the Census Blocks with the 65 DNL noise contour that yields the total population and the minority and low-income percentages in this analysis. For example, the specific data (minority and low-income populations) associated with each Census Block that touches and is contained within the 65 DNL and higher noise contours was added together to obtain total populations.

The City of Chicago, for a number of years, has been updating a separate database, which primarily tracks the total housing units that are in some way affected by noise. While this system may yield greater specificity in total numbers of people in the area around O'Hare, it does not track minority or low-income population. As a result, for this analysis, the City's data was not considered. The City's database when applied to the contour yields a total population of approximately 30 percent lower than the population calculated using the Census Block data. Therefore, the population numbers presented in this environmental justice section differ from the numbers presented in **Section 5.1, Noise, Section 5.2, Compatible Land Use, and Section 5.4, Social Impacts**.

5.21.2.1 Project Area

The project area includes portions of 18 communities surrounding O'Hare in which aircraft noise exposure either does now, or has the potential to increase and reach or exceed FAA levels

of significance,¹⁴ and areas in which acquisition of residences and businesses is proposed. These 18 communities, or portions thereof, include: Addison, Arlington Heights, Bensenville, Chicago, Des Plaines, Elk Grove Village, Elmhurst, Franklin Park, Harwood Heights, Itasca, Mount Prospect, Norridge, Northlake, Park Ridge, Rolling Meadows, Rosemont, Schiller Park, Wood Dale, and portions of unincorporated Cook and DuPage counties. See **Chapter 4, Affected Environment, Exhibit 4.1-1**. This project area was used as the boundary for the preliminary demographic analysis for environmental justice. GIS software and 2000 block-level demographic data were used to determine population breakdowns within the project area.

Overview of Minority (By Race) Population in the Project Area

Using 2000 U.S. Census data, information contained within the census block groups for the area described as the "project area" was tabulated. The total population within the project area is 212,660. Of this population, 16 percent is identified as minority (by race).

Overview of Minority (By Ethnicity) Population in the Project Area

Using 2000 U.S. Census data information for the "project area" noted above; of this population, 17 percent is identified as Hispanic.

Overview of Low-Income Population in the Project Area

Using 2000 U.S. Census data, information contained within the census block groups for the area described as the "project area" was tabulated. The total number of households within the project area is 79,818. Of these households, 19 percent are identified as low-income using the criteria for low-income households as outlined in **Section 5.21.1.3, Definitions**.

Proposed Northwest and Southwest Acquisition Area

For social impacts associated with acquisition and relocation, the potentially affected area was defined as the proposed acquisition areas for each of the alternatives under consideration. See **Section 5.4, Social Impacts** for detailed discussion of social impacts. A demographic analysis was conducted for the proposed acquisition areas using the boundaries for the largest proposed acquisition area (Alternative C), which is inclusive of each of the Build Alternatives.

The acquisition area is divided into two sections: southwest and northwest as illustrated on **Exhibits 5.21-3** and **5.21-4**, respectively. The northwest acquisition area consists of 136 acres in Des Plaines and Elk Grove Village, including approximately 109 commercial properties and 6 residential properties. The southwest area is located to the southwest of the O'Hare Airport and includes approximately 304 acres, including 88 commercial properties and 533 residential units in Bensenville, and two cemeteries in Chicago.

¹⁴ Noise exposure based on the composite of all noise contours for each alternative under consideration. Noise impacts are discussed further in **Section 5.2, Compatible Land Use**.

Minority Population in the Proposed Northwest and Southwest Acquisition Areas

U.S. Census 2000 block group data was used to calculate the total population of the proposed acquisition areas for this environmental justice analysis. Based on this data, the total population of the proposed acquisition areas is 2,682. Approximately 60 percent of the population in the proposed acquisition areas is identified as Hispanic. As a result, the acquisition area impacts are borne predominantly by a minority population. The percentage and number of individuals in racial and ethnic groups in the acquisition areas are shown in **Table 5.21-1**.

**TABLE 5.21-1
RACE AND ETHNICITY OF POPULATION IN PROPOSED ACQUISITION AREA**

Race/Ethnicity	Population		Percent (a)	
	NW	SW	NW	SW
Hispanics	9	1,590	39.1%	59.8%
Whites	13	1,094	56.5%	41.1%
Minority (By Race)	10	1,565	43.5%	58.9%
Total (Whites + Minority)	23	2,659		

Note: (a) Percentages add up to over 100 percent because Hispanic is an ethnic category that covers all races.
Sources: United States Census Bureau, 2000 Decennial Census
FAA/OMP Public Outreach Session PowerPoint Slide, May 23, 2004

Minority Population in the Proposed Northwest Acquisition Area

The number of people residing in the proposed northwest acquisition area is very small compared to the proposed southwest acquisition area. The total population in the proposed northwest acquisition area is 23 with 13 people (57 percent), designated as White, 9 (39 percent) as Hispanic, and 10 (44 percent) as Minority (By Race). **Exhibit 5.21-4** illustrates the number and percentage of minority individuals within the proposed northwest acquisition area.

Minority Population in the Proposed Southwest Acquisition Area

Of the two proposed acquisition areas, the southwest has more acreage and includes more residents. The total population of the proposed southwest acquisition area portion is 2,659. The White population in the proposed southwest acquisition area is 1,094 or 41 percent of the total population and the Minority (By Race) population is 1,565 or 59 percent. Hispanics form the largest ethnic group in the proposed southwest acquisition area. With a population of 1,590, Hispanics make up 60 percent of the total population. **Exhibit 5.21-3** shows the number and percentage of minority individuals within the proposed southwest acquisition area.

Comparison of Minority Population in Acquisition Areas to Minority Population in the Project Area

The Census Block data indicates that there are 23 people within the northwest acquisition area. However, the geographic area for the Census Blocks represents a larger area than the properties proposed for acquisition in the northwest under the Build Alternatives. When the City initiated their proposed O'Hare Modernization Program (OMP), there were approximately eight people residing in the northwest acquisition area. Since the specific minority and low-income statistics for these eight individuals are not available, and because there are so few properties involved,

specific environmental justice outreach is targeted on the southwest acquisition areas. The City is in process of acquiring these properties. For further discussion related to this acquisition, see **Section 5.21.10, Potential Mitigation Measures**. The status of the City's property acquisitions since late 2001 is depicted on **Exhibit H-1 in Appendix H, Social Impacts**.

The population in the proposed southwest acquisition area is predominately Minority (By Race) (58.9 percent) and Hispanic (59.8 percent). Additionally, the southwest acquisition area has a Minority and Hispanic population that is "meaningfully greater" than the project area as a whole.

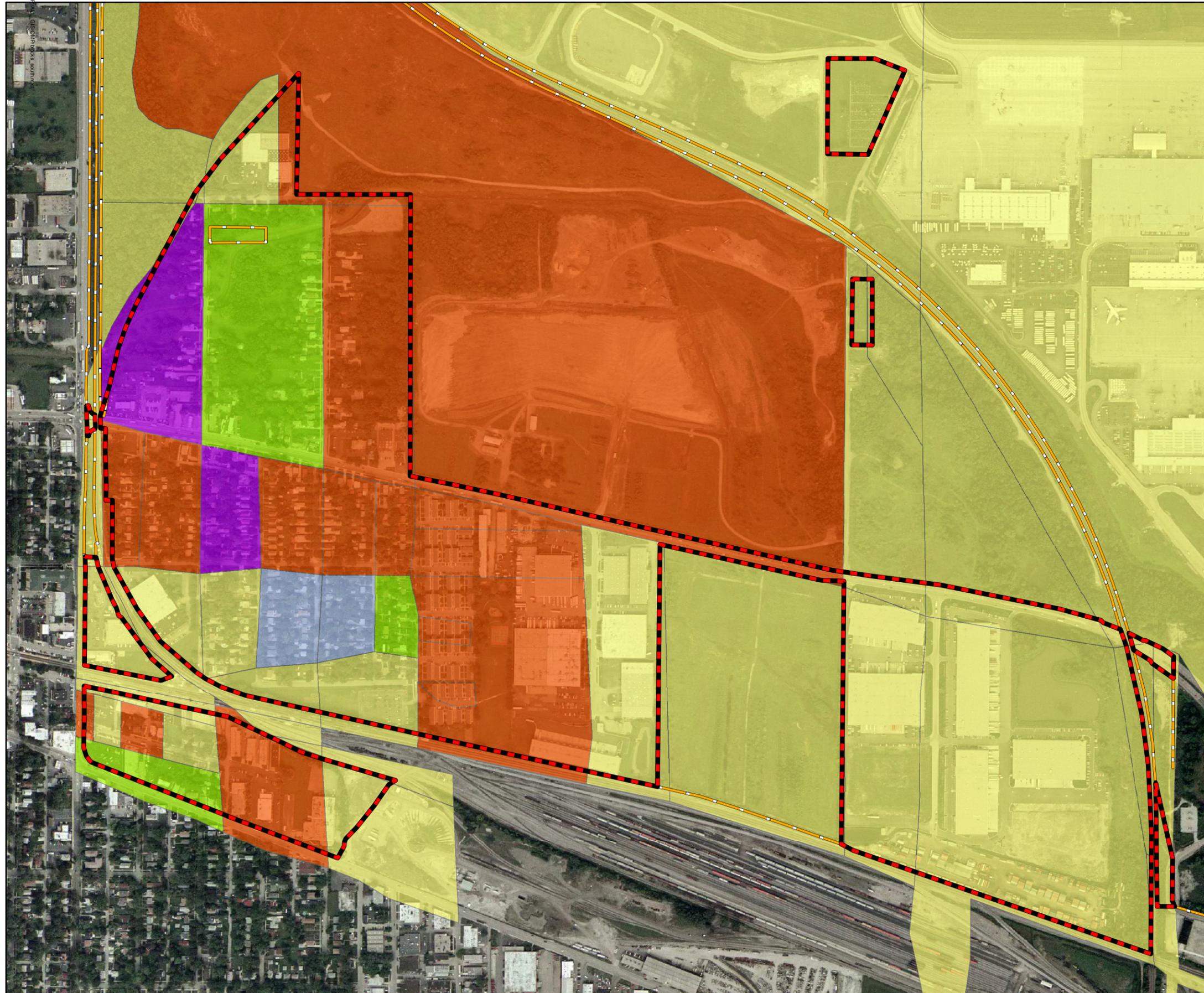
Tables P-1, P-2, and P-3 in Appendix P show the minority (by race and by ethnicity) population percentage of the proposed acquisition areas is significantly higher than that of other communities surrounding O'Hare airport. The municipalities of Addison, Arlington Heights, Bensenville, Des Plaines, Elk Grove Village, Elmhurst, Franklin Park, Harwood Heights, Itasca, Mount Prospect, Norridge, Park Ridge, River Grove, Rolling Meadows, Rosemont, Schiller Park, WoodDale, and portions of unincorporated Cook and DuPage County all have minority populations that are well under 50 percent for those municipalities.

The total Hispanic population of Bensenville numbers at 7,690 or 37 percent. In contrast Hispanics make up 60 percent of the southwest acquisition area. This group faces disproportionate impacts from the proposed land acquisition. Therefore, the southwest acquisition area is identified as an environmental justice impact area and is targeted for impact analysis and public outreach.

Low-Income Population in the Total Proposed Acquisition Area (Southwest and Northwest Combined)

The median income of households for the total acquisition area for a 3.79- member family unit is \$33,924. Since this is greater than the low-income threshold of \$30,768 for an average family unit of 3.79, the criterion for low-income does not apply to the acquisition area. For detailed income data for the acquisition areas, see **Tables P-4 and P-5 in Appendix P, Environmental Justice**.

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Source: Population Data: United States Census Bureau, 2000 Census. Aerials: September 2002, AerialsExpress.



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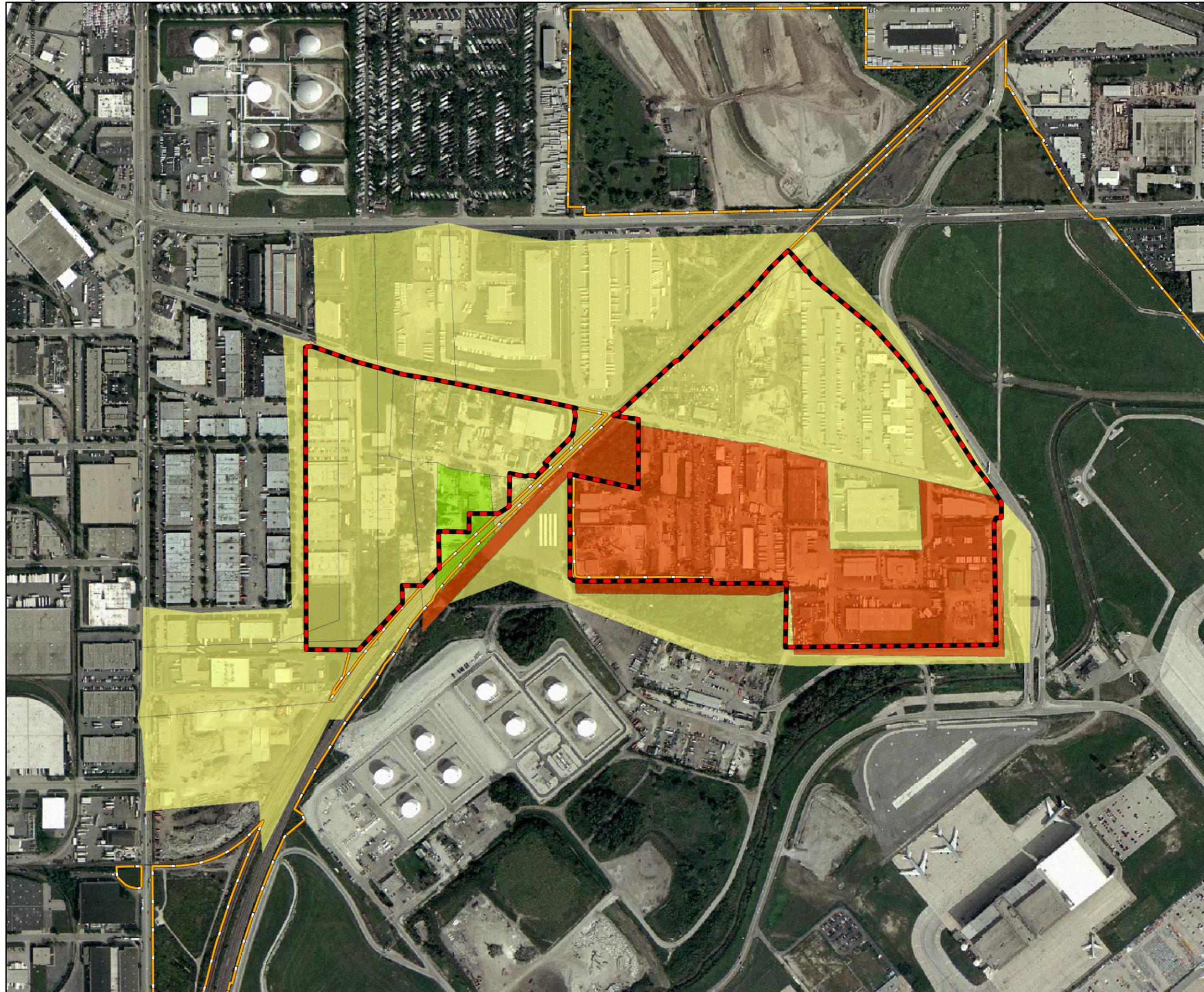
-  Proposed Acquisition Areas
-  Existing Airport Property

Percentage Minority (By Race)

-  0-9.9%
-  10-19.9%
-  20-29.9%
-  30-39.9%
-  40-49.9%
-  50% and Greater



**Minority Population (By Race)
in Southwest Acquisition Area**



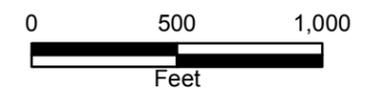
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-  Proposed Acquisition Areas
-  Existing Airport Property

Percentage Minority (By Race)

-  0-9.9%
-  10-19.9%
-  20-29.9%
-  30-39.9%
-  40-49.9%
-  50% and Greater



**Minority Population (By Race)
in Northwest Acquisition Area**

► Exhibit 5.21.4

Source: Population Data: United States Census Bureau, 2000 Census. Aerials: September 2002, AerialsExpress.

5.21.3 Analysis of Potential Social Impacts on Environmental Justice Population in Acquisition Areas – Construction Phases I and II

This section describes the impacts of each of the Build Alternatives C, D, and G in a comparative form against the No Action Alternative (Alternative A). Based on the City of Chicago's proposed timeline for the redevelopment of O'Hare, all of the land required for the development of the Build Alternatives would be acquired over a period of time, with completion of all acquisition anticipated prior to the end of Construction Phase II. Therefore, the analysis of environmental justice impacts related to land acquisition represents a fully completed acquisition process for each alternative.

5.21.3.1 Alternative C

Relocation of Residents

Based on the 2000 U.S. Census, there are approximately 2,682 residents from 545 housing units within the proposed land acquisition areas for Alternative C. Within the population to be acquired, there is a disproportionate number of minority individuals. There are approximately 1,575 minorities (by race) and 1,599 minorities (by ethnicity) out of a total population of 2,682. This represents approximately 59 percent minority (by race) and 60 percent minority (by ethnicity) populations proposed to be acquired under Alternative C.

Impacts on Businesses (Relocated and Remaining)

Table 5.4-7 in Section 5.4, **Social Impacts** shows the number of businesses and estimates the number of employees that will be relocated or positions that will be lost. There are a total of 197 businesses in the acquisition area, which are estimated to employ approximately 3,040 people. Section 5.4 also discusses how these businesses and employees would be treated under the Uniform Relocation Assistance and Real Property Acquisition Policies Act.

It is also important to consider businesses that will remain in the area. In some instances, the impacts may have a more profound effect on businesses whose property would not be acquired for construction. In certain instances, minority populations tend to support minority businesses in and around their neighborhoods. It has been shown that a minority business could suffer disproportionately due to the relocation of the community residents that tend to support said businesses. The EIS has identified over 150 businesses adjacent or near the acquisition area. Of these, at least 17 businesses are minority-owned and/or cater specifically to minorities.

When possible, business owners were approached directly to establish minority-owned status. In other instances, observations were used to determine if the business catered primarily to minorities. Businesses that cater to minorities were further identified by bilingual signs and advertisements displayed on the premises. These businesses were clustered around thoroughfares found along the west, northwest, southwest, and southeast areas of the southwest acquisition area.

Businesses that would be most negatively impacted by the loss of the 1,541 minority residents are located on South Center, West Main, and Green Streets. These businesses are located within

a two-block distance from the proposed acquisition area and are walking distance from these residences. The six businesses along 22 – 26 East Green Street and the Park & Shop Plaza on the 200 block of West Main Street provide many services to Spanish-speaking customers and could lose some of their business upon relocation of residences in the southwest acquisition area.

Other Community Resources

Other than the residents and the businesses mentioned in the previous paragraphs, there may also be some environmental justice impacts to certain community resources that would remain following acquisition. For instance, schools or other social service agencies may conduct programs, which teach English as a second language because of the large minority population present in the acquisition area. If this large minority population moves beyond the limits of the present school district boundary, programs may be affected. Class size and demographics could be affected which could cause a reduction in staff.

It is difficult to determine the impact on schools since it is not known how many acquisition area residents will remain in the Village of Bensenville after acquisition. There is likely to be a redistribution of students within the elementary schools for those who remain within the Village limits. This may result in increase in certain minority-targeted programs at some schools, and a decrease of such programs in other schools.

5.21.3.2 Alternatives D and G

Relocation of Residents

Alternatives D and G require 27 less acres of land than Alternative C. Based on the 2000 U.S. Census, Alternatives D and G would relocate approximately 2,553 residents from 509 housing units versus 2,682 residents from 545 housing units for Alternative C. The housing units that would remain under Alternatives D and G would be physically located adjacent to the new airport boundaries. Within the population to be acquired are a disproportionate number of minority populations. There are approximately 1,479 minorities (by race) and 1,524 minorities (by ethnicity) out of a total population of 2,553. This represents approximately 58 percent minority (by race) and 60 percent minority (by ethnicity) populations proposed to be acquired under Alternatives D and G.

Impacts on Businesses (Relocation and Remaining)

Table 5.4-7 in Section 5.4, Social Impacts, shows the number of businesses and estimates the number of employees that will be relocated or positions that will be lost as a result of Alternatives D and G. There are a total of 164 businesses in the acquisition area which employ approximately 2,928 people. This compares to 197 businesses and approximately 3,040 employees in Alternative C. **Section 5.4, Social Impacts** also discusses how these businesses and employees would be treated under the Uniform Relocation Assistance and Real Property Acquisition Policies Act.

It is also important to consider businesses that will remain in the area. In some instances, the impacts may have a more profound effect on businesses whose property would not be acquired

for construction. In certain instances, minority populations tend to support minority businesses in and around their neighborhoods. It has been shown that a minority business could suffer disproportionately due to the relocation of the community residents that tend to support said businesses. The EIS has identified a number of businesses adjacent to the acquisition area in an effort to qualitatively evaluate the potential impacts to the minority business.

There are approximately 180 businesses adjacent to or near the acquisition areas for Alternatives D and G. The difference of about 30 businesses between Alternative C and Alternatives D and G is due to the area bounded by Green, York and Railroad Streets which is a part of the proposed acquisition area for Alternative C. Alternatives D and G include the minority businesses found within this area in addition to the minority businesses already identified for Alternative C.

Other Community Resources

Other than the residents and the businesses mentioned in the previous paragraphs, there may also be some environmental justice impacts to certain community resources that remain following acquisition. For instance, schools or other social service agencies may conduct programs which teach English as a second language because of the large minority population present in the acquisition area. If this large minority population moves beyond the limits of the present school district boundary, programs may be affected. Class size and demographics could be affected which could cause a reduction in staff.

The impacts on schools for Alternatives D and G will be nearly the same as the impacts of Alternative C. The additional proposed acquisition area for Alternative C contains mostly businesses, and includes only 24 additional minority (by race) and 45 additional minority (by ethnicity) residents (36 housing units). Therefore the impact on relocation of minority residents on schools will have a negligible difference between the Build Alternatives.

5.21.4 Analysis of Potential Noise Impacts on Environmental Justice Populations Outside of the Acquisition Areas – Build Out

As Build Alternatives approach Build Out, all land acquisition and relocations would have been completed. Potential noise impacts for the interim years of construction are presented for informational purposes in **Section 5.21.4.6, Temporary Noise Impacts** and in **Section 5.1, Noise**. The analysis in this section focuses on the Build Out + 5 impacts.

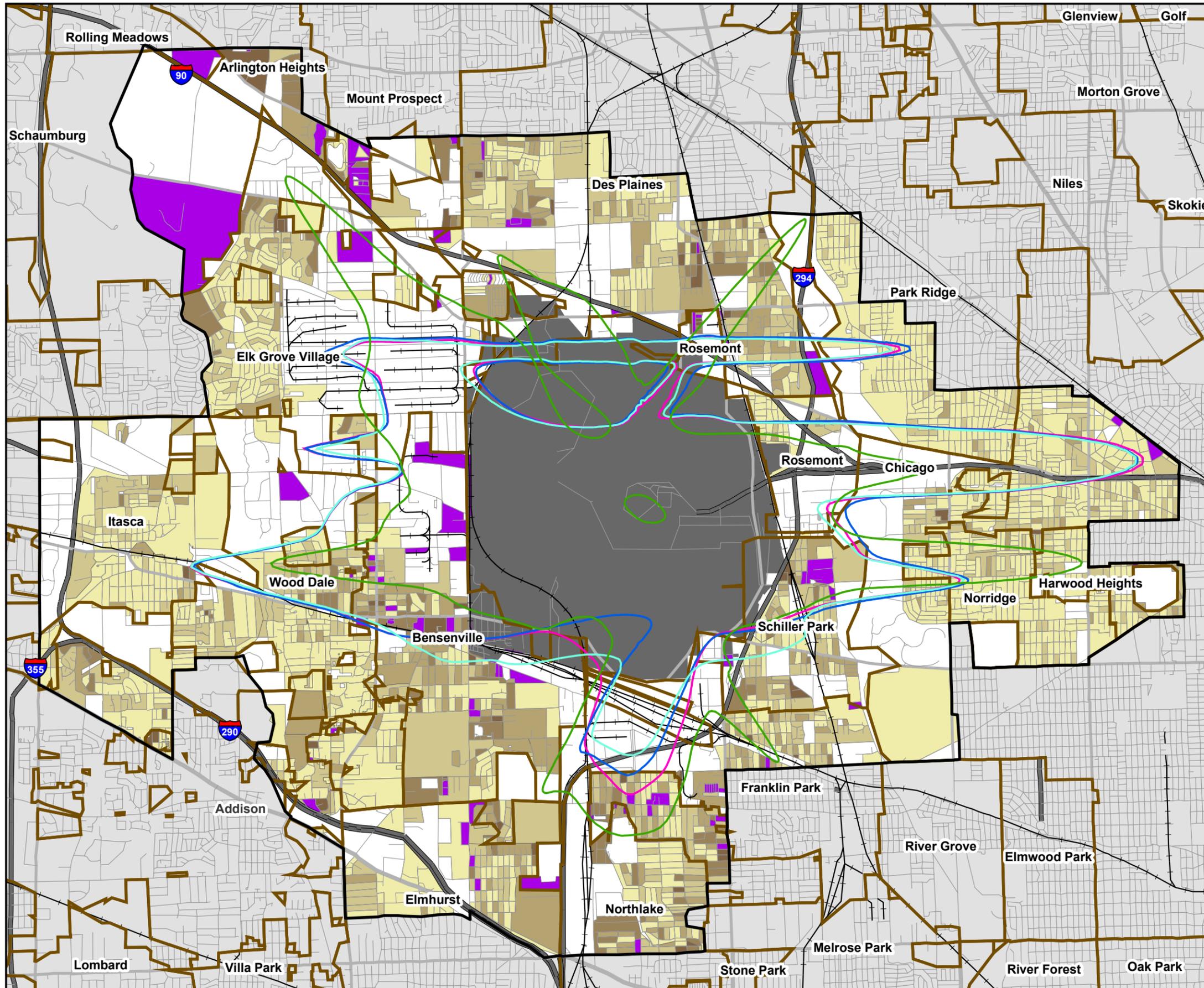
For purposes of noise, a much larger area was considered. The area potentially affected by noise was identified as those political jurisdictions (cities and towns) affected by the 65 DNL and higher noise contours. The 65 DNL is the noise level at which all land uses are considered compatible under federal land use compatibility guidelines set forth in 14 CFR Part 150. Refer to **Section 5.1, Noise** and **Appendix F, Noise** for detailed discussion on noise metrics.

This analysis identifies geographic areas exposed to noise levels of the 65 DNL and higher noise contour under the Build Alternative as compared to the No Action Alternative, and then assesses the percentage of minority population and low-income households within these areas to determine potential environmental justice impacts. This analysis also identifies the areas that

would experience significant increases in noise, which is defined as a DNL 1.5 dB or greater increases in noise at or above the 65 DNL noise contour, then assesses the percentage of minority population and low-income households within these areas.

The DNL 1.5 dB or greater increase in noise over noise sensitive areas within the 65 DNL and higher noise contour areas is used in this analysis because this noise increase represents a "significant impact" as defined in FAA Order 1050.1E. A significant noise impact would occur if analysis shows that the proposed action will cause noise sensitive areas to experience an increase in noise of DNL 1.5 dB or more at or above DNL 65 dB noise exposure when compared to the No Action Alternative for the same timeframe.

The percentage of minority (by race) and minority (by ethnicity) populations, as well as low-income households surrounding the Airport are depicted on **Exhibits 5.21-5, 5.21-6, and 5.21-7**, respectively. These exhibits also include the Build Out + 5 noise contours for each alternative under consideration, including the No Action Alternative.



Source: Municipal Boundaries & Census Blocks: US Census Bureau, Census 2000. Streets: StreetMapUSA Noise Contours: Leigh Fisher Associates [TPC], 2004.



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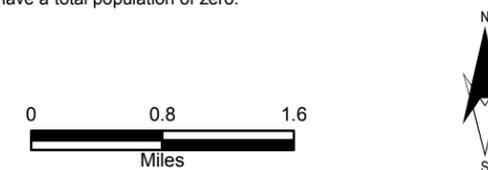
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- 2018 Alternative D 65 DNL
- 2018 Alternative G 65 DNL

Percentage of Minorities by Race

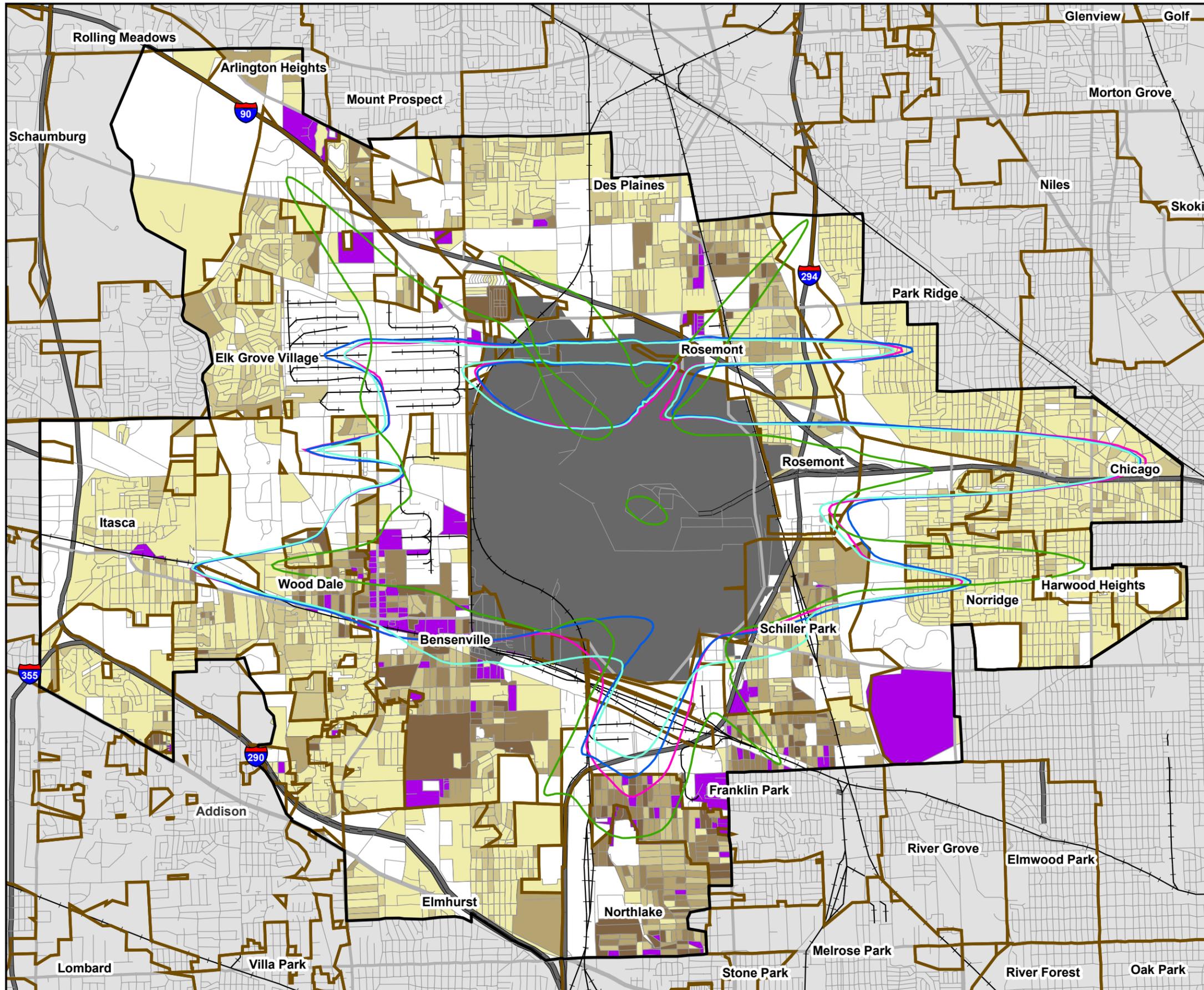
- 0-9.9%
- 10-19.9%
- 20%-29.9%
- 30-39.9%
- 40-49.9%
- 50% and Greater
- Project Area
- Community Boundaries
- Proposed Future Airport Property for Alternative C

- Notes:
1. Proposed Acquisition Areas were not included in these calculations as they are assessed in direct impacts.
 2. Areas in white represent census blocks that have a total population of zero.



EJ - Minority (By Race) By Census Blocks (Build Out + 5 Phase)

► Exhibit 5.21-5



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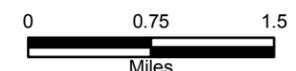
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- 2018 Alternative D 65 DNL
- 2018 Alternative G 65 DNL

Percentage of Minorities by Ethnicity

- 0-9.9%
- 10-19.9%
- 20%-29.9%
- 30-39.9%
- 40-49.9%
- 50% and Greater
- Project Area
- Community Boundaries
- Proposed Future Airport Property for Alternative C

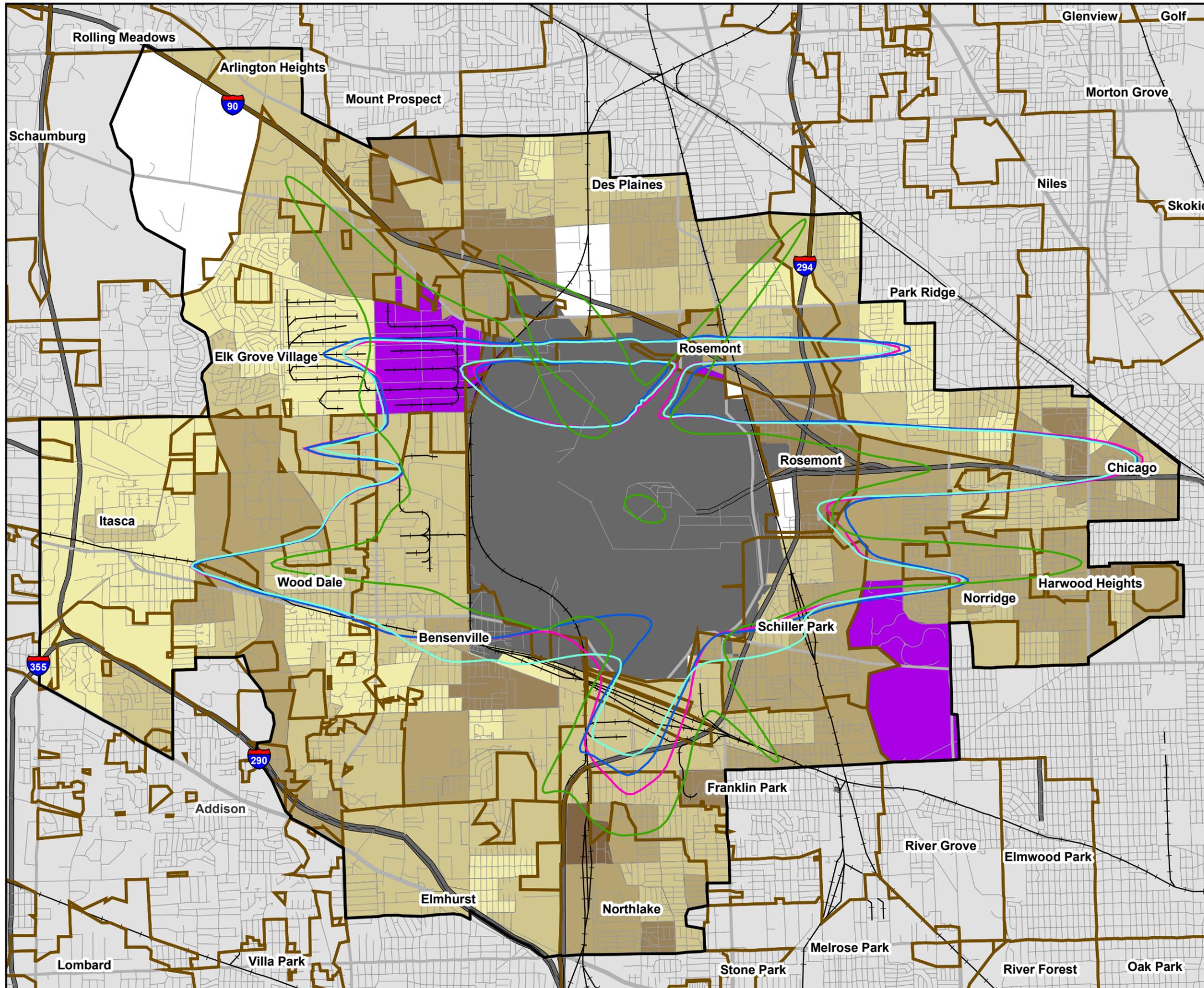
- Notes:
1. Proposed Acquisition Areas were not included in these calculations as they are assessed in direct impacts.
 2. Areas in white represent census blocks that have a total population of zero.



**EJ - Minority (By Ethnicity)
By Census Blocks
(Build Out + 5 Phase)**

► Exhibit 5.21-6

Source: Municipal Boundaries & Census Blocks: US Census Bureau, Census 2000. Streets: StreetMapUSA Noise Contours: Leigh Fisher Associates [TPC], 2004.



Source: Municipal Boundaries & Census Blocks: US Census Bureau, Census 2000. Streets: StreetMapUSA Noise Contours: Leigh Fisher Associates [TPC], 2004.



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- 2018 Alternative G 65 DNL

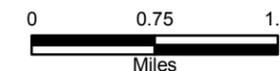
Percentage of Low Income Households

- 0-9.9%
- 10-19.9%
- 20%-29.9%
- 30-39.9%
- 40-49.9%
- 50% and Greater

- Project Area
- Community Boundaries
- Proposed Future Airport Property for Alternative C

Notes:

1. Proposed Acquisition Areas were not included in these calculations as they are assessed in direct impacts.
2. The "Poverty Threshold" was determined using the Department of Housing and Urban Developments Poverty thresholds for 2004plus 50%. The average size of a household in the project area is 2.64 people, which has a poverty threshold of \$14,525.20, plus 50% is \$21,787.80.
3. Areas in white represent census blockgroups that have zero households.



EJ - Low-Income Households By Census Blockgroups (Build Out + 5 Phase)

► Exhibit 5.21-7

The following sections describe the analysis of potential noise impacts related to the environmental justice population in greater detail.

5.21.4.1 65+ DNL Areas

The 65 DNL and greater noise contour areas for Build Out + 5 for each of the Build Alternatives (C, D, and G) were compared against the No Action Alternative (Alternative A). The No Action 65 DNL contour and the Build Alternatives 65 DNL contours are depicted on **Exhibits 5.21-8, 5.21-10, 5.21-12, 5.21-14, 5.21-16, and 5.21-18**. Within these 65 DNL and higher noise contour areas, the 2000 U.S. Census data for minority (by ethnicity), minority (by race) and low-income households were evaluated for each alternative. Census blocks (the smallest unit available from the Census) that touch or are contained within each alternative's 65 DNL and higher contour area were evaluated for minorities (by race and ethnicity). Census block groups (the smallest unit available from the Census) that touch or are contained within each alternative's 65 DNL and higher contour area were evaluated for low-income households. The percentage of minority population and low-income households was derived by comparing the minority population and low-income households to the total population and total households, respectively, within the 65 DNL and higher noise contour areas for each alternative.

5.21.4.2 Comparison Areas for the 65+ DNL Areas

The Comparison Areas for the 65 DNL Areas (Comp. Areas for 65+ DNL) includes the whole of the political jurisdictions (via associated Census blocks) that touch or are contained within the 65 DNL contour for each of the respective alternatives, except that aldermanic wards are included instead of the whole City of Chicago.¹⁵ In addition, the unincorporated areas of Cook and DuPage counties surrounded by the communities that touch or are contained within the 65 DNL contour for the Build Alternatives are included in the Comp. Areas for 65+ DNL. Because data for low-income households is only available down to the Census block group (the smallest unit available from the Census), the Comp. Areas for 65+ DNL for the low-income households covers an area that is slightly larger than the Comp. Areas for 65+ DNL for the minority populations. **Exhibits 5.21-8, 5.21-10, 5.21-12, 5.21-14, 5.21-16, and 5.21-18** illustrate the Comp. Areas for 65+ DNL for the minority populations and the low-income households as appropriate.

5.21.4.3 DNL 1.5 dB Noise Increase Areas within the 65+ DNL and Higher Noise Contours

Analyses were performed, using the Integrated Noise Model (INM) grid points to compare all Build Alternatives (C, D and G) against the No Action Alternative (Alternative A). Where grid point noise increases of DNL 1.5 dB or greater occurred within the 65 DNL and higher noise contours for the respective Build Alternatives, these areas became the basis for further analyses. The 2000 U.S. Census data for minority (by ethnicity), minority (by race) and low-income

¹⁵ The aldermanic wards for Chicago were chosen as the appropriate units of geographic analysis rather than the entire City of Chicago so as not to artificially dilute or inflate the total minority or low-income comparison population. The population of Chicago is exponentially greater than any of the other political jurisdictions.

households were evaluated within these DNL 1.5 dB increase areas. Census blocks (the smallest unit available from the Census) were evaluated for minorities and block groups (the smallest unit available from the Census) were evaluated for low-income populations. Minority populations and low-income populations within the DNL 1.5 db increase areas were compared against the total populations and total households, respectively, within the areas represented by a DNL 1.5 dB increase to establish a percentage of these groups. **Exhibits 5.21-9, 5.21-11, 5.21-13, 5.21-15, 5.21-17, and 5.21-19** illustrate these areas of DNL 1.5 dB noise increase in addition to the 65 DNL noise contours.

5.21.4.4 Comparison Areas for the DNL 1.5 dB Noise Increase Areas within the 65+ DNL and Higher Noise Contours

The Comparison Areas for the DNL 1.5 dB Noise Increase Areas within the 65 DNL and Higher Noise Contours (Comp. Areas for DNL 1.5 dB) for minority populations are the Census block groups that are contained within or touch the 65 DNL and higher noise contour areas. Because data for low-income households is only available down to the Census block group (the smallest unit available from the Census) for the DNL 1.5 dB increase areas, the Comp. Areas for DNL 1.5 dB were generated with Census tracts (the next largest unit available from the Census). Therefore, the Comp. Areas for DNL 1.5 dB for the low-income households covers an area that is slightly larger than the Comp. Areas for DNL 1.5 dB for the minority populations. **Exhibits 5.21-9, 5.21-11, 5.21-13, 5.21-15, 5.21-17, and 5.21-19** illustrate the Comparison Areas for the DNL 1.5 dB Noise Increase Areas within the 65 DNL and Higher Noise Contours.

5.21.4.5 Comparative Analysis

The total number and percentage of minority populations and low-income households within the 65 DNL and higher noise contours for each Build Alternative were compared to the total number and percentage of these groups within this contour under the No Action Alternative. The minority population and low-income households affected within the 65 DNL and higher noise contours for each Build Alternative in Build Out + 5 were also compared to the 2000 U.S. Census baseline minority population and low-income households of the Comp. Areas for 65+ DNL to determine if the minority population and low-income households affected by each of the Build Alternatives was "meaningfully greater" than that in the Comp. Areas for 65+ DNL. Where a greater number or higher percentage of the minority or low-income population would experience 65 DNL and higher noise levels under any of the Build Alternatives than under the No Action Alternative (Alternative A), there could be a disproportionately high and adverse impact. Additionally, if a meaningfully greater percentage of minority or low-income populations would experience 65 DNL and higher noise levels under any of the Build Alternatives as compared to the 2000 U.S. Census baseline minority and low-income population of the Comp. Areas for 65+ DNL, there could be a disproportionately high and adverse impact.

The minority populations and low-income households in areas that would newly experience DNL 1.5 db or greater increases in noise at or above 65 DNL noise levels for each Build Alternative were examined to determine whether significant noise impacts would be predominately borne by minority population and low-income households in any area.

Additionally, the minority population and low-income households in areas that would newly experience DNL 1.5 dB or greater increases in noise at or above 65 DNL noise levels for each Build Alternative was examined, and was compared to the 2000 U.S. Census baseline minority and low-income population of the respective Comp. Area for DNL 1.5 dB for each Build Alternative to determine if there was a "meaningfully greater" percentage of minority or low-income populations that would experience a significant noise increase.

Because the results of the comparison analysis were so close (i.e., within ten percent), and in the absence of specific CEQ guidance related to the definition of "meaningfully greater," FAA decided to conduct a statistical analysis. This statistical analysis was performed to determine if there was a statistically significant difference among the proportions of minority populations and low-income households in the "impact" areas when compared to the larger general study areas described previously. This analysis was prepared by the Associate Professor in Statistics, ChungHsien Sung, PhD. of the Mathematical Sciences Program of the University of Illinois. A copy of the statistical analysis is contained in **Attachment P-37 in Appendix P**. The following sections present the results of the analysis of potential noise impacts on environmental justice populations outside of the acquisition areas for each of the Build Alternatives (C, D, and G). For the purposes of this EIS, FAA is treating differences in proportions of populations that are statistically significant as "meaningfully greater" differences.

Minority (By Race)

Tables 5.21-2 and 5.21-3 show the numbers and percentages of minority (by race) populations within the 65 DNL and higher noise contour areas for each alternative and the DNL 1.5 db increase areas for each Build Alternative. The 65 DNL and higher noise contour areas are compared to the Comp. Areas for 65+ DNL, and the DNL 1.5 db increase areas are compared to the Comp. Areas for DNL 1.5 dB.

**TABLE 5.21-2
NOISE INCREASE COMPARISON OF BUILD ALTERNATIVES TO NO ACTION
ALTERNATIVE (ALTERNATIVE A) FOR BUILD OUT + 5
65 DNL AND HIGHER NOISE CONTOUR AREA
MINORITY (BY RACE)**

	Alternative A		Alternative C		Alternative D		Alternative G	
	Number	%	Number	%	Number	%	Number	%
Total Population								
65+ DNL Area	32,151	NA	36,262	NA	35,960	NA	36,581	NA
Comp. Area for 65+ DNL	329,285	NA	346,595	NA	356,204	NA	356,204	NA
Minority (By Race) Population								
65+ DNL Area	5,942	18.5%	6,573	18.1%	6,207	17.3%	6,337	17.3%
Comp. Area for 65+ DNL	52,629	16.0%	49,420	14.3%	51,855	14.6%	51,855	14.6%
Notes:	NA = Not applicable							
	Comp. Area for 65+ DNL = Comparison Area for the 65+ DNL Area							
Source:	TPC Analysis, United States Census Bureau, 2000 Decennial Census, File SF1, Matrices P7 and P8.							

**TABLE 5.21-3
NOISE INCREASE COMPARISON OF BUILD ALTERNATIVES TO NO ACTION
ALTERNATIVE (ALTERNATIVE A) FOR BUILD OUT + 5
DNL 1.5 DB INCREASE WITHIN 65 DNL AND HIGHER
MINORITY (BY RACE)**

	Alternative A		Alternative C		Alternative D		Alternative G	
	Number	%	Number	%	Number	%	Number	%
Total Population								
DNL 1.5 dB increase in 65+DNL	NA	NA	33,870	NA	32,305	NA	31,414	NA
Comp. Area for DNL 1.5 dB	NA	NA	86,342	NA	82,117	NA	81,221	NA
Minority (By Race) Population								
DNL 1.5 dB increase in 65+DNL	NA	NA	6,097	18.0%	5,544	17.2%	5,446	17.3%
Comp. Area for DNL 1.5 dB	NA	NA	13,531	15.7%	12,404	15.1%	12,426	15.3%
Notes:	NA = Not applicable							
	Comp. Area for DNL 1.5 dB = Comparison Area for the DNL 1.5 dB Area							
Source:	TPC Analysis, United States Census Bureau, 2000 Decennial Census, File SF1, Matrices P7 and P8.							

Alternative C

As shown in **Table 5.21-2**, the percent of minorities (by race) within the 65 DNL and higher noise contour areas for Alternative C is less than the percent of minorities (by race) within the 65 DNL and higher noise contour areas for the No Action Alternative (Alternative A). However, the total numbers of minority (by race) individuals within the 65 DNL and higher noise contour area are greater under Alternative C than the No Action Alternative.

The percent of minorities (by race) within the 65 DNL and higher contour area is 18.1 percent when compared to the total population within the 65 DNL and higher contour area. An analysis of the total 2000 U.S. Census minority (by race) population within the Comp. Area for 65+ DNL yields approximately 14.3 percent. The minority population within the 65 DNL and higher contour area (18.1 percent) is more than the 2000 U.S. Census minority population within the Comp. Area for 65+ DNL (14.3 percent). The statistical analysis (**Attachment P-37** in **Appendix P**) indicates that this difference (i.e. 18.1 percent vs. 14.3 percent) is statistically significant. As a result, FAA has determined that there is a "meaningfully greater" difference. Therefore, the analysis leads to the preliminary conclusion that there is a disproportionately high and adverse noise impact on minority (by race) populations. In making its final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibit 5.21-8** graphically depicts this analysis.

As shown in **Table 5.21-3**, the percent of minorities (by race) within the DNL 1.5 dB increase areas at or above the 65 DNL noise contour is approximately 18.0 percent when compared to the total population within these DNL 1.5 increase areas. A similar analysis of the 2000 U.S. Census minority (by race) population within the Comp. Area for DNL 1.5 dB yields approximately 15.7 percent. The minority population within the DNL 1.5 dB increase areas at or above the 65 DNL contour area (18.0 percent) is more than the 15.7 percent minority population in the Comp. Area for DNL 1.5 dB. The statistical analysis (**Attachment P-37** in **Appendix P**) indicates that this

difference (i.e., 18.0 percent vs. 15.7 percent) is statistically significant. As a result, FAA has determined that there is a “meaningfully greater” difference. Therefore, the analysis leads to the preliminary conclusion that there is a disproportionately high and adverse noise impact on minority (by race) populations. In making its final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibit 5.21-9** graphically depicts this analysis.

Alternative D

As shown in **Table 5.21-2**, the percent of minorities (by race) within the 65 DNL and higher noise contour areas for Alternative D is less than the percent of minorities (by race) within the 65 DNL and higher noise contour areas for the No Action Alternative (Alternative A). However, the total numbers of minority (by race) individuals within the 65 DNL and higher noise contour area are greater under Alternative D than the No Action Alternative.

The percent of minorities (by race) within the 65 DNL and higher contour area is 17.3 percent when compared to the total population within the 65 DNL and higher contour area. An analysis of the total 2000 U.S. Census minority (by race) population within the Comp. Area for 65+ DNL yields approximately 14.6 percent. The minority population within the 65 DNL and higher contour area (17.3 percent) is more than the 2000 U.S. Census minority population within the Comp. Area for 65+ DNL (14.6 percent). The statistical analysis (**Attachment P-37** in **Appendix P**) indicates that this difference (i.e., 17.3 percent vs. 14.6 percent) is statistically significant. As a result, FAA has determined that there is a “meaningfully greater” difference. Therefore, the analysis leads to the preliminary conclusion that there is a disproportionately high and adverse noise impact on minority (by race) populations. In making its final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibit 5.21-10** graphically depicts this analysis.

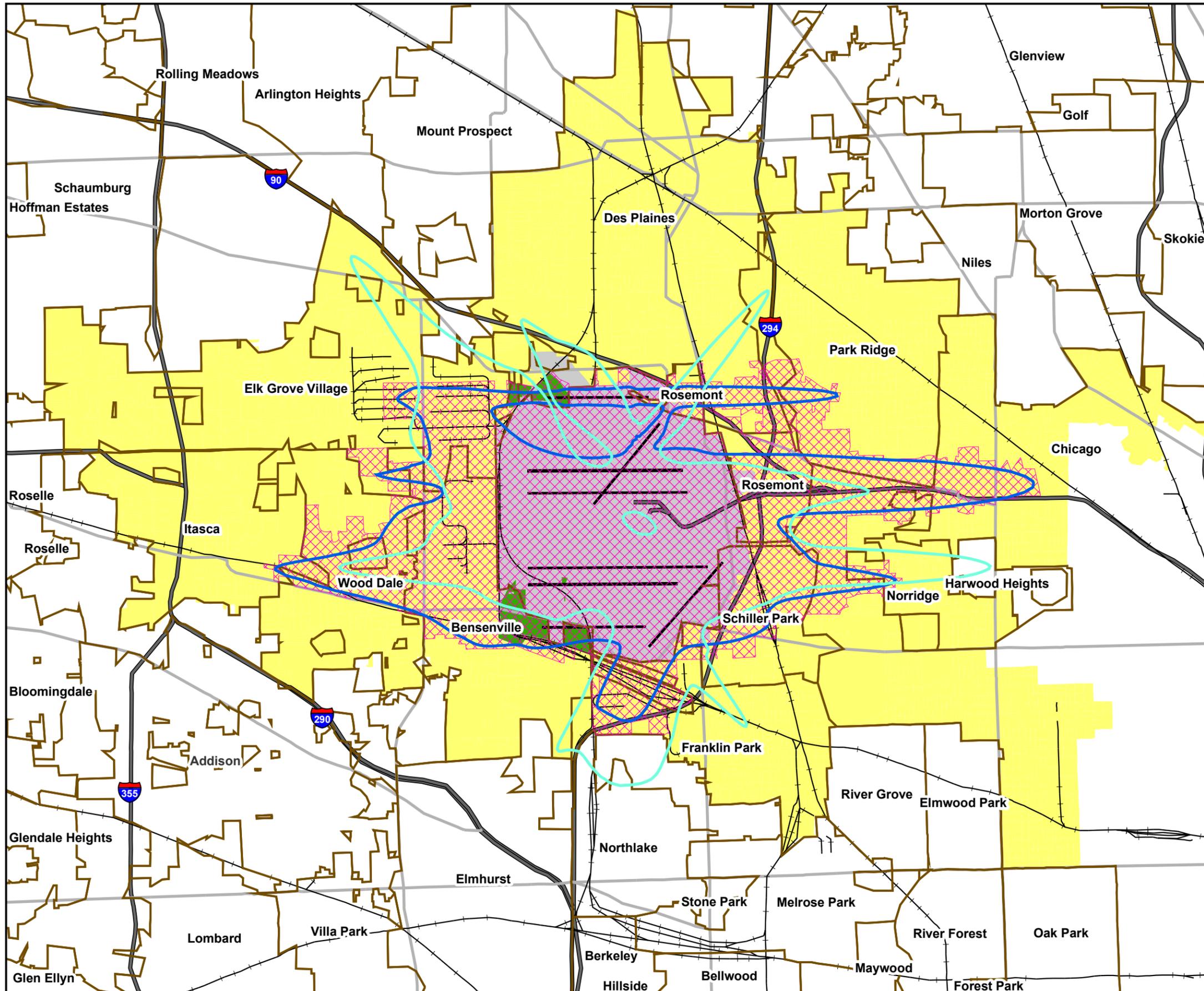
As shown in **Table 5.21-3**, the percent of minorities (by race) within the DNL 1.5 dB increase areas at or above the 65 DNL noise contour is approximately 17.2 percent when compared to the total population within these DNL 1.5 increase areas. A similar analysis of the 2000 U.S. Census minority (by race) population within the Comp. Area for DNL 1.5 dB yields approximately 15.1 percent. The minority population within the DNL 1.5 dB increase areas at or above the 65 DNL contour area (17.2 percent) is more than the 15.1 percent minority population in the Comp. Area for DNL 1.5 dB. The statistical analysis (**Attachment P-37** in **Appendix P**) indicates that this difference (i.e., 17.2 percent vs. 15.1 percent) is statistically significant. As a result, FAA has determined that there is a “meaningfully greater” difference. Therefore, the analysis leads to the preliminary conclusion that there is a disproportionately high and adverse noise impact on minority (by race) populations. In making its final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibit 5.21-11** graphically depicts this analysis.

Alternative G

As shown in **Table 5.21-2**, the percent of minorities (by race) within the 65 DNL and higher noise contour areas for Alternative G is less than the percent of minorities (by race) within the 65 DNL and higher noise contour areas for the No Action Alternative (Alternative A). However, the total numbers of minority (by race) individuals within the 65 DNL and higher noise contour area are greater under Alternative G than the No Action Alternative.

The percent of minorities (by race) within the 65 DNL and higher contour area is 17.3 percent when compared to the total population within the 65 DNL and higher contour area. An analysis of the total 2000 U.S. Census minority (by race) population within the Comp. Area for 65+ DNL yields approximately 14.6 percent. The minority population within the 65 DNL and higher contour area (17.3 percent) is more than the 2000 U.S. Census minority population within the Comp. Area for 65+ DNL (14.6 percent). The statistical analysis (**Attachment P-37 in Appendix P**) indicates that this difference (i.e. 17.3 percent vs. 14.6 percent) is statistically significant. As a result, FAA has determined that there is a "meaningfully greater" difference. Therefore, the analysis leads to the preliminary conclusion that there is a disproportionately high and adverse noise impact on minority (by race) populations. In making its final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibit 5.21-12** graphically depicts this analysis.

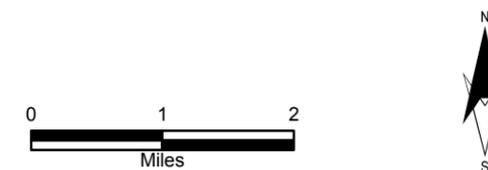
The percent of minorities (by race) within the DNL 1.5 dB increase areas at or above the 65 DNL noise contour is approximately 17.3 percent when compared to the total population within these DNL 1.5 increase areas. A similar analysis of the 2000 U.S. Census minority (by race) population within the Comp. Area for DNL 1.5 dB yields approximately 15.3 percent. The minority population within the DNL 1.5 dB increase areas at or above the 65 DNL contour area (17.3 percent) is more than the 15.3 percent minority population in the Comp. Area for DNL 1.5 dB. The statistical analysis (**Attachment P-37 in Appendix P**) indicates that this difference (i.e. 17.3 percent vs. 15.3 percent) is statistically significant. As a result, FAA has determined that there is a "meaningfully greater" difference. Therefore, the analysis leads to the preliminary conclusion that there is a disproportionately high and adverse noise impact on minority (by race) populations. In making its final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibit 5.21-13** graphically depicts this analysis.



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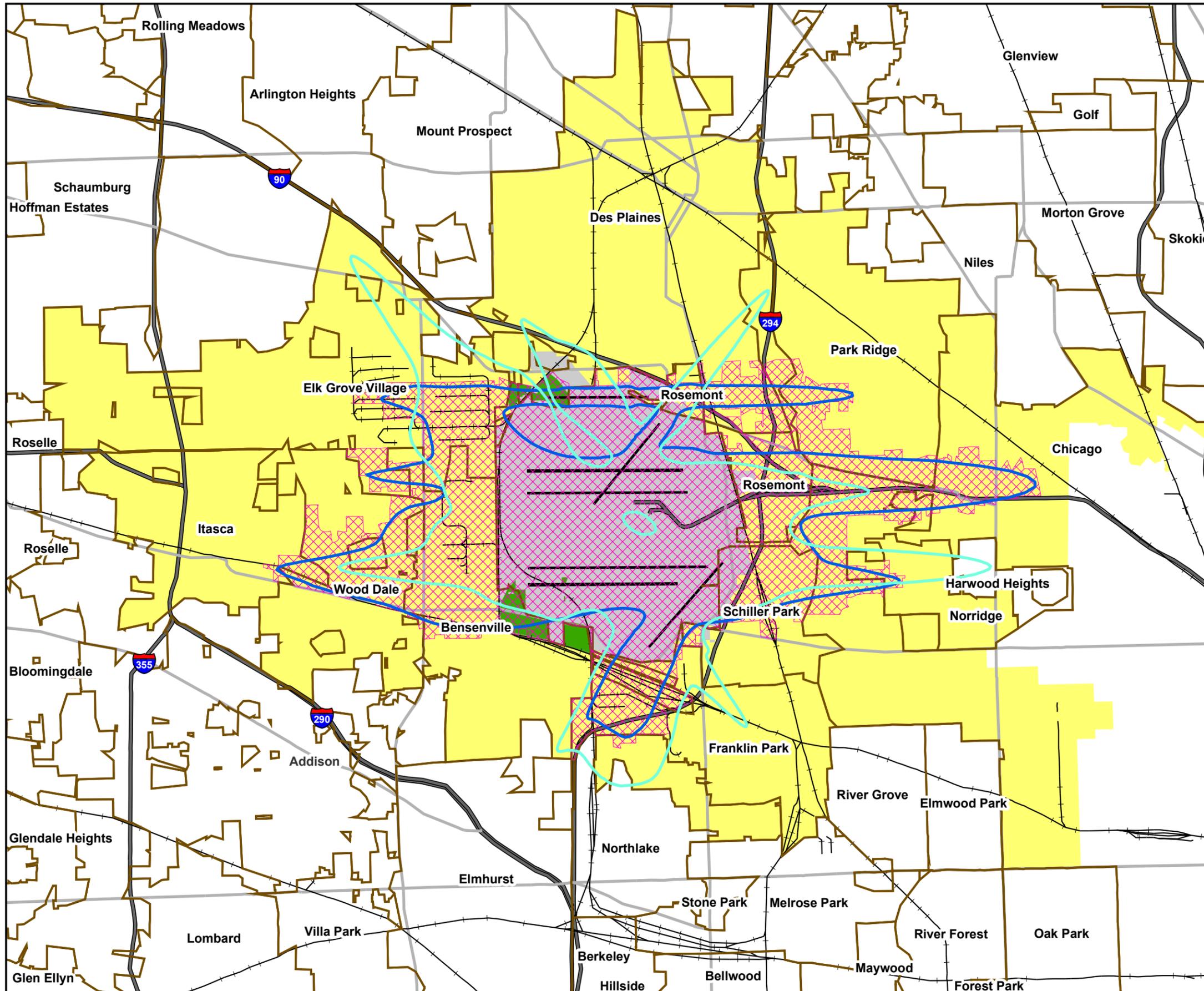
- Railroads
- Freeways
- Secondary Roads
- 2018 Alternative C 65 DNL Contour
- 2018 Alternative A (No-Action) 65 DNL Contour
- Proposed Land Acquisition
- Existing Airport Property
- Census Blocks that Intersect the Alternative C 65 DNL and Greater Contours
- Comparison Area for the 65 DNL and Greater Area
- Community Boundaries



**EJ - Minority (By Race and Ethnicity)
Alternative C (Build Out + 5 Phase)
65+ DNL & Comparison Area for 65+ DNL**

► Exhibit 5.21-8

Source: Municipal Boundaries & Census Blocks: US Census Bureau, Census 2000. Streets: StreetMapUSA Noise Contours: Leigh Fisher Associates [TPC], 2004.



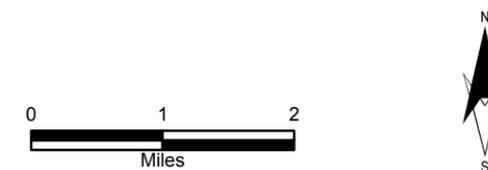
Source: Municipal Boundaries & Census Blocks: US Census Bureau, Census 2000. Streets: StreetMapUSA Noise Contours: Leigh Fisher Associates [TPC], 2004.



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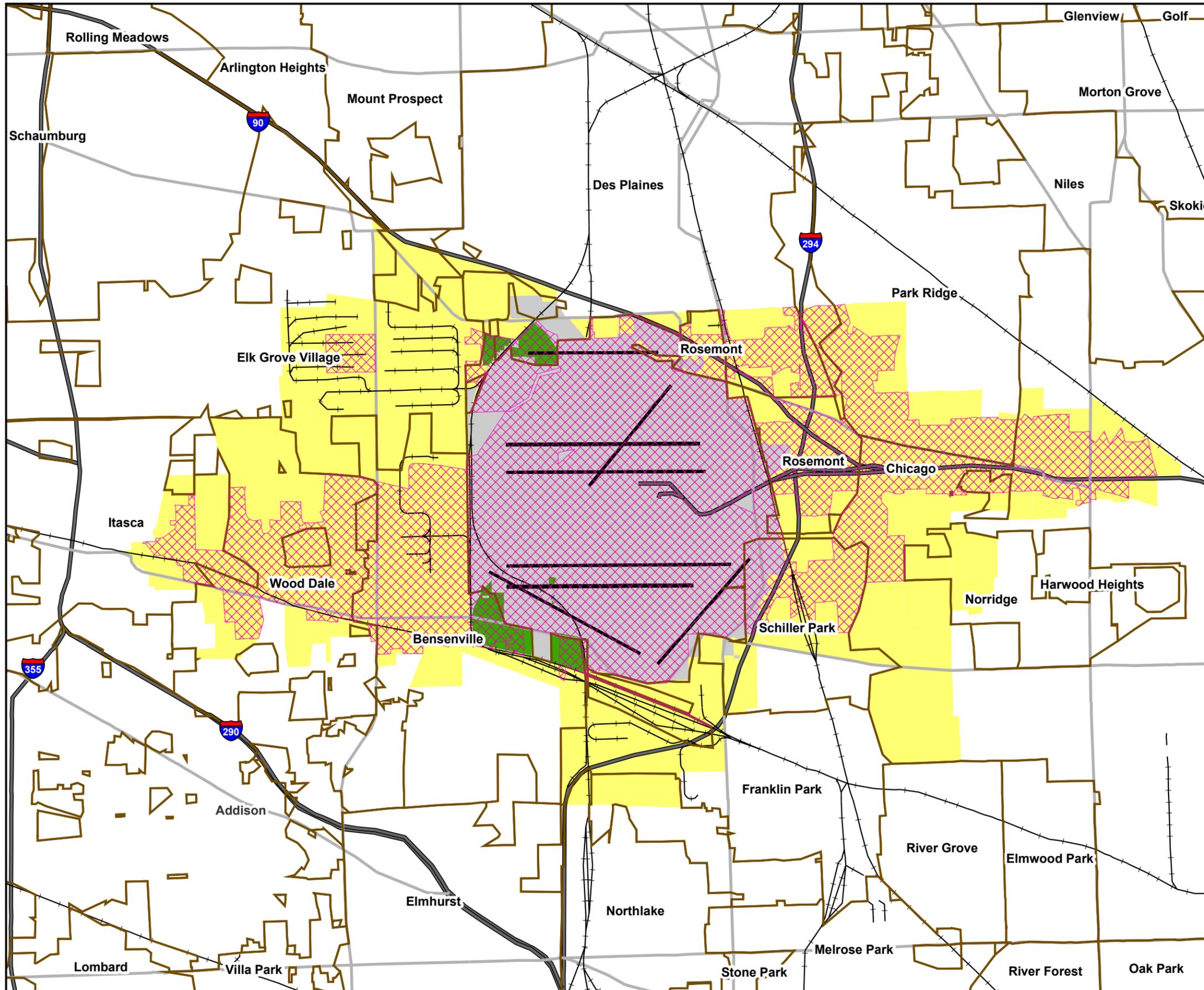
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- 2018 Alternative A (No-Action) 65 DNL Contour
- Proposed Land Acquisition
- Existing Airport Property
- Census Blocks that Intersect the Alternative D 65 DNL and Greater Contours
- Comparison Area for the 65 DNL and Greater Area
- Community Boundaries



**EJ - Minority (By Race and Ethnicity)
Alternative D (Build Out + 5 Phase)
65+ DNL & Comparison Area for 65+ DNL**

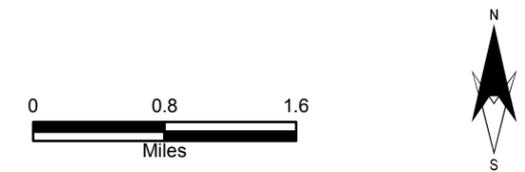
► Exhibit 5.21-10



Chicago
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Airport

**O'Hare Modernization
Environmental Impact Statement**

- Railroads
- Freeways
- Secondary Roads
- Census Blocks that intersect the DNL 1.5 dB Increases in Noise Exposure within the 65 DNL and greater Contours for Alternative G
- Proposed Land Acquisition
- Existing Airport Property
- Comparison Area for DNL 1.5 dB Areas
- Community Boundaries



**EJ - Minority (By Race and Ethnicity)
Alternative G (Build Out + 5 Phase)
DNL 1.5 dB & Comparison Area for DNL 1.5 dB**

► Exhibit 5.21-13

Source: Municipal Boundaries & Census Blocks: US Census Bureau, Census 2000. Streets: StreetMapUSA Noise Contours: Leigh Fisher Associates [TPC], 2004.

Minority (By Ethnicity - Hispanic)

Tables 5.21-4 and 5.21-5 show the numbers and percentages of minority (by ethnicity) populations within the 65 DNL and higher noise contour areas for each alternative and the DNL 1.5 db increase areas for each Build Alternative. The 65 DNL and higher noise contour areas are compared to the Comp. Areas for 65+ DNL, and the DNL 1.5 db increase areas are compared to the Comp. Areas for DNL 1.5 dB. Minority population (by ethnicity) only includes persons of Hispanic ethnicity.

**TABLE 5.21-4
NOISE INCREASE COMPARISON OF BUILD ALTERNATIVES TO NO ACTION
ALTERNATIVE (ALTERNATIVE A) FOR BUILD OUT + 5
65 DNL AND HIGHER NOISE CONTOUR AREA
MINORITY (BY ETHNICITY – HISPANIC)**

	Alternative A		Alternative C		Alternative D		Alternative G	
	Number	%	Number	%	Number	%	Number	%
Total Population								
65+ DNL Area	32,151	NA	36,262	NA	35,960	NA	36,581	NA
Comp. Area for 65+ DNL	329,285	NA	346,595	NA	356,204	NA	356,204	NA
Minority (By Ethnicity) Population (a)								
65+ DNL Area	7,699	23.9%	7,762	21.4%	7,409	20.6%	7,674	21.0%
Comp. Area for 65+ DNL	56,092	17.0%	49,826	14.4%	53,143	14.9%	53,143	14.9%

Notes: (a) Minority Population (By Ethnicity) only includes persons of Hispanic ethnicity.
NA = Not applicable
Comp. Area for 65+ DNL = Comparison Area for the 65+ DNL Area

Source: TPC Analysis, United States Census Bureau, 2000 Decennial Census, File SF1, Matrices P7 and P8.

**TABLE 5.21-5
NOISE INCREASE COMPARISON OF BUILD ALTERNATIVES TO NO ACTION
ALTERNATIVE (ALTERNATIVE A) FOR BUILD OUT + 5
DNL 1.5 DB INCREASE WITHIN 65 DNL AND HIGHER
MINORITY (BY ETHNICITY – HISPANIC)**

	Alternative A		Alternative C		Alternative D		Alternative G	
	Number	%	Number	%	Number	%	Number	%
Total Population								
DNL 1.5 dB increase in 65+DNL	NA	NA	33,870	NA	32,305	NA	31,414	NA
Comp. Area for DNL 1.5 dB	NA	NA	86,342	NA	82,117	NA	81,221	NA
Minority (By Ethnicity) Population (a)								
DNL 1.5 dB increase in 65+DNL	NA	NA	7,518	22.2%	6,945	21.5%	6,805	21.7%
Comp. Area for DNL 1.5 dB	NA	NA	15,837	18.3%	14,256	17.4%	14,303	17.6%

Notes: (a) Minority Population (By Ethnicity) only includes persons of Hispanic ethnicity.
NA = Not applicable
Comp. Area for DNL 1.5 dB = Comparison Area for the DNL 1.5 dB Area

Source: TPC Analysis, United States Census Bureau, 2000 Decennial Census, File SF1, Matrices P7 and P8.

Alternative C

As shown in **Table 5.21-4**, the percent of minorities (by ethnicity) within the 65 DNL and higher noise contour areas for Alternative C is less than the percent of minorities (by ethnicity) within the 65 DNL and higher noise contour areas for the No Action Alternative. However, the total numbers of minority (by ethnicity) individuals within the 65 DNL and higher noise contour area are greater under Alternative C than the No Action Alternative.

The percent of minorities (by ethnicity) within the 65 DNL and higher contour area is 21.4 percent when compared to the total population within the 65 DNL and higher contour area. An analysis of the total 2000 U.S. Census minority (by ethnicity) population within the Comp. Area for 65+ DNL yields approximately 14.4 percent. The minority population within the 65 DNL and higher contour areas (21.4 percent) is more than the 2000 U.S. Census minority population within the Comp. Area for 65+ DNL (14.4 percent). The statistical analysis (**Attachment P-37** in **Appendix P**) indicates that this difference (i.e., 21.4 percent vs. 14.4 percent) is statistically significant. As a result, FAA has determined that there is a "meaningfully greater" difference. Therefore, the analysis leads to the preliminary conclusion that there is a disproportionately high and adverse noise impact on minority (by ethnicity) populations. In making its final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibit 5.21-8** graphically depicts this analysis.

As shown in **Table 5.21-5**, the percent of minorities (by ethnicity) within the DNL 1.5 dB increase areas at or above the 65 DNL noise contour is approximately 22.2 percent when compared to the total population within these DNL 1.5 increase areas. A similar analysis of the 2000 U.S. Census minority (by ethnicity) population within the Comp. Area for DNL 1.5 dB yields approximately 18.3 percent. The minority population within the DNL 1.5 dB increase areas at or above the 65 DNL contour area (22.2 percent) is more than the 18.3 percent minority population in the Comp. Area for DNL 1.5 dB. The statistical analysis (**Attachment P-37** in **Appendix P**) indicates that this difference (i.e., 22.2 percent vs. 18.3 percent) is statistically significant. As a result, FAA has determined that there is a "meaningfully greater" difference. Therefore, the analysis leads to the preliminary conclusion that there is a disproportionately high and adverse noise impact on minority (by ethnicity) populations. In making its final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibit 5.21-9** graphically depicts this analysis.

Alternative D

As shown in **Table 5.21-4**, the percent of minorities (by ethnicity) within the 65 DNL and higher noise contour areas for Alternative D is less than the percent of minorities (by ethnicity) within the 65 DNL and higher noise contour areas for the No Action Alternative (Alternative A). Further, the total numbers of minority (by ethnicity) individuals within the 65 DNL and higher noise contour area are also less under Alternative D than the No Action Alternative.

The percent of minorities (by ethnicity) within the 65 DNL and higher contour area is 20.6 percent when compared to the total population within the 65 DNL and higher contour area. An analysis of the total 2000 U.S. Census minority (by ethnicity) population within the Comp. Area for 65+ DNL yields approximately 14.9 percent. The minority population within the 65 DNL and higher contour areas (20.6 percent) is more than the 2000 U.S. Census minority population within the Comp. Area for 65+ DNL (14.9 percent). The statistical analysis (**Attachment P-37 in Appendix P**) indicates that this difference (i.e. 20.6 percent vs. 14.9 percent) is statistically significant. As a result, FAA has determined that there is a “meaningfully greater” difference. Therefore, the analysis leads to the preliminary conclusion that there is a disproportionately high and adverse noise impact on minority (by ethnicity) populations. In making it’s final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibit 5.21-10** graphically depicts this analysis.

As shown in **Table 5.21-5**, the percent of minorities (by ethnicity) within the DNL 1.5 dB increase areas at or above the 65 DNL noise contour is approximately 21.5 percent when compared to the total population within these DNL 1.5 increase areas. A similar analysis of the 2000 U.S. Census minority (by ethnicity) population within the Comp. Area for DNL 1.5 dB yields approximately 17.4 percent. The minority population within the DNL 1.5 dB increase areas at or above the 65 DNL contour area (21.5 percent) is more than the 17.4 percent minority population in the Comp. Area for DNL 1.5 dB. The statistical analysis (**Attachment P-37 in Appendix P**) indicates that this difference (i.e., 21.5 percent vs. 17.4 percent) is statistically significant. As a result, FAA has determined that there is a “meaningfully greater” difference. Therefore, the analysis leads to the preliminary conclusion that there is a disproportionately high and adverse noise impact on minority (by ethnicity) populations. In making it’s final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibit 5.21-11** graphically depicts this analysis.

Alternative G

As shown in **Table 5.21-4**, the percent of minorities (by ethnicity) within the 65 DNL and higher noise contour areas for Alternative G is less than the percent of minorities (by ethnicity) within the 65 DNL and higher noise contour areas for the No Action Alternative (Alternative A). Further, the total numbers of minority (by ethnicity) individuals within the 65 DNL and higher noise contour area are also less under Alternative G than the No Action Alternative.

The percent of minorities (by ethnicity) within the 65 DNL and higher contour area is 21.0 percent when compared to the total population within the 65 DNL and higher contour area. An analysis of the total 2000 U.S. Census minority (by ethnicity) population within the Comp. Area for 65+ DNL yields approximately 14.9 percent. The minority population within the 65 DNL and higher contour areas (21.0 percent) is more than the 2000 U.S. Census minority population within the Comp. Area for 65+ DNL (14.9 percent). The statistical analysis (**Attachment P-37 in Appendix P**) indicates that this difference (i.e., 21.0 percent vs. 14.9 percent) is statistically significant. As a result, FAA has determined that there is a “meaningfully greater” difference. Therefore, the analysis leads to the preliminary conclusion

that there is a disproportionately high and adverse noise impact on minority (by ethnicity) populations. In making its final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population.. **Exhibit 5.21-12** graphically depicts this analysis.

As shown in **Table 5.21-5**, the percent of minorities (by ethnicity) within the DNL 1.5 dB increase areas at or above the 65 DNL noise contour is approximately 21.7 percent when compared to the total population within these DNL 1.5 increase areas. A similar analysis of the 2000 U.S. Census minority (by ethnicity) population within the Comp. Area for DNL 1.5 dB yields approximately 17.6 percent. The minority population within the DNL 1.5 dB increase areas at or above the 65 DNL contour area (21.7 percent) is more than the 17.6 percent minority population in the Comp. Area for DNL 1.5 dB. The statistical analysis (**Attachment P-37** in **Appendix P**) indicates that this difference (i.e., 21.7 percent vs. 17.6 percent) is statistically significant. As a result, FAA has determined that there is a “meaningfully greater” difference. Therefore, the analysis leads to the preliminary conclusion that there is a disproportionately high and adverse noise impact on minority (by ethnicity) populations. In making its final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibit 5.21-13** graphically depicts this analysis.

Low-income Households

Tables 5.21-6 and **5.21-7** show the numbers and percentages of low-income households within the 65 DNL and higher noise contour areas for each alternative and the DNL 1.5 db increase areas for each Build Alternative. The 65 DNL and higher noise contour areas are compared to the Comp. Area for 65+ DNL, and the DNL 1.5 db increase areas are compared to the Comp. Areas for DNL 1.5 dB.

**TABLE 5.21-6
NOISE INCREASE COMPARISON OF BUILD ALTERNATIVES TO NO ACTION
ALTERNATIVE (ALTERNATIVE A) FOR BUILD OUT + 5
65 DNL AND HIGHER NOISE CONTOUR AREA
LOW-INCOME HOUSEHOLDS**

	Alternative A		Alternative C		Alternative D		Alternative G	
	Number	%	Number	%	Number	%	Number	%
Total Households								
65+ DNL Area	28,683	NA	30,186	NA	29,649	NA	29,854	NA
Comp. Area for 65+ DNL	149,577	NA	159,891	NA	161,960	NA	161,960	NA
Low-income Households								
65+ DNL Area	8,266	28.8%	7,996	26.5%	7,669	26.9%	7,770	26.0%
Comp. Area for 65+ DNL	36,903	24.7%	37,673	23.6%	38,159	23.6%	38,159	23.6%

Notes: NA = Not applicable
Comp. Area for 65+ DNL = Comparison Area for the 65+ DNL Areas
Source: TPC Analysis, United States Census Bureau, 2000 Decennial Census, File SF1, Matrices P7 and P8.

**TABLE 5.21-7
NOISE INCREASE COMPARISON OF BUILD ALTERNATIVES TO NO ACTION
ALTERNATIVE (ALTERNATIVE A) FOR BUILD OUT + 5
DNL 1.5 DB INCREASE WITHIN 65 DNL AND HIGHER
LOW-INCOME HOUSEHOLDS**

	Alternative A		Alternative C		Alternative D		Alternative G	
	Number	%	Number	%	Number	%	Number	%
Total Households								
DNL 1.5 dB increase in 65+DNL	NA	NA	28,823	NA	26,441	NA	26,799	NA
Comp. Area for DNL 1.5 dB	NA	NA	50,878	NA	50,878	NA	50,878	NA
Low-income Households								
DNL 1.5 dB increase in 65+DNL	NA	NA	7,359	25.5%	6,556	24.8%	6,733	25.1%
Comp. Area for DNL 1.5 dB	NA	NA	12,324	24.2%	12,324	24.2%	12,324	24.2%

Notes: NA = Not applicable
Comp. Area for DNL 1.5 dB = Comparison Area for the DNL 1.5 dB Area
Source: TPC Analysis, United States Census Bureau, 2000 Decennial Census, File SF1, Matrices P7 and P8.

Alternative C

As shown in **Table 5.21-6**, the percent of low-income households within the 65 DNL and higher noise contour areas for Alternative C is less than the percent of low-income households within the 65 DNL and higher noise contour areas for the No Action Alternative (Alternative A). Further, the total numbers of low-income households within the 65 DNL and higher noise contour area are also less under Alternative C than the No Action Alternative.

The percent of low-income households within the 65 DNL and higher contour area is 26.5 percent when compared to the total households within the 65 DNL and higher contour area. An analysis of the total 2000 U.S. Census low-income households within the Comp. Area for 65+ DNL yields approximately 23.6 percent. The low-income households within the 65 DNL

and higher contour areas (26.5 percent) is more than the 2000 U.S. Census low-income households within the Comp. Area for 65+ DNL (23.6 percent). The statistical analysis (**Attachment P-37 in Appendix P**) indicates that this difference (i.e., 26.5 percent vs. 23.6 percent) is statistically significant. As a result, FAA has determined that there is a “meaningfully greater” difference. Therefore, the analysis leads to the preliminary conclusion that there is a disproportionately high and adverse noise impact on low-income households. In making it’s final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibit 5.21-14** graphically depicts this analysis.

As shown in **Table 5.21-7**, the percent of low-income households within the DNL 1.5 dB increase areas at or above the 65 DNL noise contour is approximately 25.5 percent when compared to the total households within these DNL 1.5 increase areas. A similar analysis of the 2000 U.S. Census low-income households within the Comp. Area for DNL 1.5 dB yields approximately 24.2 percent. The low-income households within the DNL 1.5 dB increase areas at or above the 65 DNL contour area (25.5 percent) is more than the 24.2 percent low-income households in the Comp. Area for DNL 1.5 dB. The statistical analysis (**Attachment P-37 in Appendix P**) indicates that this difference (i.e., 25.5 percent vs. 24.2 percent) is statistically significant. As a result, FAA has determined that there is a “meaningfully greater” difference. Therefore, the analysis leads to the preliminary conclusion that there is a disproportionately high and adverse noise impact on low-income households. In making it’s final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibit 5.21-15** graphically depicts this analysis.

Alternative D

As shown in **Table 5.21-6**, the percent of low-income households within the 65 DNL and higher noise contour areas for Alternative D is less than the percent of low-income households within the 65 DNL and higher noise contour areas for the No Action Alternative (Alternative A). Further, the total numbers of low-income households within the 65 DNL and higher noise contour area are also less under Alternative D than the No Action Alternative.

The percent of low-income households within the 65 DNL and higher contour area is 26.9 percent when compared to the total households within the 65 DNL and higher contour area. An analysis of the total 2000 U.S. Census low-income households within the Comp. Area for 65+ DNL yields approximately 23.6 percent. The low-income households within the 65 DNL and higher contour areas (26.9 percent) is more than the 2000 U.S. Census low-income households within the Comp. Area for 65+ DNL (23.6 percent). The statistical analysis (**Attachment P-37 in Appendix P**) indicates that this difference (i.e., 26.9 percent vs. 23.6 percent) is statistically significant. As a result, FAA has determined that there is a “meaningfully greater” difference. Therefore, the analysis leads to the preliminary conclusion that there is a disproportionately high and adverse noise impact on low-income households. In making it’s final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibit 5.21-16** graphically depicts this analysis.

As shown in **Table 5.21-7**, the percent of low-income households within the DNL 1.5 dB increase areas at or above the 65 DNL noise contour is approximately 24.8 percent when compared to the total households within these DNL 1.5 increase areas. A similar analysis of the 2000 U.S. Census low-income households within the Comp. Area for DNL 1.5 dB yields approximately 24.2 percent. The low-income households within the DNL 1.5 dB increase areas at or above the 65 DNL contour area (24.8 percent) is more than the 24.2 percent low-income households in the Comp. Area for DNL 1.5 dB. The statistical analysis (**Attachment P-37 in Appendix P**) indicates that this difference (i.e., 24.8 percent vs. 24.2 percent) is statistically significant. As a result, FAA has determined that there is a “meaningfully greater” difference. Therefore, the analysis leads to the preliminary conclusion that there is a disproportionately high and adverse noise impact on low-income households. In making it’s final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibit 5.21-17** graphically depicts this analysis.

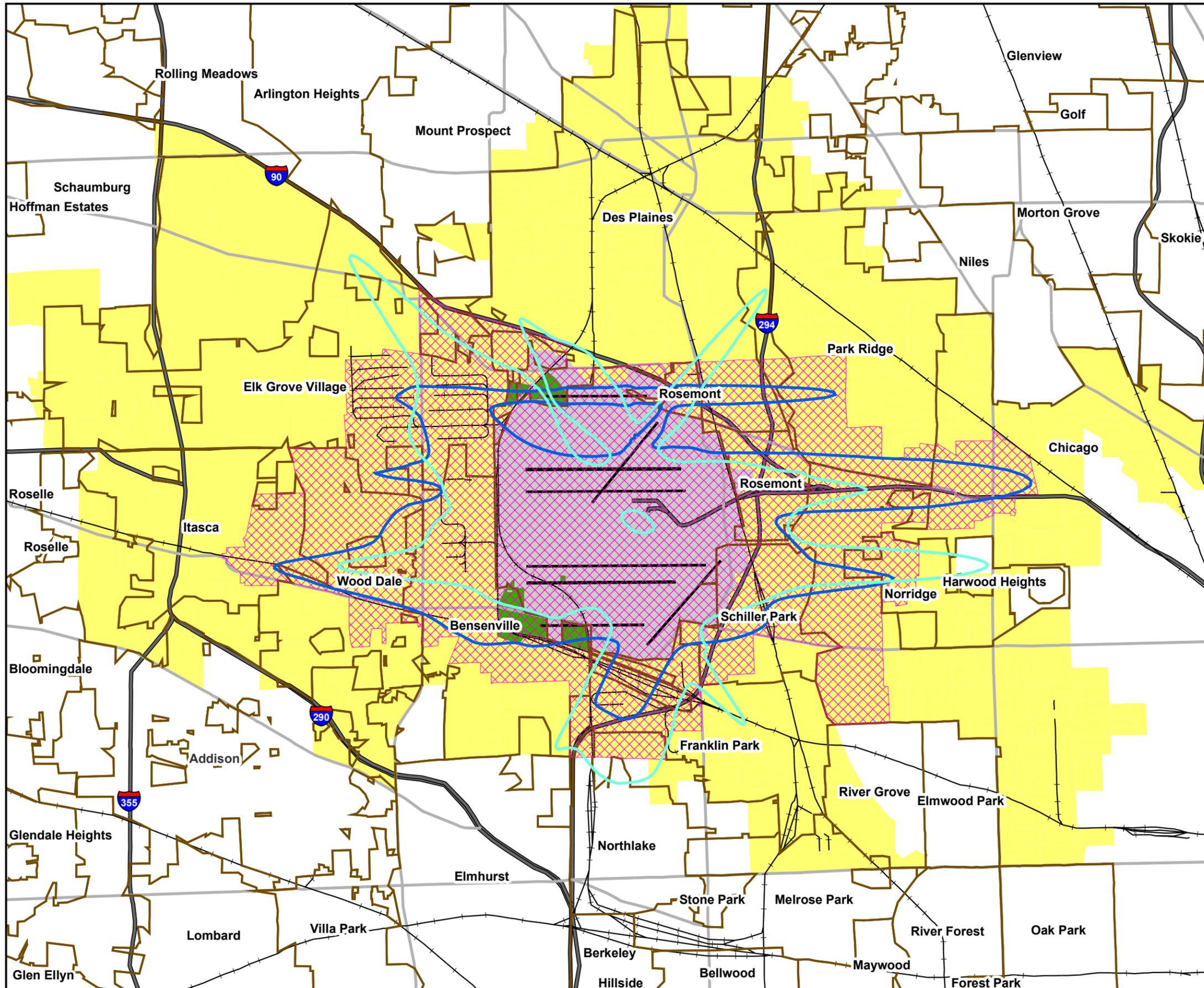
Alternative G

As shown in **Table 5.21-6**, the percent of low-income households within the 65 DNL and higher noise contour areas for Alternative G is less than the percent of low-income households within the 65 DNL and higher noise contour areas for the No Action Alternative (Alternative A). Further, the total numbers of low-income households within the 65 DNL and higher noise contour area are also less under Alternative G than the No Action Alternative.

The percent of low-income households within the 65 DNL and higher contour area is 26.0 percent when compared to the total households within the 65 DNL and higher contour area. An analysis of the total 2000 U.S. Census low-income households within Comp. Area for 65+ DNL yields approximately 23.6 percent. Therefore, the low-income households within the 65 DNL and higher contour areas (26.0 percent) is more than the 2000 U.S. Census low-income households within the Comp. Area for 65+ DNL (23.6 percent). The statistical analysis (**Attachment P-37 in Appendix P**) indicates that this difference (i.e., 26.0 percent vs. 23.6 percent) is statistically significant. As a result, FAA has determined that there is a “meaningfully greater” difference. Therefore, the analysis leads to the preliminary conclusion that there is a disproportionately high and adverse noise impact on low-income households. In making it’s final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibit 5.21-18** graphically depicts this analysis.

As shown in **Table 5.21-7**, the percent of low-income households within the DNL 1.5 dB increase areas at or above the 65 DNL noise contour is approximately 25.1 percent when compared to the total households within these DNL 1.5 increase areas. A similar analysis of the 2000 U.S. Census low-income households within the Comp. Area for DNL 1.5 dB yields approximately 24.2 percent. The low-income households within the DNL 1.5 dB increase areas at or above the 65 DNL contour area (25.1 percent) is more than the 24.2 percent low-income households in the Comp. Area for DNL 1.5 dB. The statistical analysis (**Attachment P-37 in Appendix P**) indicates that this difference (i.e., 25.1 percent vs. 24.2 percent) is statistically significant. As a result, FAA has determined that there is a “meaningfully greater” difference.

Therefore, the analysis leads to the preliminary conclusion that there is a disproportionately high and adverse noise impact on low-income households. In making its final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibit 5.21-19** graphically depicts this analysis.



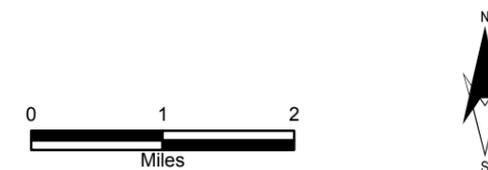
Source: Municipal Boundaries & Census Blocks: US Census Bureau, Census 2000. Streets: StreetMapUSA Noise Contours: Leigh Fisher Associates [TPC], 2004.



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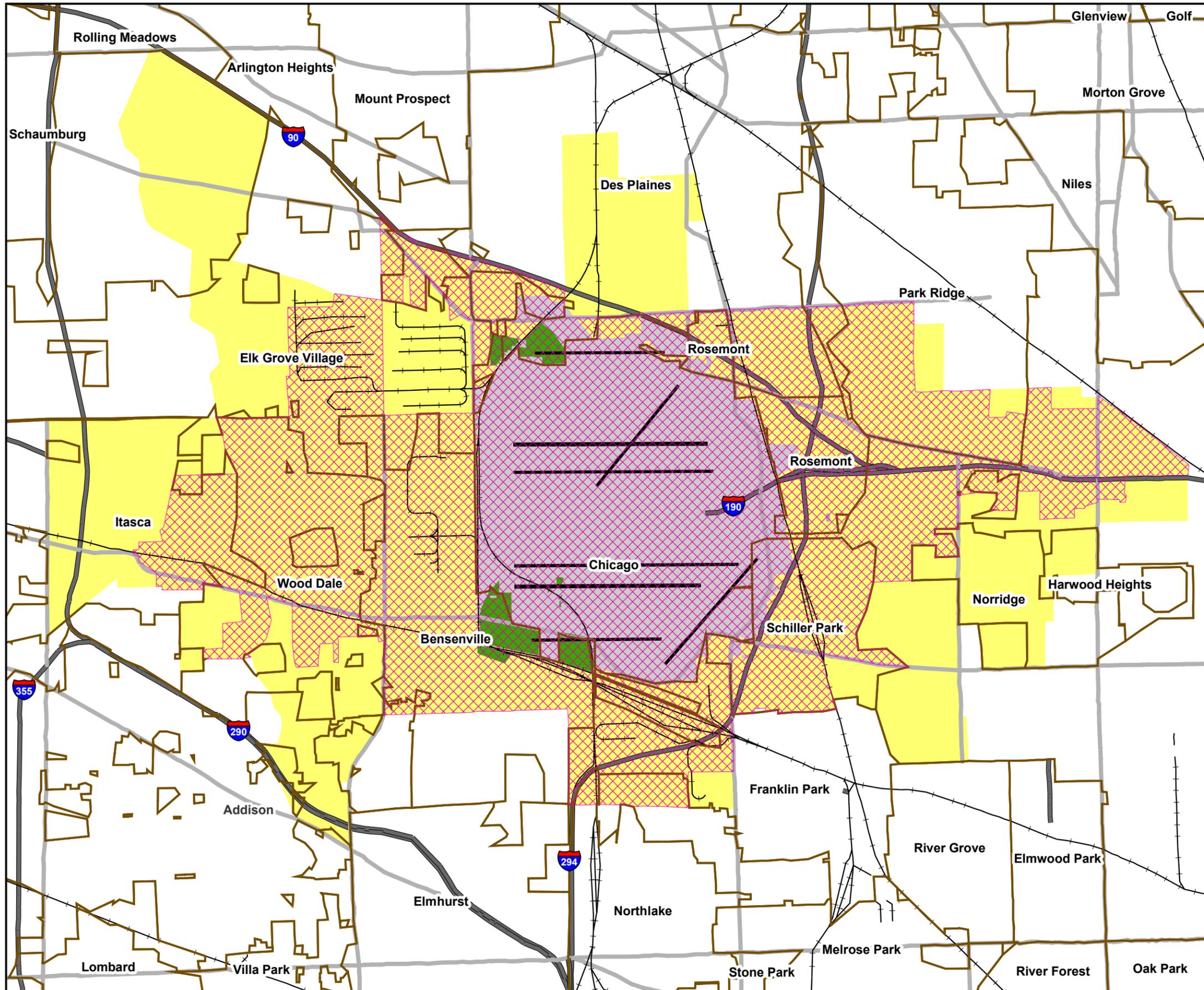
**O'Hare Modernization
Environmental Impact Statement**

- Railroads
- Freeways
- Secondary Roads
- 2018 Alternative C 65 DNL Contour
- 2018 Alternative A (No-Action) 65 DNL Contour
- Proposed Land Acquisition
- Existing Airport Property
- Census Block Groups that Intersect the Alternative C 65 DNL and Greater Contours
- Comparison Area for the 65 DNL and Greater Area
- Community Boundaries



**EJ - Low-Income Households
Alternative C (Build Out + 5 Phase)
65+ DNL & Comparison Area for 65+ DNL**

► Exhibit 5.21-14

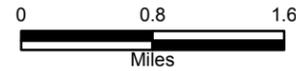


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**O'Hare Modernization
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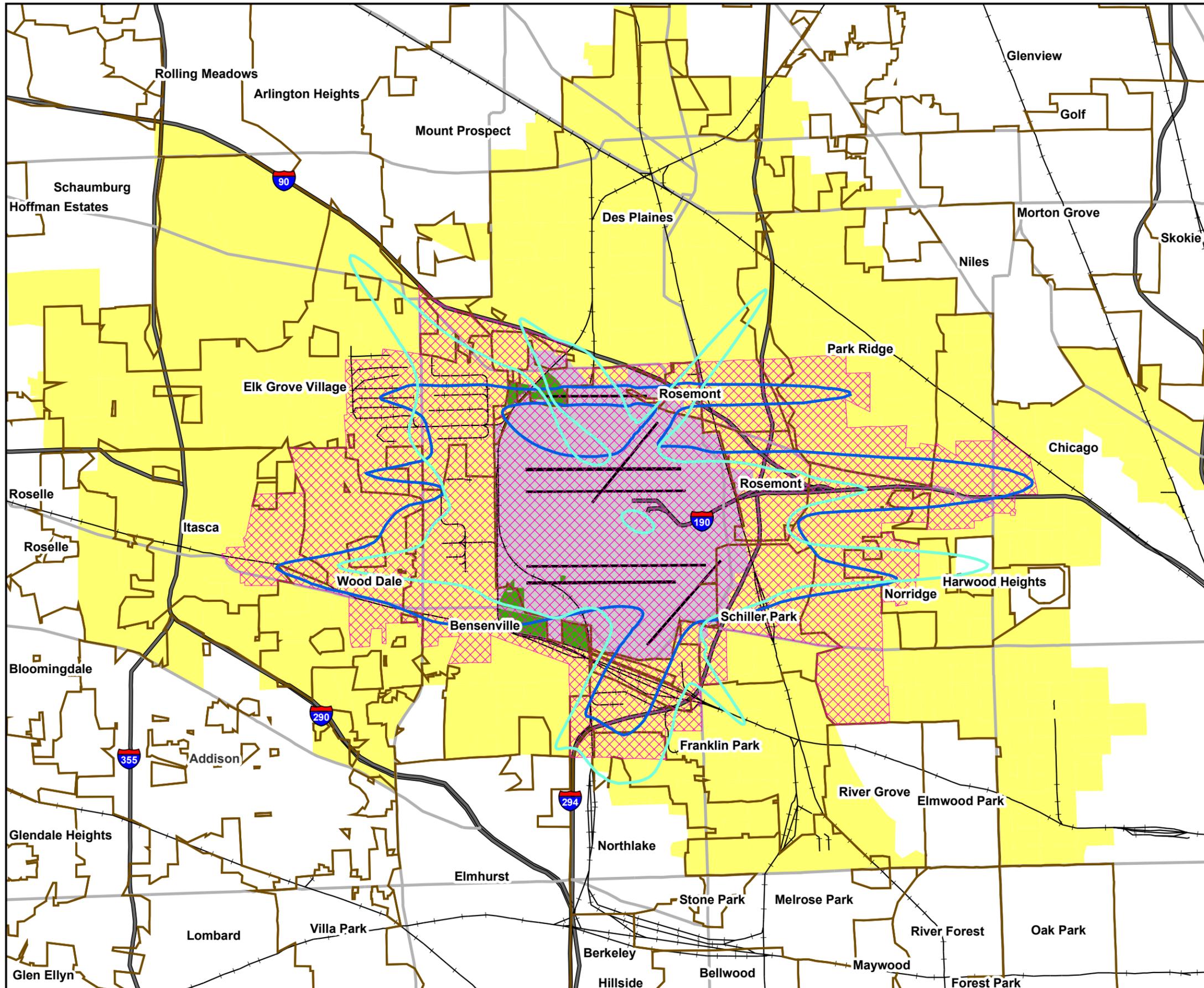
-  Railroads
-  Freeways
-  Secondary Roads
-  Census Blocks Groups that intersect the DNL 1.5 dB Increases in Noise Exposure within the 65 DNL and greater Contours for Alternative C
-  Proposed Land Acquisition
-  Existing Airport Property
-  Comparison Area for DNL 1.5 dB Areas
-  Community Boundaries




**EJ - Low-Income Households
Alternative C (Build Out + 5 Phase)
DNL 1.5 dB & Comparison Area for DNL 1.5 dB**

► **Exhibit 5.21-15**

Source: Municipal Boundaries & Census Blocks: US Census Bureau, Census 2000. Streets: StreetMapUSA Noise Contours: Leigh Fisher Associates [TPC], 2004.



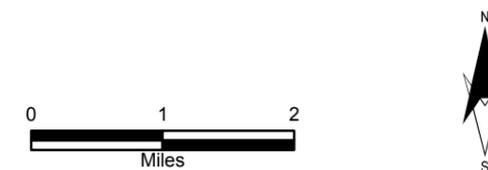
Source: Municipal Boundaries & Census Blocks: US Census Bureau, Census 2000. Streets: StreetMapUSA Noise Contours: Leigh Fisher Associates [TPC], 2004.



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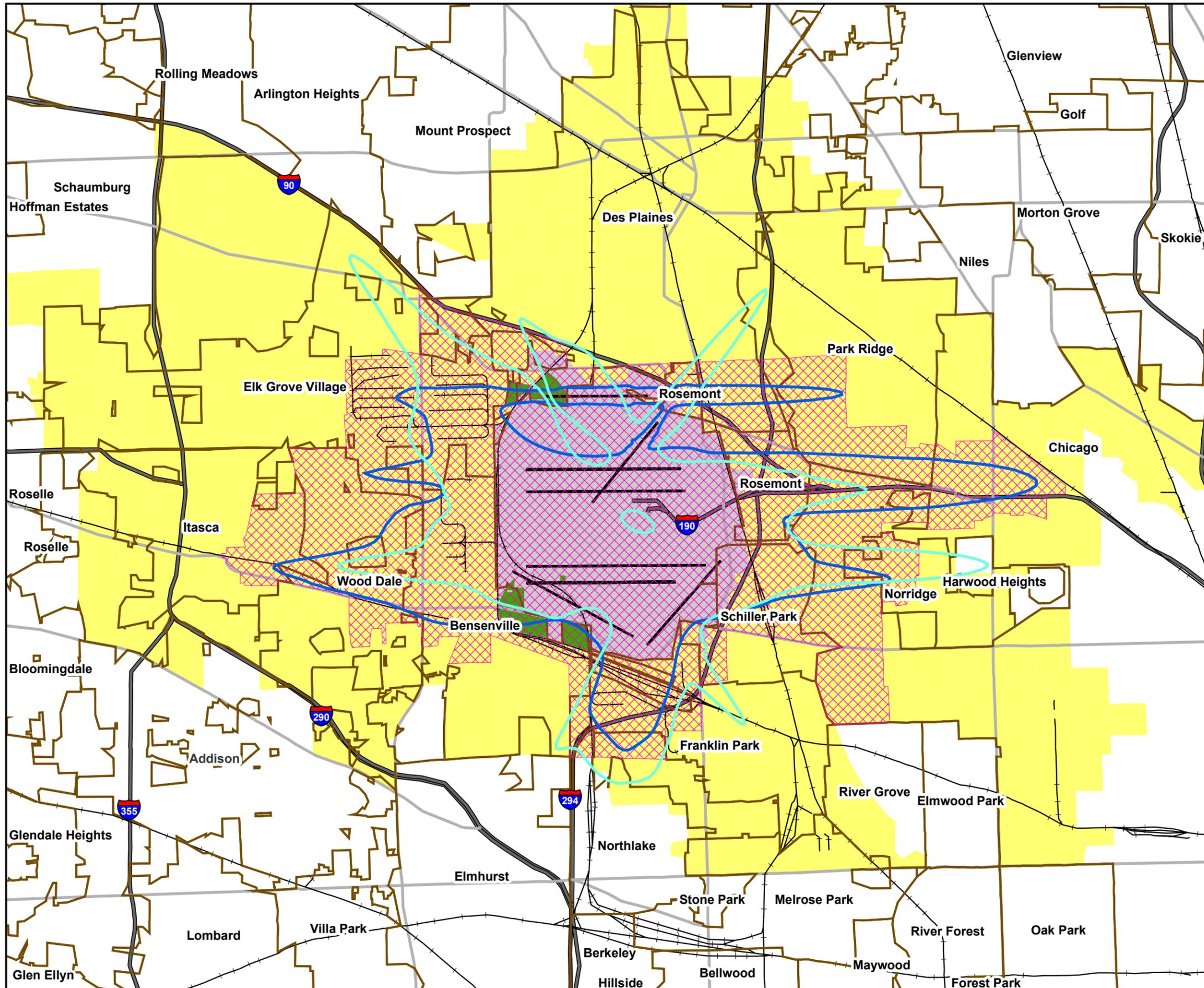
**O'Hare Modernization
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- Railroads
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- 2018 Alternative A (No-Action) 65 DNL Contour
- Proposed Land Acquisition
- Existing Airport Property
- ▨ Census Block Groups that Intersect the Alternative D 65 DNL and Greater Contours
- Comparison Area for the 65 DNL and Greater Areas
- Community Boundaries



**EJ - Low-Income Households
Alternative D (Build Out + 5 Phase)
65+ DNL & Comparison Area for 65+ DNL**

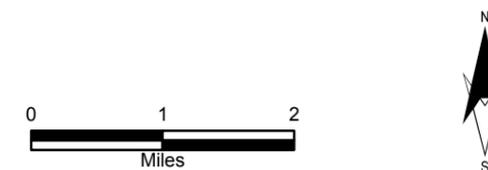
► Exhibit 5.21-16



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**O'Hare Modernization
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- Railroads
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- Secondary Roads
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- 2018 Alternative A (No-Action) 65 DNL Contour
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- Existing Airport Property
- Census Blockgroups that Intersect the Alternative G 65 DNL and Greater Contours
- Comparison Area for the 65 DNL and Greater Area
- Community Boundaries



**EJ - Low-Income Households
Alternative G (Build Out + 5 Phase)
65+ DNL & Comparison Area for 65+ DNL**

► Exhibit 5.21-18

Source: Municipal Boundaries & Census Blocks: US Census Bureau, Census 2000. Streets: StreetMapUSA Noise Contours: Leigh Fisher Associates [TPC], 2004.

5.21.4.6 Temporary Noise Impacts

The previous **Section 5.21.4.5, Comparative Analysis**, identified potential noise impacts to minority and low-income populations in the Build Out + 5 phase for the Build Alternatives. For informational purposes, this section discloses the total population, and estimated percentage of minority and low-income populations, within the 65 DNL and higher noise contours for Construction Phase I and Construction Phase II which are outside of the areas that were included in the 65 DNL contour areas computed for the Build Out + 5 phase and for Baseline 2002. This analysis utilizes the 2000 U.S. Census blocks, and block groups where appropriate, to compute the estimated populations and households, as well as the estimated minority populations and low-income households in these areas. Impacts in these areas on minority and low-income populations would be potential temporary impacts that would no longer be impacts under the Build Out phase and Build Out + 5 phase.

In Construction Phase I, the total population and total households within the 65 DNL and higher noise contour areas that are physically outside the previous analysis for the Baseline 2002 and Build Out + 5, in **Section 5.21.4.5**, are approximately 5,506 people (using blocks) and 2,707 households (using block groups). Within this area, the percent of minorities (by race) is approximately 13.0 percent and the percent of minorities (by ethnicity) is approximately 21.7 percent. The percent of low-income households within this area is approximately 34.5 percent. The preceding information is representative of each of the Build Alternatives since the alternatives are identical under Construction Phase I.

In Construction Phase II, the total population and total households within the 65 DNL and higher noise contour areas that are physically outside the previous analysis for the Baseline 2002 and Build Out + 5, in **Section 5.21.4.5**, are approximately 7,420 people (using blocks) and 2,443 households (using block groups). Within this area, the percent of minorities (by race) is approximately 21.1 percent and the percent of minorities (by ethnicity) is approximately 43.0 percent. The percent of low-income households within this area is approximately 30.8 percent. The preceding information is representative of each of the Build Alternatives since the alternatives are identical under Construction Phase II.

5.21.5 Analysis of Potential Air Quality Impacts on Environmental Justice Populations

O'Hare is located within Cook and DuPage counties. These counties are within Illinois Air Quality Control Region Number 67 (the Metropolitan Chicago Interstate (Illinois-Indiana) Region). Cook and DuPage counties are designated attainment for carbon monoxide, nitrogen dioxide, and sulfur dioxide.¹⁶ With the exception of an area within the Lyons Township (south of O'Hare) that is designated moderate non-attainment, both counties are also designated attainment for particulate matter 10 microns in size or less. Finally, both counties are currently designated as severe and moderate non-attainment for the one- and eight-hour ozone National

¹⁶ USEPA Green Book (<http://www.epa.gov/oar/oaqps/greenbk/oindex.html>).

Ambient Air Quality Standards (NAAQS), respectively. The ozone non-attainment area for both the one- and eight-hour NAAQS encompasses the following:

- Illinois: the counties of Cook, DuPage, Grundy (Aux Sable and Gooselake Townships), Kane, Kendall (Oswego Township), Lake, McHenry, and Will.
- Indiana: The counties of Lake and Porter.

Following requirements in the Clean Air Act, the mandated attainment date for the one-hour ozone NAAQS is November 15, 2007. However, recent rules regarding the eight-hour ozone NAAQS specify that the one-hour standard was revoked on June 15, 2005.¹⁷ The mandated attainment date for the eight-hour ozone NAAQS is June 15, 2010. In December 2004, the USEPA also designated Cook and DuPage counties as non-attainment with respect to the NAAQS for particulate matter 2.5 microns or less in size.

Because O'Hare is located within Illinois, the discussion and assessment of precursors to the air pollutant ozone has, for the most part, been limited to the Illinois portion of the one- and eight-hour ozone non-attainment areas (referred to as the Chicago non-attainment area).

The analysis below focuses on the relationship between air quality impacts from criteria pollutants and the potential for adverse health effects and evaluates the potential for the alternatives to result in disproportionately high and adverse health effects in minority and low-income communities in the study area. Pollutant emissions under the Build Alternatives are analyzed relative to the No Action Alternative (Alternative A) for comparative purposes. While emissions estimates indicate the amount of pollutants entering the atmosphere from project-related sources, these estimates do not correlate directly with the quantity of a particular pollutant in the air at an individual receptor. The quantity of a particular pollutant at a receptor is measured by the concentration of that pollutant in the air, which is more closely correlated with health impacts. Therefore, for purposes of this analysis, the determination as to adverse effect rests primarily on whether or not the Build Alternatives would result in exceedances of the health-based NAAQS for criteria pollutants, which are based on pollutant concentrations at receptor locations.

The FAA has added an analysis of project related particulate matter emissions of 2.5 microns per cubic meter or less (PM 2.5) which is presented in **Section 5.6, Air Quality**. The NAAQS are health based standards designed to address concerns associated with "sensitive" populations (including children, the elderly, and those with asthma). By using the NAAQS to determine whether there is an adverse effect, the FAA evaluates impacts to the entire population, including children and environmental justice populations.

5.21.5.1 Alternative A - No Action

Under No Action, concentrations of all criteria pollutants (except for carbon monoxide in Construction Phase I at one location) would be lower than the NAAQS in all years of analysis. In addition, the results of the analysis indicate that the maximum one- and eight-hour

¹⁷ 40 CFR Part 81, Air Quality Designations and Classifications for the 8-Hour Ozone NAAQS.

concentrations of carbon monoxide with No Action Alternative (Alternative A) are not predicted to exceed the NAAQS in Build Out and Build Out + 5.

5.21.5.2 Alternatives C, D, and G

With Alternatives C, D, or G, predicted concentrations of the evaluated pollutants are also below the NAAQS. With these alternatives, the pollutant predicted to be closest to its standard(s) is nitrogen dioxide. However, the maximum concentration is predicted to occur at the northern Airport property line, which is adjacent to the proposed Runway 9L/27R where there will be changes in roadway activity near the location of the existing O'Hare Express Center parking lot. When compared to No Action Alternative (Alternative A), concentrations predicted for average 3- and 24-hour sulfur dioxide levels go down. For all other evaluated pollutants, the maximum predicted concentrations are expected to increase from three to eight percent as result of increases in motor vehicle volumes and aircraft operations. Because no project-related, modeled exceedances of the NAAQS would occur anywhere in the study area, as identified in **Section 5.6, Air Quality**, including any potential environmental justice areas, there is no disproportionate impact to minority and/or low-income communities.

With Alternative C, D, and G, the maximum one-and eight-hour carbon monoxide concentrations are predicted to be below the NAAQS. The maximum concentrations would occur at the intersection of Mannheim Road and Lawrence Avenue. When compared to the No Action Alternative (Alternative A), the maximum concentrations of carbon monoxide are predicted to decrease. The reduction in carbon monoxide concentrations is a direct result of the addition of an exclusive southbound left turn lane, a decrease in average delay, and a decrease of volume to capacity ratio within Alternatives C, D, and G. Because no project-related, modeled exceedances of the NAAQS would occur anywhere in the study area, as identified in **Section 5.6, Air Quality**, including any potential environmental justice areas, there is no disproportionate impact to minority and/or low-income communities.

This analysis indicates that Build Alternatives will increase PM 2.5 emissions. The increased emissions will not result in violations of or delay attainment of the NAAQS, therefore the proposed project and alternatives are not expected to cause adverse health effects on residents (including minority populations, low-income households, or children) in Cook and DuPage Counties.

5.21.6 Analysis of Potential Surface Transportation Impacts on Environmental Justice Populations

Under current conditions, as evaluated in the Final EIS, roadway intersections in the vicinity of O'Hare are operating poorly during peak periods of the day. A substantial amount of traffic diverts off the interstate system to local and arterial streets for airport access, contributing to congestion in the immediate O'Hare vicinity. A full presentation of existing and proposed future traffic conditions is provided in **Section 5.3, Surface Transportation**.

Analysis of surface transportation impacts for environmental justice purposes evaluated the surface transportation study area defined in **Section 5.3, Surface Transportation**. Intersections

that would experience a deficient level of service (as defined in **Section 5.3, Surface Transportation**), for both the No Action and Build Alternatives in the Build Out and/or Build Out + 5 Phases, were determined to have no environmental justice impact, as the impact would be the same for the No Action and Build Alternatives. If an intersection would not experience a deficient level of service (in the Build Out and/or Build Out + 5 Phases) with the No Action, but would have a deficient level of service with the Build Alternatives, the census areas (blocks and block groups) adjacent to the deficient intersection were analyzed. If a census area surrounding or adjacent to the deficient intersection had a minority population (via race or ethnicity) or low-income population of greater than 50 percent, the deficient intersection was preliminarily determined to have a disproportionately high and adverse impact on that census area. In making its final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population.

Table 5.21-8 summarizes the roadway intersections that experience deficient levels of service within areas of environmental justice communities for the Build Out and Build Out + 5 phase for each alternative under consideration. **Exhibits 5.21-20** through **5.21-25** depict these intersections graphically in relation to the minority (by race) populations, the minority (by ethnicity) populations, and low-income households for the Build Out and the Build Out + 5 phase. The following sections describe the potential surface transportation impacts on minority population and low-income households for the No Action Alternative (Alternative A) and the Build Alternatives.

**TABLE 5.21-8
POTENTIAL SURFACE TRANSPORTATION IMPACTS ON MINORITY
POPULATIONS AND LOW-INCOME HOUSEHOLDS**

Intersection Number (a)	Intersection Name	Build Out Phase		Build Out + 5	
		No Action Alternative A	Build Alternatives C, D & G	No Action Alternative A	Build Alternatives C, D & G
Minority by Race Census Blocks					
03	Touhy Avenue & Wolf Road				
27	Thorndale Avenue & Wood Dale Road				
38	Irving Park Road & York Road Ramp				
Minority by Ethnicity Census Blocks					
04	Touhy Avenue & Lee Street (West)				
37	York Road & Irving Park Road Ramp				
38	Irving Park Road & York Road Ramp				
Low-income Households Census Block Groups					
01	Touhy Avenue & Elmhurst Road				
06	Bessie Coleman Drive & Higgins Road				
07	Mannheim Road & Higgins Road				
10	Mannheim Road & Zemke Road				

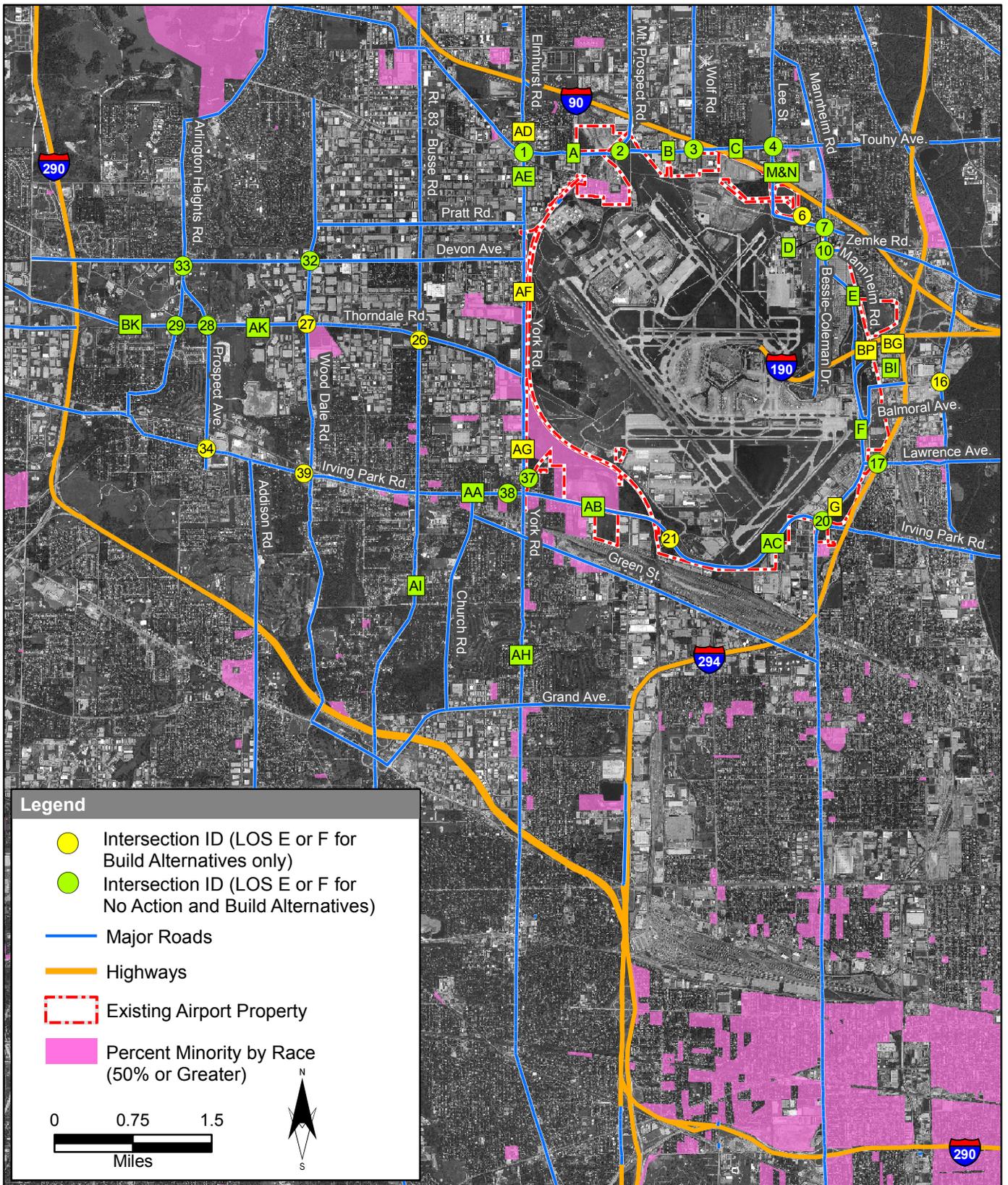
Notes: (a) Numbers indicate intersections. (See Exhibits 5.21-20 through 5.21-25)

 Intersection with Deficient Level of Service (E or F)

 Intersection not Deficient

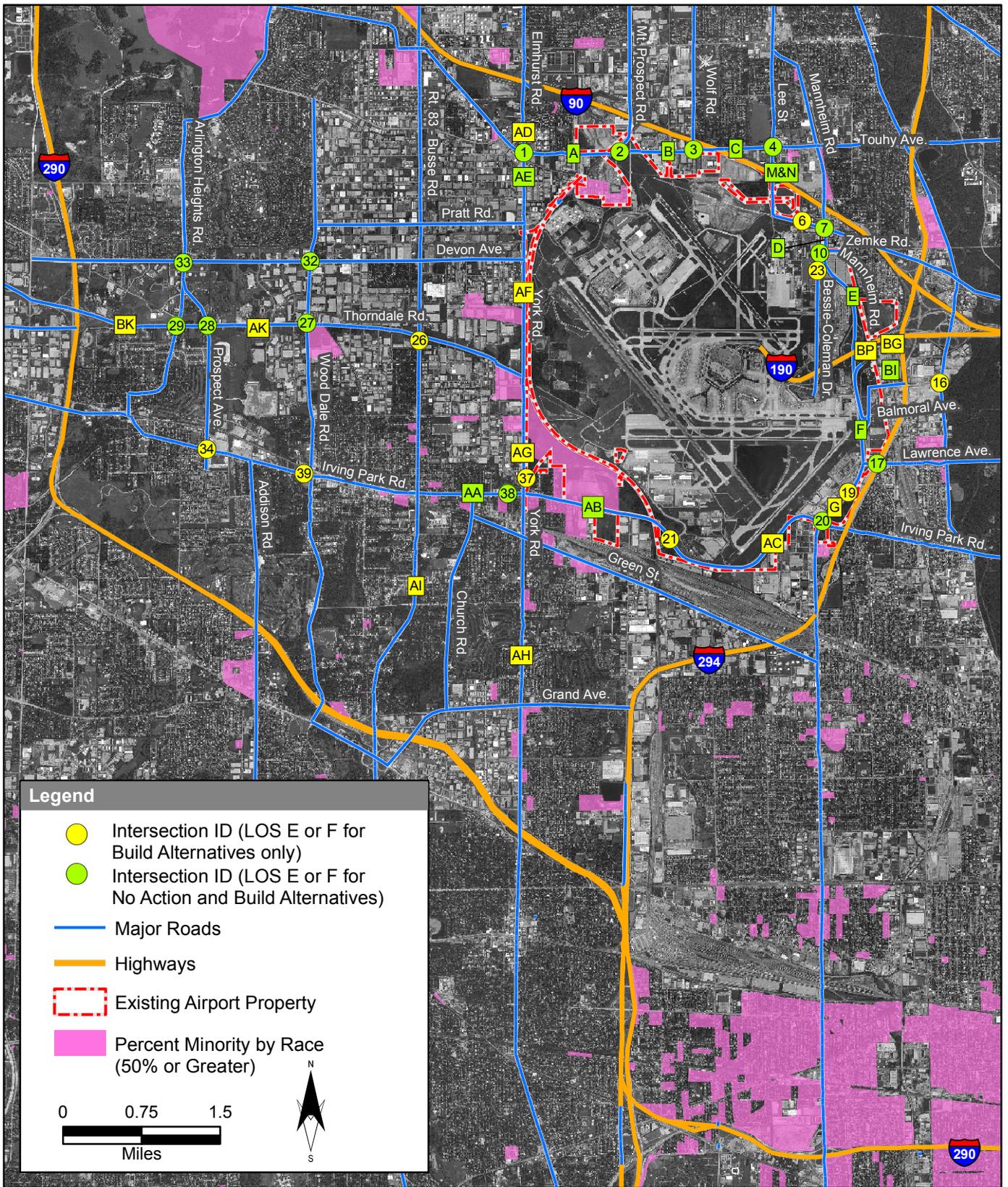
Source: TPC analysis based on results of the surface transportation analyses presented in Section 5.3, Surface Transportation. 2000 U.S. Census Data

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Source: Aerials Express, September 2002. StreetmapUSA, ESRI 2003. Jacobs Engineering [TPC], 2004. Census Blocks: United States Census Bureau, Census 2000.

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Source: Aerials Express, September 2002. StreetmapUSA, ESRI 2003. Jacobs Engineering [TPC], 2004. Census Blocks: United States Census Bureau, Census 2000.



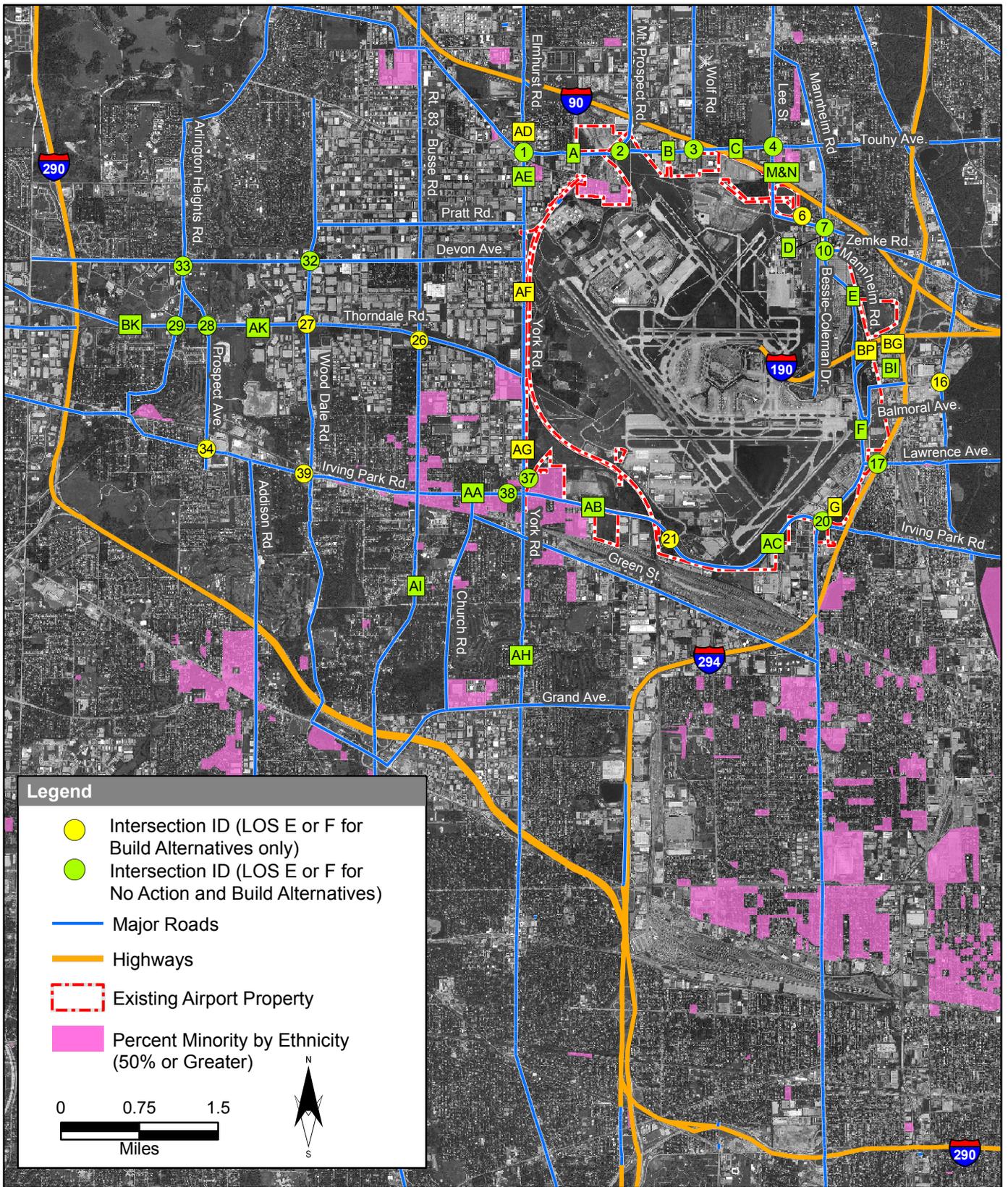
Chicago O'Hare International Airport

**O'Hare Modernization
Environmental Impact Statement**

**EJ Minority (By Race) Impacted
Intersections (Build Out + 5 Phase)**

► Exhibit 5.21-21

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Source: Aerials Express, September 2002. StreetmapUSA, ESRI 2003. Jacobs Engineering [TPC], 2004. Census Blocks: United States Census Bureau, Census 2000.



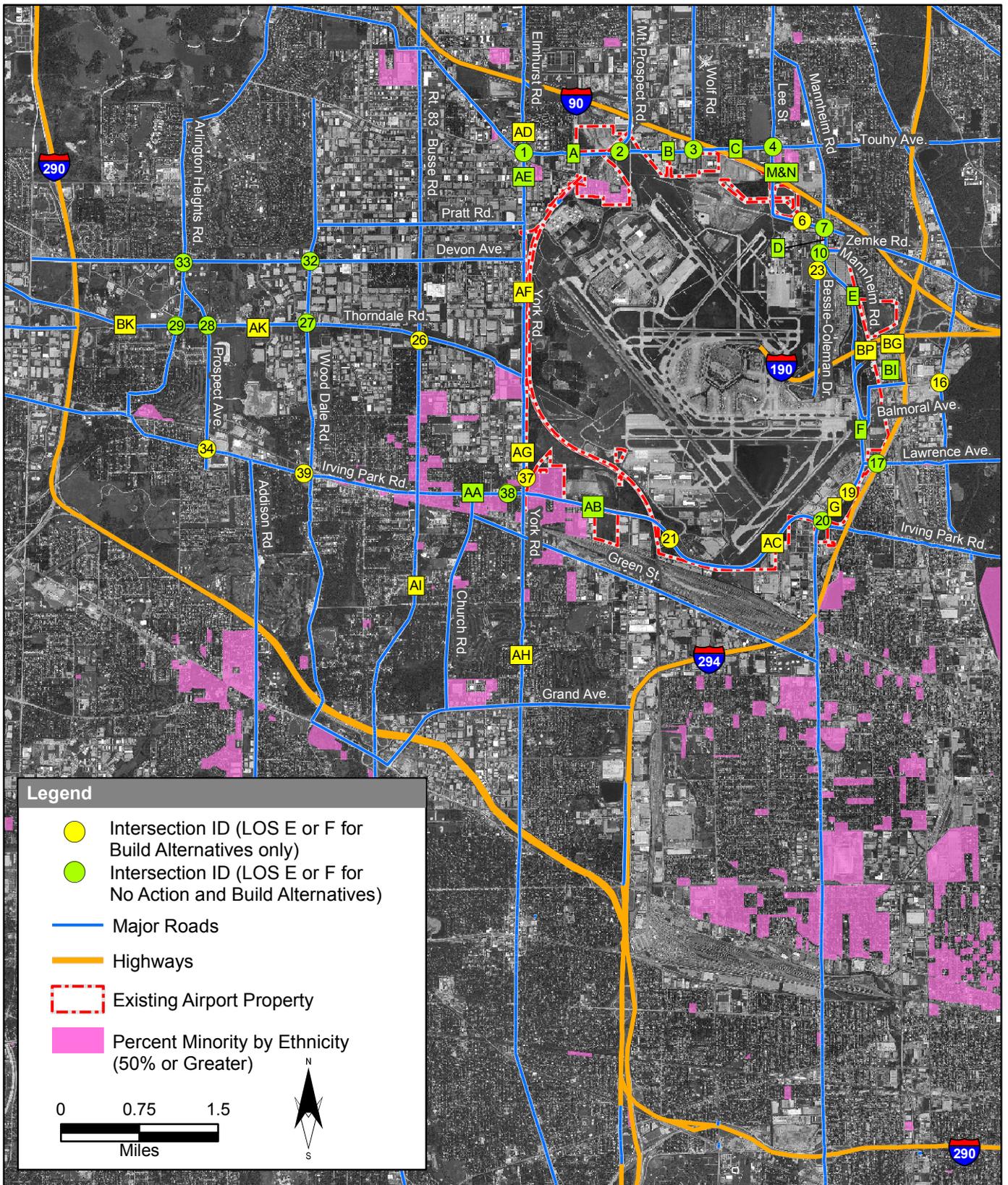
Chicago O'Hare International Airport

**O'Hare Modernization
Environmental Impact Statement**

**EJ Minority (By Ethnicity) Impacted
Intersections (Build Out Phase)**

► Exhibit 5.21-22

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Source: Aerials Express, September 2002. StreetmapUSA, ESRI 2003. Jacobs Engineering [TPC], 2004. Census Blocks: United States Census Bureau, Census 2000.



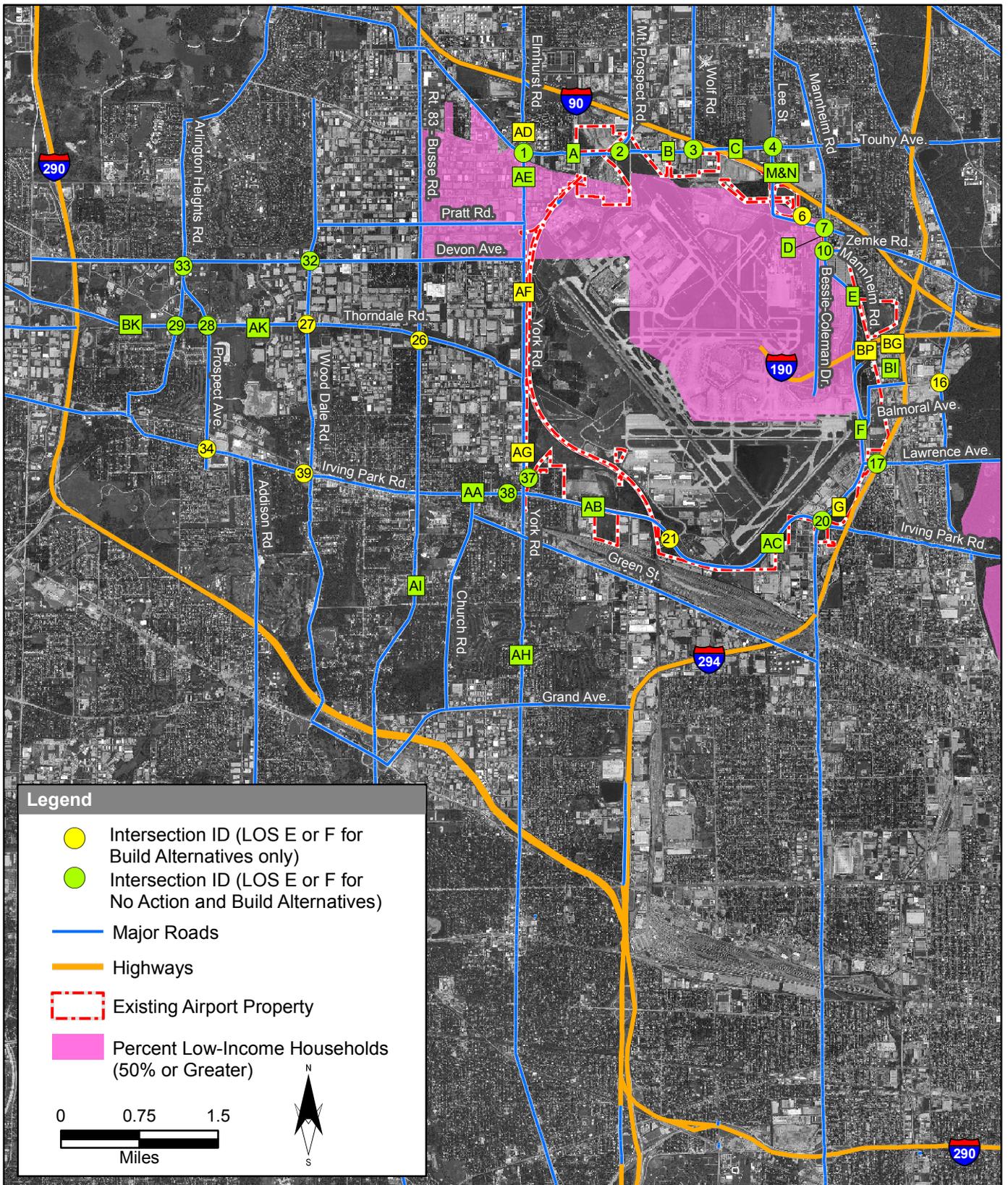
Chicago O'Hare International Airport

**O'Hare Modernization
Environmental Impact Statement**

**EJ Minority (By Ethnicity) Impacted
Intersections (Build Out + 5 Phase)**

► Exhibit 5.21-23

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Legend

- Intersection ID (LOS E or F for Build Alternatives only)
- Intersection ID (LOS E or F for No Action and Build Alternatives)
- Major Roads
- Highways
- Existing Airport Property
- Percent Low-Income Households (50% or Greater)

0 0.75 1.5
Miles

N
↑
S

Source: Aerials Express, September 2002. StreetmapUSA, ESRI 2003. Jacobs Engineering [TPC], 2004. Census Blockgroups: United States Census Bureau, Census 2000.



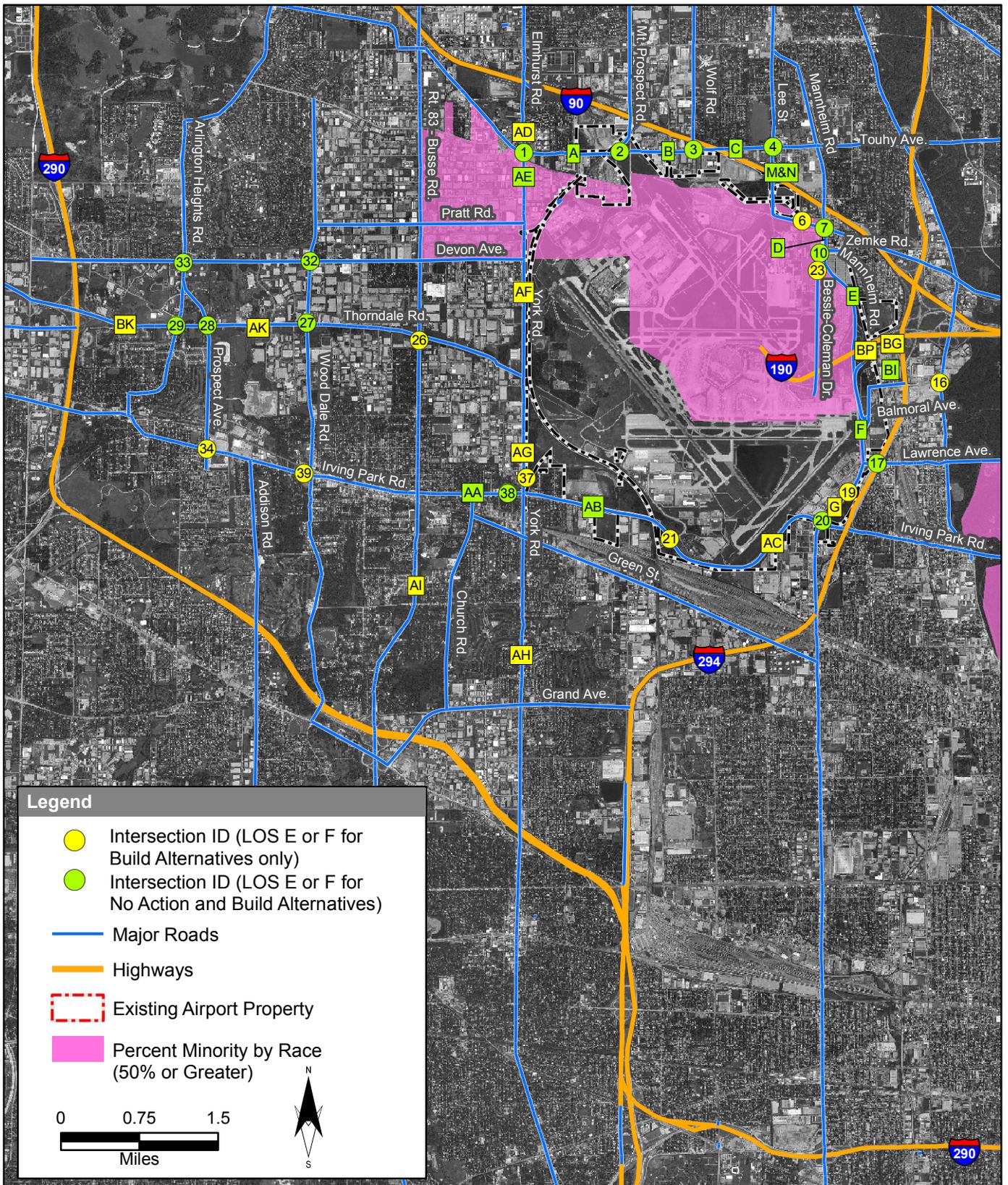
Chicago O'Hare International Airport

**O'Hare Modernization
Environmental Impact Statement**

**EJ Minority (Low-Income Households)
Impacted Intersections (Build Out Phase)**

► Exhibit 5.21-24

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Legend

- Intersection ID (LOS E or F for Build Alternatives only)
- Intersection ID (LOS E or F for No Action and Build Alternatives)
- Major Roads
- Highways
- Existing Airport Property
- Percent Minority by Race (50% or Greater)

0 0.75 1.5
Miles

N
↑
S

Source: Aerials Express, September 2002. StreetmapUSA, ESRI 2003. Jacobs Engineering [TPC], 2004. Census Blockgroups: United States Census Bureau, Census 2000.



Chicago O'Hare International Airport

**O'Hare Modernization
Environmental Impact Statement**

**EJ Minority (Low-Income Households)
Impacted Intersections (Build Out +5 Phase)**

► **Exhibit 5.21-25**

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5.21.6.1 Alternative A - No Action

As described in **Section 5.3, Surface Transportation**, traffic conditions would continue to decline under the No Action Alternative (Alternative A). As previously presented in **Table 5.3-6** and **Table 5.3.7** in **Section 5.3**, under the No Action Alternative in the Build Out phase, 14 intersections would experience deficient levels of service. In the Build Out + 5 Phase, 15 intersections would experience deficient levels of service under the No Action Alternative.

Minority by Race

There would be two intersections (Touhy Avenue & Wolf Road and Irving Park Road & York Road Ramp) that would experience deficient levels of service located adjacent to minority (by race) census blocks for Build Out. For Build Out + 5, there are three intersections (Touhy Avenue & Wolf Road, Thorndale Avenue & Wood Dale Road, and Irving Park Road & York Road Ramp) that would experience deficient levels of service located adjacent to minority (by race) census blocks.

Minority by Ethnicity

There would be three intersections [Touhy Avenue & Lee Street (West), York Road & Irving Park Road Ramp, and Irving Park Road & York Road Ramp] that would experience deficient levels of service located adjacent to minority (by ethnicity) census blocks for Build Out. For Build Out + 5, there are two intersections [Touhy Avenue & Lee Street (West) and Irving Park Road & York Road Ramp] that would experience deficient levels of service located adjacent to minority (by ethnicity) census blocks.

Low-income Households

There would be three intersections (Touhy Avenue & Elmhurst Road, Mannheim Road & Higgins Road, and Mannheim Road & Zemke Road) that would experience deficient levels of service located within low-income census block groups for Build Out and Build Out + 5.

5.21.6.2 Alternatives C, D, and G

As described in **Section 5.3, Surface Transportation**, traffic conditions would also continue to decline under the Build Alternatives (C, D, and G). As previously presented in **Table 5.3-6** and **Table 5.3.7** in **Section 5.3, Surface Transportation**, under the Build Alternatives in the Build Out phase, 21 intersections would experience deficient levels of service. In the Build Out + 5 phase, 24 intersections would experience deficient levels of service.

Minority by Race

There would be three intersections (Touhy Avenue & Wolf Road, Thorndale Avenue & Wood Dale Avenue, and Irving Park Road & York Road Ramp) that would experience deficient levels of service located adjacent to minority (by race) census blocks for Build Out and Build Out + 5.

Minority by Ethnicity

There would be three intersections [Touhy Avenue & Lee Street (West), York Road & Irving Park Road Ramp, and Irving Park Road & York Road Ramp] that would experience deficient levels of service located adjacent to minority (by ethnicity) census blocks for Build Out and Build Out + 5.

Low-income Households

There would be four intersections (Touhy Avenue & Elmhurst Road, Bessie Coleman Drive & Higgins Road, Mannheim Road & Higgins Road, and Mannheim Road & Zemke Road) that would experience deficient levels of service located within low-income census block groups for Build Out and Build Out + 5.

5.21.6.3 Comparison between No Action and Build Alternatives

Minority by Race

As shown in **Table 5.21-8**, within minority (by race) census blocks, there is one more deficient intersection (#27 – Thorndale Avenue & Wood Dale Road) with the Build Alternatives when compared to the No Action Alternative (Alternative A) for Build Out. For Build Out + 5, there are no additional deficient intersections with the Build Alternatives when compared to the No Action Alternative. **Exhibits 5.21-20** and **5.21-21** illustrate the location of this intersection in relation to the census blocks where minority (by race) populations exceed 50 percent.

Further research of the census block showed that the population measured by the U.S. Census was for one, non-white person. A field survey of the census block in June of 2005 revealed that there are no residences within the census block, and therefore no residents. As such, there are currently no individuals (minority by race or otherwise) within the census block to have a disproportionately high and adverse impact.

Minority by Ethnicity

Within minority (by ethnicity) census blocks, there are no additional deficient intersections with the Build Alternatives when compared to the No Action Alternative (Alternative A) in Build Out. For Build Out + 5, there is one additional deficient intersection (#37 – York Road & Irving Park Road Ramp) with the Build Alternatives when compared to the No Action Alternative. The analysis leads to the preliminary conclusion that there is a disproportionately high and adverse impact on minority (by ethnicity) populations. In making its final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. **Exhibits 5.21-22** and **5.21-23** illustrate the location of this intersection in relation to the census blocks where minority (by ethnicity) populations exceed 50 percent.

Low-income Households

Within low-income census block groups, there is one more deficient intersection (#06 – Bessie Coleman Drive & Higgins Road) with the Build Alternatives when compared to the No Action

Alternative (Alternative A) for Build Out and for Build Out + 5. The analysis leads to the preliminary conclusion that there is a disproportionately high and adverse impact on low-income households. In making its final determination concerning whether there is a disproportionately high and adverse impact, FAA will take into account mitigation and enhancement measures for the impacted population. Exhibits 5.21-24 and 5.21-25 illustrate the location of this intersection in relation to the census block groups where low-income households exceed 50 percent.

5.21.7 Analysis of Potential Section 4(f) and Section 6(f) Impacts on Environmental Justice Populations

Analysis of Section 4(f) and Section 6(f) impacts for environmental justice purposes evaluated the study areas defined in Section 5.8, Section 4(f) and Section 6(f) Resources. The study areas are defined by direct impact (proposed acquisition and conversion or demolition of resources) and indirect impact (noise impacts). Indirect noise impacts would not themselves necessarily impact the resource, but sound insulation of the resource could affect the resource. Following the Secretary of Interior's *Standards for the Treatment of Historic Buildings* (U.S. Department of Interior, National Park Service, 1995) and FAA guidelines would avoid adverse impacts to these sites from sound insulation.

Proposed acquisition and conversion or demolition of Section 4(f) and Section 6(f) resources was evaluated for environmental justice impacts. If acquisition and conversion or demolition of a resource would impact a census area with a minority population (via race or ethnicity) or low-income population of greater than 50 percent, the impact would constitute a disproportionate impact to the minority or low-income population.

5.21.7.1 Alternative A - No Action

Under the No Action Alternative (Alternative A), no potential direct or indirect impact on Section 4(f) and Section 6(f) resources would occur.

5.21.7.2 Alternative C

Alternative C would require the acquisition and conversion of two parks (Bretman Park and Schuster Park) and one forest preserve property (Silver Creek). These properties are within the proposed Southwest Acquisition Area, which is predominantly minority via race and ethnicity. The residents within the Southwest Acquisition Area, the primary users of these recreational areas, are proposed to be relocated as a part of this alternative. Therefore, the loss of the recreational resources would not be a disproportionate impact to the minority populations.

This alternative would directly impact five historic properties by acquisition and demolition: a gas station, a geodesic dome (locally historic), the Schwerdtfeger Farmstead, and St. Johannes and Rest Haven Cemeteries. These properties are within the proposed Southwest Acquisition Area. The minority population does not use the cemeteries as they are German Lutheran cemeteries. The gas station is vacant and is no longer used. The farmstead was used as a residence and is now vacant. The geodesic dome is a private residence and is not used by the

public as a historic resource, and the owners of the residence would be relocated as a part of this alternative. Impact to these resources would not constitute a disproportionate impact to the minority or low-income population.

Alternative C would directly impact one additional historic property, as compared to Alternatives D and G, by modification. The Green Street School is currently used as a commercial office building. This alternative would require the removal of the top 9.1 feet of the building's tallest chimney because it would penetrate the Terminal Instrument Procedures (TERPS) surfaces for the proposed Runway 10R. Impact to this resource would not constitute a disproportionate impact to the minority or low-income population.

This alternative would indirectly impact 43 locally important residences. These indirect impacts would be due to sound insulation measures for noise increases. With any Build Alternative, if selected, sound insulation following the Secretary of Interior's *Standards for the Treatment of Historic Buildings* (U.S. Department of Interior, National Park Service, 1995) and FAA guidelines, would avoid adverse impacts to these sites. Therefore, no disproportionate impacts to the minority or low-income population would occur.

5.21.7.3 Alternatives D and G

Alternative D and G would require the acquisition and conversion of two parks (Bretman Park and Schuster Park) and one forest preserve property (Silver Creek). These properties are within the proposed Southwest Acquisition Area, which is predominantly minority via race and ethnicity. The residents within the Southwest Acquisition Area, the primary users of these recreational areas, are proposed to be relocated as a part of this alternative. Therefore, the loss of the recreational resources would not be a disproportionate impact to the minority populations.

These alternatives would directly impact five historic properties by acquisition and demolition: a gas station, a geodesic dome (locally historic), the Schwerdtfeger Farmstead, and St. Johannes and Rest Haven Cemeteries. These properties are within the proposed Southwest Acquisition Area. The minority population does not use the cemeteries as they are German Lutheran cemeteries. The gas station is vacant and is no longer used. The farmstead was used as a residence and is now vacant. The geodesic dome is a private residence and is not used by the public as a historic resource, and the owners of the residence would be relocated as a part of this alternative. Impact to these resources would not constitute a disproportionate impact to the minority or low-income population.

Alternatives D and G would indirectly impact 22 locally important residences. These indirect impacts would be due to sound insulation measures due to noise increases. With any Build Alternative, if selected, sound insulation following the Secretary of Interior's *Standards for the Treatment of Historic Buildings* (U.S. Department of Interior, National Park Service, 1995) and FAA guidelines would avoid adverse impacts to these sites. Therefore, no disproportionate impacts to the minority population or low-income households would occur.

5.21.8 Analysis of Potential Wetland Impacts on Environmental Justice Populations

Analysis of wetland impacts for environmental justice purposes evaluated the existing Airport property and the proposed acquisition areas for the Build Alternatives. If filling of a wetland would impact a census area with a minority population (via race or ethnicity) or low-income population of greater than 50 percent, the impact would constitute a disproportionate impact to the minority or low-income population.

5.21.8.1 Alternative A - No Action

A total of 23.5 acres would be filled under the No Action Alternative, consisting of 13.5 acres of isolated wetlands and 10 acres of jurisdictional wetlands. Ongoing projects, either previously assessed, or with independent utility as identified in **Table E-19** in **Appendix E, Alternatives**, could directly affect existing wetlands through draining, filling, and development of the wetland areas, or indirectly by altering the hydrology of the areas in which the wetlands are located. All of these projects are on the current Airport property and therefore would not constitute a disproportionate impact to a minority or low-income population.

5.21.8.2 Alternatives C, D, and G

The site preparation and earthwork required for construction of these Build Alternatives would impact existing wetlands on the Airport. Of the approximate 155.2 acres of wetlands and non-wetland Waters of the U.S. (WUS) at the Airport and in the proposed acquisition areas, Alternatives C and G would result in the filling of 154.2 acres of wetlands and non-wetland WUS (see **Table 5.12-3** in **Section 5.12, Wetlands**). Of the 155.2 acres of wetlands and WUS, only 1.0 acre is not within the current Airport property. Only 1.0 acres of WUS associated with Higgins Creek and Crystal Creek would not be affected by Alternatives C and G.

The 1.0 acre of WUS impact in the proposed Southwest Acquisition Area, contained within the Silver Creek (DuPage County) Forest Preserve, would not constitute a disproportionate impact because the population that is adjacent to the resource is to be relocated as a part of the Build Alternatives.

5.21.9 Other Environmental Impact Categories

The FAA has reviewed all other impact categories as contained in **Chapter 5, Environmental Consequences** and has not found any additional environmental justice impacts.

5.21.10 Potential Mitigation Measures

As stated by EO 12898, Federal agencies must address potential environmental justice impacts. NEPA requires federal agencies to identify measures to mitigate adverse effects of federally funded, licensed, or approved projects. Additionally, other federal laws, such as the Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act) and Title VI of the Civil Rights Act, require federal agencies to take steps to alleviate impacts from federally-approved projects. Further, the DOT Order 5610.2 states, "In making determinations regarding disproportionately high and adverse effects on minority and low-income populations,

mitigation and enhancement measures that will be taken and all offsetting benefits to the affected minority and low-income populations may be taken into account..." Accordingly, the following sections identify mitigation measures for potential impacts on environmental justice populations.

The environmental justice mitigation strategies presented herein build on these considerations to mitigate potentially significant impacts from the Build Alternatives.

5.21.10.1 Mitigation for Residential and Business Acquisitions

Implementation of Build Alternatives C, D, and G would necessitate the acquisition and relocation of residents and businesses as identified in **Section 5.21.3.1, Alternative C**, and **Section 5.21.3.2, Alternatives D and G**. Such relocation requires full compliance with the Uniform Act. The Uniform Act is a Federal statute that regulates the acquisition and relocation process and protects the interests of residents and business owners affected by the potential acquisitions. The Uniform Act requires that homeowners, business owners, and renters are provided with the following:

- Training in the acquisition process and an explanation of residents' rights, relative to the proceedings. (This training will be conducted in the language most familiar to the residents.)
- Help in identifying comparable residential housing and commercial properties. (Housing must be safe, decent, sanitary and comparable to their present homes and lifestyles.)
- Payment of applicable relocation assistance and moving expenses, as well as guidance on determining the property's fair market value.

During the small group and outreach meetings for minority populations, the single biggest issue was related to the fair market value of property being contemplated for acquisition. FAA is aware of the residents' concerns that the sale price established for their existing property (fair market value) would be insufficient to provide for purchase of comparable property in a new location. Provisions within the Uniform Act provide a mechanism to address these concerns. FAA representatives at outreach meetings assured minority attendees that the Uniform Act would address these kinds of issues. Under the Build Alternatives, the Uniform Act will be implemented by the City of Chicago's O'Hare Land Acquisition Program with compliance assured by the FAA. The City established this office in July 2002, and it currently provides information through a website,¹⁸ written material, and a telephone hotline. In addition, the City of Chicago, under the supervision of the FAA, has developed a Draft Relocation Plan¹⁹ for the OMP.

¹⁸ City of Chicago Land Acquisition Program Website:
http://egov.cityofchicago.org/city/webportal/portalDeptCategoryAction.do?BV_SessionID=@@@@0251109114.1101308422@@@@&BV_EngineID=cceadddefhimmlcefecelldffhdfgn.0&deptCategoryOID=-536884668&contentType=COC_EDITORIAL&topChannelName=SubAgency&entityName=OHare+Modernization+Program&deptMainCategoryOID=-536884668

¹⁹ O'Hare Land Acquisition Relocation Plan, O.R. Colan, March 13, 2003.

Section 15 of the O'Hare Modernization Act (OMA)²⁰ identifies powers the City may utilize to acquire property within the proposed acquisition area. This includes condemnation authority by quick-take for the acquisition of various parcels of land associated with the redevelopment of O'Hare. The law describes this land area, which is included in **Attachment A-1** in **Appendix A, Background**. This legislation enables Chicago to acquire properties as defined in the Act, faster than normal due in part to the authority granted by the State of Illinois. This legislation was signed into law on August 6, 2003.

Prior to the OMA in late 2001, the City began to pursue the acquisition of certain properties in the northwest acquisition area. As a result of the City's actions to acquire property in advance of a Record of Decision (ROD), the FAA wrote three letters²¹ which state FAA's position that such actions were "solely at the City's own risk", "the EIS must evaluate that property from the perspective of the use of that property prior to its acquisition by the airport sponsor", and that "any property acquisition by the City will not influence the FAA's objective evaluation of impacts and alternatives such as may be found in forthcoming environmental documents pertaining to O'Hare." Copies of these three letters written by the FAA are included in **Appendix H, Social Impacts**.

The City's proposal to acquire certain properties also generated opposition from certain communities. At present, a lawsuit is pending against the City and the FAA in which the communities and others are seeking to prevent the City's acquisition. On July 10, 2003, the City of Chicago and the Plaintiffs entered into an Agreed Order,²² which limits property acquisition that can occur prior to completion of the EIS process within Bensenville and Elk Grove Village. The Agreed Order states:

IT IS HEREBY ORDERED THAT:

The City of Chicago agrees that the City voluntarily agrees that it will not acquire property in the Village of Bensenville and Elk Grove Village for the OMP, or acquire the Rest Haven or St. Johannes Cemeteries, unless and until the FAA has issued a Record of Decision following completion of an EIS for the OMP. The City also agrees that it will not acquire any property subject to NHPA or Section 4(f) until the FAA determines that the requirements of those laws have been satisfied for the OMP. This agreement does not include hardship cases that may arise in Bensenville or Elk Grove Village prior to the FAA's issuance of a Record of Decision. The City remains willing to acquire properties in hardship situations in Bensenville and Elk Grove Village prior to the FAA's decision on the OMP, as allowed by FAA guidance, with advance consent by Village Plaintiffs required to such acquisitions.

²⁰ O'Hare Modernization Act, Illinois Public Act 93-0450, August 6, 2003.

²¹ Letters from FAA to City of Chicago Department of Aviation dated December 5, 2001, August 19, 2002, and May 28, 2003.

²² *St. John's United Church of Christ et. al. v. City of Chicago*, In the United States District Court for the Northern District of Illinois Eastern Division, Case No. 03-C-3726, July 10, 2003.

The FAA has evaluated the topic of hardship acquisition and has provided the City and Village of Bensenville and Elk Grove Village with its guidance as described in the above Order. The FAA has found that hardship acquisition is a humane action to be taken.²³

The status of the City's property acquisitions since late 2001 is depicted on **Exhibit H-1** in **Appendix H, Social Impacts**. None of these properties are covered by the Agreed Order.

Due to the nature of this project, any impacted owner or tenant in the acquisition area will be afforded all appropriate rights established in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 and various FAA Orders as identified in **Section 5.4.1.1, Regulatory Context**. In addition, the City of Chicago has developed of a Draft Relocation Plan²⁴ to ensure fair treatment of the acquired owners and tenants if property acquisition were to take place.

In addition, because a large number of Spanish-speaking residents with the acquisition areas, the City's Land Acquisition Consultant will provide a Spanish translator (and other languages as needed), with knowledge of 49 CFR Part 24 requirements, throughout the land acquisition process.

5.21.10.2 Advisory Services for Businesses Adjacent to the Acquisition Area

The FAA entered into discussions with the City of Chicago regarding the provision of appropriate assistance to businesses adjacent to the acquisition area. Although not specifically required under the Uniform Act, the City has committed to providing advisory services to those who request such services.²⁵

5.21.10.3 Mitigation for Noise Impacts on Environmental Justice Populations

Particularly with respect to noise impacts related to the project, NEPA and CEQ require that FAA consider mitigation of significant adverse impacts that are reasonably foreseeable. Accordingly, the FAA would require the City to take steps to minimize significant noise impacts as a result of any of the Build Alternatives, if selected.

Significant noise impacts are anticipated to be mitigated with specific noise abatement techniques. Such techniques would include the following:

- All eligible residences and schools within the Build Out 65 DNL and greater noise contour for a Build Alternative, but outside of the Build Out 65 DNL and greater noise contour for No Action, if approved by FAA's issuance of a Record of Decision, would be insulated by the City of Chicago by the time Build Out would occur. In addition, all eligible residences with a 1.5 DNL or greater increase within the 65 DNL and greater noise contour area for a Build Alternative would be insulated by the time Build Out would occur.

²³ Letter from FAA to Karaganis, White & Magel Ltd. and Kirkland & Ellis, September 22, 2004.

²⁴ Draft O'Hare Land Acquisition Relocation Plan, O.R. Colan, March 13, 2003.

²⁵ Letter from City of Chicago to FAA, July 11, 2005.

- After Build Out occurs, the City of Chicago will produce a 65 DNL noise contour based on the operational characteristics of the Build Out configuration but with forecasted operational levels five years in the future from when Build Out occurs, thus creating a new contour referred to as Build Out +5 Forecast Contour (BO +5 F). The City would then insulate all eligible residences and schools within the BO +5 F 65 DNL and greater noise contour, but outside of the No Action (Alternative A) Build Out +5 65 DNL and greater noise contour presented in the FEIS, by the time Build Out +5 would occur. In addition, all eligible residences with a 1.5 DNL or greater increase within the 65 DNL and greater noise contour area for a Build Alternative would be insulated by the time Build Out +5 would occur.
- At this point it is not reasonable to either assume that there would be a new Fly Quiet Program or speculate about what a new Fly Quiet Program would be. FAA will, however, give consideration to suggestions for changes in the Fly Quiet Program developed by the ONCC and requested of the FAA by the City of Chicago. It is FAA's understanding that it is Chicago's intent to continue the existing Fly Quiet Program. The Fly Quiet Program would be modified by ONCC in the future only if needed; such modification would be done in consultation with the FAA and the City of Chicago Department of Aviation. Modification requiring FAA action would be subsequent to its prior approval and any necessary environmental review. If FAA's ROD approves a Build Alternative, the existing Fly Quiet Program would remain in place, except as affected by runway decommissioning. The EIS discloses the potential effects of runway decommissioning on the Fly Quiet Program.
- Continuation of the ONCC to oversee noise mitigation efforts around O'Hare.
- Continued use of the ground run-up enclosure during engine run-up testing.

5.21.10.4 Mitigation for Surface Transportation Impacts on Environmental Justice Populations

Within environmental justice areas, there are a total of two deficient intersections (#6 and #37) with any of the Build Alternatives when compared to the No Action Alternative in Build Out and Build Out + 5. The following section outlines the potential mitigation measures that would occur for any of the Build Alternative impacts in Build Out + 5. The potential mitigation measures would be the same for all Build Alternatives, and in each case would contribute to the improvement of the level of service (LOS) for each significantly impacted intersection, respectively.

Intersection of Bessie Coleman Drive and Higgins Road (Location 6): Improvements that enhance capacity and improve the LOS of this intersection to D or better could potentially require the acquisition of additional right-of-way (ROW) by the Illinois Department of Transportation (IDOT), the jurisdictional agency of Higgins Road. Adjacent land that would need to be acquired for the additional ROW is currently owned by the Airport. The City has committed to participate in cooperative planning with IDOT to address future improvements to this intersection required to improve the intersection LOS, which may include additional through lanes or turn lanes on Higgins Road. Additionally, the City has committed to make

available adjacent Airport-owned land that would need to be acquired by IDOT for ROW to facilitate these future improvements to the intersection and Higgins Road.

Intersection of York Road and Irving Park Road Ramp (Location 37): There is an existing Intergovernmental Agreement between the City of Chicago, IDOT, the Illinois State Toll Highway Authority (ISTHA), and DuPage County for Preliminary Phase I engineering services related to the proposed relocation of this intersection. As part of these preliminary engineering services which are currently underway, an intersection design study (IDS) will be completed which will be reviewed by the City, IDOT, ISTHA, and DuPage County to ensure that upon implementation of the improvements, the relocated intersection would operate at LOS of D or better.

5.21.10.5 Outreach/Public Involvement

NEPA guidance states it is important to “take steps to encourage and facilitate more active participation by low-income communities and minority communities in its NEPA process. This goal can be accomplished through careful identification of target audiences and aggressive community outreach beyond the traditional forms.”²⁶ The environmental justice outreach process for this EIS provided information to the affected population and allowed significant interaction with Federal officials. On May 23, 2004, the FAA held its first environmental justice public meeting. A second environmental justice outreach meeting was held on August 29, 2004 at St. Alexis Church in Bensenville, and the third environmental justice outreach meeting was held on March 6, 2005, also at St. Alexis Church. In addition, over 30 small group meetings were held at various businesses and residences located in the acquisition area. At all of these outreach sessions, language translators (Spanish) were present to facilitate the communication process.

The public hearing on the Draft EIS was another vehicle for the environmental justice outreach process. Comments received during the public hearing comment period were reviewed and documented in this Final EIS. Answers to questions or comments raised related to environmental justice, including potential mitigation strategies are included in **Appendix U, Response to Comments**.

5.21.11 Summary

5.21.11.1 Proposed Acquisition Areas

Within the population to be acquired under the Build Alternatives, there are a disproportionate number of minority (by race and ethnicity) populations. In addition, businesses could be negatively impacted by the loss of minority residents are located on South Center, West Main, and Green Streets. These businesses are located within a two-block distance from the proposed acquisition area and are walking distance from these residences. Six businesses along East Green Street and the Park & Shop Plaza on West Main Street provide many services to Spanish-

²⁶ Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses April 1998; Website: http://www.abanet.org/irr/committees/environmental/epa_guidance.doc.

speaking customers and could lose some of their business upon relocation of residences in the proposed southwest acquisition area.

Other than the residents and the businesses mentioned in the previous paragraph, there may also be some environmental justice impacts to certain community resources that would remain following acquisition. For instance, schools or other social service agencies may conduct programs which teach English as a second language because of the large minority population present in the acquisition area. If this large minority population moves beyond the limits of the present school district boundary, programs may be affected. Class size and demographics could be affected which could cause a reduction in staff.

The methodology and mitigation strategies found in this report are based on EO 12898, NEPA, and FAA's guidance. The environmental justice analysis indicates that the impact of the acquisition and relocation under the proposed Build Alternatives would be borne predominately by minority populations. In accordance with the guidelines' emphasis on public participation, this environmental justice process primarily focused on developing mechanisms to involve all residents directly impacted by the proposed Build Alternatives.

The environmental justice findings for this EIS focused primarily on addressing land acquisition issues associated with the Build Alternatives C, D, and G. The direct impact of relocation requires mitigation efforts that concentrate on fully implementing the Uniform Relocation Assistance and Real Property Acquisition Policies Act. Proposed acquisition area residents will be fully informed about the Uniform Act and receive the assistance and support needed for the relocation process.

In contrast to the other alternatives, the No Action Alternative (Alternative A) would leave the conditions of the acquisition area as described in the baseline conditions section of this report.

5.21.11.2 Potential Noise Impacts on Environmental Justice Populations Outside of the Proposed Acquisition Areas

The analyses for the Build Alternatives led to the preliminary conclusions that there are disproportionately high and adverse noise impacts on minority (by race and ethnicity) populations and low-income households.

In making determinations regarding disproportionately high and adverse effects on minority and low-income populations, mitigation and enhancement measures to the affected minority and low-income populations may be taken into account. **Section 5.21.10, Potential Mitigation Measures** and **Chapter 7, Mitigation Summary** describe the proposed mitigation measures to offset the potential impacts.

5.21.11.3 Analysis of Potential Surface Transportation Impacts on Environmental Justice Populations

The analyses for the Build Alternatives led to the preliminary conclusions that there are disproportionately high and adverse noise impacts on minority (by ethnicity) populations and low-income households. Within environmental justice areas, there are a total of two deficient intersections (#6 and #37) with any of the Build Alternatives when compared to the No Action

Alternative (Alternative A) in Build Out and Build Out + 5. In making determinations regarding disproportionately high and adverse effects on minority and low-income populations, mitigation and enhancement measures to the affected minority and low-income populations may be taken into account. **Section 5.21.10, Potential Mitigation Measures** and **Chapter 7, Mitigation Summary** describe the proposed mitigation measures to offset the potential impacts.