



# Environmental Justice Technical Report

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## 1.0 INTRODUCTION

The Federal Highway Administration (FHWA) and Colorado Department of Transportation (CDOT) have initiated the Environmental Assessment (EA) for the C-470 Corridor between Kipling Parkway and I-25 to address congestion and delay, and to improve reliability for corridor users. The C-470 Corridor is a state highway, located in the southwest part of the Denver metropolitan area, spanning Arapahoe, Douglas, and Jefferson counties, including the communities of Highlands Ranch, Lone Tree, Littleton, and Centennial.

As a part of the C-470 Corridor EA, the project corridor was evaluated to determine the presence of minority and/or low-income populations and whether these communities might incur disproportionate high and adverse environmental impacts as a result of this project. This technical report presents the data collected during this evaluation.

In February 1994, President Clinton issued Executive Order (EO) 12898 requiring federal agencies to incorporate consideration of environmental justice (EJ) into the National Environmental Policy Act (NEPA) evaluation process. The purpose of the order is to ensure that minority and low-income communities do not suffer a disproportionate share of high and adverse environmental impacts and are not excluded from the benefits resulting from federal actions. The order also requires that these parties have adequate access and opportunity for participation in project planning.

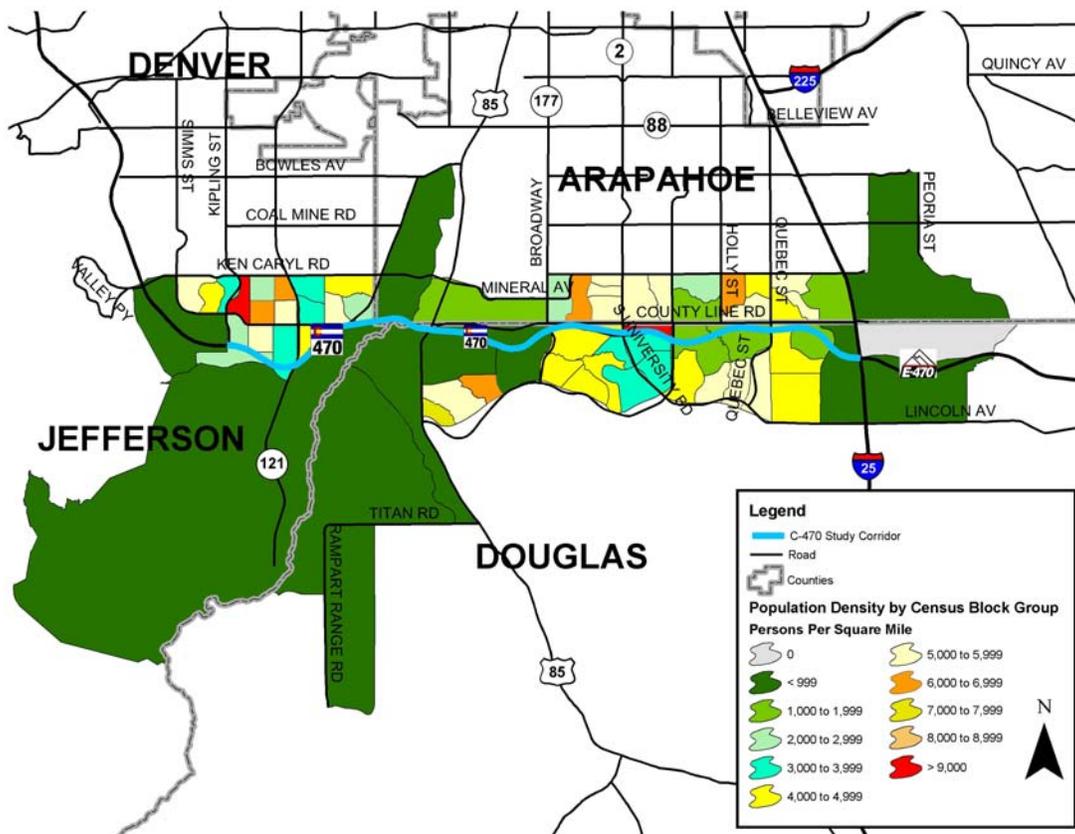
As a federally sponsored project, the C-470 Corridor EA is subject to the provisions of EO 12898. To assist in this analysis, current demographic data for minority and income status were collected and analyzed at the census block group level, using year 2000 United States Census data. While the CDOT's recent guidance directs minority and low-income analysis to be completed at the census tract level, this analysis for the C-470 Corridor provides data at the block group level to identify smaller pockets of populations, thus providing greater insight to potential minority and low-income populations. The project team identified 158 census block groups within the C-470 Corridor study area. This area covers parts of three counties including Arapahoe, Douglas, and Jefferson. Data and analysis presented in the following sections pertain to these 158 census block groups with regard to minority and low-income populations and potential for impact to any identified population.

This analysis follows the guidance provided in the U.S. Department of Transportation (DOT) Order 5610.2 on Environmental Justice (1997) and the Council on Environmental Quality (CEQ) Environmental Justice Guidance under NEPA (1997). Definitions for minority and low income based on this guidance are explained further in the respective sections of this document.

## 2.0 AFFECTED ENVIRONMENT

The 2000 U.S. Census data indicates that the population along the C-470 Corridor study area is 103,467 residents and 37,337 households. Generally, the study area for the EJ evaluation on the C-470 EA is limited to approximately one-mile buffer on either side of the existing highway. The corridor land use is generally suburban residential, with commercial development along County Line Road to the north of the highway. Population density is generally 6,000 persons per square mile or less, with small pockets of multi-family housing or neighborhoods with smaller lot sizes. The western half of the corridor is considerably less dense than the eastern half, as shown in Figure 1.

Figure 1  
Population Density



Source: U.S. Census 2000

## 2.1 MINORITY POPULATIONS

The U.S. DOT Order 5610.2 defines the term minority as a person who is Black/ African American, Asian or Pacific Islander (including Native Hawaiian), American Indian or Alaskan Native, or from Hispanic/Latino culture or origin, regardless of race. A minority population includes any readily identifiable group of minority persons who

live in geographic proximity who will be affected by a proposed program, policy, or activity. The CEQ has a similar definition, but goes on to say that minority populations exist where the minority population of an affected area is greater than 50 percent, or is meaningfully greater than the minority population percentage of the surrounding geographic area.

In order to determine the presence of minority populations along the C-470 Corridor, year 2000 Census data was obtained and analyzed. Geographic Information System (GIS) mapping was used to present the demographic information. It is important to note that the U.S. Census definition of race (including White, Black/African American, American Indian and Alaska Native, Asian, Native Hawaiian and other Pacific Islander, or other race) is separate and distinct from Hispanic origin. For this reason, two separate data tables and maps have been used to demonstrate minority populations.

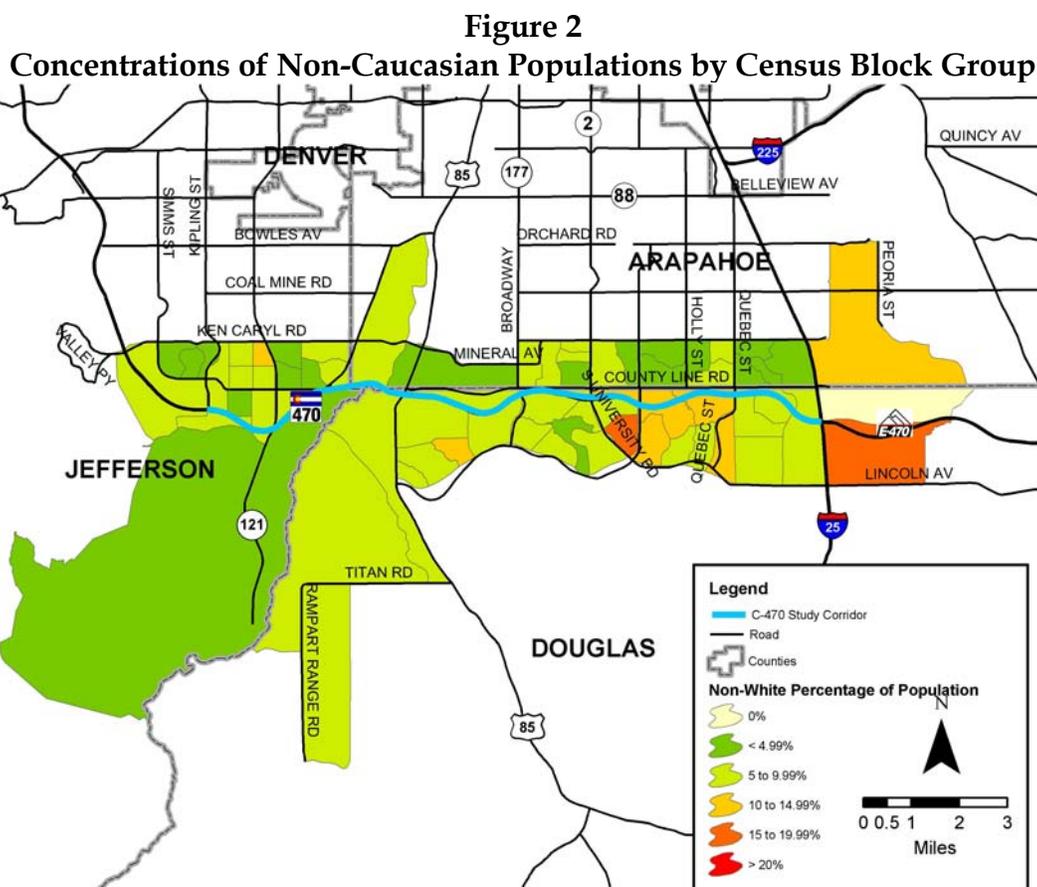
### 2.1.1 Race

Of the Corridor’s 103,467 residents, approximately 7.2 percent or 7,460 defined themselves as non-Caucasian. The average non- Caucasian population of all three counties within the Corridor is 13.5 percent. Table 1 shows the non- Caucasian population composition of the Corridor in comparison to respective counties. No single county represented in the corridor has a non- Caucasian population significantly higher than that of the county as a whole. While the percentage of non-Caucasian residents along the corridor within Douglas County is slightly higher than Douglas County percentage as a whole, this small difference of 1.7 percent was determined not to be significant when comparing the corridor to the three-county area. Figure 2 illustrates the disbursement of non-Caucasian populations throughout the corridor by census block group.

**Table 1**  
**Non-White Race Composition Comparison to County**

	Corridor Total			County Total		
	Arapahoe	Douglas	Jefferson	Arapahoe	Douglas	Jefferson
<b>Total Population 2000</b>	33,309	46,178	23,980	487,967	175,766	527,056
<b>Total Non-Caucasian Population 2000</b>	1,921	4,104	1,435	97,919	12,702	49,602
<b>% Non-Caucasian 2000</b>	5.8%	8.9%	6.0%	20.1%	7.2%	9.4%
<b>Average Non-Caucasian %</b>	7.2%			13.5%		

Source: U.S. Census 2000



Source: U.S. Census 2000

### 2.1.2 Hispanic Origin

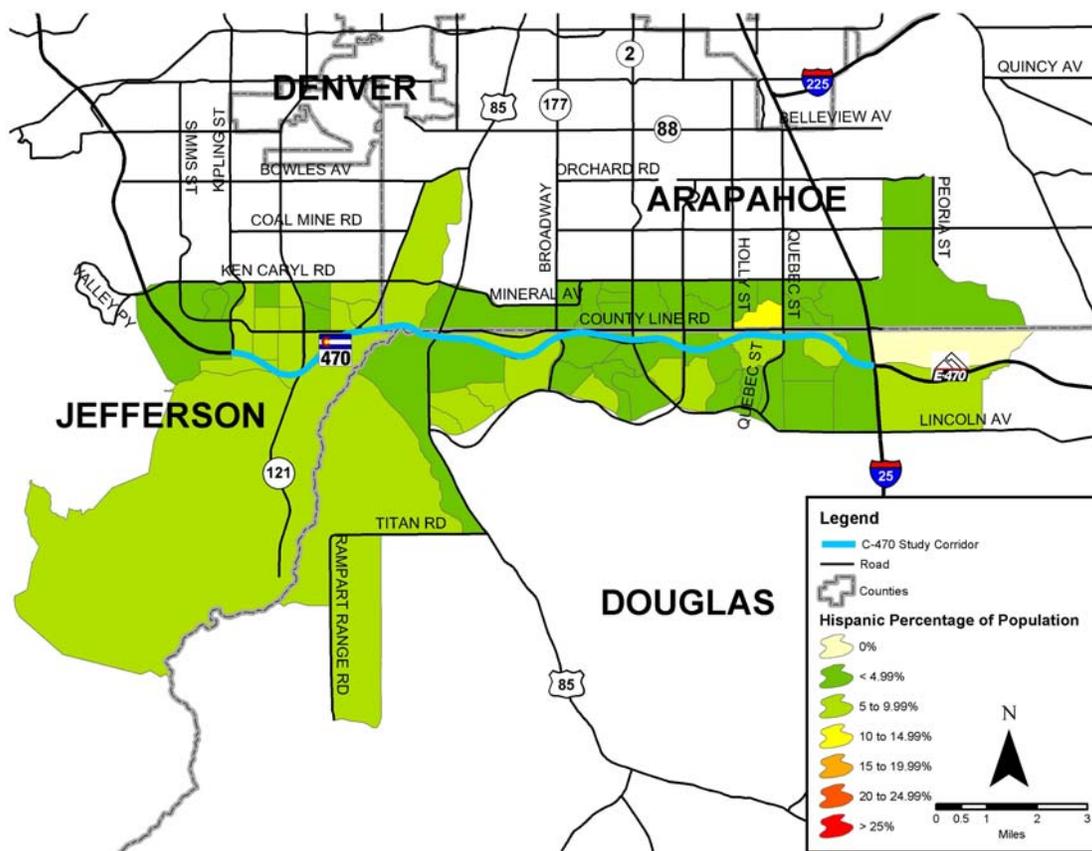
Approximately five percent or 5,100 of the corridor’s residents define themselves as Hispanic or Latino, as compared to ten percent for the three-county area. Table 2 shows the Hispanic composition of the corridor in comparison to respective counties. Figure 3 shows the disbursement of Hispanic/Latino populations throughout the corridor by census block group.

**Table 2**  
**Hispanic Population Percentages Comparison to County**

	Corridor Total			County Total		
	Arapahoe	Douglas	Jefferson	Arapahoe	Douglas	Jefferson
<b>Total Population 2000</b>	33,309	46,178	23,980	487,967	175,766	527,056
<b>Hispanic Population 2000</b>	1,271	2,359	1,467	57,612	8,886	52,449
<b>% Hispanic 2000</b>	3.8%	5.1%	6.1%	11.8%	5.1%	10.0%
<b>Average % Hispanic 2000</b>	4.9%			10.0%		

Source: U.S. Census 2000

**Figure 3**  
**Concentrations of Hispanic Populations by Census Block Group**



Source: U.S. Census 2000

## 2.2 LOW-INCOME POPULATIONS

Low-income populations are defined by three different means, depending on which guidance was followed. (1) The CEQ defines a low-income population as a group of individuals living in geographic proximity to one another for which income levels fall below the poverty threshold set annually from the Bureau of the Census' Current Population Reports. (2) The U.S. DOT Order 5610.2 on Environmental Justice definition identifies low-income populations as any readily identifiable group of individuals whose median household income is at or below the Department of Health and Human Services (HHS) poverty guidelines. (3) CDOT's EJ guidance, Environmental Justice in Colorado's Statewide and Regional Planning Process Guidebook, September 2003, provides yet a different direction, which will be applied in this identification of low-income communities for the C-470 Corridor. The U.S. Department of Housing and Urban Development (HUD) annually determines area median incomes (AMI) for each county or Metropolitan Statistical Area (MSA) in the allocation of Community Development Block Grants (CDBG). The HUD distinguishes between three different

income thresholds in the allocation of these grants at 30 percent, 50 percent and 80 percent of the AMI. The CDOT has adopted the AMI method for determining low-income populations, as it more accurately reflects the cost of living in Colorado compared to the rest of the nation. For this corridor analysis, 30 percent of the AMI was determined to be the low-income threshold for EJ populations.

The HUD income thresholds are provided on a person per household basis and were used for calculating average household income for each census block group in the C-470 study area. The C-470 study area is part of the Denver MSA, which includes Adams, Arapahoe, Denver, Douglas, and Jefferson counties. Year 2000 income thresholds were used to be consistent with census data used in the calculations. These thresholds are based on previous year income data, as listed in Table 3. The AMI for the Denver MSA for 2000 was \$62,100 for a four-person household. The 30 percent AMI low-income threshold used for this analysis is approximately \$18,650 for a four-person household.

**Table 3**  
**Low Income Thresholds for Arapahoe, Douglas, and Jefferson Counties, Denver, CO**

Persons per Household	1 Person	2 Persons	3 Persons	4 Persons	5 Persons	6 Persons	7 Persons	8 Persons
Low Income Threshold (30% AMI)	\$13,050	\$14,900	\$16,750	\$18,650	\$20,100	\$21,600	\$23,100	\$24,600
50% AMI	\$21,750	\$24,850	\$27,950	\$31,050	\$33,550	\$36,000	\$38,500	\$41,000
80% AMI	\$34,800	\$39,750	\$44,700	\$49,700	\$53,650	\$57,650	\$61,600	\$65,600

Source: U.S. Department of Housing and Urban Development, 2000  
 Note: Values are based on 1999 incomes

Using U.S. Census data, each block group was evaluated to determine the number of households that fell below the 30 percent AMI low-income threshold. The percentage of low-income households was then compared to the average for each of the counties along the corridor. Table 4 shows the percentages of low-income households for each of the three counties in the Corridor.

**Table 4**  
**Low-Income Household Averages for Arapahoe, Douglas, and Jefferson Counties**

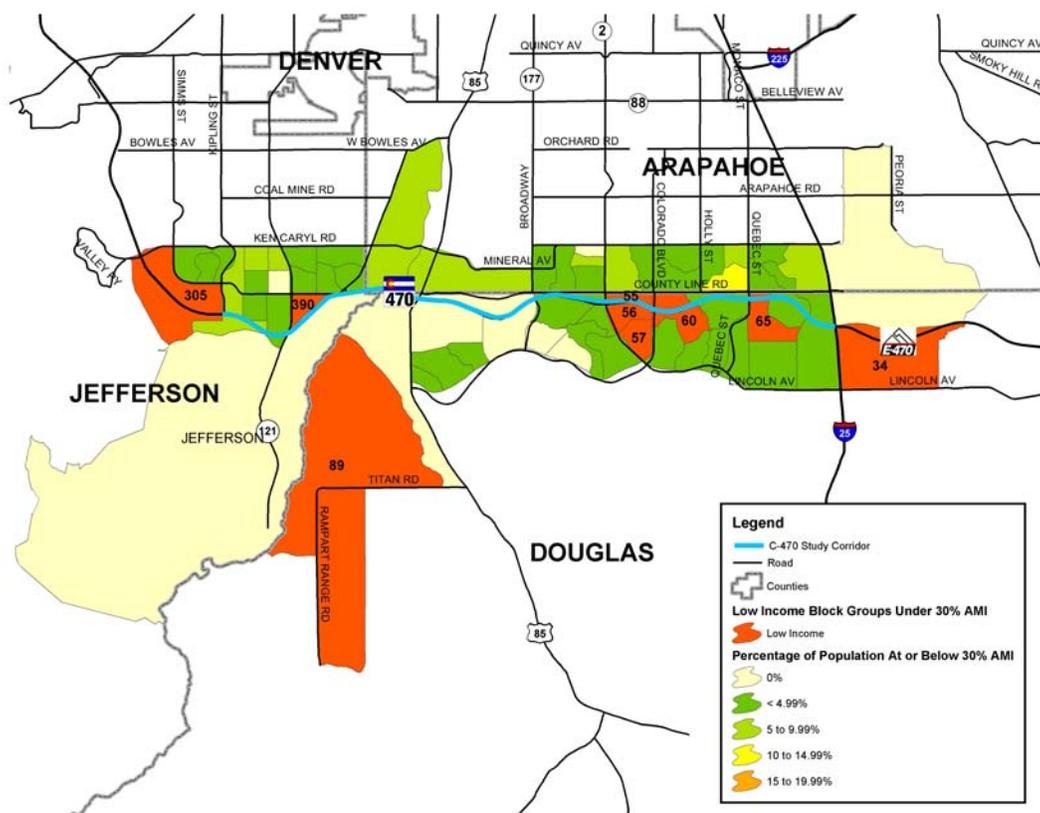
	Arapahoe	Douglas	Jefferson
<b>% Low-Income Households 2000</b>	11.76%	4.45%	10.83%

Source: U.S. Census 2000  
 Note: Low-income threshold was based on values from Table 3 using U.S. Census 2000 data

Figure 4 shows the percentage of households by census block group with income levels at or below 30 percent AMI. Generally, for each block group, the Corridor has less than ten percent of the population below the AMI low-income threshold. However, nine census block groups were identified as having a greater number of households below

the low-income threshold than the county average, most of these falling in Douglas County. Block groups highlighted in red represent those having a larger percentage of households below 30 percent AMI than the county average, thus meeting the low-income threshold.

**Figure 4**  
**Populations Below Thirty Percent AMI by Census Block Group**



Source: U.S. Census 2000

In order to determine if these areas meet CDOT’s definition of a low-income population, additional steps were taken to confirm whether these areas should be considered a low-income population for the Environmental Justice analysis, as part of the C-470 Environmental Assessment. The following information and criteria was used to make this determination:

- Contacted local counties for their determination of low-income
- Contacted local housing authorities to determine if households in area are receiving Section 8 housing vouchers
- Researched national education statistics to determine if a high percentage of students in area schools are receiving reduced-price or free lunches
- Conducted visual inspection of neighborhoods to determine the housing composition of the area. Answer the question, “Does the area appear to be composed of low-income households?”

### 2.2.1 Local Contacts

Since none of the identified block groups are located within Arapahoe County, contacts were established only with Douglas and Jefferson County planning departments to confirm any known concentrations of low-income households.

Douglas County's Community Development Department has prepared the Consolidated Plan Reference Material (January 2004) that is used to determine what parts of the county are eligible for assistance based on U.S. Census income information. Based on the data presented in this report, only 1-5 percent of the population within the Douglas County portion of the C-470 Corridor study area falls below the Census poverty level. The Census poverty threshold (\$17,650) is only slightly lower than 30 percent of the AMI low-income threshold (\$18,650) for a family of four, and is a comparable measure of low-income status.

Based on email correspondence from Stephanie O'Hara from Jefferson County Community Development, there are no areas with the C-470 Corridor study area that Jefferson County considers low or moderate-income areas for their reporting purposes.

### 2.2.2 Housing Authorities

On August 2, communication was conducted with Craig Maraschky from the Douglas County Housing Partnership. This organization distributes Section 8 housing vouchers. The housing choice voucher program is the federal government's major program for assisting very low-income families. Based on information Craig provided, there are only 120 Section 8 Housing vouchers currently issued to families in Douglas County. In order to qualify for a housing voucher, the family income must not exceed 50 percent of the area median income (AMI). By law, seventy-five percent of the vouchers distributed by each housing authority must be distributed to families with incomes less than 30 percent of the AMI. Craig was not aware of any locations along C-470 that meet the requirements for this type of housing assistance.

There are three apartment complexes along County Line Road in Highlands Ranch within the Census block groups identified as having low-income households above the county average (ID 55 and 60). The addresses of these apartments include:

Autumn Chase  
8305 S. Harvest Lane, Highlands Ranch

Copper Canyon  
3380 E. County Line Road, Highlands Ranch

Traditions  
3290 County Line Road, Highlands Ranch

Apartment managers for all three of these complexes were contacted. Two of the three offer low income tax credits for households falling within certain income categories. Rental rates for all residents, regardless of income remain the same. However, low-income residents receive federal tax credits. In order to qualify, the household income must meet the following annual income guidelines:

- 1 bedroom/1 person - minimum = \$19,500; maximum = \$29,340
- 2 bedroom/1 person - minimum = \$22,800; maximum = \$29,340
- 2 bedroom/2 person - maximum = \$33,540
- 3 person - maximum = \$37,740
- 4 person - maximum = \$41,940

While the income thresholds for the tax credits are relatively low, these minimum thresholds fall above 30 percent of the AMI for the Denver area, therefore it is unlikely that low-income populations that meet the low-income threshold exist in these apartments along County Line Road.

### 2.2.3 School Lunch Program

Statistics for students eligible for reduced-price or free lunch during the 2002-03 school year for 13 schools in the corridor study area were available from the National Center for Education Statistics website (<http://nces.ed.gov/ccd/schoolsearch>). The number of students eligible for these programs at each school is shown in Table 5. Each year parents fill out an eligibility form to qualify for federal reduced or free lunch programs. To qualify for Reduced Price Meals, a household must make 185 percent or less (\$32,650) of the Federal Poverty Guideline (\$17,650). To qualify for free lunch a household must make 130 percent or less (\$22,945) of the Federal Poverty Guideline.

**Table 5**  
**Students Eligible for Reduced-Price or Free Lunch**

Schools	County	2002-2003 Enrollment	Reduced Price Lunch Eligible	% Eligible for Reduced Price Lunch	Total Free Lunch Eligible	% Eligible for Free Lunch
ACRES GREEN ELEM.	Douglas	612	13	2.1%	14	2.3%
COLLEGIATE CHARTER ACADEMY	Jefferson	532	19	3.6%	21	3.9%
COLUMBINE HIGH	Jefferson	1,795	36	2.0%	49	2.7%
COLUMBINE HILLS ELEM.	Jefferson	512	23	4.5%	29	5.7%
CORONADO ELEM.	Jefferson	557	20	3.6%	18	3.2%
COUGAR RUN ELEM.	Douglas	643	10	1.6%	8	1.2%

Schools	County	2002-2003 Enrollment	Reduced Price Lunch Eligible	% Eligible for Reduced Price Lunch	Total Free Lunch Eligible	% Eligible for Free Lunch
CHAPARRAL HIGH	Douglas	1,564	14	0.9%	12	0.8%
HIGHLANDS RANCH HIGH	Douglas	1,834	3	0.2%	10	0.5%
MORTENSEN ELEM.	Jefferson	388	14	3.6%	18	4.6%
NORTHRIDGE ELEM.	Douglas	623	16	2.6%	13	2.1%
POWELL MIDDLE	Arapahoe	980	10	1.0%	14	1.4%
ROXBOROUGH ELEM.	Douglas	692	13	1.9%	10	1.4%
SAND CREEK ELEM.	Douglas	500	11	2.2%	9	1.8%

Source: <http://nces.ed.gov/ccd/schoolsearch>

Of these schools, Columbine Hills Elementary has the highest percentage of eligible students (5.7 percent) eligible for free lunch. Columbine Hills Elementary is located a half mile north of the C-470 Corridor. While this school represents the highest percentage of eligible students of any others in the study area, it is still relatively low, and therefore not considered an indicator of a low-income population.

## 2.2.4 Site Inspection

A visual site inspection was conducted for each of the block group areas identified as having low-income household percentages above the county average. A description of each area is provided and referenced by County and block group ID, as listed in Figure 1.

### 2.2.4.1 Douglas County

ID 34 - This census block group, located immediately east of I-25 and south of C-470/E-470 is generally made up of office and commercial uses as part of the Meridian development, and one luxury apartment complex along Lincoln Avenue. Further east on Lincoln Avenue, the landscape becomes suburban, with large lot single-family residential development known as Grandview Estates. Many of these homes have horses on property. The data indicates that 12 households out of 95 in this area are below 30 percent of the AMI, representing 12.63 percent of the block group. This is approximately eight percent greater than the county average of 4.5 percent for Douglas County. Chaparral High School is the nearest school in the area, located approximately two miles east of this block group, with 0.9 and 0.8 percent of students eligible for reduced price and free lunch, respectively. While the Census statistics indicate a larger percentage of the households below AMI30 than the county average, based on a lack of other qualifying evidence for low-income populations from school statistics and visual

inspection, this area was not considered further as a concern for the environmental justice evaluation.

ID 65 – This block group located east of Quebec Street and generally south of C-470, is generally made up of retail uses, fronting C-470 and Business Center Drive, continuing from Quebec Street, east of Acres Green. Single-family residences are located south of the commercial development in unincorporated Douglas County. The data indicates that only 53 households out of 1030 in this area are below 30 percent of the AMI, representing 5.15 percent of the block group. This is only slightly over the county average of 4.45 percent, and is not considered statistically significant. Acres Green Elementary School is located within this block group, of which 2.1 and 2.3 percent of the students are eligible for reduced price and free lunch, respectively. Upon visual inspection, these houses appear to be moderately sized, although somewhat unkempt. This may be due to the lack of a strongly governing homeowners association. Because the percentage of low-income households for this block group is only marginally over the county average, and other evidence does not support the presence of a low-income population, this area was not considered further as a concern for the environmental justice evaluation.

ID 55, 56, 57, and 60 – These block groups are located in Highlands Ranch, east of University Boulevard, extending south of County Line Road to approximately Highlands Ranch Parkway/Lincoln Avenue. There are three apartment complexes along County Line Road, backing to C-470 (ID 55). The remaining development is composed of single-family homes and a large retail shopping center at the intersection of University Boulevard and Colorado Avenue. The neighborhoods east of Colorado (ID 56 & 57) are composed of large lot “estate” homes including the Falcon Hills development. West of Colorado (ID 60), the homes are more moderately sized with smaller lots. The data indicates that only 26 out of 554 households (ID 56) and 26 out of 521 households (ID 57) in this area are below 30 percent of the AMI, representing 4.69 and 4.99 percent of the block groups, respectively. This is only marginally over the county average of 4.45 percent for Douglas County, and is not considered statistically significant. Cougar Run Elementary School is located within block group ID 56, with only 1.6 and 1.2 percent of students eligible for reduced price and free lunch, respectively. None of these areas appear to have the characteristics of a low-income population. While data indicates that block group ID 55 has smaller household sizes and two of the three apartment complexes offer the availability of low-income tax credits, there does not appear to be enough collective data to support the presence of a low-income population. Therefore, this area was not considered further as a concern for the environmental justice evaluation.

ID 89 – This block group is located between Wadsworth and Santa Fe Boulevard, encompassing much of the area contained within Chatfield State Park. The single-family homes in this area are scattered south of the park on large lots, and a smaller lot

subdivision. Many of the large lot homes have horses on property and been established long before the C-470 corridor was built. The data indicates that 36 out of 322 households in this area are below 30 percent of the AMI, representing 11.18 percent of the block group, compared to the Douglas County average of 4.45 percent. Roxborough Elementary is located within this block group, with 1.9 and 1.4 percent of students eligible for reduced price or free lunch, respectively. While the Census statistics indicate a larger percentage of the households below AMI30 than the county average, based on school statistics and visual inspection, this area was not considered a low-income population for the environmental justice evaluation.

#### 2.2.4.2 Jefferson County

ID 390 – This block group is located between Wadsworth Boulevard and Platte Canyon Road, immediately north of C-470. This area is composed of a mixture of older established single-family homes, and new residential development in at least three separate subdivisions. The established neighborhood appears to have older, possibly retired residents, which may be the reason for triggering the low-income threshold. The data indicates that only 82 households out of 674 in this area are below 30 percent of the AMI, representing 12.17 percent of the block group. This is only slightly over the county average of 10.83 percent. Coronado Elementary is located approximately one mile away from this area, with 3.6 and 3.2 percent of students eligible for reduced price or free lunch, respectively. Based on the lack of qualifying data, this area was not considered a low-income population for the environmental justice evaluation.

ID 305 – This block group is located west of Kipling Boulevard, straddling C-470, extending north to Ken Caryl. This area is largely residential development, with accompanying commercial shopping centers. This area, known as the Ken Caryl Ranch area, is a highly regarded community, with many homes fronting the Deer Creek Golf Course, just north of C-470. The data indicates that only 27 households out of 236 in this area are below 30 percent of the AMI, representing 11.44 percent of the block group. This is only slightly over the county average of 10.83 percent. Given the neighborhood characteristics, this area was not considered a low-income population for the environmental justice evaluation.

### 2.3 WOLHURST COMMUNITY ANALYSIS

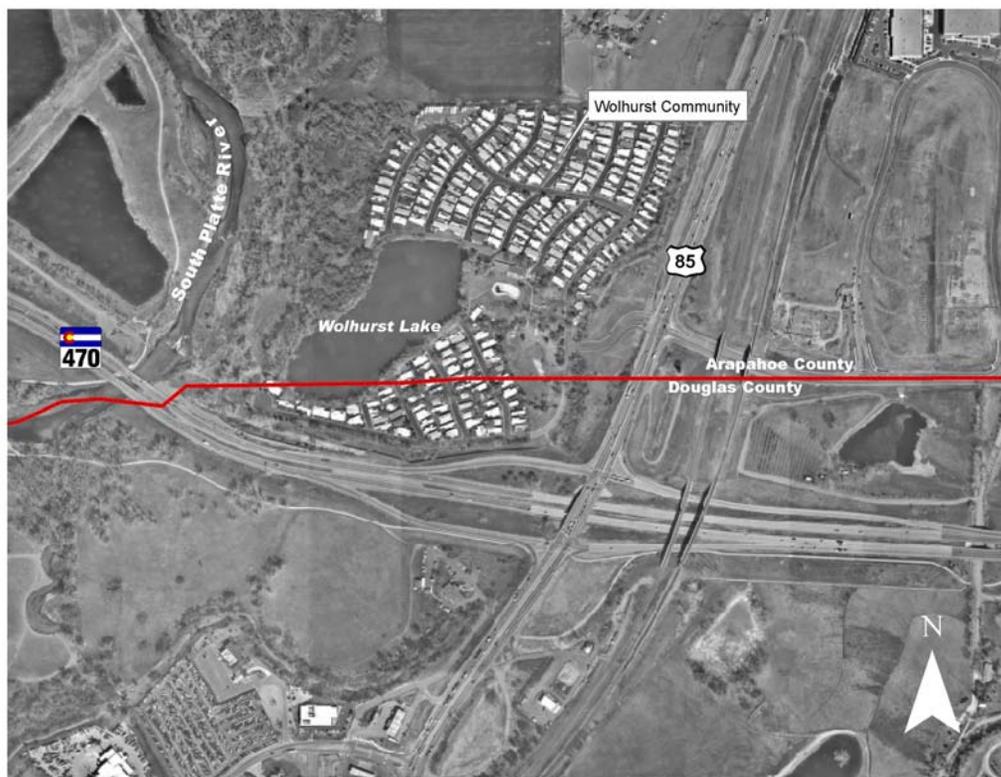
While low-income population analysis for the entire corridor did not identify any low-income populations, the Project Team further analyzed Wolhurst because this neighborhood is a known retirement community and the Team questioned the income status of residents living within this area. A separate technical memorandum, *Potential Environmental Justice Issues near the Santa Fe (U.S. 85) and C-470 Interchange - Wolhurst Adult Community* (December 2003) was prepared and reviewed by the C-470 Project Management Team, specifically to address these concerns.

Established in 1973, the Wolhurst community is located at 8201 South Santa Fe Drive, Littleton, Colorado, in the northwest quadrant of the C-470 and Santa Fe Drive (U.S. 85) interchange. Figure 5 shows the location of the Wolhurst community. The community is comprised of 272 mobile/manufactured home units, spanning the border of Arapahoe and Douglas Counties, and is currently expanding to accommodate 29 additional units. Residents lease lots from the community's owner Wolhurst Adult Community Incorporated. As a retirement community, children are not allowed as permanent residents.

In the spirit of EO 12898, public outreach with Wolhurst began in September 2003, with a small group meeting scheduled through the community's management office. The intent of this meeting was to provide an overview of the C-470 Corridor project, answer specific questions from area residents, and to inform them of the mail-in survey that was distributed to their mailboxes. Over 60 residents attended the meeting.

In order to better analyze the income statistics for this neighborhood, economic information about the community was gathered in the form of a mail-in survey distributed to each resident's mailbox, as a part of project outreach efforts. Two hundred seventy-two surveys were distributed, one for each household. Of these, 147 were returned, for a response rate of over 50 percent. One hundred fourteen respondents answered the household income questions on the survey, representing approximately 40 percent of the households surveyed. Since the survey was conducted in 2003, the low-income threshold was based on HUD's 30 percent AMI for 2003 as shown in Table 6.

**Figure 5**  
**Location of Wolhurst Community**



Source: 2003 Aerial Photography, C-470 Corridor Study Team

**Table 6**  
**Low Income Thresholds for Arapahoe and Douglas Counties, CO**

Persons per Household	1 Person	2 Persons	3 Persons	4 Persons	5 Persons	6 Persons	7 Persons	8 Persons
Low Income Threshold (30% AMI)	\$14,700	\$16,800	\$18,850	\$20,950	\$22,650	\$24,350	\$26,000	\$27,700

Source: U.S. Department of Housing and Urban Development, 2003  
 Note: Values are based on 2002 incomes

Household incomes were evaluated to determine how many households fell below the low-income threshold, based on average household size. Survey results indicated that the average household size for the Wolhurst Community was 1.57 persons per household. With this information, it was determined that \$15,900 was the low-income threshold for the Wolhurst Community, using 30 percent of the AMI low-income threshold.

Table 7 shows the distribution of household incomes for the Wolhurst Community. Nearly 30 percent of the respondents reported their household income below \$14,999. This compares to the county averages for both Arapaho and Douglas counties of 11.76 and 4.45 percent, respectively.

**Table 7**  
**Wolhurst Resident Income Ranges**

Income	Wolhurst Survey
Less than \$10,000	12.28%
\$10,000 to \$14,999	17.54%
\$15,000 to \$24,999	24.56%
\$25,000 to \$34,999	24.56%
\$35,000 to \$49,999	8.77%
\$50,000 to \$74,999	7.02%
\$75,000 to \$99,999	3.51%
\$100,000 to 124,999	1.75%
\$125,000 to \$149,999	0.00%
\$150,000 to \$199,999	0.00%
\$200,000 or more	0.00%
<b>Total</b>	<b>100.00%</b>

Source: Resident survey responses, October 2003, n=114

Further research was conducted to confirm whether Wolhurst should be considered a low-income population.

- Conversations with the City of Littleton following the survey effort reflected a sense that this community did not represent a low-income community, as compared to another mobile home park within the City limits.
- The Littleton Housing Authority was contacted, as the responsible entity for distributing Section 8 housing vouchers. Based on information obtained, they require the household to earn below 30 percent of the AMI in order to receive housing vouchers. Data provided from the Wolhurst management office, which receives property lease payments from each resident indicated that only three Wolhurst households are currently receiving Section 8 Housing vouchers. This represents approximately one percent of the total households in the Wolhurst Community.
- Education statistics do not apply to this community, as school-age children do not live in this retirement community.
- Upon visual inspection, the community appears to be well kept. Residents are active in the community, some still having jobs outside the home.

While several indicators provide evidence leading to a conclusion that the Wolhurst Community may not qualify as a low-income population, reported income levels from the community survey indicate a higher percentage of households that meet the low-income threshold than both the Arapahoe and Douglas County averages. Given these results, the Project Team has identified the Wolhurst Community as a low-income population, and is therefore subject to the guidelines of EO 12898. Analyses were conducted with regard to adverse impacts to this community, as described in Section 3 of this technical report.

### **3.0 ENVIRONMENTAL CONSEQUENCES**

Environmental consequences or impacts, as they pertain to the populations subject to the Environmental Justice guidelines were evaluated as part of the C-470 EA. The impacts were considered with regard to the context and intensity.

#### **3.1 IMPACT EVALUATION METHODOLOGY**

During the alternatives evaluation process, potential impacts to the Wolhurst Community were identified with regard to all environmental resources evaluated in the EA. As potential impacts were identified, the project team made specific efforts to provide outreach to the Community and obtain their input regarding these impacts. Public outreach activities are discussed further in Section 4. All reasonable and feasible efforts were made to first avoid such impacts to the Community. Due to the nature of improvements to the C-470/Santa Fe interchange, in some cases, total avoidance was

not possible. In such cases, the project team made all efforts to minimize the impacts and provide mitigation that was acceptable to the Community.

Once impacts were identified, and avoidance and minimization efforts were completed, the extent of impacts was compared to the extent of impacts to other populations and communities throughout the corridor study area. A detailed description of avoidance and minimization efforts and the evaluation of context and intensity of such impacts is provided in this section.

### **3.2 NO-ACTION ALTERNATIVE**

The No-Action Alternative will not provide the needed capacity and safety improvements to the C-470/Santa Fe interchange or other capacity improvements to the C-470 Corridor. The only improvements included in this alternative are those projects with dedicated funding, included as municipal Capital Improvement Plans or DRCOG's Regional Transportation Plan (RTP). As such, the Wolhurst Community will not receive any impacts other than those that will occur over time as a result of increased congestion, and the resulting increased noise and air quality effects of that congestion.

### **3.3 GENERAL PURPOSE LANES ALTERNATIVE**

The GPL Alternative includes widening existing C-470 and Santa Fe Drive, both of which border Wolhurst. These improvements would require ROW acquisition from Wolhurst. The existing noise barrier along the southern border of the property would also be affected by highway widening and interchange improvements. A replacement noise barrier would be re-located within CDOT ROW parallel to C-470, approximately 50-90 feet closer to the interior road than the existing barrier.

Improvements to the C-470/Santa Fe Drive interchange would also require complete reconstruction of the bridge over C-470 and the addition of a flyover to accommodate the high-volume movement from southbound Santa Fe Drive to eastbound C-470. The flyover would be constructed so that the ramp would begin ascending north of the signalized entrance to Wolhurst at the Santa Fe Drive/County Line Road intersection. The flyover would be above this existing intersection. Impacts to Wolhurst have been identified with respect to ROW, traffic, noise levels, air quality, and aesthetics.

#### **3.3.1 ROW**

Additional ROW necessary to construct improvements to Santa Fe Drive, the C-470/Santa Fe Drive interchange, and C-470 itself would require approximately 2.1 acres of property from Wolhurst. The land required for acquisition does not occupy any residences, since the area is immediately adjacent to the existing road and highway. However, the improvements would result in traffic lanes, including the flyover ramp that would be 140 feet closer to residential homes than they are today. As discussed in

Section 3.2.6, Wolhurst is one of many areas where additional ROW would be required. Corridor wide, the GPL Alternative would require approximately 19 acres of additional ROW, on 56 different parcels, five of which are residential.

### 3.3.2 Traffic

Capacity improvements to Santa Fe Drive, County Line Road, and the ramp terminal intersections would improve travel conditions. A dedicated southbound right-turn lane from Santa Fe Drive into Wolhurst would facilitate free movement into the community. The flyover ramp would improve the conditions at the Santa Fe Drive/County Line Road intersection, which also serves as the entrance to Wolhurst by removing southbound traffic headed for eastbound C-470. It will not interfere with the existing access to Wolhurst. Traffic exiting Wolhurst headed for eastbound C-470 would turn right out of the community and left onto the eastbound C-470 entrance ramp, just as they would today. The westbound County Line Road approach to the Santa Fe Drive intersection would include an exclusive right-turn-only lane, two left-turn lanes, and a dedicated through lane into Wolhurst, improving traffic operations at this intersection.

### 3.3.3 Air Quality

As a result of operational improvements to C-470, the C-470/Santa Fe Drive interchange, and Santa Fe Drive air quality in the vicinity would improve. As part of the air quality modeling for the study area, hot-spot analyses for carbon monoxide emissions were conducted for the ramp intersection of Santa Fe Drive and the westbound C-470 entrance and exit ramps. The emission levels for this intersection are below the national standard for carbon monoxide and would decrease as a result of improved traffic operations for the GPL Alternative. Other air pollutants attributable to highway traffic (such as particulate matter and ozone) were also evaluated on a corridor-wide basis and found to not exceed national standards. Within the 2025 planning year horizon, air pollutants will rise slightly, but will remain below national standards.

### 3.3.4 Noise

As a result of the C-470 widening, the existing noise wall that borders Wolhurst on the south would be impacted. The widening of Santa Fe Drive, plus the flyover ramp, would result in noise levels exceeding CDOT's 66 dBA threshold at two locations in Wolhurst. These are the south side, where noise impacts are currently mitigated with a noise barrier and the east side of Wolhurst, north of Wolhurst Drive.

### 3.3.5 Aesthetics

The addition of the flyover along Santa Fe Drive would introduce a visual impact to Wolhurst. Construction of a retaining wall along the portion of the flyover that extends north of the community entrance would block views from the community to Santa Fe Drive and the railroad corridor. The wall would also block eastern sunlight entering the community. It would cast shadows to varying degrees depending on the time of year

during the morning hours. The combination of travel lanes closer to the community, an elevated structure adjacent to and above the property, and a retaining wall along the northern portion of the flyover structure would create a more urban context to the community than current conditions.

### **3.4 EXPRESS LANES ALTERNATIVE**

The EL Alternative would have the same design footprint as the GPL Alternative, with a few minor exceptions. These differences in the width and impacts to the environment would not be relevant to Wolhurst. The proximity of improvements from the EL Alternative to Wolhurst would be the same as in the GPL Alternative. The difference for the EL Alternative is a function of the express lanes themselves. Because direct access to the express lanes would not be provided at the Santa Fe Drive interchange, eastbound traffic from Wolhurst would turn left from southbound Santa Fe Drive onto the eastbound entrance ramp and enter C-470 in the general purpose lanes. Traffic would then merge into the express lanes at a slip ramp located between the Lucent Boulevard and Broadway interchanges. Westbound Wolhurst traffic in the express lanes would merge out of the express lanes and into the general purpose lanes at a slip ramp between the Broadway and Lucent Boulevard interchanges and then exit at Santa Fe Drive and turn into Wolhurst using the same travel pattern as currently exists. This access configuration would be the same for all traffic entering or exiting the express lanes or general purpose lanes to or from Santa Fe Drive. The benefit provided by the EL Alternative would be the travel time savings for trips made in the express lanes, as these lanes would be less congested than the general purpose lanes.

ROW, air quality, noise, and aesthetic impacts to Wolhurst would be the same for the EL Alternative as discussed for the GPL Alternative, since the C-470/Santa Fe Drive interchange improvements consist of the same elements for both alternatives. Because the EL Alternative would require a toll to enter the facility, this could be considered an economic disadvantage to low-income individuals, if they could not afford to pay the tolls. While this was a consideration during the alternatives evaluation, statistics from other toll facilities such as the EL Alternative have demonstrated that individuals from all income levels use the express lanes. While lower-income individuals may not use the facility as frequently as those with higher incomes, this data suggest that the imposition of tolls does not preclude low-income individuals or households from using the facility at times when minimizing traffic delay is of importance.

## **4.0 MITIGATION**

Wolhurst residents have been involved in many of the mitigation discussions. Through an open public involvement program, CDOT has met with community members to discuss impacts and potential mitigation measures. Residents were asked what mitigation measures could make these impacts less intrusive on their community.

Noise impact mitigation was one of the most important community issues. This input led to additional noise analysis in this area, including new residential sites currently under development. Based on the additional analysis, noise abatement was determined reasonable and feasible for both impacted locations. The noise barrier along the southern border of the community would be reconstructed and possibly extended to a maximum height of 20 feet. The northern portion of the flyover ramp would be constructed with a new retaining wall north of the Wolhurst entrance. This wall would effectively reduce noise levels to between 62 to 64 db(A), which is below CDOT's noise abatement standards.

To improve the aesthetic character, Wolhurst residents expressed interest in trees and other landscaping around their community. Trees, earthen berms, and landscaping elements would be added under and adjacent to the flyover, within the CDOT ROW. The berms would provide additional noise abatement to the southeastern border. CDOT would work with the community and property owner to place landscaping elements in aesthetically desirable locations. Additional public involvement opportunities would be offered during final design to allow residents the opportunity to provide input on landscaping elements.

Wolhurst residents also suggested adding aesthetic treatments to the retaining walls on the northern portion of the flyover. Because this wall would serve as the eastern viewshed to the community, an aesthetically pleasing treatment for this structure would improve the appearance of this eastern view. CDOT will work with Wolhurst to enhance the texture and color treatments on the retaining walls and the interior face of the relocated southern noise wall to provide a pleasing view from within the community. Additional public involvement opportunities will be offered during final design so that residents have an opportunity to provide input on the structure treatments.

## 5.0 PUBLIC OUTREACH

The C-470 project team has made a focused effort to provide information to the public regarding the C-470 project, the alternatives under consideration, and the impacts associated with each alternative. Public outreach has consisted of formal newsletters mailed to corridor residents, press releases, newspaper articles, meeting advertisements, project website, small group meetings held for neighborhood groups, homeowners associations (HOAs), Chambers of Commerce and special interest groups, and public open houses. Small group meetings have been and will continue to be held at the request of local groups throughout the study process. The schedule of public open house meetings is included in Table 8.

**Table 8**  
**Public Open House Schedule**

Date/Time	Location	Attendance
October 7, 2003 5:00 to 8:00 p.m.	Lone Tree Golf Club House 9808 Sunningdale Boulevard, Lone Tree	45
October 8, 2003 5:00 to 8:00 p.m.	Ken Caryl Ranch House 7676 S. Continental Divide Road, Littleton	62
October 9, 2003 5:00 to 8:00 p.m.	South Metro Chamber of Commerce 6840 S. University Boulevard, Centennial	40
February 23, 2004 5:00 to 8:00 p.m.	Ken Caryl Ranch House 7676 S. Continental Divide Road, Littleton	67
February 24, 2004 5:00 to 8:00 p.m.	Lone Tree Golf Club House 9808 Sunningdale Boulevard, Lone Tree	47
February 26, 2004 5:00 to 8:00 p.m.	Littleton Community Center 1950 W. Littleton Boulevard, Littleton	44
May 11, 2004 5:00 to 6:30 p.m.	Highlands Ranch Metro Districts Office 62 Plaza Drive, Highlands Ranch	24
May 12, 2004 5:00 to 6:30 p.m.	South Metro Chamber of Commerce 6840 S. University Boulevard, Centennial	15
May 13, 2004 5:00 to 6:30 p.m.	Jefferson County Courts and Administration Building 100 Jefferson County Parkway, Golden	9
June 29, 2004 5:00 to 8:00 p.m.	Ken Caryl Ranch House 7676 S. Continental Divide Road, Littleton	69
June 30, 2004 5:00 to 8:00 p.m.	Highlands Ranch Metro Districts Office 62 Plaza Drive, Highlands Ranch	78
August 23, 2004 5:00 to 8:00 p.m.	Highlands Ranch Metro Districts Office 62 Plaza Drive, Highlands Ranch	33
August 26, 2004 5:00 to 8:00 p.m.	Inn at Hudson Gardens 6115 S. Santa Fe Drive, Littleton	31
December 13, 2004 5:00 to 8:00 p.m.	Ken Caryl Ranch House 7676 S. Continental Divide Road, Littleton	34
December 15, 2004 5:00 to 8:00 p.m.	Highlands Ranch Metro Districts Office 62 Plaza Drive, Highlands Ranch	72

These locations were selected based on the desire to hold meetings in each county in the study area to disseminate project information to frequent users of the highway. Additional public meetings in the future will likely occur at one of these locations, or other available offices with close proximity to C-470 in Arapahoe, Douglas, and Jefferson counties. While every effort has been made to provide information to the greatest range of public possible, specific meeting locations have not been selected based on known minority or low-income populations, with the exception of initial outreach, as described below.

To provide meaningful public involvement opportunities for minority and low-income populations, communities containing these populations were identified during the study process. These communities were engaged in additional small group meetings and presentations. As discussed in Section 2.1, no minority populations were identified, and the Wolhurst Community was determined to be the only distinct low-income population within the study area.

Before the first public open house meetings, a meeting was held with Wolhurst Community residents at their clubhouse in September 2003 to introduce them to the study and to obtain input. A sign-in sheet was distributed, and the names were added to the study database. While well defined study alternatives had not yet been developed at the time of this meeting, questions and issues were documented. Residents were given study business cards and provided with comment cards for written concerns.

In August 2004, a focused effort was made to contact Wolhurst Community residents for the Santa Fe Drive interchange open house meetings. Meeting announcements were distributed door to door to the Wolhurst Community residences on August 17, in advance of the two meetings held on August 23 and 26.

In October 2004, during the quantitative level of alternative screening, a second meeting was held at the Wolhurst Community Clubhouse. The purpose of this meeting was to inform residents of the Santa Fe Drive interchange alternatives under consideration, to answer questions, and obtain input. A sign-in sheet was distributed and the names were entered into the study database. A presentation and handouts were distributed. Study business cards with contact numbers and Web site information were distributed. Comment cards were distributed to encourage written comments.

A focused effort was made to initiate a third meeting with Wolhurst Community residents in December 2004 in advance of the December open houses. The purpose of these meetings was to review alternatives recommended for detailed evaluation in the EA. The community declined this meeting offer. Transportation was then offered to the December 13 and 15 open house meetings. Only three residents requested transportation service and attended the December 13 meeting.

In January 2005, Wolhurst requested a presentation at the February homeowner's association meeting. Prior to this meeting, the community organized a "CDOT Committee" to address residents' concerns arising from highway projects affecting Wolhurst Community residents. This committee submitted specific questions about the potential impacts resulting from the interchange concept under consideration for both action alternatives. A presentation was made on February 15, 2005 at the Wolhurst Clubhouse to address the community's questions. Residents were then given an opportunity to ask additional questions.

Meeting notes and all correspondence with the Wolhurst Community were documented.