ELGIN O'HARE – WEST BYPASS STUDY
COOK AND DUPAGE COUNTIES, ILLINOIS

PROJECT NUMBER: P-91-443-06

TIER ONE DRAFT ENVIRONMENTAL IMPACT STATEMENT

Submitted Pursuant to 42 USC 4332(2)(c)
and 49 USC 303 by

the U.S. Department of Transportation, Federal Highway Administration
and the Illinois Department of Transportation

Cooperating Agencies

Illinois Department of Natural Resources — Transportation Security Administration

8-26-09
Date of Approval

Charles J. Ingersoll
For Illinois Department of Transportation

8/28/2009
Date of Approval

Norman R. Stoner
For Federal Highway Administration

The following persons may be contacted for additional information concerning this document:

Norman Stoner, P.E.
Division Administrator
Federal Highway Administration
3250 Executive Park Drive
Springfield, Illinois 62703
Phone: 217-492-4600

Diane O'Keefe
Deputy Director, Region 1 Engineer
Illinois Department of Transportation
201 West Center Court
Schaumburg, Illinois 60196
Phone: 847-705-4000

Abstract: The Illinois Department of Transportation (IDOT), in consultation with the Federal Highway Administration (FHWA), has conducted a study of alternative multimodal transportation solutions for the Elgin O'Hare–West Bypass study area, which comprises 127 square miles and 27 communities in Cook and DuPage counties in Illinois. The study is being advanced as a tiered process. Tier One will yield a preferred multimodal transportation concept for the study area, and Tier Two will conduct detailed engineering and environmental studies for elements of the preferred concept. Alternatives under consideration in the Tier One Draft Environmental Impact Statement include the No-Action (Baseline) Alternative, and two build alternatives: Alternative 203 and Alternative 402. The proposed build alternatives would provide more than 40 miles of freeway and arterial improvements. Companion to both roadway alternatives are transit, bicycle/pedestrian, and freight rail improvements, and travel demand management/transportation system management strategies. The build alternatives would have both adverse and beneficial impacts. Environmental and social impacts include a loss of up to 39 acres of wetlands, 27 acres of floodplains, and seven acres of park or forest preserve properties. Depending on the alternative and south bypass connection option selected, up to 18 homes, 38 industrial structures, 12 commercial structures, and 57 businesses in those commercial and industrial structures would be displaced, and 730 to 1,200 employees would be displaced. The tax revenue loss would be up to $4.45 million, depending on the alternative selected. The build alternatives would directly create 9,200 and 7,000 jobs per year from the construction of Alternatives 203 or 402, respectively. The project investment would include added job growth totaling 21,600 and 16,600 for Alternatives 203 or 402, respectively. Other benefits of the build alternatives include an increase in the overall system efficiency up to 10 percent, reduced congestion on secondary roads up to 15 percent, increased speed up to eight percent, and an increase in transit trips.

Comments are due by October 26, 2009.

Contents

Tables

Exhibits

Appendices

Acronyms List

ADT	average daily traffic
AUID	Assessment Unit IDs
BMP	best management practices
BRT	bus rapid transit
BSC	biological stream characterization
BSS	biologically significant streams
CBBEL	Christopher B. Burke Engineering, Ltd.
CBOD	carbonaceous biochemical oxygen demand
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
CLG	certified local government
CMAP	Chicago Metropolitan Agency for Planning
COSIM	Carbon Monoxide Screen for Intersection Modeling
CNRR	Canadian National Railroad
CPRR	Canadian Pacific Railroad
CSO	combined sewer overflow
CSS	Context Sensitive Solutions
CPG	Corridor Planning Group
CTA	Chicago Transit Authority
CWA	Clean Water Act
dB	decibel
DCWI	DuPage County Wetland Inventory
DDT	dichloro-diphenyl-trichloroethane
DO	dissolved oxygen
EcoCAT	Ecological Compliance Assessment Tool
EIS	Environmental Impact Statement
EO	Executive Order
EO-WB	Elgin O'Hare-West Bypass

FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FPDCC	Forest Preserve District of Cook County
FPDDC	Forest Preserve District of DuPage County
GARVEE	Grant Anticipate Revenue Vehicle Bond
GIS	geographic information system
HAARGIS	Historic Architectural and Archaeology Resources Geographic Information System
IDNR	Illinois Department of Natural Resources
IDNR-ORC	Illinois Department of Natural Resources-Office of Resource Conservation
IDNR-OWR	Illinois Department of Natural Resources-Office of Water Resources
IDOA	Illinois Department of Agriculture
IDOT	Illinois Department of Transportation
IEMA	Illinois Emergency Management Agency
IEPA	Illinois Environmental Protection Agency
IFR	Instrument Flight Rules
IHPA	Illinois Historic Preservation Agency
IILCP	Illinois Interagency Landscape Classification Project
IMPLAN	Input Output Model for Planning
INAI	Illinois Natural Areas Inventory
INHS	Illinois Natural History Survey
IRIS	Integrated Risk Information System
ISGS	Illinois State Geological Survey
ISTHA	Illinois State Toll Highway Authority
ISWS	Illinois State Water Survey
ITARP	Illinois Transportation Archaeological Research Program
IWPA	Interagency Wetland Policy Act
LAWCON	Land and Water Conservation
LOS	level of service
LUST	leaking underground storage tank
LWCFA	Land and Water Conservation Fund

MDW	Milwaukee District West
MIBI	Macroinvertebrate Index of Biotic Integrity
MPO	Metropolitan Planning Organization
MPSD	municipal point source discharges
MS4	municipal separate storm sewer system
MSAT	mobile source air toxics
MWRDGC	Metropolitan Water Reclamation District of Greater Chicago
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NATA	National Air Toxics Assessment
NCS	North Central Service
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NIPC	Northeastern Illinois Planning Commission
NLEV	national low emission vehicle
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O'Hare Airport	O'Hare International Airport
OMP	O'Hare Modernization Program
OSLAD	Open Space Land Acquisition and Development
PCB	polychlorinated biphenyl
PESA	Preliminary Environmental Site Assessment
PM_{xx}	particulate matter (where $_{xx}$ indicates size of the particulate)
PPP	public and private partnership
PSI	Preliminary Site Investigation
RCRA	Resource Conservation and Recovery Act
RFG	reformulated gasoline program
ROD	Record of Decision
RTA	Regional Transportation Authority
RTP	Regional Transportation Plan
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users

SHPO	State Historic Preservation Officer
SIB	State Infrastructure Bank
SIP	Stakeholder Involvement Plan
SRA	Strategic Regional Arterial
SRP	Site Remediation Program
SWA	special waste screening
SWCD	Soil & Water Conservation District
SWPPP	Storm Water Pollution Prevention Plan
TCM	transportation control measure
TDM	travel demand management
TDS	total dissolved solids
TEA	Transportation Equity Act
TIFIA	Transportation Infrastructure Finance and Innovation Act
TMDL	total maximum daily load
TRI	Toxics Release Inventory
TSM	transportation system management
TSPR	Transportation System Performance Report
TSS	total suspended solids
UP-NW	Union Pacific-Northwest
UPRR	Union Pacific Railroad
UP-W	Union Pacific-West
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
VHD	vehicle hours of delay
VHT	vehicle hours of travel
VMT	vehicle miles of travel
VOC	volatile organic compound
VSS	volatile suspended solids

Executive Summary

Introduction

The six-county Chicago metropolitan region is home to more than nine million people, 5.1 million jobs, and a $500 billion economy. It is a globally diversified economy that contains 160 company headquarters, 30 Fortune 500 company headquarters, 12 Fortune Global 500 and 10 Financial Times Global 500 companies.

The Elgin O'Hare-West Bypass (EO-WB) study area is about 17 miles northwest of Chicago's central business district. It is strategically located at a transportation crossroads that includes O'Hare International Airport; a network of freeways and tollways including I-90, I-190, I-294, Elgin O'Hare Expressway and I-290; transit facilities (including Metra rail lines and Pace bus service); and freight rail service and multimodal transfer facilities. The EO-WB study area contains the second largest employment base in the metropolitan area. Given its geographic position as a transportation and employment hub, 18 percent of all vehicle trips in the region occur in the EO-WB study area; consequently, traffic congestion throughout the roadway system is severe.

In 2005, as part of the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA–LU) Federal Transportation Bill, the U.S. Congress identified the EO-WB as a project of regional and national significance, one of only a dozen such projects nationwide. Thus, in 2007, the EO-WB study was launched to address the growing transportation needs. The study, sponsored by the Illinois Department of Transportation (IDOT) and the Federal Highway Administration (FHWA), began with a process that had several key objectives:

- Provide for extensive stakeholder outreach to seek input to solutions that fit into and reflect their surroundings
- Identify the major transportation problems and issues
- Evaluate a broad range of multimodal transportation solutions that leads to a preferred transportation system concept for the study area

The outcome of that process is two build alternatives that emerged from a thorough and comprehensive alternatives development and evaluation process. The analysis presented in this Draft Environmental Impact Statement (Draft EIS) is a side-by-side comparison of the remaining build alternatives and a No-Action (Baseline) Alternative. It is intended to assist decision-makers in selecting a preferred system transportation concept for the study area. Subsequent National Environmental Policy Act (NEPA) documents will focus upon detailed environmental and engineering analyses for the preferred transportation system concept.

Study Area

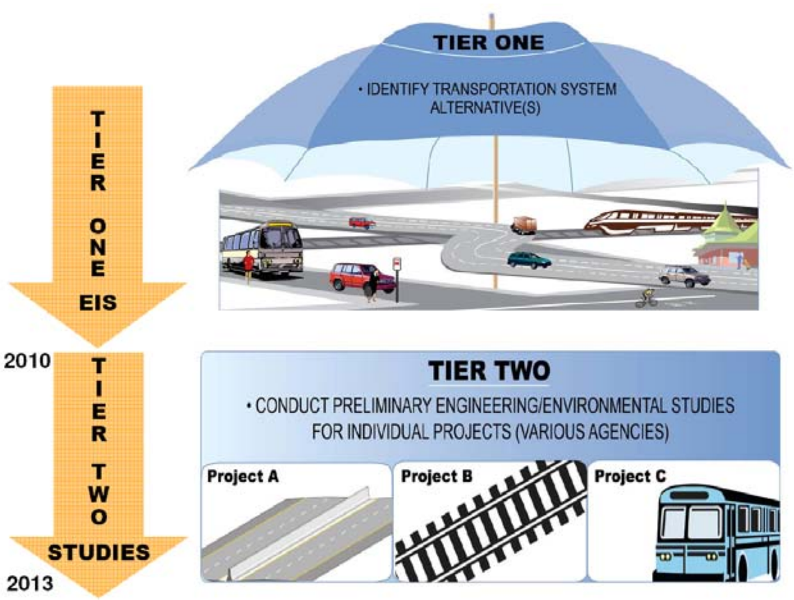
The study area is bounded roughly by I-90 on the north, I-294 on the east, I-290 on the south, and the Elgin O'Hare Expressway on the west. It comprises 127 square miles and 27 communities in northwest Cook and DuPage counties, and is home to roughly 509,900 persons (5.3 percent) and 569,500 jobs (11.1 percent) within the six-county Chicago metropolitan region (Cook, DuPage, Kane, Lake, McHenry, and Will). The area is densely developed with a mix of residential, commercial, and industrial land uses. It is a regional transportation hub, with multiple interstate highways, transit facilities, and major freight transportation facilities and distribution centers, and one of the nation's busiest airports—O'Hare Airport.

Study Area

About the Study

The EO-WB study is being advanced in two parts, or tiers. During Tier One, a preferred multimodal transportation concept for the study area, priorities for improvement, and financing strategies are identified and provide a basis for hardship or protective right-of-way acquisition. It includes the preparation of Draft and Final EISs that will document the potential environmental and social effects (evaluated at a planning level) of the proposed improvements. Tier One concludes with the FHWA's Record of Decision (ROD), which states the preferred multimodal transportation system for the study area.

During Tier Two, detailed engineering and environmental studies are conducted for elements of the conceptual plan that have independent operational utility as identified in the Tier One ROD. The availability of project funding will be the primary determinant for advancing elements of the plan. Detailed engineering will be conducted to produce the appropriate engineering and environmental documentation for individual projects that comply with NEPA and the regulatory requirements of state and federal agencies.



An important aspect of the study has been the extensive stakeholder and public outreach that has both been consistent with IDOT's Context Sensitive Solution (CSS) policy and has accompanied the technical work over the course of the planning process. The object of CSS is an interdisciplinary approach that seeks effective, multimodal transportation solutions by working with stakeholders to develop cost-effective solutions that fit into and reflect the project's surroundings. During the course of the study, dozens of meetings were held with communities, transportation providers, special districts, state and federal agencies, and the general public. Input was requested about transportation problems, the improvements needed, valued community resources that should be considered, the criteria and data that should be used to evaluate alternatives, the alternatives considered, and the process for evaluating alternatives. The two final build alternatives retained for evaluation directly reflect the application of the CSS process and the valued input of the many stakeholders that have been involved.

Sponsoring Agencies

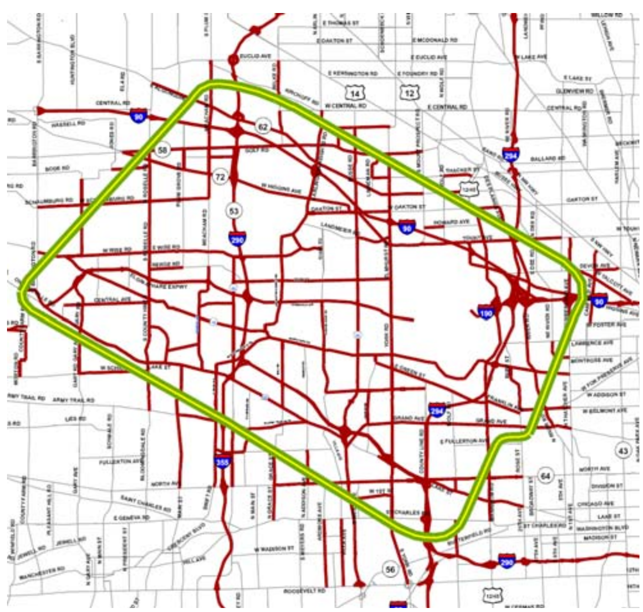
The joint lead agencies for preparing the Tier One EISs are FHWA and IDOT. FHWA, the lead federal agency, and IDOT managed the study and environmental review process and provided opportunities for the public and participating agencies to get involved. As such, FHWA (Division Administrator) and IDOT (Secretary of Transportation) are the ultimate decision-makers for the project. As part of the process, FHWA and IDOT have extended cooperating agency and participating status to a number of agencies and communities—see Section 5 for details.

Transportation Need

Rapidly increasing travel demand has been outpacing the capacity of the transportation infrastructure, resulting in facilities characterized by congestion, traffic delays, and overall reduced travel efficiency. These conditions, coupled with unique multimodal opportunities in the area, underscore the need for a comprehensive and innovative planning solution that considers all modes. This study involved detailed technical analysis and extensive outreach to stakeholders to obtain their perspective on transportation issues in the study area. See the EO-WB's *Transportation System Performance Report* (FHWA and IDOT, 2009), and *Stakeholder Problem Definition* (FHWA and IDOT, 2008) for details. The following are some major findings:

- Eighteen percent of all travel in the region enters, leaves, or passes through the study area. By 2030, that amount will grow to 19 percent.
- Roughly 86 percent of the area's interstate highways and major arterials are congested. That will grow to 91 percent by 2030.
- Congestion on major roads will spill over to secondary roads, with 70 percent of minor arterials (as shown in red on the map) congested by 2030 and travel delay increasing to 52 percent.

2030 Baseline Congestion



- Travel times to interstate connections are longest in 40 percent of the study area, and much of the area consists of densely developed commercial and industrial uses that rely upon superior access to major transportation facilities.
- Travel times from the proposed O'Hare West Terminal to locations west and northwest are among the longest in the study area. Future travel demand with the construction of the new west terminal will warrant improved access compatible with a world class airport.
- Approximately four percent of all trips in the study area are made by transit, estimated to increase to five percent by 2030. More is needed to reduce dependence upon the automobile in the study area.

The technical analysis of the transportation problems and stakeholders' perspectives were jointly used to develop purpose of and need for the project:

- Improve regional and local travel by reducing congestion
- Improve travel efficiency
- Improve access to O'Hare Airport from the west
- Improve modal opportunities and connections

These four basic needs served as the foundation upon which the range of reasonable transportation alternatives were developed and the measures by which to comparatively evaluate their performance.

Alternatives Development and Evaluation Process

The alternative development and evaluation process for the EO-WB study was both comprehensive and structured, with the goal of considering a broad range of the alternatives that could be screened using appropriate technical data and stakeholder perspectives to distinguish those that warrant further consideration. The process began with stakeholders identifying the transportation problems and locations where physical improvements were needed. Using that information, the project team assembled working concepts for roadway and transit system alternatives. The 15 initial roadway concepts were screened to 10 based on whether they satisfied purpose and need. A subsequent screening step examined the environmental and socioeconomic effects of the remaining alternatives and determined that three additional alternatives should be dismissed because of high socioeconomic impacts, leaving seven remaining roadway alternatives under consideration.

The seven remaining roadway alternatives were refined in terms of roadway layout, footprint or right-of-way requirements, access requirements, and incorporation of the transit improvements into corridors shared by roadways and transit. The criteria used to compare the alternatives were expanded to include travel performance, design feasibility, construction and right-of-way costs, and environmental and socioeconomic impacts. The measured effects of each alternative (travel efficiency, travel times, acres affected, number of resources affected, residential and businesses displaced, and tax revenue loss) were analyzed using both quantitative and qualitative analyses supported by stakeholder input. The combination of these evaluation methodologies yielded justification to drop five of the seven alternatives, leaving only Alternatives 203 and 402 for further analysis. Parallel to this process was an analysis of options for connecting the bypass part of the system alternatives to I-90 on the north and I-294 on the south. After completing this evaluation, North Bypass Connection Option D was selected as the preferred corridor, and South Bypass Connection Options A and D were selected as corridors warranting further study.

The transit alternative evaluation followed a path similar to the roadway alternative evaluation process, with more than 20 transit improvement corridors proposed initially, screened to 15 at the end of the process. The final transit corridors carried into the Draft EIS have been refined in length and location, type of service, station locations, transit center locations, parking requirements, and more. The location of transit improvements will be common to both roadway alternatives.

The roadway and transit improvements are supported by a common set of other improvements, including transportation system management (TSM) strategies, travel demand management (TDM) strategies, and bicycle and pedestrian improvements. TSM and TDM strategies are endorsed by the Chicago Metropolitan Agency for Planning (CMAP) and influence the trip generation in the regional travel model.

Public Involvement

IDOT implemented an extensive public involvement program that provided an opportunity for every stakeholder with an interest in or affected by the proposed transportation improvements to participate. Many venues were provided, with the goal of establishing meaningful opportunities for stakeholders to be actively involved, and influence the outcome of the process. Details are provided in the *Stakeholder Involvement Plan (SIP)* (FHWA and IDOT, 2009). The public outreach program included the following major elements:

- Project working groups that essentially met monthly. A key element has been the “workshop” format, which involved stakeholders literally drawing on study area maps to define the transportation issues and to facilitate development and evaluation of alternatives.
- Open house public meetings in November 2007 (transportation needs), September 2008 (initial alternatives), and March 2009 (refined alternatives and expanded study area), which yielded invaluable insights regarding stakeholder issues and priorities. Regular newsletters provided detailed information on project activities and progress, and an opportunity for public comment (distribution to almost 1,000).
- A Web site (www.elginohare-westbypass.org) that provides study information, summaries of meeting minutes, reports, and an opportunity for the public to send comments and feedback to the project team.
- Speakers bureau meetings, based on the requests from individuals and groups, as a venue for putting the project message and information to the public.
- Extensive media coverage.

Stakeholder involvement has helped to develop the foundation upon which the study rests—the purpose of and need for the transportation project within the study area. Stakeholders have helped to identify the type and location of improvements, information that served as a starting point for developing the initial roadway and transit alternatives. Later they helped to develop criteria that would be used to evaluate and compare alternatives.

Transportation providers and other agencies have provided valuable input regarding the development and evaluation of roadway, transit proposals, and refinements in the transportation concept that would avoid conflicts with their respective plans and operations. Planning and regulatory/resource agencies also have been integral to the process. The regulatory and resources agencies have partnered with the project sponsors from the beginning to guide the project through the NEPA/404 Merger process, and the analysis techniques used to measure natural and socioeconomic impacts. For additional details regarding the EO-WB public involvement activities, refer to Section 5, Coordination.

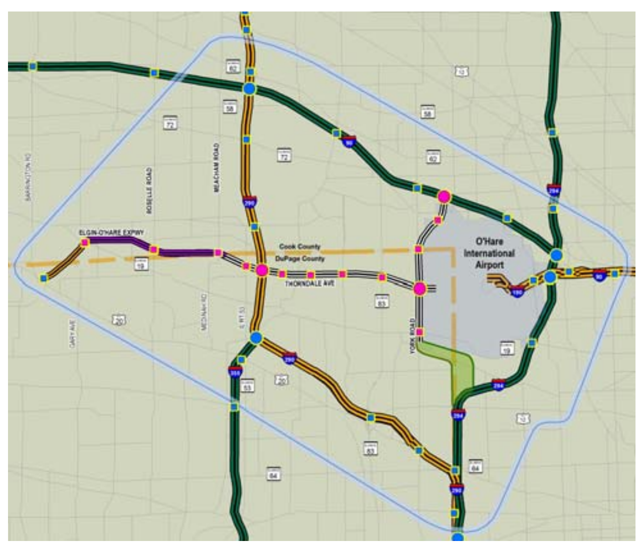
Alternatives Considered

Build alternatives 203 and 402, including the South Bypass Connection Options A and D, and the No-Action Alternative were carried forward for further consideration in the Draft EIS. Each is briefly described below (see Section 3, Alternatives, for details).

No-Action Alternative

The No-Action Alternative consists of transportation improvements to roadway and transit facilities that are expected to be constructed within the study area by 2030. It represents an investment aligned to current program funding levels and thus does not include the major improvements considered in this study. Transportation improvements under the No-Action Alternative represent 80 lane miles of additional capacity, 135 miles of rehabilitation improvements to roadways, 54 interchange/intersection location improvements, and bus and rail transit improvements (see Exhibits 3-8 and 3-9, and Table 3-11).

Alternative 203



Build Alternatives 203 and 402

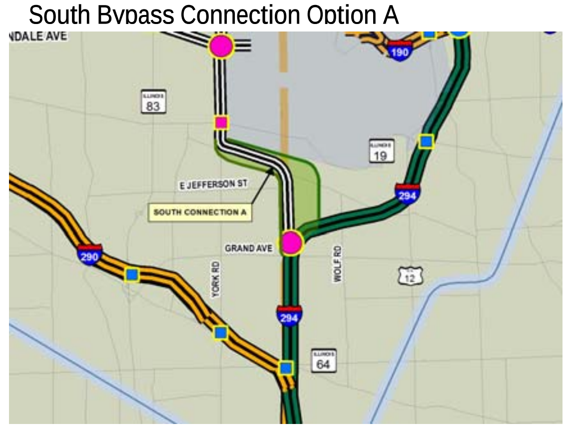
The build alternatives that emerged from a comprehensive evaluation of travel performance, environmental and social impacts, and costs are Alternatives 203 and 402. The two are similar except for their configuration north of Thorndale Avenue.

Alternative 203

Elgin O'Hare Expressway Section. Alternative 203 consists of upgrading and extending the Elgin O'Hare Expressway between IL 19/Gary Avenue to the O'Hare West Bypass for about 10 miles. Between IL 19/Gary Avenue and I-290, the expressway would be widened and upgraded along the existing alignment. East of I-290, extending to the West Bypass and proposed western terminal, Thorndale Road would be upgraded to a new full-access control freeway. The mainline facility would be three to four basic lanes in each direction, with additional auxiliary lanes between high volume interchanges. A 70-foot median would accommodate potential dedicated transit service. To accommodate local traffic circulation, frontage roads would be provided extensively throughout the corridor. Service interchanges would provide access at IL 19, Springinsguth Road, Wright Boulevard, Roselle Road, Meacham Road, Rohlwing Road, Park Boulevard, Arlington Heights Road/Prospect Avenue, Wood Dale Road, and IL 83. Access to other intersecting roadways would be provided by a frontage road system. A full-access system interchange would be provided at I-290. In many cases, crossroad improvements would extend several hundred feet north and south of the intersections.

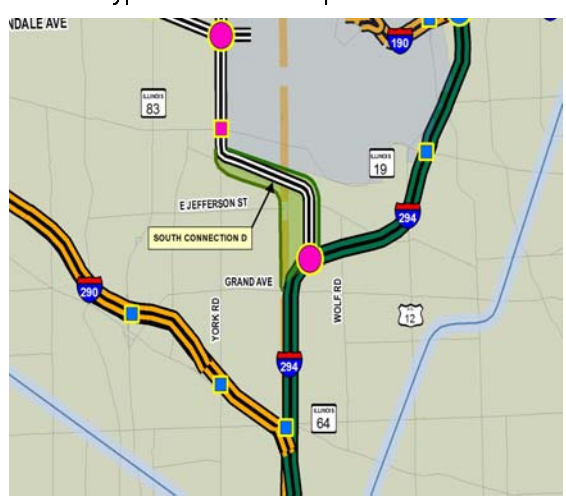
O'Hare West Bypass Section. Alternative 203 includes a freeway section that would extend from I-90 at the current location of the Des Plaines Oasis, south along the western edge of O'Hare Airport to the Bensenville Yard. The overall length of the O'Hare West Bypass is 4.35 miles. The freeway would then tunnel under and extend east along the south edge of the Yards before turning south to a connection with I-294.

South Bypass Connection Option A



The freeway would consist of four basic lanes in each direction, with additional auxiliary lanes at interchanges, and a 70-foot median to accommodate transit service north of Thorndale Avenue. System interchanges are proposed at I-90, the Elgin O'Hare Expressway, and I-294. Service interchanges are proposed at IL 72, Devon/Pratt, the proposed O'Hare West terminal, IL 19, and Green/Franklin Street. There are two alignment options for connecting to I-294 that would begin at the tunnel under the Yard. They are described below.

South Bypass Connection Option D



- **South Bypass Connection Option A—**The freeway generally would proceed south along the west edge of County Line Road to a new system connection with I-294 near Grand Avenue. County Line Road would be retained as a one-way frontage road on the east side, and a new one-way frontage road would be provided on the west side of the proposed freeway facility.
- **South Bypass Connection Option D—**The freeway generally would extend southeast along the south edge of the marshalling yard, then cross the Union Pacific Railroad (UPRR) and proceed south, paralleling the east side of the railroad, to a new system connection with I-294 near Grand Avenue.

These options also include a new bridge that reconnects Taft Road across the Bensenville Yard, linking Franklin Avenue and IL 19. A full-access system interchange would be provided at I-294. Part of I-294, extending roughly from Grand Avenue south to North Avenue, would be improved to accommodate system ramp connections and lane balance requirements.

Alternative 402

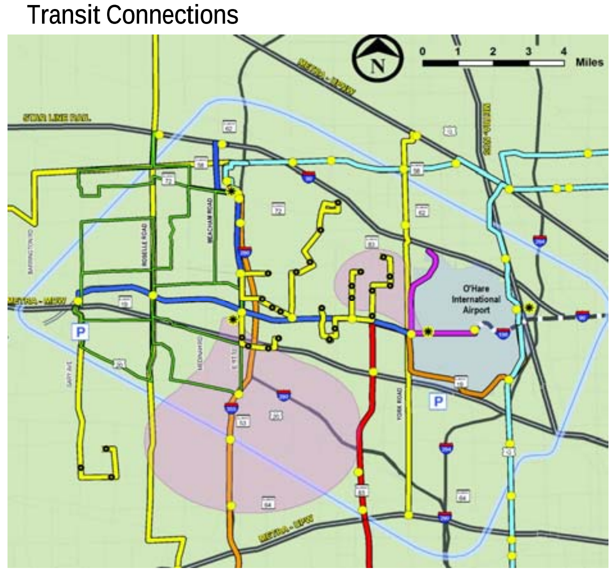
Alternative 402

The Elgin O'Hare Expressway and south bypass sections for Alternative 203 are the same for Alternatives 402. However, the north section (north of Thorndale Avenue) for Alternative 402 is proposed as an arterial improvement to York Road/Elmhurst Road. The proposed improvement would add a travel lane in each direction, for a total of three travel lanes in each direction. The arterial improvement would extend along York Road/Elmhurst Road from the east end of the new Elgin O'Hare Expressway to the service interchange at I-90. The partial interchange would be completed to accommodate I-90 exiting and entering movements from all directions.

Transit Improvements

New transit opportunities and connections in the study area are regarded an important objective, and so are a component of the project purpose and need. The proposed set of transit improvements has 15 elements (see Table S-1). These elements consist of corridors that would provide commuter rail service, rail or bus rapid transit (BRT), express bus, local bus, and shuttles (to be built by others). Other facets include new stations, intermodal facilities or transit centers, and park and ride facilities. Improvements include a transit corridor along the J-Line west corridor from the proposed O'Hare West terminal station to the Schaumburg Metra Milwaukee District West (MDW) station. This transit improvement would be either BRT or rail, and would be located in the median of the proposed roadway improvement. This particular improvement would link residents to jobs in the study area and to downtown Chicago.

Transit Connections



Another aspect of this improvement is the J-Line northwest that would extend from the Elgin O'Hare corridor north along IL 53 to the Woodfield Mall area. Another element of the J-Line would be an express bus service extending south along IL 83 and then in a westerly direction to a terminus at the proposed STAR Line station in Aurora. Other elements of the plan include extending the Chicago Transit Authority (CTA) Blue Line service from O'Hare's terminal core to the proposed O'Hare West Terminal, and the STAR Line rail service from the O'Hare West Terminal to the I-90 corridor where the service would be extended west. Express bus service is planned on I-355, Golf Road, Dempster, Irving Park, and Mannheim Road. Circulator bus routes and shuttles are planned to develop better connections to stations and employment and activity centers. Rail and BRT stations have been added at key locations, as well as park and ride facilities to provide convenience to the system. The sum of these improvements is aimed at providing an alternative to the automobile for area residents and workers.

Supporting Improvements

Other supporting transportation improvements were considered in the development of a comprehensive transportation solution for the study area. Among these were TDM and TSM strategies, and a bicycle and pedestrian plan. TDM strategies are designed to decrease vehicle demand on the roadway system by increasing vehicle occupancy or changing the attractiveness of competing

TABLE S-1
Transit Element Screening Results

TRANSIT ELEMENT	SCREENING RESULTS	
› DEDICATED OR MOSTLY DEDICATED R-O-W (RAIL OR BRT)		
J-Line (West O'Hare to IKEA)	●	
J-Line (West O'Hare to Schaumburg MD-W Metra)	●	
J-Line (IL 83 West O'Hare to Aurora/Naperville)	●	
STAR Line Connection to West Terminal	●	
CTA Blue Line Extension to West Terminal	●	
Express Airport Train *		●
MidCity Transitway *		●
› HIGH LEVEL BUS (ART OR EXPRESS BUS)		
Golf (Evanston to Woodfield)	●	
Dempster (East O'Hare to Yellow Line Skokie)	●	
Mannheim (East O'Hare to I-55)	●	
Irving Park (East O'Hare to West O'Hare)	●	
I-94 Yellow Line Transfer (Jefferson Park to Yellow Line Skokie)		●
I-294 (East O'Hare to Ogden Ave.)		●
I-294 (East O'Hare to Lake Cook Road)		●
I-355 (Higgins to 87th Street)	●	
› LOCAL BUS, SHUTTLES, AND CIRCULATORS		
York Road Shuttle (UPNW to UPW)	●	
Golf West (Northwest Transportation Center to Elgin)	●	
Roselle Road (Palatine to Glen Ellyn UPW Metra)	●	
Community Circulators	●	
Employment Shuttles	●	

LEGEND

● = Carried Forward into the Draft EIS ● = Eliminated from further study

* These are Regional Supporting Projects that impact the regional system and the EO-WB area. They have been eliminated from further analysis in this project because they are largely outside the study area.

modes (e.g., rideshare programs, park and ride facilities, employer shuttles to and from transit stations, etc.). TSM strategies are designed to make the transportation system function more effectively, work more reliably, and operate more safely (e.g., measures that modernize traffic signal control systems that adjust to optimize traffic flow). Lastly, non-motorized transportation is an important aspect of the plan that would benefit home to work trips, recreational opportunities, and linkages to transit facilities, activity centers, and employment centers. Each of these improvements would be common to the build alternatives. The types of recommended strategies include the following:

- **Transportation System Management** involves modernization of traffic signal control systems that adjust themselves to optimize traffic flow, freeway/arterial traffic flow management, incident detection and response, system surveillance, intersection improvements, communication with traffic/transit management center, and traveler information services.
- **Travel Demand Management** involves increased rideshare opportunities, improved pedestrian and bicycle facilities, additional park and ride facilities, expanded vanpool programs, parking management, and transit incentives.
- **Bicycle and Pedestrian** includes new bicycle trails and pedestrian paths that would provide better connections to transit stations, transportation centers, park and ride facilities, community activity centers, regional trail systems, and employment areas.

Effects of the Proposed Actions

Travel Performance

The build alternatives would improve travel in and through the study area in terms of improving regional travel, decreasing congestion on secondary roads, improving average speed throughout the system, and improving travel times to freeway connections and various destinations. Both alternatives would improve travel as compared to the No-Action Alternative.

- Overall congestion would be reduced roughly 10 percent.
- Congestion on secondary roads would be reduced roughly 20 percent.
- Travel time for selected trips in the area would be reduced up to 40 percent.
- Travel speed on arterial roadways would increase up to seven percent.
- Travel to interstate interchanges would improve in the range of 20 to 25 percent.

Economic Effects

The proposed build alternatives are expected to stimulate the local and regional economies (see Table S-2). Transportation investment would flow through all areas of the economy—restaurants and hotels, financial and banking businesses, concrete or cement industry, etc.—with increases in jobs, income, profit and tax revenue, and also provide stimulus far exceeding the original investment. The investment in transportation not only will benefit the local economy by providing needed transportation; it will also increase economic activity through a multiplier effect.

TABLE S-2
Economic Impacts from Construction

	Alternative 203	Alternative 402
Construction costs total	$3.0 B	$2.3 B
Construction costs per year[a]	$1.0 B	$770 M
Total value added per year[b]	$1.6 B	$1.3 B
Total value added[b]	**$4.8 B**	**$3.9 B**
Direct jobs created per year[c]	9,200	7,000
Total jobs created per year[d]	**21,600**	**16,600**

[a] Assumes a three-year construction schedule.
[b] This value is the measure of the contribution of economic activity by an industry to the region using the IMPLAN model.
[c] These are jobs related to construction of the transportation improvement.
[d] Includes all jobs created by the multiplier effect.

The "multiplier effect" is the phenomenon that the initial project costs, or investment, lead to the respending of those dollars in the region. Jobs would be created not only in the transportation construction industry, but also in service sectors that support construction workers such as medical facilities, laundries, restaurants, and other services. Investments in transportation infrastructure are expected to spur private investment in the redevelopment of older or obsolete structures and the modernization of industrial parks, further increasing employment opportunities.

The annual construction costs during the three-year construction period are $1.0 billion for Alternative 203 and $770 million for Alternative 402. This expenditure would result in an annual number of 9,200 jobs created for Alternative 203, and 7,000 for Alternative 402. Roughly 21,600 jobs would be created per year under Alternative 203 when considering the multiplier effects in other industries, and roughly 16,600 jobs under Alternative 402. The value added to the regional economy from the construction of build alternatives is estimated to be an $1.6 billion per year for Alternative 203, or almost $5 billion over the construction period, and $1.3 billion per year or about $4 billion for Alternative 402.

Environmental and Social Effects

Table S-3 summarizes the environmental, social, and economic effects of the build alternatives, and highlights are provided below. See Section 4, Environmental Consequences, for details.

- Natural resource impacts are comparable for the build alternatives, with wetland impacts ranging from 36 to 39 acres, floodplain impacts ranging from 25 to 27 acres, surface water impacts ranging from 15 to 18 acres, and the number of stream crossings ranging from 20 to 22.
- The annual tax revenue loss for Alternative 203 with Option A or D is almost $1 million greater than the annual tax loss for Alternative 402 with Option A or D.
- Alternative 203 with Option A or D has about 16 to 22 percent greater displacement of employees compared to Alternative 402 with Option A or D.
- Alternative 203 with Option A or D displaces about four more structures than Alternative 402 with Option A or D.
- Both alternatives have limited impact on publicly owned properties.

Summary

Economic Benefits

Alternative 203
21,600 jobs created,
$5 billion in value added

Alternative 402
16,600 jobs created,
$4 billion in value added

Tier One of the EO-WB study has brought together numerous stakeholders to assist in planning the future of transportation in an area needing substantial improvements. Two build alternatives that have risen above all others balance transportation performance with environmental and social factors. This report outlines the process that resulted in the two alternatives under consideration, and the effects each would have regarding travel performance and environmental and social impacts upon the resources and communities in the area. It serves as a tool for public and decision-makers to use to be more informed about the benefits and the consequences of each alternative. A 45-day comment period has been established, whereby the public and others may offer comments about the content of this report. A public hearing will be held in early fall. Responses to comments will be compiled and reviewed by FHWA and IDOT. The comments will be fully considered in selecting the Preferred Alternative and also the South Bypass Connection. The Final EIS will address the agency and public comments, and will include additional discussions as required and identify the preferred alternative(s). The Final EIS will be distributed to agencies and the general public. Following the comment period for the Final EIS, FHWA and IDOT will prepare a ROD that documents the reasons for selecting the Preferred Alternative.

TABLE S-3
Summary of Environmental Consequences

	Alternative 203		Alternative 402	
	Option A	Option D	Option A	Option D
Length (miles)[a]	25.0	23.3	24.6	22.9
Right-of-way (acres)	1,910	1,895	1,600	1,585
Roadway construction costs	$3,061M	$2,987M	$2,405M	$2,331M
Roadway right-of-way costs	$563M	$648 M	$388 M	$473 M
Total roadway costs	$3,624M	$3,635M	$2,793M	$2,804M
Transit cost[b]	$430M	$430M	$250M	$250M
Socioeconomics				
Population (2030)	540,790	540,790	539,040	539,040
Households (2030)	207,400	207,400	206,800	206,800
Employment (2030)	712,100	712,100	698,100	698,100
Residential displacements	18	11	18	11
Commercial structure displacements	4	12	3	11
Industrial structure displacements	38	27	35	24
Employees displaced	892	1,203	729	1,040
Tax revenue loss	$3.08M	$4.45M	$2.17M	$3.54M

TABLE S-3
Summary of Environmental Consequences

	Alternative 203		Alternative 402	
	Option A	**Option D**	**Option A**	**Option D**
Natural Resources				
Wetlands (acre)[c]	38.9	39.1	36.3	36.5
Stream crossings (total number)	22	22	20	20
Surface waters (acre)[c]	18.2	18.1	15.2	15.1
Floodplain encroachments (acre)	24.7	24.7	27.2	27.2
Threatened and endangered species	0	0	0	0
Noise				
Noise-sensitive residential areas	48	46	44	42
Noise-sensitive, non-residential receptors (churches, schools, parks)	31	29	28	26
Cultural Resources and Potential Section 4(f) Resources				
Historic structures	0	0	0	0
Archaeological sites[d]	31	31	24	24
Potential forest preserve and local park 4(f) impacts (acres)	6.8	5.9	4.0	3.1
Potential forest preserve, local park, and trail 4(f) impacts (number of properties)[e]	8	8	6	6
Special Waste				
High-risk sites	2	2	2	2
Medium-risk sites	162	170	157	165
Low-risk sites	68	70	68	70

[a] Includes new freeway/tollway as well as arterial widening where one or more lanes are added. Does not include turn lanes around existing interchanges.
[b] Transit cost represents only transit infrastructure improvements co-located in proposed roadway improvement corridors (e.g., Elgin O’Hare Expressway, north leg of O’Hare West Bypass).
[c] Totals include impacts to potentially jurisdictional areas, such as stormwater facilities. Subject to regulatory review, several manmade stormwater facilities may be exempt from regulation.
[d] Includes known archaeological sites, sites with potential for archaeological resources, and previously studied sites.
[e] One property purchased with OSLAD funds may be affected.

SECTION 1

Purpose of and Need for Improvements

1.1 Introduction

The IDOT and the FHWA are evaluating the transportation system in an area bounded by I-90 on the north, I-294 on the east, I-290/US 20 on the south, and the western terminus of the existing Elgin O'Hare Expressway (see Exhibit 1-1). The area contains critical local, regional and national transportation facilities with more than 18 percent of all trips in the six-county region occurring in the study area. However, mobility is affected by severe congestion on 86 percent of the interstate and primary roads in the study area. The purpose of the EO-WB study is to identify multimodal transportation solutions that will help address major congestion and mobility problems in the study area.

The EO-WB study is being conducted in accordance with NEPA and its associated regulations. The NEPA process will be completed in two parts, or tiers. Tier One is a broad planning process that includes an examination of the transportation needs, transportation system alternatives that would satisfy the needs, and consideration of impacts of the alternatives using a database of existing and available data. Tier One will be developed in conformance with the SAFETEA-LU and IDOT's CSS policy and procedures. CSS is a process that seeks stakeholder input to transportation solutions that fit into and reflect their surroundings. Tier One will disclose the potential beneficial and adverse impacts of proposed system alternatives in a Draft and Final EIS. The Tier One EIS will conclude with a ROD identifying the preferred transportation system alternatives. The ROD will document the following decisions:

- Identification of a conceptual plan for multimodal transportation improvements in the EO-WB study area
- Identification of components of the conceptual plan that have operational independence and may be implemented in a phased manner
- Identification and consideration of funding options

Tier Two studies will commence after the conclusion of Tier One for elements of the conceptual plan that have operational independence. Tier Two studies will be undertaken at a more detailed level of engineering and environmental analysis and result in decisions regarding the following:

- Identification of design details and specific environmental impacts for improvements with operational independence
- Conclusion of the NEPA process for improvements with operational independence
- Identification of project funding strategies

1.2 Transportation Purpose and Need

A transportation needs analysis was conducted to evaluate the range of transportation issues and problems for the existing roadway and transit systems, as well as bicycle and pedestrian accommodations in the study area. This evaluation involved a detailed technical analysis and an extensive outreach to stakeholders (transportation agencies, regulatory agencies, elected officials, and the public) to obtain their perspective on transportation issues in the study area. See the *Transportation System Performance Report* (FHWA and IDOT, 2009), and *Stakeholder Problem Definition* (FHWA and IDOT, 2008) for details. The technical analysis and the stakeholder outreach approached the identification of issues and problems differently, but the findings have many similarities. The project needs in Table 1-1 have evolved as the major themes from the technical analysis and stakeholder problem identification.

TABLE 1-1
Technical and Stakeholder Problem Statements

Project Needs	Technical Analysis Findings	Stakeholder Problem Statement
Improve local and regional travel	Roughly 86 percent of the area's interstates and major arterials are congested, growing to 91 percent by 2030. Congestion on major roads will spill over to secondary roads with 81 percent congested on minor arterials and collector roads by 2030, and travel delay increasing up to 46 percent.	Congestion on major routes. Reduced truck/freight mobility.
Improve travel efficiency	40 percent of the study area has the longest travel times to interstate connections. Lack of service interchanges along existing interstates results in poor access and inadequate connections with major regional corridors. System interchanges operate inefficiently because of traffic volumes exceeding capacity, lack all movements, inefficient loop style ramps, and short weaving sections. Freight rail traffic impedes the movement of vehicle traffic in the study area with 120 at-grade crossings, and 15 on major routes.	Poor access and connectivity in the study area. Travel delays caused by at-grade railroad crossings. Travel management strategies that could improve travel efficiency are minimally applied in the study area.
Improve O'Hare West access	Proposed O'Hare West Terminal reliant on high-capacity transportation connections from the west (i.e., roadway, rail transit, bus, shuttle) to serve an estimated year 2030 average daily traffic of 29,000. West terminal entrance would have the longest travel times in the study area to interstate connections. Western access would be required to serve the terminal need while maintaining local route continuity and supporting local community economic goals.	Lack of access to O'Hare Airport.
Improve modal opportunities and connections	Roughly four percent of the all trips in the study area are made by transit, increasing to five percent by 2030. Ridership is affected by gaps in service, inability to adequately serve the reverse commute or suburb-to-suburb commutes, lack of system capacity, inadequate bus/shuttle connections to rail transit and to employment centers, constrained parking capacity at rail stations, and inadequate pathways for pedestrians and bicyclists to transit.	Public transportation not being a realistic choice: enhanced service options and improved infrastructure are required. Fragmented pedestrian and bicycle system that impairs access to transit stations and major activity centers.

The transportation problems and issues outlined by stakeholders and technical analyses indicate improvements are needed to provide efficient, safe, environmentally sound, and cost-effective transportation facilities. The EO-WB EIS will focus on major system deficiencies and will also provide a foundation for planning by other transportation providers.

The purpose and need for the project is to accomplish the following:

- Improve regional and local travel by reducing congestion
- Improve travel efficiency
- Improve access to O'Hare Airport from the west
- Improve modal opportunities and connections

The remainder of this section discusses the transportation needs supporting the project purpose.

1.2.1 Regional and Local Travel

A tremendous amount of traffic passes through, enters, leaves, or travels within the study area (see Table 1-2). In all, about 4,100,000 vehicle trips occur daily in the area, or 18 percent of all trips in the six-county region. By 2030, daily vehicle trips will grow to around 4,700,000, or about 19 percent. The volume of traffic in the study area is attributable to the major interstates and major traffic attractors including O'Hare Airport, an abundance of industrial and commercial development, and one of Chicago's largest retail malls (Woodfield Mall).

TABLE 1-2
Study Area Daily Trips by Trip Origin and Destination: 2007 & 2030

Trip Origin-Destination	2007		2030[a]	
	Trips	Percent	Trips	Percent
Internal-internal	1,364,000	33	1,526,000	33
Internal-external	913,000	23	1,045,000	23
External-internal	918,000	23	984,000	21
External-external	877,000	21	1,109,000	23
Total	**4,072,000**	**100**	**4,664,000**	**100**

[a] 2030 travel performance values presume improvements to the future transportation system that are identified in the 2030 Regional Transportation Plan, but without the Elgin O'Hare and West Bypass facilities. This level of improvement is referred to as the No-Action Alternative.

Long-distance travel (through trips) and trips originating or ending outside the study area represent a large component—67 percent—of all travel in the study area. In 2007, 877,000 vehicle trips in the study area were through trips, and 1,831,000 began or ended outside the study area. Through trips show the largest growth by 2030 among the four trip types (see Table 1-2). Most trips from outside the study area are to the major traffic attractors named above, and the more than 570,000 jobs in the area (CMAP, 2006).

Freeways and principal arterials (I-90, I-290, Thorndale Avenue, York Road, etc.) are used mainly for long distance trips, but represent only 46 percent of the total road system mileage and carry 78 percent of all VMT in the peak period. Congestion has overwhelmed the roadway system in the study area (see Exhibit 1-2). In 2007, 88 percent of freeways and 79 percent of principal arterials operated at level of service (LOS) D, E, or F, generally defined as moderate, severe, and extreme congestion, respectively (see Table 1-3). By 2030, congestion will worsen, with LOS F being typical for 90 percent of all interstate and freeways, and the hours of travel delay will increase by about 37 percent (see Exhibit 1-3). The total annual hours of delay in 2030 would be equivalent to 6.5 million workdays, or 10 workdays for every employee in the study area in 2030 (680,000 persons). Extreme congestion on freeways and principal arterials will force traffic to use local roads (minor arterials and collectors) causing severe congestion on those facilities. By 2030, 90 percent of the minor arterials in the study area will be congested during the P.M. peak travel period.

TABLE 1-3
Traffic Congestion P.M. Peak Period: 2007 and 2030

	P.M. Peak Period Vehicle Miles of Travel (VMT)					
	2007 Existing VMT			2030 Baseline VMT[a]		
Road Type	**Total**	**Congested**	**% Congested**	**Total**	**Congested**	**% Congested**
Freeway	1,576,000	1,381,000	88	1,693,000	1,522,000	90
Principal arterial	434,000	344,000	79	529,000	489,000	92
Minor arterial	410,000	241,000	59	585,000	526,000	90
Collector	153,000	62,000	41	259,000	155,000	60
Total	**2,573,000**	**2,028,000**	**79**	**3,066,000**	2,692,000	**88**

[a] 2030 travel performance values presume improvements to the future transportation system that are identified in the 2030 Regional Transportation Plan, but without the Elgin O'Hare and West Bypass facilities. This level of improvement is referred to as the No-Action Alternative.

The study area is a key transportation hub for the region, and increasing congestion and travel delay has ramifications to a major portion of the traveling public and the economic well being of the area and the region. As traffic grows, the effectiveness of the system to move people and goods through and into the study area are degraded. Fundamentally, there is a need for transportation improvements that maintain longer distance travel on the appropriate type of facility, and assist in relieving travel congestion on the local road network to serve the travel needs of the region and those within the study area.

1.2.2 Travel Efficiency

Several factors other than congestion contribute to inefficient mobility in the study area including partial interchanges on the freeway system that impair access to and from the study area, poor accessibility to major business nodes in the study area, at-grade railroad crossings on major arterials, and operational issues at freeway system interchanges (see Exhibit 1-4).

Impaired accessibility to and from the interstate system was ranked among the top issues by stakeholders in the study area. Exhibit 1-5 shows 2030 travel times from a location on the west side of O'Hare Airport to locations inside and outside of the study area. Furthermore, it shows travel times begin to exceed 20 minutes before reaching connections with the interstate system. In many cases these distances are relatively short – five miles or less. Thus, corresponding travel speeds are relatively slow with average speed ranging between 15 and 25 miles per hour. An examination of travel times to five interstate locations shows that times vary depending on the direction of travel (see Table 1-4).

TABLE 1-4
Travel Time/Speed from the West Side of O'Hare Airport to Study Area Locations

	Thorndale Avenue/I-290		Arlington Heights Road/ I-90		Elmhurst Road/ I-90		Irving Park Road/I-294		IL 83/I-290		US 20	
	2007	2030[a]	2007	2030[a]	2007	2030[a]	2007	2030[a]	2007	2030[a]	2007	2030[a]
Travel time (min)	18.5	22.6	17.2	19.3	11.2	12.5	9.8	12.2	11.2	13.3	22	28
Distance (mi)	4.5	4.5	6.4	6.4	2.8	2.8	4.60	4.60	5.0	5.0	11	11
Travel speed (mph, avg)	15	12.0	22	20	15.0	14	28	23	27	23	30	24

[a] 2030 travel performance values presume improvements to the future transportation system that are identified in the 2030 Regional Transportation Plan, but without the Elgin O'Hare and West Bypass facilities. This level of improvement is referred to as the No-Action Alternative.

Travel times for even the shortest trips are 10 minutes or more. These include connections at Elmhurst Road/I-90 to the north, Irving Park Road/I-294 to the east, and IL 83/I-290 to the south. At those locations, future travel times will increase by 10 to 25 percent, and average travel speed will be slower by 10 to 20 percent. The longest travel times will be as follows:

- To the west, more than 22 minutes in 2007, growing to 28 minutes by 2030
- To the northwest, more than 17 minutes, growing to 20 minutes by 2030

Travel time to and from the west along the Elgin O'Hare corridor will increase 27 percent by 2030 at US 20 and 22 percent at I-290. Travel to and from the west and northwest has been the topic of repeated comments by stakeholders, who declare that improved travel is needed to and from these directions.

Another analysis examined the travel time requirements to reach freeway access from any location within the study area (see Exhibit 1-6). Considerable time is required to travel a short distance to the nearest freeway access during the P.M. peak period. This is clearly evident for locations at Elmhurst Road/I-90, Thorndale Avenue/I-290, Lee Street/I-90, Higgins Road/I-290, Arlington Heights Road/I-90, and Lake Street/I-290. For these locations, travel distances of two miles or less require travel times of more than 10 minutes with average speeds less than 15 miles per hour. Over 40 percent of the study area has the longest travel times to a freeway connection. Much of the area with the longest travel time to an interstate connection is also the location of the area's prime industrial and commercial land use, which relies on convenient access to interstate roadways (see Exhibit 1-6). Commercial/industrial land use in the study area is oriented largely to the transportation/distribution business, a growing business sector in the region that accounts for 50 percent of all occupied space in the Chicago metropolitan area. Ready interstate access for these business types in the study area would have a direct relationship to the area's long-term economic vitality.

Adding to accessibility concerns is the number of service interchanges on the interstate system that do not provide movement in all directions. There are 21 locations on the interstate system that connect with local roads in the study area, and of those, eight are partial interchanges that do not allow full access between the interstate and the local road system (see Exhibit 1-7). Stakeholders' comments have referenced the number of partial interchanges as contributing to out-of-direction travel and inefficient travel. Considering that 48 percent of all vehicle trips in the area have origins and destinations outside the study area, the availability of convenient access into and from the area is important.

The more than 120 at-grade railroad crossings in the study area further degrade the efficiency of the system. Fifteen of the at-grade railroad crossings are on major roads (see Exhibit 1-7). Delays at some locations are lengthy (greater than 15 minutes) and can double the length of an average local trip.

Stakeholder input ranked improving interstate connectivity as one of their top issues. There are large volumes of traffic switching from one interstate to another at each of the three major system interchanges in the study area (I-90/I-294, I-90/I-290, and I-290/I-294; see Exhibit 1-7), and each interchange has operational issues that contribute to the system congestion. Generally, the system interchanges display the following problems:

- Operating capacity is exceeded
- Movements in all directions are not provided
- Loop style ramps are inefficient for the volume of traffic
- Interchange configurations have many short weaving sections where vehicles enter or exit the interstate system

All these issues contribute to inefficient movement through these interchanges resulting in congestion at the interchange, as well as congestion on the mainline. Further, the absence of directional movements in some locations requires out-of-direction travel and results in increased VMT.

1.2.3 Access to O'Hare from the West

The O'Hare Airport is the second busiest airport in the world and until recently held the rank of number one. The airport only one major access road. Discussions have been ongoing about how improved access to O'Hare would reduce the roadway operational problems that occur with primary access only on I-190. Further emphasis is now being placed upon this issue with the development of the O'Hare Modernization Program (OMP).

In 2001, the City of Chicago announced a modernization plan for O'Hare Airport and began preparation of an EIS. In 2005, the Federal Aviation Administration (FAA) issued its ROD. The approved plans include a western terminal and a western airport entrance near the intersection of Thorndale Avenue and York Road. Construction on the OMP began in 2005, and the west terminal complex is anticipated to be completed in 2014.

In 2030, the average daily traffic projected for the west side of O'Hare Airport is 29,000 vehicles, based on 2030 baseline assumptions that will be added to an already congested system. Examination of appropriate access to the west side of O'Hare Airport is a focus of the EO-WB, as well as other recent studies by others. It is evident worldwide that major airports rely on efficient regional access with the provision of major highway and transit facilities to serve terminal and cargo complexes, and this is clearly the case on the east side of the airport with freeway, tollway, arterial and transit access. Stakeholders rank improvement in access to O'Hare Airport from the west and northwest suburbs as a top issue. The location of the west entrance is another important consideration. As discussed under subsection 1.2.2, Travel Efficiency, the proposed west entrance of the airport is in a location with the longest travel times in the study area to interstate access. By 2030, some of those times will be more than 20 percent greater, especially to and from the west and northwest. The object of western access is to provide a gateway to both the airport and the study area that balances efficient travel to and from the airport while improving local mobility needs and local economic opportunity.

1.2.4 Modal Opportunities and Connections

Stakeholders in the study area rank establishing transit as a valid mode choice and increasing mode share as an important need associated with the project. Regional and local transportation planning and operating agencies continue to examine associated transit issues, including: better intermodal connections; adjusting the systems to serve the needs of reverse and suburb-to-suburb commuters; more direct and faster service; making "last mile" connections (linking rail stations to employment and activity centers with bus and shuttle service); and reducing transit travel times to trip lengths that compare to auto travel times.

The proportion of all transit trips made wholly within the study area is small even with the 2030 planned transit system improvements included in the 2030 baseline assumptions. Since much of the transit travel in the area originates or ends elsewhere, using regional transit data provides the best understanding of transit trips (see Table 1-5).

TABLE 1-5
Transit Mode Split

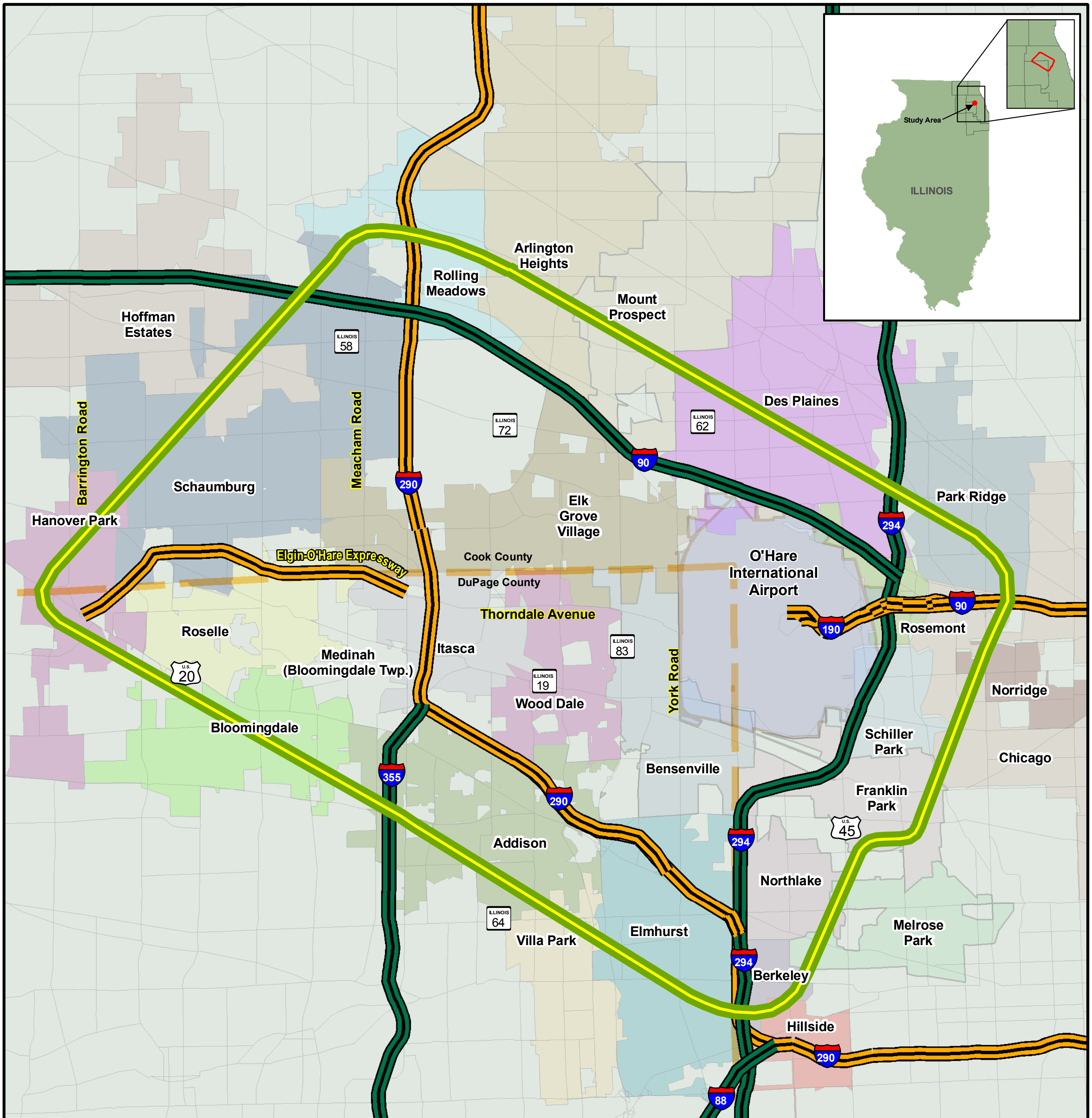
	2007		2030	
	EO-WB Study Area	Northeast Illinois	EO-WB Study Area	Northeast Illinois[a]
Work trips	1.5%	12%	2.3%	13%–21%
All trips	4.3%	9%	5.2%	8%–11%

[a] The range in transit market share relates to the type of upgrades in the system (e.g., higher investment will yield higher market share).

In 2030, the proportion of regional transit trips will not have changed substantially from 2007. Given the magnitude of highway congestion and opportunities for enhancing transit in the study area, there is a need to improve not just the number, but also the percentage, of trips made by transit.

Dispersed suburban employment and housing challenges the transit system to compete more effectively with the auto in connecting origins to destinations, linking home to work, shopping, recreation, and professional services. More than 60 percent of the Chicago region's 5.1 million jobs are in the suburbs, with over 20 percent of them (570,000) within the EO-WB study area, a proportion that compares to downtown Chicago's employment of 680,000 (CMAP, 2006). The challenges of enhancing transit market share in the study area require an approach that gives importance to both rail and bus transit as part of the solution. The absence of reliable, fast, and direct connections to employment and activity centers by bus and rail accounts for lower than desired ridership. Lack of reliable rail transit schedules is attributed to a need for more capacity. Transit service between suburbs is underdeveloped, and a faster and more direct transit service that would establish needed connections between travel modes and home to work trips would be facilitated by a bus backbone system. The mobility gap (the last mile) between commuter rail stations and employment centers is a major issue, and, as of June 2009, that connection is lacking at many locations. The study area has an abundance of employers who are relatively close to transit service; however, the absence of convenient, fast, and direct connections to employment and activity centers by bus or shuttle affects ridership.

Easy access to transit is critical to maintaining and increasing ridership. One important element of access is parking availability, on average affecting 52 percent (62 percent on one study area line) of Metra's commuters who drive to the station and park. In a few years, parking will be largely unavailable to new users unless supply is increased. Other accessibility issues are safety and attractiveness of pedestrian paths and bikeways and connectivity of the paths. For example, IDOT classifies 45 percent of more than 550 miles of bike routes and trails in the study area as "not recommended" for biking. There are also substantial gaps in the system where bike routes are either completely interrupted or unavailable within one-half mile of transit stations. Improving accessibility is key to increasing the percentage of cyclists (two percent) who access Metra on bikes. Finally, safe connections linking pedestrian paths or sidewalks to transit facilities is important, and directly affects the 21 percent of Metra riders who access the system by walking. The absence of lighting, signage, safe crossings at major roads, and dedicated paths compromise safety for the transit riders in the study area that walk to stations.



Legend

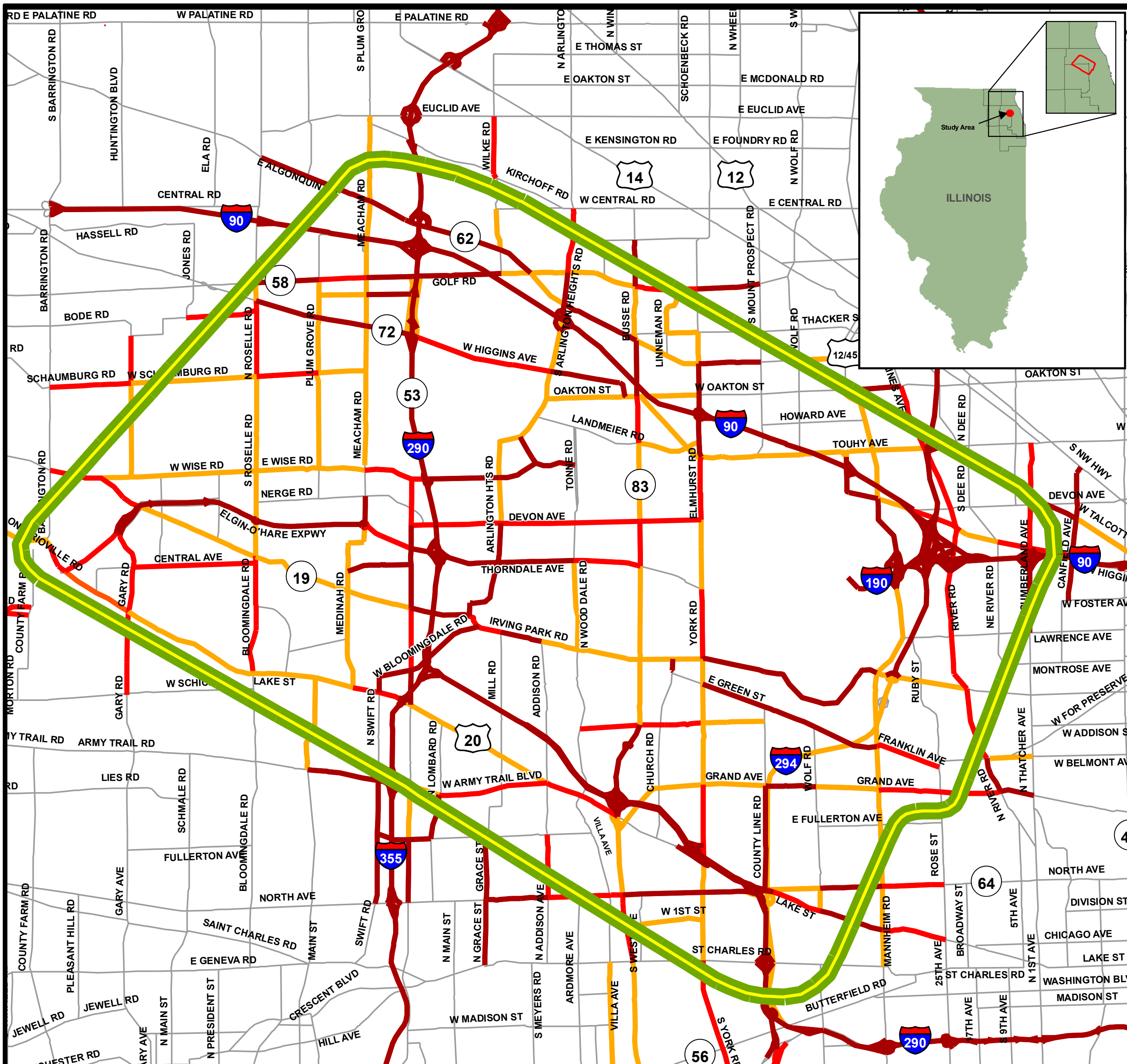
Study Area

N

0 0.5 1 1.5 2 2.5
Miles

Exhibit 1-1

Study Area Map



Legend

Study Area

Congestion Levels

Moderate Congestion (LOS D)

Severe Congestion (LOS E)

Extreme Congestion (LOS F)

N

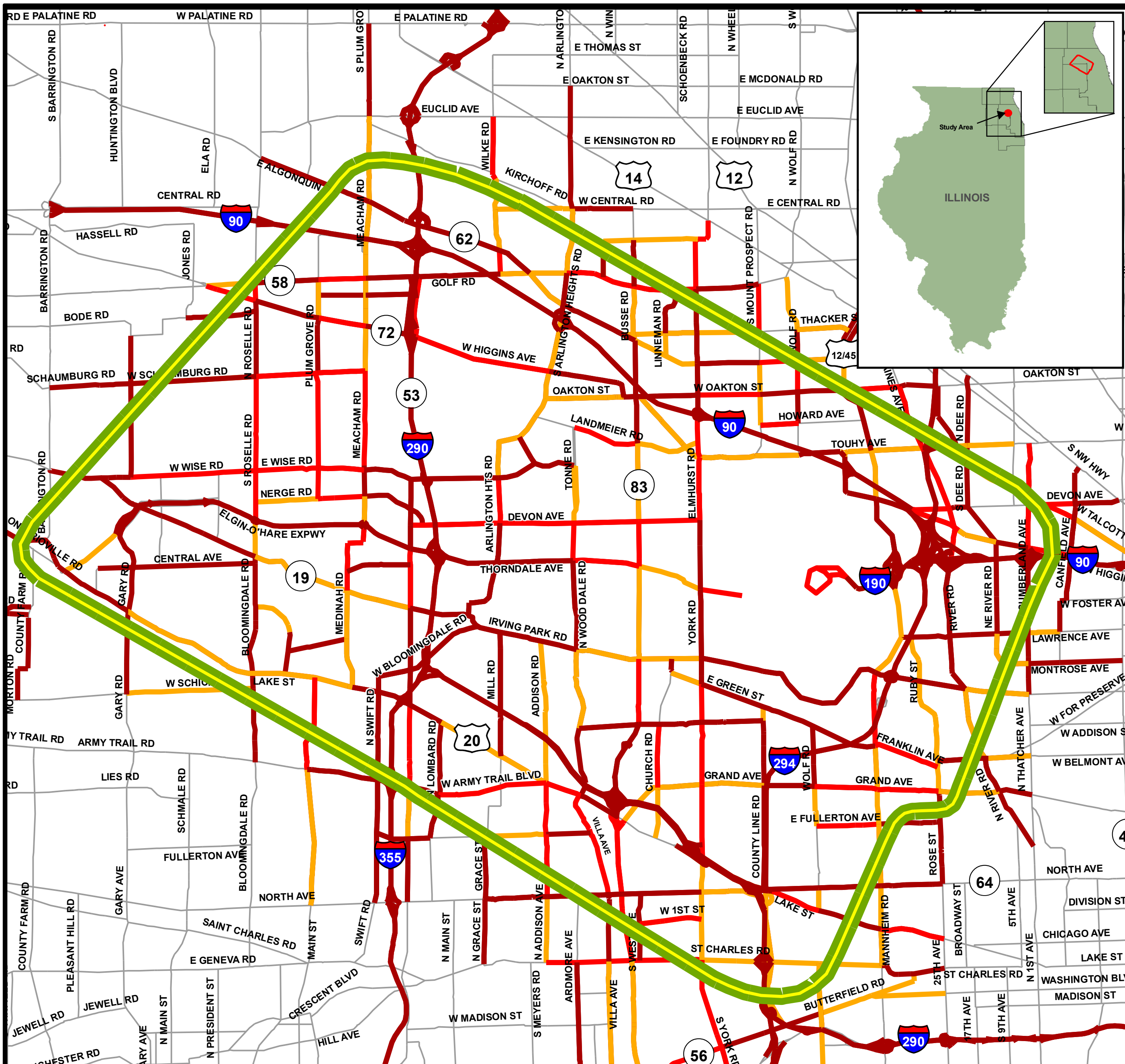
0 2 4

Miles

NOTE:
1. LEVEL OF SERVICE (LOS) ESTIMATES ARE BASED ON HCM 2000 THRESHOLDS FOR V/C RATIO AND AVERAGE SPEED VALUES
2. LOS ESTIMATES GENERATED BY 2007 EXISTING TRAVEL DEMAND MODEL.
3. TRAVEL MODEL LOS ESTIMATES ADJUSTED FOR A FEW SELECTED SEGMENTS BASED ON FIELD OBSERVATIONS TO REFLECT EXISTING CONDITIONS.

Exhibit 1-2

Study Area Congested Roadways (2007)
P.M. Peak Period



Legend

Study Area

Congestion Levels

Moderate Congestion (LOS D)

Severe Congestion (LOS E)

Extreme Congestion (LOS F)

N

0 2 4

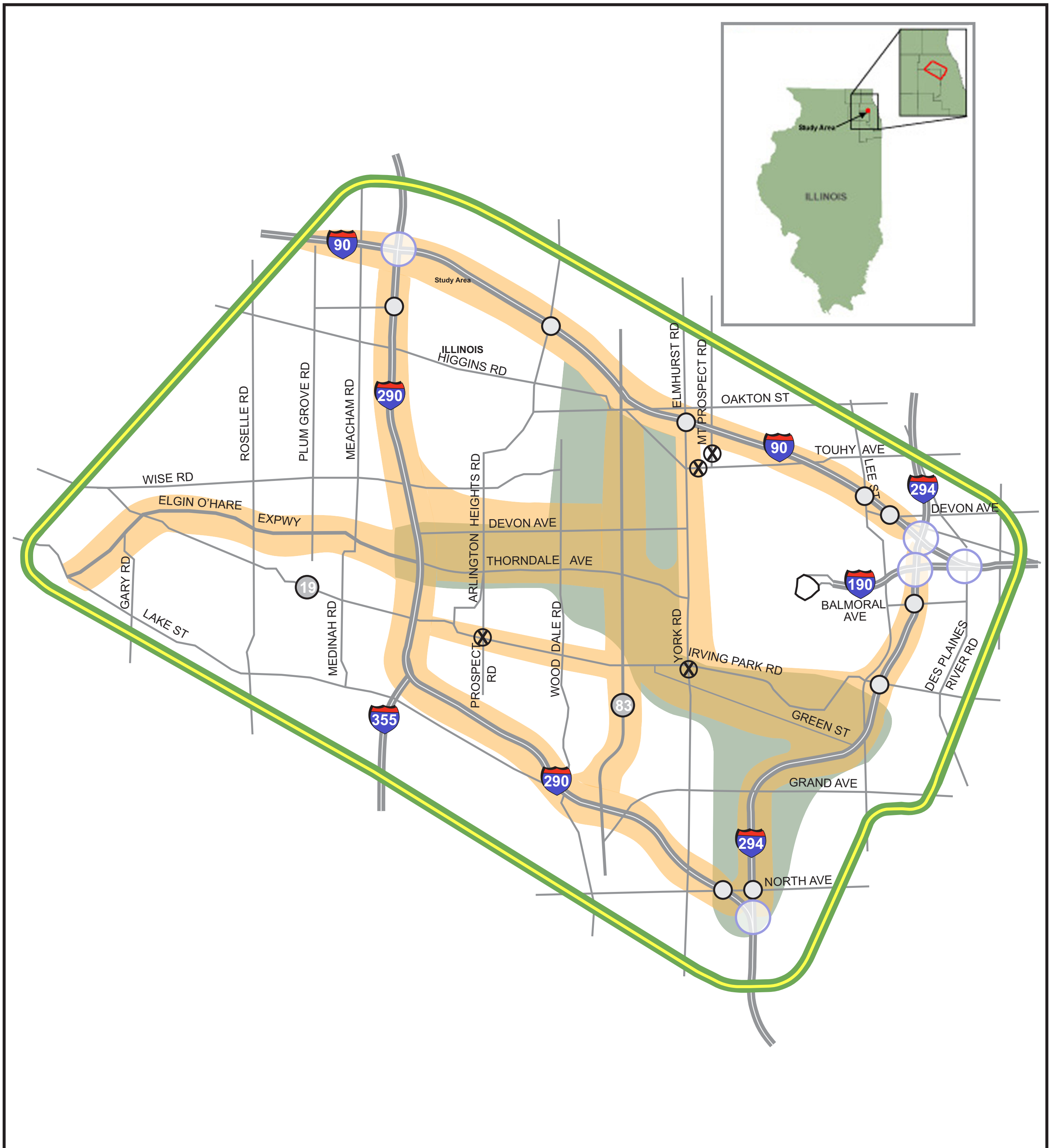
Miles

Exhibit 1-3

Study Area Congested Roadways
(2030 Baseline)
P.M. Peak Period

NOTES:

1. LEVEL OF SERVICE (LOS) ESTIMATES ARE BASED ON HCM 2000 THRESHOLDS FOR V/C RATIO AND AVERAGE SPEED VALUES.
2. LOS ESTIMATES GENERATED BY 2030 BASELINE TRAVEL DEMAND MODEL.



LEGEND

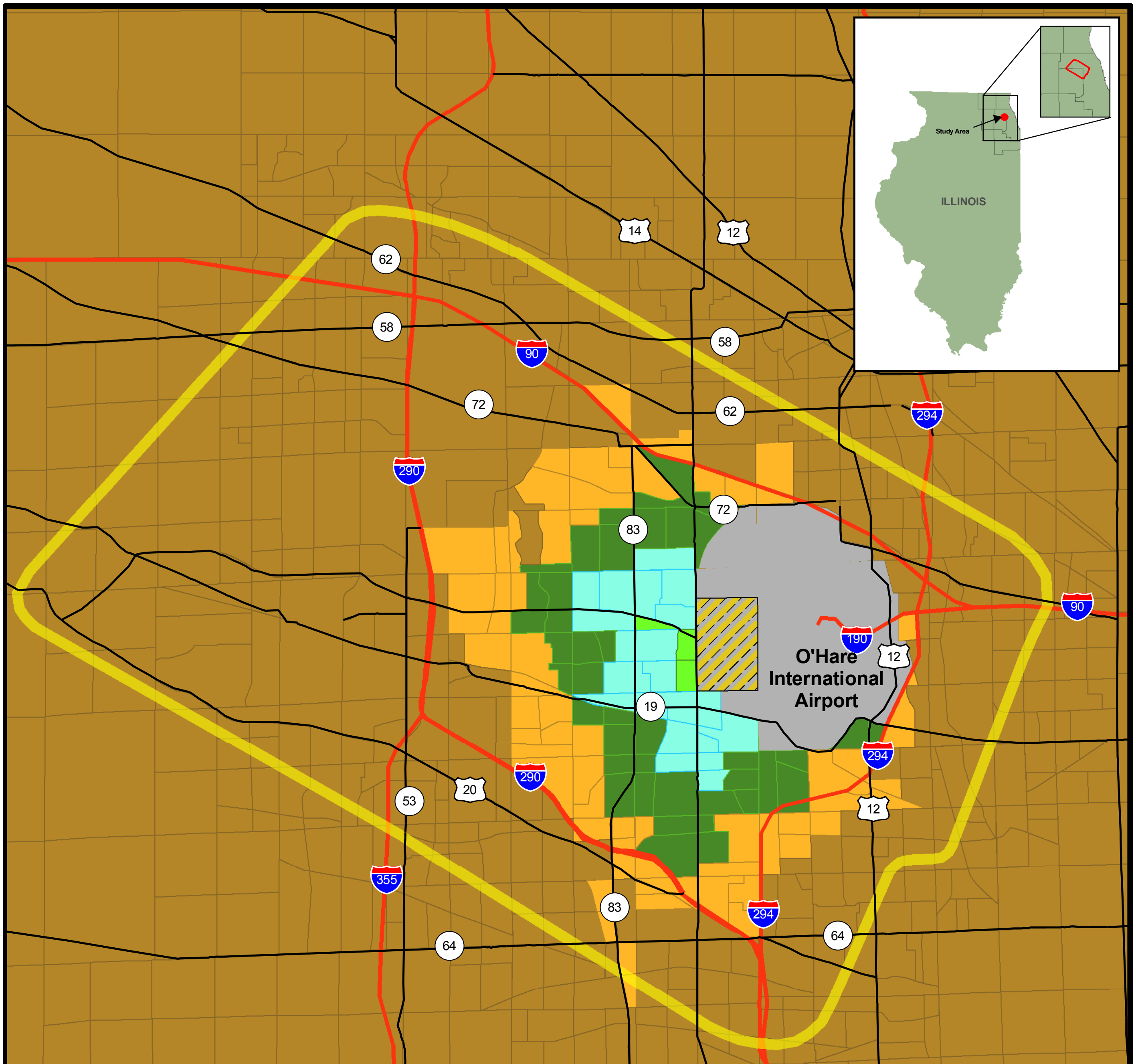
- Study Area
- Congestion Concerns
- Inadequate Access to Industrial/Commercial Nodes
- Operational Issues at System Interchanges
- Partial Local Interchange Access
- Major At-Grade Rail Crossing Issues

N

Not to Scale

Exhibit 1-4

Issues Identified by Stakeholders



Legend

- Study Area Boundary
- O'Hare West Terminal

2030 P.M. Peak Period Travel Times (Minutes)

- 0 - 5
- 5 - 10
- 10 - 15
- 15 - 20
- > 20

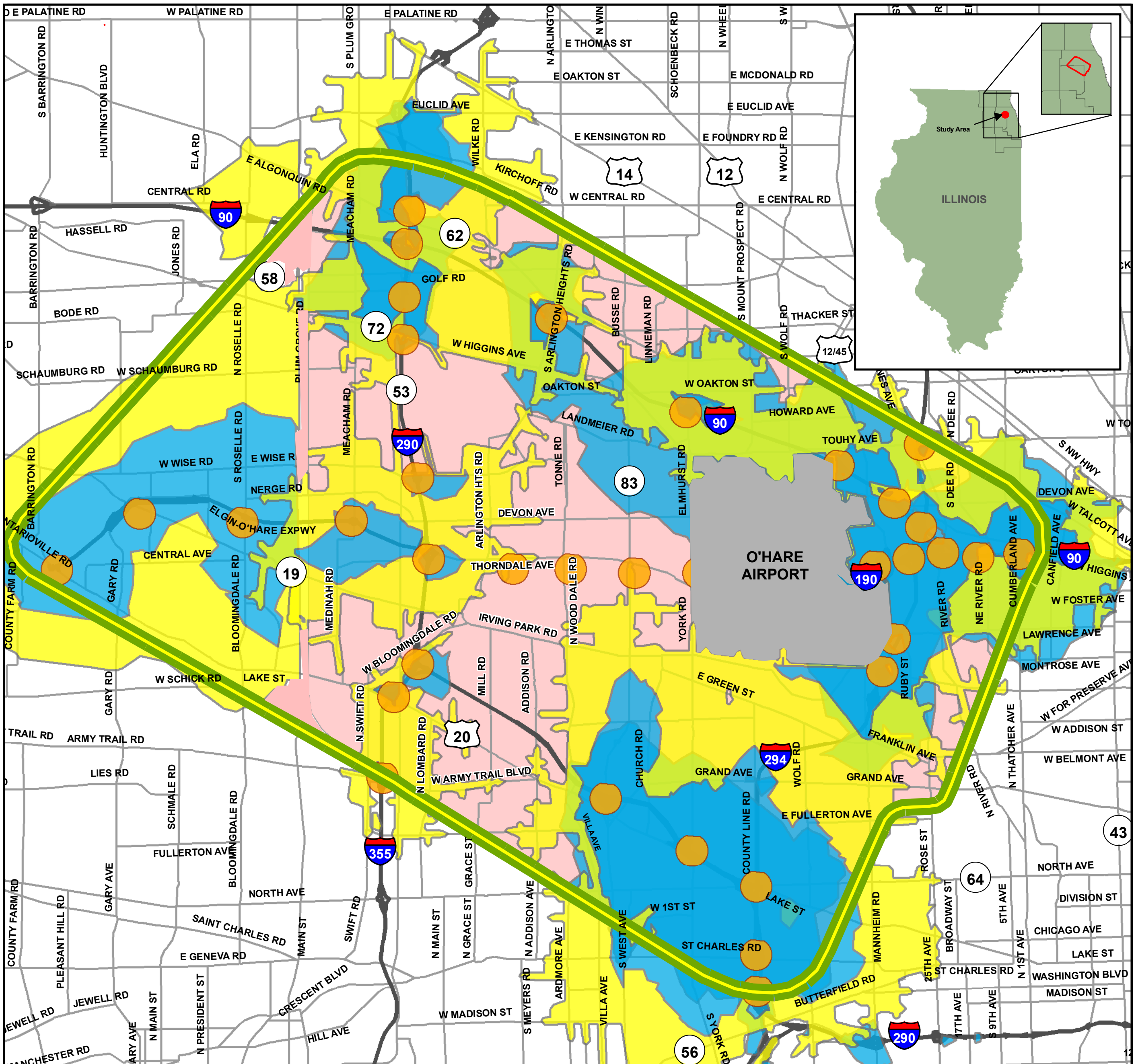
N

0 2 4

Miles

Exhibit 1-5

Travel Times from O'Hare West Terminal
(2030 Baseline)
P.M. Peak Period



Legend

- Study Area
- Freeway
- Study Area Interchange Locations
- Lines

Accessibility from Interchange within Study Area

- 5 Minutes
- 10 Minutes
- > 10 Minutes

N

0 2 4

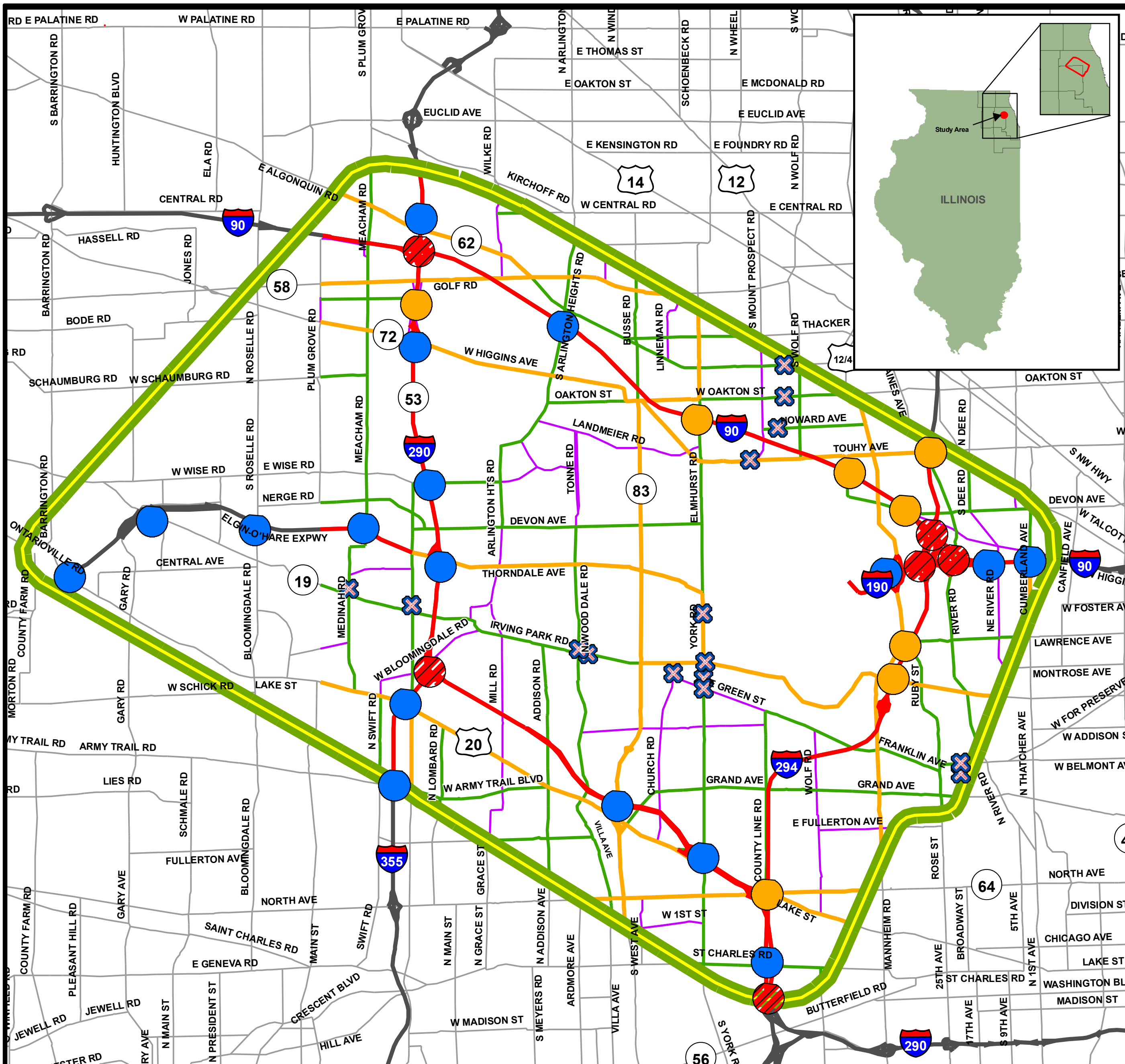
Miles

Exhibit 1-6

Accessibility From Freeway Interchanges within the Study Area (Contours)

Congested Travel Times

P.M. Peak Period



Legend

Study Area

Interchange Type

Service Interchange (Partial Access)

Service Interchange (Full Access)

System Interchange

Major Grade Crossings

Functional Class

Freeway

Principal Arterial

Minor Arterial

Collector

NOTE:
1. FUNCTIONAL CLASSIFICATION OBTAINED FROM ILLINOIS ROADWAY INFORMATION SYSTEM DATABASE.

N

0 2 4
Miles

Exhibit 1-7

Interchange Locations in the Study Area

SECTION 2

Affected Environment

This section describes the social, economic, and environmental setting of the study area. It describes the human and natural environment within the study area for the purpose of establishing baseline conditions from which to evaluate and compare potential impacts of the alternatives described in Section 3. The resources discussed in this section relate to FHWA Technical Advisory T6640.8A.

Several resource topics do not affect the consideration of project alternatives, therefore are not discussed including surficial geology, bedrock geology, and mineral resources. For the Tier One analysis, the study area's social and environmental characteristics were first determined using readily available census data, existing maps, geographic information system (GIS) data, and other existing information. See Appendix A for the list of GIS sources. As the location of the proposed improvements became better defined, windshield surveys and site visits were conducted in the surrounding area proximate to the proposed improvements to locate more accurately resources that could be affected by the proposed improvements. Exhibit 2-1 portrays the study area and the areas of detailed analysis. Exhibits 2-2 and 2-3 show the major natural and built features within the study area.

2.1 Socioeconomic Characteristics

2.1.1 Demographics

The study area encompasses 27 communities within northwest Cook and northeast DuPage counties. Approximately 509,900 individuals, or 5.3 percent of the Chicago metropolitan area's population of 9.7 million, reside within the study area (CMAP, 2006a). In evaluating the study area, special attention is focused on six core communities: Elk Grove Village, Wood Dale, Bensenville, Itasca, Schaumburg, and Roselle (see Exhibit 1-1 for locations and boundaries). The communities represent the heart of the study area and include most of the industrial land use and concentrations of major transportation facilities there. Demographically, the study area's population is similar to other built-out suburbs; however, population density is slightly less because of the concentration of transportation, commercial, and industrial land uses (see Exhibit 2-4).

The population of the study area grew substantially following 1960, as parts of the population in Chicago began to shift from the urban core to the outlying suburbs. In the past 15 years, growth in the study area has stabilized, with major population growth expanding farther into outlying Kane, Lake, McHenry, and Will counties. Growth figures for the counties from 2000 to 2008 have ranged from about 10 to more than 40 percent, whereas growth in mature counties, such as Cook and DuPage, have declined or slowed (see Table 2-1). Though population forecasts differ for individual communities in the study area, the population of the study area, as a whole, is projected to grow (see Table 2-2). Population forecasts range from an 8.0 percent decrease in Bensenville to a 34.2 percent increase in Schaumburg. The number of households in the study area is forecast to increase in every community in the study area.

2.1.2 Economic Characteristics

Communities within the study area exhibit large concentrations of employment. According to 2006–2007 estimates by CMAP, total employment within the study area is 569,500, representing a considerable percentage (11.08) of the overall metropolitan employment total of 5,141,090. As of 2000, Elk Grove Village represents the largest concentration of employment in the Chicago metropolitan region outside the central business district in downtown Chicago. Schaumburg represents the second largest and O'Hare Airport the fifth largest (McMillen, 2003).

TABLE 2-1
Chicago Region Population Growth by County

	2000	2008	% Change
Cook County	5,376,741	5,294,664	-1.5
DuPage County	904,161	930,528	+2.9
Kane County	404,119	570,579	+41.2
Lake County	644,356	712,453	+10.6
McHenry County	260,077	318,641	+22.5
Will County	502,266	681,097	+35.6
Six-County Area	**8,091,720**	**8,507962**	**+5.1**

Source: U.S. Bureau of the Census, 2009.

TABLE 2-2
Population and Household Projections for the Core Communities in the Study Area

	Population			Households		
	2000	**2030**	**Change (%)**	**2000**	**2030**	**Change (%)**
Elk Grove Village	34,727	36,948	6.4	13,278	14,030	5.7
Bensenville	20,703	19,048	-8.0	6,885	7,582	10.1
Itasca	8,302	10,706	29.0	3,179	3,912	23.1
Wood Dale	13,535	13,869	2.5	5,117	5,245	2.5
Schaumburg	75,386	83,284	34.2	31,799	33,571	5.6
Roselle	23,115	26,784	15.9	8,443	9,830	16.4
Total Core Communities	**175,768**	**190,639**	**8.5**	**68,701**	**74,170**	**8.0**

Source: CMAP, 2006a.

Transportation facilities, including highways and O'Hare Airport, largely contribute to the concentration of employment within the study area. Employment density is greatest in Elk Grove Village directly adjacent to the O'Hare Airport, along major thoroughfares like Thorndale Avenue, I-90 north of Elk Grove Village, and I-294 east of O'Hare Airport. Junctions of Thorndale Avenue and I-290, and I-90 and I-290, are substantial employment centers.

Table 2-3 lists the largest employers within each core community. They include hospitals (Alexian Brothers), manufacturers (Videojet Technologies and Tigerflex Corp), and global service companies (Automatic Data Processing and Household Credit Services). All require proximity to efficient transportation facilities. Other nearby major employers include the international headquarters of the Motorola Corporation, and the operational headquarters of United Airlines, which is one of the largest passenger airlines in the world. An estimated 60,000 individuals work at O'Hare Airport for the numerous companies and agencies affiliated with airport related functions and services.

TABLE 2-3
Major Employers within the Core Communities in the Study Area

Company	Employees	Company	Employees
Elk Grove Village		**Bensenville**	
Alexian Brothers Medical Center	1,800	Sara Lee	750
Automatic Data Processing	850	Lifelink Corp.	500
Citigroup	600	Quebecor World (1130 W. Thorndale)	400
Metal Impact	315	U.S. Food Service, Inc.	400
Sizmons	300	Victor Envelope	320
American Academy of Pediatrics	300	Restoration Inc, JC	315
Bigston	270	Quebecor World (110 Foster)	300
RR Donnelly	250	A. S. G. Staffing, Inc.	250
Elk Grove High School	250	Allmetal, Inc.	200
Manor Care	230	ATA Trucking, Inc.	200
Itasca		**Wood Dale**	
Gallagher – Bassett Services, Inc.	675	Corning Clinical Laboratories	900
Boise Cascade Office Products	625	Videojet Systems International	900
Fellowes Manufacturing Company	600	Sales Force Cos. Inc.	625
Westin Hotel	320	Household Retail Services	600
Continental Web Press, Inc.	425	Market Day	450
Oce-Bruning	330	AEC Inc.	360
Nestle	320	Majesty Maintenance Inc.	350
		AAR Corporation	300
		Florstar Sales, Inc.	280
		Tempco Electric Heater	275
Schaumburg		**Roselle**	
Motorola	7,000	Service Decorating and Construction	250
Woodfield Shopping Center	3,800	NEC Technologies	200
School District 54	2,274	Roman, Inc.	160
Zurich American Insurance	1,600	Exhibit Group	158
Experian	1,400	Rich Graphics	150
Cingular	1,200	Compton Presentations	125
IBM	1,150	Genesis	125
Nation Pizza Products	1,000	Electri-Flex	90
G.E. Financial Assurance	800	Larson-Juhl	65
AC Nielson	610	Sony	62

Source: IDCEO, 2008.

The transportation hub formed by crossing interstate highways, railroads, and one of the world's largest airports is a factor that will continue to contribute to future growth. The 2030 employment forecast for the study area is estimated at 680,500, an increase of more than 100,000 employees. Estimates indicate that the core communities will gain 76,579 jobs, or more than half the overall growth projected for the entire study area (see Table 2-4). Elk Grove Village is expected to have the largest increase.

TABLE 2-4
Employment Projections for the Core Communities in the Study Area

	2000	2030	Change	% Change
Elk Grove Village	61,121	97,974	36,853	60.3
Bensenville	28,903	31,862	2,959	10.2
Itasca	31,374	37,210	5,836	18.6
Wood Dale	24,897	29,273	4,376	17.6
Schaumburg	87,688	111,229	23,541	26.9
Roselle	8,862	11,876	3,014	34.0
Total	**242,845**	**319,424**	**76,579**	**31.5**

Source: CMAP, 2006a.

2.1.3 Land Use

The study area is a mix of open space, residential, industrial, and commercial land uses (see Exhibit 2-4). The existence of transportation infrastructure has contributed to a concentration of commercial and industrial land uses within the study area, while substantial open space and residential neighborhoods remain. Most communities have a well-developed core of commercial and retail business that adequately serves their respective populations. Regional business and commercial centers have primarily developed at major roadway junctions such as I-90 and I-290, and I-290 and Thorndale Avenue.

Transportation accounts for 11 percent of the land use within the study area (see Table 2-5) and includes several major transportation facilities. Among them is O'Hare Airport, on more than 7,000 acres. Also present are six major roadway facilities: I-294, I-90, I-190, I-290/IL 53, I-355, and the Elgin O'Hare Expressway. Major freight and commuter rail, whose operators include Metra, Union Pacific Railroad (UPRR), Canadian Pacific Railroad (CPRR), and Canadian National Railroad (CNRR), also cross the study area and operate freight yards and intermodal transfer facilities in the area (see subsection 2.1.6).

TABLE 2-5
Land Use in the Study Area

Land Use	Area (mi^2)	Acres	% of Study Area
Residential	47.3	30,250	37
Commercial	10.5	6,740	8
Institutional	4.6	2,970	4
Industrial	18.0	11,520	14
Transportation[a]	14.5	9,250	11
Open Space[b]	32.6	20,870	26
Total	**127.5**	**81,600**	**100**

Source: CMAP, 2006b.

[a] Includes roadways, rail, and O'Hare Airport.
[b] Includes park, forest preserve, and undeveloped land.

Fourteen percent of land use within the study area is industrial, which is twice the percentage of the Chicago six-county metropolitan area (CMAP, 2006b). The industrial facilities include some of the largest and most concentrated employment centers in the metropolitan region, including Elk Grove Village, with the largest industrial business center in the United States. As noted, the study area includes the largest employment in the Chicago region, other than downtown Chicago.

Residential land use in the study area is proportionately less than the six-county metropolitan area. According to the Chicago Metropolitan Land Use Inventory (2001), nearly 46 percent of land use within the greater Chicagoland area is residential, compared to 37 percent in the study area. Residential areas are primarily concentrated along the southern and western parts of the study area, whereas O'Hare Airport and adjacent industrial facilities dominate the northern and eastern part. Residential areas are representative of typical suburban areas with moderately dense populations and little undeveloped land.

Open space within the study area primarily comprises units within the DuPage and Cook Counties Forest Preserves (see also subsection 2.7.1, Forest Preserves). The Ned Brown Preserve, the largest tract of open space in the study area, is a 3,700-acre public forest in northwestern Cook County. The preserve, also known as Busse Woods, surrounds Busse Lake, a 590-acre lake that is the focus of the area. Within the eastern part of the study area is a system of Forest Preserve District of DuPage County (FPDDC) properties along the Des Plaines River running north-south. Collectively, they total 1,650 acres within the study area. The FPDDC manages several smaller public open spaces, including Salt Creek Marsh (100 acres), the Silver Creek Preserve (18 acres), Salt Creek Park (90 acres), Wood Dale Grove (187 acres), Fischer Woods (149 acres), and Songbird Slough (391 acres) in the southern and western parts of the study area. There are also many golf facilities in the study area, ranging from 162 to nearly 250 acres, including Oak Meadows Golf Club, Maple Meadow Golf Club, White Pines Golf Club, Salt Creek Golf Club, Itasca Country Club, and the River Forest Country Club.

A comparison between the land use make-up of the six core communities within the study area (see Table 2-6) and the greater six-county Chicago region shows that the communities in the study area have more urban and built-up lands (75.9 percent and above compared to 44 percent). These communities exhibit a large concentration of industrial and commercial land use. Elk Grove Village, with nearly 40 percent of land use designated as industrial, has the highest concentration. Similarly, four of the six core communities contain a lower percentage of residential land use than the Chicagoland area. Communities farther from Chicago (Schaumburg and Roselle) exhibit higher percentages of residential and commercial land uses and lower industrial land use than the other core communities. The amount of vacant land in each community is 5.9 percent or less, so growth that occurs represents infilling or selective redevelopment.

2.1.4 Environmental Justice

For all federal funded programs and activities, the issue of equality must be addressed in compliance with Title VI of the 1964 Civil Rights Act (Title VI) and Environmental Justice Executive Order (EO) 12898. Title VI states that "No person in the United States shall, on the grounds of race, color age, sex, disability, religion or national origin, be excluded from participation in, be denied benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance."

EO 12898 further requires that federal agencies achieve environmental justice by identifying and addressing disproportionately high and adverse human health and environmental effects, including both the social and economic effects of their programs, policies, and

TABLE 2-6
Land Use within the Core Communities in the Elgin O'Hare–West Bypass Study Area

	Elk Grove Village		Bensenville		Itasca		Wood Dale		Schaumburg		Roselle	
	acres	**%**	**acres**	**%**	**acres**	**%**	**acres**	**%**	**acres**	**%**	**acres**	**%**
Residential	2,691	37.9	1,369	35.6	876	27.5	1,295	43.3	5,878	48.0	2,105	61.0
Commercial and services	390	5.5	211	5.5	393	12.3	142	4.8	2,727	22.3	298	8.6
Institutional	276	3.9	180	4.7	85	2.7	51	1.7	377	3.1	223	6.5
Industrial	2,777	39.1	1,378	35.8	674	21.1	849	28.4	504	4.1	200	5.8
Transportation, communication and utilities	148	2.1	104	2.7	330	10.4	49	1.6	510	4.2	100	2.9
Under construction	24	0.3	37	1.0	64	2.0	0	0.0	117	1.0	24	0.7
Total urban and built-up land uses	**6,306**	**88.8**	**3,279**	**85.3**	**2,422**	**75.9**	**2,386**	**79.8**	**10,113**	**82.7**	**2,950**	**85.5**
Agriculture	6	0.0	11	0.3	1	0.0	8	0.3	21	0.2	87	2.5
Open space (includes wetlands and water)	647	9.1	448	11.7	580	18.8	527	17.6	1,503	12.3	310	9.0
Vacant	146	2.1	106	2.8	187	5.9	69	2.3	601	4.9	102	3.0
Total	**7,105**	**100**	**3,844**	**100.1**	**3,190**	**100**	**2,990**	**100**	**12,239**	**100.1**	**3450**	**100**

Source: CMAP, 2006b.

activities on minority and low-income populations. The most recent data from the Census 2000 were used to characterize the population in the study area. Census data were collected for the core communities and compared against the county and state Census information (see Table 2-7). Census information for the core communities is considered representative of the broader study area. The core communities make up most of the area within which the proposed improvements would occur. The study area outside the core communities was reviewed to determine if any neighborhoods were not represented by the core community statistics.

As a group, the core communities in the study area have a minority population of less than 20 percent. Individually, Bensenville and Schaumburg have percentages of minority populations of 29.4 percent and 21.2 percent, respectively.

Bensenville also has a higher percentage of Hispanic or Latino population than the other core communities, the counties, or the state. Asians are the largest minority group in the six core communities.

The average household size in the study area is three, except in Schaumburg where it is two. The U.S. Department of Health and Human Services defined the 2009 poverty guideline for a family of three at $18,310 and $14,570 for an average household size of two. The median household income levels for core communities in the study area are well above the poverty threshold (see Table 2-8).

TABLE 2-8
1999 Median Household Income for the Core Communities in the Study Area

Elk Grove Village	$62,132
Bensenville	$54,662
Itasca	$70,156
Wood Dale	$57,509
Schaumburg	$60,941
Roselle	$65,254
DuPage County	$67,887
Cook County	$45,922
State of Illinois	$46,590

Source: U.S. Bureau of the Census, 2000.

Census data for the six core communities indicate household and individual poverty levels to be a small percentage of the total population (see Table 2-9). The core communities have relatively low poverty levels, with none of the communities having poverty levels exceeding five percent of the households. Again, the core communities were very similar to DuPage County as a whole, and markedly lower than the average poverty level of Illinois.

TABLE 2-9
Poverty Levels (percentages) in the Core Communities in the EO-WB Study Area

	Elk Grove Village	Bensenville	Itasca	Wood Dale	Schaumburg	Roselle	DuPage County	Cook County	Illinois
Families below poverty level	1.5	4.2	3.1	2.9	2.0	1.3	2.4	10.6	7.8
Individuals below poverty level	2.0	6.5	4.7	4.1	3.0	2.0	3.6	13.5	10.7

Source: U.S. Bureau of the Census, 2000.

TABLE 2-7
Comparison of the Demographics of the Core Communities in the Elgin O'Hare–West Bypass Study Area to DuPage and Cook Counties and the State of Illinois

	Elk Grove Village	Bensenville	Itasca	Wood Dale	Schaumburg	Roselle	DuPage County	Cook County	State of Illinois
White	29,874 (86.0%)	14,615 (70.6%)	7,309 (88.0%)	12,076 (89.2%)	59,391 (78.8%)	20,315 (87.9%)	759,924 (84.0%)	3,025,760 (56.3%)	9,125,471 (73.5%)
Black or African American	490 (1.4%)	579 (2.8%)	140 (1.7%)	78 (0.6%)	2,526 (3.4%)	383 (1.7%)	27,600 (3.1%)	1,405,361 (26.1%)	1,876,875 (15.1%)
American Indian and Alaska Native	33 (0.1%)	94 (0.5%)	22 (0.3%)	20 (0.1%)	77 (0.1%)	48 (0.2%)	1,520 (0.2%)	15,496 (0.3%)	31,006 (0.2%)
Asian	3,051 (8.8%)	1,318 (6.4%)	484 (5.8%)	439 (3.2%)	10,697 (14.2%)	1,685 (7.3%)	71,252 (7.9%)	260,170 (4.8%)	423,603 (3.4%)
Native Hawaiian and other Pacific islander	15 (0.0%)	5 (0.0%)	2 (0.0%)	10 (0.1%)	43 (0.1%)	11 (0.0%)	217 (0.0%)	2,561 (0.0%)	4,610 (0.0%)
Some other race	797 (2.3%)	3,438 (16.6%)	143 (1.7%)	650 (4.8%)	1,307 (1.7%)	333 (1.4%)	28,166 (3.1%)	531,170 (9.9%)	722,712 (5.8%)
Population of 2 or more races	467 (1.3%)	654 (3.2%)	202 (2.4%)	262 (1.9%)	1,345 (1.8%)	340 (1.5%)	15,482 (1.7%)	136,223 (2.5%)	235,016 (1.9%)
Total Population	**34,727**	**20,703**	**8,302**	**13,535**	**75,386**	**23,115**	**904,161**	**5,376,741**	**12,419,293**
Percent minority of total population	14.0%	29.4%	12.0%	10.8%	21.2%	12.1%	16.0%	43.7%	26.5%
Percent Hispanic or Latino (of any race) of total population[a]	6.2%	37.1%	7.0%	13.1%	5.3%	5.2%	9.0%	19.9%	12.3%

Source: U.S. Bureau of the Census, 2000.

[a] Percent Hispanic or Latino of total population is calculated separately from percent minority of total population and is not represented in the minority percentages.

2.1.5 Public Services and Facilities

Communities within the study area are well established with a comprehensive range of public services and facilities. According to a database search completed in 2007, 253 public community parks, 174 schools, 102 churches, nine libraries, 25 cemeteries, 35 police and fire stations, and three medical facilities are located within the study area.

2.1.6 Transportation Facilities

The transportation system in the study area consists of an established roadway system, commuter and freight rail, and the second largest airport in the world. Commuter rail, bus routes, bicycle routes and pedestrian paths further compliment the system of transportation.

2.1.6.1 Existing Roadways

The study area is the crossroads of several interstate and major routes. Among the fully access-controlled facilities (freeways and tollways) in the area are I-294, I-90, I-190, I-290/IL 53, I-355 and the Elgin O'Hare Expressway. Eighteen percent of all trips in the Chicago region start, stop, or pass through the study area. With more than four million daily vehicle trips in the study area, 86 percent of the freeways and principal arterials are congested during peak hour travel periods.

Major arterial roadways form a grid throughout most of the study area (except for O'Hare Airport, which blocks east-west and north-south travel in the study area) and provide high volume travel and access within it. In the study area, many arterials are designated as Strategic Regional Arterials (SRAs)—routes that carry large volumes of traffic through the area. There are eight SRAs with a total length of roughly 50 miles either fully or partially within the study area. Almost 32 percent of all travel during the P.M. peak is on roadways classified as principal and minor arterials (see Table 2-10). Principal arterials are 79 percent congested and minor arterials are 59 percent congested during the P.M. peak. The combination of arterials and freeway type facilities account for 94 percent of congestion in the P.M. peak travel periods. Both facilities are projected to be more than 90 percent congested by 2030.

TABLE 2-10
Traffic Congestion P.M. Peak Period: 2007 and 2030

	2007 Existing VMT			2030 Baseline VMT		
Road Type	**Total**	**Congested**	**% Congested**	**Total**	**Congested**	**% Congested**
Freeway	1,576,000	1,381,000	88	1,693,000	1,522,000	90
Principal arterial	434,000	344,000	79	529,000	489,000	92
Minor arterial	410,000	241,000	59	585,000	526,000	90
Collector	153,000	62,000	41	259,000	155,000	60
Total	**2,573,000**	**2,028,000**	**79**	**3,066,000**	**2,692,000**	**88**

A well-established secondary street system of collectors extends from the arterial network of roadways providing the connection between the traveler's origin and destination and the remainder of the roadway system. Roadways classified as collectors account for six percent of travel during the P.M. peak period. Whereas congestion is lowest of any category in 2007 at 41 percent, congestion on collectors will grow to 60 percent by 2030.

Although the roadway network is well-established, it carries large traffic volumes that exceed roadway capacity. With 79 percent of the roadways congested, travel delays on the system during peak periods are notable. The equivalent of seven workdays is lost annually by every employee in the study area due to travel delay. Access from the interstate system to the study area is impeded by partial interchanges, and access to freeway connections is impeded by roadway capacity issues and congestion. Efficient travel is complicated by numerous at-grade railroad crossings that slow vehicular travel with crossing freight train traffic.

Analysis of travel desires in the study area shows that the area is a pivotal location for travel to and from the Chicago downtown area, and for travel that bypasses downtown and goes around the city. I-294, the principal north-south beltway around the Chicago core, carries the highest traffic volumes of the interstate facilities in the study area. I-355 is a major north-south corridor, a key transportation link between communities and employment centers in the northwest, west, and southwest suburbs. I-90 is a principal radial east-west corridor in the northwest Chicago metropolitan area serving travel to and from the Chicago core area. I-290 is another principal radial east-west corridor that connects west and northwest suburban areas with downtown Chicago. With this confluence of routes serving major regional travel patterns, it is noted that 61 percent of all travel in the study area is on the interstate system.

2.1.6.2 Existing Public Transit System

The public transit system serving the study area is extensive. It includes services provided by all of the Regional Transportation Agency's (RTA) operating agencies: the CTA; Metra, the region's commuter rail operator; and Pace, the suburban bus operator (see Exhibit 2-5). Table 2-11 summarizes the commuter and bus routes in the study area. Yet another system, the airport "people mover," provides circulation and distribution within the O'Hare Airport.

TABLE 2-11
Commuter and Bus Routes in Study Area

Facility	Quantity
Commuter rail lines	5
Commuter rail stations	37
Bus routes	35

CTA Rapid Transit. CTA provides rapid transit service in the study area through its Blue Line. Five Blue Line stations are near the study area: Jefferson Park, Harlem, Cumberland, Rosemont, and the O'Hare Airport. The Jefferson Park Station is a pivotal point with connecting Pace routes and a convenient transfer option from Metra's Union Pacific-Northwest (UP-NW) line.

Bidirectional Blue Line service is provided 24 hours a day, from every four minutes during the evening peak period to 30 minutes in the middle of the night. During most periods, trains operate on average at seven to eight minute intervals. Not only does the Blue Line connect the Chicago Central Business District to O'Hare Airport; it also serves Forest Park, Oak Park, west-central Chicago in the I-290 corridor, and downtown Chicago. It then extends northwest through the city, serving neighborhoods with either elevated or subway lines before entering the I-90 and I-190 corridors to complete the route to O'Hare. Thus, the line connects several communities and corridors to the study area.

Metra Commuter Rail System. Four Metra lines, all connecting to Chicago's downtown, serve the study area: the North Central Service (NCS), UP-NW, MDW, and Union Pacific-West (UP-W). Service on these and all Metra lines is configured to bring large numbers of suburban residents to work in downtown Chicago in the A.M. peak period, and to transport them to the suburbs in the P.M. peak. Although most service is oriented to bring suburban residents into downtown Chicago, more service is being added to accommodate the reverse commute (i.e., from downtown to the suburbs).

In and near the study area, the NCS rail line has five stations, UP-NW has 12, MDW has 11, and UP-W has 4. In most cases, railroad companies operate passenger service under a service area agreement with Metra.

Pace Bus System. In the study area, there are 35 Pace routes consisting of 24 CTA connectors, four suburban links, three community-based routes, three Metra feeder services, and one intracommunity route. The density or route coverage is greatest in the eastern part of the study area. CTA's Blue Line stations at Harlem, Cumberland, and Rosemont serve as terminals for numerous Pace bus routes, with the station at Rosemont functioning as an important Pace transportation center. Many routes, including express services to employment sites at Schaumburg and Prairie Stone, originate there. Another important facility is Pace's Northwest Transit Center in Schaumburg where nine routes including express services intersuburban connector and local routes converge, and where there are park and ride facilities.

Existing Freight Rail System. The Chicago region is a major junction for transcontinental freight systems, and a critical element of the continental land bridge connecting the Pacific and Atlantic coasts. At the Chicago facilities, eastern and western railroads meet and transfer loads. The region is also the location of many intermodal facilities, where trucks collect to deliver or receive and distribute freight containers. There are five freight lines and five freight yards in the study area (see Exhibit 2-6). Intermodal operations occur at three freight yards: CPRR's yards in Bensenville and in Schiller Park and UPRR's Proviso yard spanning Bellwood, Berkeley, and Melrose Park. There are 120 at-grade railroad crossings in the study area, 15 of which are on major roads. Delays at some locations are lengthy (over 15 minutes) and can double the length of an average local trip.

2.1.6.3 Other Modes of Transportation

Air Transportation. O'Hare Airport is located in the northeastern part of the study area. O'Hare is the second largest airport in the world with almost one million airplane takeoffs and landings a year (see Table 2-12). The O'Hare terminal complex is located on the east side of the airfield, and access is provided from the east by major roadways and transit service. Other secured entrances are located on the north and south sides of the airfield. These entrances serve employee parking and cargo facilities. For the last six years, the City of Chicago has been working on the OMP, which is adding new runways and related infrastructure to reduce air travel delay

TABLE 2-12
O'Hare Airport Air Transportation in the Study Area: 2007

Facility	Quantity
Enplanements[a]	36,521,585 (passengers)
Aircraft movements[b]	926,973 (takeoffs/landings)

[a] *Source:* FAA, 2008.
[b] *Source:* City of Chicago, 2008.

at O'Hare Airport. Modernization of the airfield includes a new terminal complex on the west side of O'Hare field that would be served by ground transportation from the west. The estimated vehicle trips to the west terminal in 2030 are estimated to be 29,000 vehicles per day.

Pedestrian and Nonmotorized Facilities. The region's bicycle system consists of roadways available for shared use with autos and dedicated trails available for shared use with pedestrians. Gaps within the bicycle system result in a lack of access at transit stations or between various community activity centers in the study area. Three regional trails are located within close proximity of the study area: the North Central DuPage Regional Trail, the Salt Creek Greenway Trail, and the Des Plaines River Trail. The North Central DuPage Regional Trail is primarily an east-west trail extending from Ned Brown Forest Preserve south and west to Mallard Lake Forest Preserve. In the future, it will connect farther east to the Elgin Branch of the Illinois Prairie Path. The Salt Creek Greenway Trail is a north-south trail paralleling Salt Creek. Currently, six miles are completed in the study area across Thorndale Avenue and alongside Salt Creek Marsh Forest Preserve. When completed, the trail will extend from Ned Brown Forest Preserve to the Hinsdale Bikeway. The Des Plaines River Trail is a north-south trail paralleling the Des Plaines River through Lake and Cook counties, extending from the Illinois-Wisconsin state border to Maywood, Illinois. This is located east of I-294.

Several, but not all, of the communities within the study area have designated bicycle routes (both on- and off-street). The current trail system does not connect to all surrounding community centers, and not all trails are centrally located to schools, commercial and employment centers, or transit stops. There are opportunities to provide links, not only between communities but also within them. Opportunities for completing gaps in the bicycle system are discussed in Section 3.

2.2 Agriculture

Agricultural lands represent a small amount (3.3 percent) of the total land use for the core communities (see Table 2-6). General field surveys in 2008 and 2009 confirmed that there are agricultural areas located proximate to the proposed improvements, but no direct impacts are anticipated. As a result, agricultural lands are not discussed further in this document.

2.3 Water Resources and Quality

2.3.1 Water Resource and Watershed Characterization

The study area is within the Des Plaines River Watershed (Hydrologic Unit 07120004), and has been divided into seven smaller watersheds: Addison Creek, Des Plaines River,[1] East Branch DuPage River, Salt Creek, Weller Creek, West Branch DuPage River, and Willow Creek. The watershed limits are based on Illinois Environmental Protection Agency (IEPA) watershed boundaries. Table 2-13 summarizes some of the major and minor waterways that traverse the study area. No waterways in the Weller Creek Watershed traverse the study

[1] As referred to in this Tier One study, the "Des Plaines River Watershed" represents one of the seven watersheds in the study area (see Exhibit 2-7). It includes areas that are tributary to the Des Plaines River, but are not included in the other six watersheds.

area. The East Branch DuPage River Watershed is within the study area, but because it is not near the proposed improvements, it was not considered further (see Exhibit 2-7).

Within Illinois, waters are protected and evaluated under the General Use Water Quality Standards (Title 35 Illinois Administrative Code, Subtitle C, Chapter I, Part 302, Subparts A and B). Designated uses under the General Use Water Quality Standards include aquatic life, fish consumption, primary contact, secondary contact, and aesthetic quality. States are required to classify waters with respect to impairments. Waters that do not fully support their designated uses are considered impaired and are cataloged in the 303(d) list of impaired water-quality-limited waters, requiring total maximum daily loads (TMDLs). TMDLs set pollution reduction goals to improve the quality of impaired waters.

TABLE 2-13
Study Area Waterway Summary

Waterway[a]	Tributary Area[b] (mi^2)	Waterway Length[c] (miles)	Flow Characteristic[d]
Addison Creek Watershed			
Addison Creek	8.2	4.3	Perennial
Des Plaines River Watershed			
Des Plaines River	630[e]	6.1	Perennial
Bensenville Ditch	4.0[f]	3.2[f]	Intermittent
Silver Creek	8.7	3.3	Intermittent; perennial
Crystal Creek	4.8	2.3	Intermittent
Salt Creek Watershed			
Salt Creek	150.0[g]	45.9[h]	Perennial
Salt Creek Tributary D	4.3[j]	0.8	Perennial
Arlington Heights Branch	12.7[j]	0.9	Perennial
Salt Creek West Branch	12.1[j]	6.2	Perennial
Westwood Creek	5.6[k]	2.1	Intermittent
Spring Brook (Creek)	14.4[k]	8.3	Perennial
Meacham Creek	5.1[k]	2.1	Perennial
West Branch DuPage River Watershed			
West Branch DuPage River	10.1[k]	2.7	Perennial

TABLE 2-13
Study Area Waterway Summary

Waterway[a]	Tributary Area[b] (mi^2)	Waterway Length[c] (miles)	Flow Characteristic[d]
Willow Creek Watershed			
Willow Creek	20.2[j]	6.5[i]	Intermittent, perennial
Higgins Creek	7.3[j]	2.2	Perennial

Sources: U.S. Geological Survey (USGS) Quadrangle Map; Federal Emergency Management Agency (FEMA), 2004b; FEMA, 2007; FEMA, 2008b; Christopher B. Burke Engineering, Ltd. (CBBEL), 2004; CBBEL, 2007.

[a] This table does not include waterways within the study area with drainage areas less than 4.0 mi^2. The Weller Creek Watershed also is not included. No waterways in the Weller Creek Watershed traverse the study area.
[b] Approximate area of watershed to downstream limit of study area including areas upstream of the study area (except as noted).
[c] Length of waterway within the study area; generally based or calculated from FEMA Flood Insurance Studies (FIS) Flood Profiles (except as noted).
[d] Periodicity of flow is based on USGS 7.5-minute Quadrangle Maps.
[e] Data per USGS gauge at Riverside.
[f] Data from CBBEL, 2007 report.
[g] Tributary area at confluence with Des Plaines River.
[h] Approximate length per GIS estimate.
[I] Data from CBBEL, 2004 report.
[j] Data from FEMA Cook County FIS, 2008b.
[k] Data from FEMA DuPage County FIS, 2004b.

TMDLs have been prepared for waters in the Salt Creek Watershed[2] and the West Branch DuPage River (CH2M HILL, 2004b). In addition, segments of four waterways in the study area—Addison Creek, Salt Creek, West Branch DuPage River, and Higgins Creek—are in the first stage of TMDL development to address additional impairments (IEPA, 2008c). Stage 1 TMDL development includes describing the watershed, collecting/analyzing available data, identifying methodologies, procedures, models, and determining if additional data are needed.

In addition to the 303(d) list, the Illinois Department of Natural Resources (IDNR) released biological stream ratings for Illinois streams that can be used to identify aquatic resource quality (IDNR-ORC, 2008).[3] The ratings are useful in identifying biologically diverse streams and those with a high degree of biological integrity. No Biologically Significant Streams (BSS) or Wild and Scenic Rivers are within the study area, but the Des Plaines River is listed on the Nationwide Rivers Inventory as being eligible or potentially eligible for designation as a Wild and Scenic River because of its remarkable scenic and recreational values.

Preliminary field reconnaissance resulted in the identification of 225.6 acres of water resources near the proposed improvements. They include rivers/creeks, lakes/ponds, reservoirs, ditches, and open water stormwater management facilities. Based on preliminary field reconnaissance of potential stream crossings, the water clarity was generally good and the stream substrates generally consisted of silt, sand, or gravel. Many modified stream channels have been lined with hardscape measures (e.g., rock or concrete). Most of the vegetated stream channels have narrow corridors of habitat for flora and fauna.

2 The Salt Creek TMDLs addresses segments of the following waterways within the study area: Salt Creek, Addison Creek, Spring Brook, Meacham Creek, Busse Woods Lake (CH2M HILL, 2004a).

3 Based on information from IDNR, the new stream ratings replace the Biological Stream Characterization (BSC) and Biologically Significant Streams (BSS) developed in 1984 and 1992, respectively.

Within the study area, the Weller Creek Watershed comprises mostly residential land uses. The Addison Creek, Salt Creek, and West Branch DuPage River Watersheds within the study area are almost half residential land use. However, the Willow Creek and Des Plaines River Watersheds consist largely of O'Hare Airport and the adjacent industrial and transportation corridor (see Table 2-14). Additional information regarding land use within the study area is provided in subsection 2.1.3, Land Use. Table 2-14 also summarizes the number of flood control structures, dams, and wastewater treatment plants within the study area.

TABLE 2-14
Study Area Watershed Land Use Summary

Watershed	Predominant Land Use within Study Area[a]	Flood Control Reservoirs[b]	Dams[b, c]	Wastewater Treatment Plants[b]
Addison Creek	46% residential	7	1	1
Des Plaines River	20% O'Hare Airport; 15% industrial	3	2	0
Salt Creek	42% residential	5	4	4
Weller Creek	63% residential	1	0	0
West Branch DuPage River	49% residential	1	0	2
Willow Creek	39% industrial; 28% O'Hare Airport	3	2	1

[a] *Source*: CMAP, 2001; CH2M HILL, 2008.
[b] *Source*: Review of aerial photograph of study area; PhotoMapper, 2007.
[c] The number of dams is an estimate based on those primarily associated with flood control projects.

Table 2-15 provides IDNR and IEPA water quality assessment designations for waterways within the study area. Most of the waterways listed in Table 2-15 are impaired and do not support aquatic life, have been channelized or modified, and are surrounded by developed or mowed overbanks, with forest preserve areas generally being an exception. Lake Opeka and Busse Woods Lake fully support aquatic life. Willow Creek, Higgins Creek, and the Des Plaines River are impaired as a result of urban runoff, storm sewers, and point source discharges. The IEPA has listed upstream impoundments as sources of water quality impairment within the Addison and Salt Creek Watersheds. Most watersheds within the study area include creeks that have municipal point source discharges (MPSD) as a source of impairment, which can be associated with effluent from wastewater treatment plants (IEPA, 2008c).

2.3.2 Groundwater Resources

The study area contains groundwater resources and aquifers, within the surficial glacial deposits and within the bedrock. Within the surficial deposits, the accessible shallow aquifers can be found in the lenses of sands and gravels within the glacial till. The aquifers are connected hydrologically and are recharged directly by seepage from precipitation.

Within the bedrock, the shallow dolomite produces water in varying quantities depending on the presence of water-bearing sands in the overlying drift. The shallow dolomite aquifer is separated from deeper aquifers by the shales of the Maquoketa Group. Below the shale is the Cambrian-Ordovician aquifer. The Cambrian-Ordovician aquifer is the most developed deep aquifer within the Chicago region and consists primarily of the St. Peter Sandstone.

Shallow aquifer wells supply low water demand needs (e.g., single-family homes). Deep aquifer wells typically are used for large water demand needs (e.g., community supply).

According to the U.S. Environmental Protection Agency (USEPA), there are no designated sole source aquifers in Illinois (USEPA, 2008b). The Illinois State Geological Survey (ISGS) publishes a map titled *Potential for Aquifer Recharge* (Keefer and Berg, 1990). The map indicates that the study area has a relatively low potential for aquifer recharge. Consequently, there is a low potential for groundwater contamination except in the Des Plaines River, East Branch DuPage River, Salt Creek, and West Branch DuPage River corridors, where greater sand and gravel resources are present.

2.3.3 Groundwater Quality

In northeastern Illinois, including parts of Cook and DuPage counties, the primary groundwater quality issues concerning deep bedrock aquifers include high levels of naturally occurring barium, radium, and total dissolved solids (TDS). Public water systems treat these groundwater contaminants as necessary (by ion-exchange softening, lime softening, etc.) to make groundwater potable. In general, the groundwater quality of deep bedrock aquifers is less susceptible to chemical contamination by vertical migration from the land surface than shallow aquifers, although groundwater in deep bedrock aquifers tends to have higher mineral concentrations than groundwater in shallow aquifers (this varies by location).

TABLE 2-15
Study Area Waterway Quality/Rating Summary

Waterway[a]	Diversity[b, c] (Score)	Integrity[b, d] (Score)	Designated Use[e, f]	Causes of Impairment[f]	Source of Impairment[f]
Addison Creek Watershed					
Addison Creek	E (0.286)	E (0.250)	Not supporting: AL, PC[g] Not assessed: AQ, FC, SC	Aldrin, .Alpha.-BHC, littoral vegetative covers, copper, chloride, chromium, dichloro-diphenyl-trichloroethane (DDT), hexachlorobenzene, nickel, other flow regime alterations, dissolved oxygen, polychlorinated biphenyls (PCBs), total suspended solids (TSS), fecal coliform, phosphorous, aquatic algae	Channelization, contaminated sediments, loss of riparian habitat, streambank modification, combined sewer overflows (CSO), MPSD, storm sewers, urban runoff, upstream impoundments
Des Plaines River Watershed					
Des Plaines River	Not rated	Not rated	Not supporting: AL, FC, PC. Not assessed: AQ, SC	Chlorine, dissolved oxygen, sedimentation/ siltation, TSS, pH, phosphorous, mercury, PCBs, fecal coliform, littoral vegetative covers, chloride, other flow regime alterations	CSO, road runoff, MPSD, urban runoff, storm sewers, site clearance, atmospheric deposition of toxics, source unknown, streambank modifications, impacts from hydrostructure flow regulation
Lake Opeka	Not rated	Not rated	Fully supporting: AL Not supporting: AQ Not assessed: FC, PC, SC	Cause unknown	Not applicable
Salt Creek Watershed					
Salt Creek	C (0.714)[h]	C (0.500)[h]	Not supporting: AL, FC, PC[i]; Not assessed: AQ, SC	Chloride, other flow regime alternations, dissolved oxygen, phosphorous, aquatic algae, mercury, PCBs, fecal coliform, littoral vegetative covers, DDT, heptachlor, sediment/siltation, TSS, pH, aquatic plants	Urban runoff, storm sewers, impacts from hydrostructure flow regulation, atmospheric deposition of toxics, source unknown, channelization, contaminated sediments, CSO, sanitary sewer overflows, site clearance, MPSD, streambank modifications, upstream impoundments
Spring Brook	Not rated	Not rated	Fully supporting: AL[j] Not assessed: AQ, FC, PC, SC	Littoral vegetative covers, DDT, endrin, hexachlorobenzene, other flow regime alterations, dissolved oxygen, sedimentation/siltation, TSS, phosphorous, aquatic algae	Channelization, contaminated sediments, impacts from hydrostructure flow regulation, MPSD, upstream impoundments, urban runoff, storm sewers

TABLE 2-15
Study Area Waterway Quality/Rating Summary

Waterway[a]	Diversity[b, c] (Score)	Integrity[b, d] (Score)	Designated Use[e, f]	Causes of Impairment[f]	Source of Impairment[f]
Meacham Creek	Not rated	Not rated	Not supporting: AL Not assessed: AQ, FC, PC, SC	Other flow regime alterations, dissolved oxygen	Impacts from hydrostructure flow regulation, urban runoff, storm sewers
Busse Woods Lake	Not rated	Not rated	Fully supporting: AL Not supporting: AQ, FC Not assessed: PC, SC	Mercury, PCBs, cause unknown, aquatic algae	Atmospheric deposition - toxics, source unknown, waterfowl, urban runoff, storm sewers, runoff from forest/grassland
West Branch DuPage River Watershed					
West Branch DuPage River	Not rated	Not rated	Not supporting: AL, PC Not assessed: AQ, FC, SC	Chloride, iron, dissolved oxygen, sedimentation/siltation, silver, zinc, pH, phosphorus, fecal coliform, manganese, TSS	MPSD, urban runoff, storm sewers, site clearance
Willow Creek Watershed					
Willow Creek	D (0.333)	Not rated	Not supporting: AL; Not assessed: AQ, FC, PC, SC	Phosphorus	MPSD
Higgins Creek	Not rated	Not rated	Not supporting: AL, PC; Not assessed: AQ, FC, SC	Chloride, nickel, zinc, pH, phosphorus, fecal coliform, dissolved oxygen	MPSD, urban runoff, storm sewers

Sources: IEPA, 2008c; IDNR-ORC, 2008.

[a] The information provided for each waterway summarizes data provided for all Assessment Unit IDs (AUID) for that waterway segment within the study area. Designated uses and impairments may vary per AUID. Waterways within the study area that do not have an AUID are not listed in the table. Waterway segments with AUID within the study area that are not rated for diversity or integrity and do not have designated uses assessed are not listed in the table.
[b] From IDNR-ORC, 2008. All integrity and diversity ratings for the study area were rated with macroinvertebrates; no fish, mussel, or crayfish data were available for the streams. The diversity and integrity scores fall within one of five ratings ranging from A to E, with A representing the highest biological integrity or diversity of evaluated stream segments. Streams without available data or that did not fit the assessment tools were "not rated."
[c] The diversity score provided is based on the Macroinvertebrate Taxa Score.
[d] The integrity score provided is based on the Macroinvertebrate Index of Biotic Integrity (MIBI).
[e] Abbreviations: AL: Aquatic Life; AQ: Aesthetic Quality; FC: Fish Consumption; PC: Primary Contact; SC: Secondary Contact. Assessment guidelines have not yet been fully developed for the following uses: AQ and SC (for Illinois streams) and SC (for Illinois inland lakes).
[f] *Source*: IEPA, 2008c.
[g] Addison Creek segment (AUID IL_GLA-04) located downstream of I-290 not assessed for primary contact.
[h] Parts of Salt Creek located upstream of Busse Woods Lake and downstream of I-290 within the study area are not rated for diversity or integrity.
[I] Salt Creek segment (AUID IL_GL-03) located downstream of the confluence with Spring Brook within the study area is not assessed for Primary Contact.
[j] Spring Brook segment (AUID IL_GLB-01) located downstream of the confluence with Meacham Creek within the study area was assessed as Not Supporting Aquatic Life.

Shallow aquifers can be affected by surface contamination. Road runoff, underground storage tanks (USTs), landfills, septic fields, industrial discharges, sewage treatment plants, and atmospheric deposition are common sources of pollutants. Potential contaminants include chloride, TDS, heavy metals, and petroleum compounds. In northeastern Illinois, over the last 20 years, contaminants, such as TDS and chloride, have been increasing in many shallow wells. Chloride can be used to indicate surface aquifer contamination. Chloride concentrations have been increasing in shallow aquifers throughout the Chicago metropolitan area, especially in the outer counties (DuPage, Kane, McHenry, Will). The smallest changes in chloride concentrations have been in Cook and Lake counties. The increase in chloride concentrations in shallow aquifers may be attributed primarily to road salt runoff (ISWS, 2008a; ISWS, 2008b; Kelly and Wilson, 2003).

2.3.4 Water Supply Wells

Within the study area, most water supply needs are met using Lake Michigan water. There are 1,693 water supply wells in the study area, according to the ISGS Water and Related Wells Database. According to the IEPA Source Water Assessment Program, 93 wells are classified as community water supply wells and another 120 wells as non-community water supply wells. The wells vary in depth from less than 100 feet to more than 2,200 feet. Of the 1,693 water supply wells, 1,587 are in the shallow aquifer averaging about 200 feet deep, and 106 are in the deep aquifer, 1,200 to 2,200 feet deep. Every community within the study area receives its main water supply from Lake Michigan, supplied by either the City of Chicago or the City of Evanston. Municipal wells provide water for irrigation and as backup for Lake Michigan supplies.

2.3.5 Aquatic Species

Aquatic species were not surveyed as part of the study. Instead, national, state, and county databases were searched for fish, mussel, and crustacean information. Available data indicate that most of the aquatic species near the study area are locally common, widespread, or relatively adaptable. No state- or federal-listed fish, mussels, or crustaceans were listed in the information provided by IDNR or U.S. Fish and Wildlife Service (USFWS) for the study area.

Fish. Based on a review of Illinois Natural History Survey (INHS) and USGS data and available Cook County and DuPage County Forest Preserve information, 52 fish species were recorded in aquatic resources located in (or near) the study area. Game fish, such as bass (largemouth [*Micropterus salmoides*] and smallmouth [*Micropterus dolomieu*]), bluegill (*Lepomis macrochirus*), bullhead (*Ameiurus* spp.), channel catfish (*Ictalurus punctatus*), crappie (*Pomoxis* spp.), northern pike (*Esox lucius*), rainbow trout (*Oncorhynchus mykiss*), sunfish (*Lepomis* spp.), and walleye (*Stizostedion vitreum*), are included in the available fish information. Many of these species are stocked for recreational purposes in waterways within or crossing through the study area. Most of the study area is highly urbanized, and most of the sampled streams are impaired or degraded. Fish species collected from creeks within or crossing through the study area generally represent pollution tolerant to intermediate tolerant species (Adolphson et al., 2002; Anderson, 1995; Barbour et al., 1999; Headrick, 2002).

Mussels. Based on a review of available INHS data and information provided by the county forest preserves, there are 19 species of mussels from aquatic resources located in (or near) the study area including Axehead Lake (within Cook County Forest Preserve property), the Des Plaines River, Salt Creek, Salt Creek Marsh, Spring Brook, West Branch DuPage River, and a DuPage County wetland (in Salt Creek/Des Plaines River drainage area).[4]Mussel populations have declined in recent decades as a result of siltation, pollution, and competition from exotic species. More than half the 80 mussel species native to Illinois are threatened, endangered, extirpated, or extinct (IDNR, 2009). However, most mussel species recorded in the aquatic resources described above are widespread or common/locally abundant species (INHS, 2005).

Crustaceans. Based on a review of available INHS data, eight species of aquatic crustaceans, including crayfish, sowbugs (isopods), and scuds (amphipods) were recorded from aquatic resources located in (or near) the study area. The data does not include planktonic species, such as cladocerans (e.g., *Daphnia* sp.) and copepods. In general, sowbugs are often indicators of poorer water quality, whereas scuds and crayfish are moderately tolerant to pollution though not usually found in severely polluted waters.

2.4 Wetlands

Wetlands generally are associated with lakes, streams, or localized depressional areas. Within the study area, the relief is gently rolling to nearly flat. Most of the study area is urbanized and has been affected by development. Based on a review of the resources discussed below and preliminary fieldwork, there are 3,828 acres of wetland within the study area (see Exhibit 2-8).[5] Of that total, roughly 71 percent (2,702 acres) are within special lands (see subsection 2.7) that would not be directly affected by the proposed improvements.

Wetlands are "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."[6] The *1987 Corps of Engineers' Wetland Delineation Manual* identifies three essential characteristics of a jurisdictional wetland: hydrophytic vegetation, hydric soils, and wetland hydrology (Environmental Laboratory, 1987).[7]

Published wetlands data sources were used to locate mapped wetlands. The DuPage County Wetland Inventory (DCWI) was used to identify mapped wetlands in DuPage County (DuPage County Department of Development and Environmental Concerns, 1999). In general, it is considered more locally accurate than the National Wetlands Inventory (NWI).[8] Because the DCWI does not include Cook County information, the NWI was used

---

[4] Three of the mussel species have not been observed since 1958 and may no longer be present in the study area.

[5] Mapped wetlands adjacent to the proposed improvements were refined based on preliminary field reconnaissance. Open waters (e.g., creeks, ponds, etc.) located proximate to proposed improvements were also identified during preliminary field reconnaissance, but are not included in this total. For the remainder of the study area, open waters mapped in the NWI and DCWI GIS database were not excluded when calculating wetland totals. Unvegetated open water areas are not regulated by the Interagency Wetland Policy Act, but still may be regulated by the USACE, following a jurisdictional determination.

[6] 40 CFR 230.3(t)

[7] The *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region, (September 2008)* provides additional guidance regarding completion of wetland delineations in most of Illinois (USACE, 2008).

[8] The NWI is a series of topical maps developed by the USFWS to show wetlands and deepwater habitats. The NWI serves only as a large-scale guide and actual wetland locations and types often vary from those that are mapped.

for Cook County.[9] Wetland data from the OMP was used for parts of the study area that overlapped with the OMP project limits.

The DCWI identifies two categories of wetlands: critical and regulatory.[10] Critical wetlands are high quality wetlands that "play crucial roles in storing or conveying flood waters, controlling erosion, maintaining or enhancing water quality, and providing habitat for threatened or endangered species." All wetlands in DuPage County that are not designated as critical are considered regulatory. The NWI does not distinguish between critical and regulatory wetlands for the purposes of quality evaluation. Based on the DCWI, approximately 142 acres of mapped critical wetland are located within the study area.[11]

After identifying wetland locations from the published wetland inventories described above, field reconnaissance was conducted to generally confirm wetland boundaries and to identify other potential wetlands in the area. Field reconnaissance focused on wetland resources near the proposed improvements and resulted in better definition of about 247 acres of wetlands proximate to those improvements.[12] The U.S. Army Corps of Engineers (USACE), USFWS, and USEPA concurred with the Tier One wetland methodology, wherein the level of detail and field truthing was sufficient to support reasonably representative levels of impact for this type of study.[13] See Appendix B for further discussion of methodology.

Past human disturbances and runoff from the urban environment appear to have adversely affected the majority of the wetlands located near the proposed improvements. In general, most of the wetland sites identified in the field are characterized by low diversity and richness of native plant species. The palustrine cover type is dominated by invasive plant species. Except for wetlands identified in special lands, within manmade stormwater facilities, or exhibiting hydrologic connections to creeks, most appear to be hydrologically isolated[14] and average less than one acre in size. The principal functions performed by most existing wetland sites are stormwater storage, which can reduce water quality impacts, and conveyance. The wetlands may also provide habitat for common and adaptable wildlife. The stormwater storage function and water quality benefit of most of the wetlands is limited because of their small size and apparent shallow depth and storage capacity. Though providing limited functional value on an individual basis, when combined, the wetlands contribute to the functions of stormwater storage, conveyance, and overall water quality benefits.

Wetland resources evaluated by field reconnaissance are summarized in Tables 2-16 and 2-17 and discussed by watershed below. Slightly higher wetland acreage totals were identified during preliminary field reconnaissance in Cook County (128 acres) when compared to DuPage County (119 acres). Over 47 percent of the field identified Cook County wetlands

[9] The NRCS Wetland Maps were not used for this study. The NRCS Wetland Maps, if available, will be used as a reference during the formal wetland delineation process to be completed as part of the Tier Two environmental studies and/or during the approval process for individual projects.

[10] Several criteria are used to determine if a wetland is regulatory or critical. Wetlands, in addition to those mapped as critical on the DCWI, may be considered critical following site investigation and data analysis (DuPage County, Illinois, 2008).

[11] Based on preliminary field reconnaissance, approximately 12.4 acres of mapped critical wetland are located near proposed project improvements.

[12] Wetland acreage includes wetlands, wetland bottom stormwater management facilities, and wetland mitigation sites located near the proposed project improvements.

[13] Resource Agency field visit on November 12, 2008.

[14] Isolated status is based on preliminary assessment. Jurisdictional status is subject to change pending more detailed studies to be completed as part of the Tier Two environmental studies and following a USACE jurisdictional determination.

were located in the Des Plaines River Watershed and roughly 70 percent of the field identified DuPage County wetlands were located in the Salt Creek Watershed. Note that detailed wetland studies that fully comply with state and federal approved methodology will be completed as part of Tier Two environmental documents for individual project improvements.

2.4.1 Addison Creek Watershed

About 8.4 acres of wetlands in the Addison Creek Watershed are near the proposed transportation improvements. Of those, 1.7 acres are located in Fischer Woods Forest Preserve. Based on approximate locations and information provided by IDNR, some wetlands in and near Fischer Woods Forest Preserve may provide habitat for state-listed threatened and endangered species. Wetlands supporting state- or federal-listed threatened or endangered species are considered High Quality Aquatic Resources by the USACE and require higher wetland compensation ratios under the Interagency Wetland Policy Act. An additional 0.5 acre of wetlands comprises a mitigation site. The quality of the other wetland areas identified during field reconnaissance ranges from low to high.

TABLE 2-16
Summary of Wetlands and Watersheds by County

	Cook County			DuPage County		
Watershed	Watershed Acreage in Study Area	Wetland Acreage in Study Area	Wetland Acreage[a] Near Proposed Improvements	Watershed Acreage in Study Area	Wetland Acreage in Study Area	Wetland Acreage[a] Near Proposed Improvements
Addison Creek	2,787.3	15.5	0.1	5,843.6	161.7	8.1
Des Plaines River	12,864.7	352.4	60.4	2,487.2	104.1	3.0
Salt Creek	18,057.4	1242.1	35.7	17,513.2	1350.6	82.8
Weller Creek	2,634.5	16.6	0	0	0	0
West Branch DuPage River	3,029.3	178.1	11.5	2,259.5	160.9	9.3
Willow Creek	10,377.7	74.4	20.3	2,862.2	65.1	15.7
Totals	49,750.9	1,879.1	128.0	31,852.3	1,842.4[b]	118.9

[a] Wetland acreages are approximate and are based on preliminary field reconnaissance. Wetland acreage includes wetlands, wetland bottom stormwater management facilities, and wetland mitigation sites located near the proposed project improvements.
[b] In the study area, 106.3 acres of wetland are mapped within the East Branch DuPage River Watershed. The East Branch DuPage River Watershed is within the study area, but it is not located proximate to proposed improvements. Therefore, it was not included in this table.

TABLE 2-17
Summary of Field Reconnaissance for Wetlands Near Proposed Improvements

Wetland Type[a]	Addison Creek Watershed (acre)	Des Plaines River Watershed (acre)	Salt Creek Watershed (acre)	West Branch DuPage River Watershed (acre)	Willow Creek Watershed (acre)
Emergent wetland	3.5	0.6	64.8	10.8	17.3
Scrub-shrub wetland	0.1	0	3.1	0	0.5
Wet old field	0.1	0.4	8.4	3.5	2.5
Wooded wetland	0.7	0.9	7.2	0	2.9
Vegetated drainage ditch/channel	0.1	2.7	1.2	0	9.9
OMP wetlands[b]	0	27.7	0	0	0.6
Wetland mitigation sites[c]	0.5	0	10.6	2.5	0
Undetermined[d]	0.7	1.0	0	0	0
Wetland bottom stormwater management facility[e]	2.7	30.0	23.2	4.0	2.2
Total	**8.4**	**63.4**	**118.5**	**20.8**	**35.9**
%	**3.4**	**25.7**	**48.0**	**8.4**	**14.5**

Note: Acreages are approximate. Wetlands near proposed EO-WB project improvements were not identified in the East Branch DuPage River or Weller Creek Watersheds; therefore, they are not included in this table.
Source: CH2M HILL, 2008.

[a] Some wetlands include more than one community type or contained areas of open water. The dominant community type is listed.
[b] OMP obtained a Section 404 permit from the USACE in December 2005. As authorized by that permit, onsite wetlands are in the process of being filled and these wetland acreages are likely to decrease; as such, the wetlands within OMP limits are listed separately in the table above.
[c] Mitigation wetlands within OMP limits are categorized as “OMP Wetlands.” Mitigation sites may not meet all three wetland parameters (i.e., vegetation, soils, and hydrology).
[d] Includes one potential wetland area (±1.0 acre) that was identified within railroad property based on review of aerial photography, and additional wetland area (±0.7 acre) that appeared recently planted based on 2008 field observation.
[e] Stormwater management facilities were inventoried due to their potentially jurisdictional nature; however, several may be exempt from state or federal regulation following a review of soils data and site records.

2.4.2 Des Plaines River Watershed

About 63.4 acres of wetlands in the Des Plaines River Watershed are near proposed improvements. Roughly 91 percent of that area (57.7 acres) includes wetland bottom stormwater management facilities and wetlands within the OMP project limits. OMP wetlands within the study area are permitted for fill under Section 404 of the Clean Water Act. Thus, the acreage of OMP wetlands near the proposed improvements will decrease as wetlands are filled. Most remaining wetland resources in the watershed appear to be relatively low quality.

2.4.3 Salt Creek Watershed

An estimated 118.5 acres of wetlands in the Salt Creek Watershed are near the proposed improvements. Roughly one-third of that area is contiguous with, or mapped as, critical wetland or is a wetland mitigation site. Impacts to mapped critical wetlands or wetland mitigation sites most likely will require higher compensation ratios under Section 404 of the

Clean Water Act and the Interagency Wetland Policy Act. Based on preliminary field reconnaissance, most of the remaining wetland sites near proposed improvements in the watershed are relatively low quality, although higher quality wetlands are present.

2.4.4 West Branch DuPage River Watershed

An estimated 20.8 acres of wetlands in the West Branch DuPage River Watershed are near the proposed transportation improvements. Of that, approximately 12 percent (2.5 acres) are wetland mitigation sites. Most of the other wetlands identified during field reconnaissance are of low quality.

2.4.5 Willow Creek Watershed

An estimated 35.9 acres of wetlands in the Willow Creek Watershed are near the proposed transportation improvements. Approximately 82 percent (29.4 acres) of that area includes emergent wetland, vegetated drainage ditch/channel, or wetland bottom stormwater management facilities. Most of the wetlands are manmade or induced; are in channelized corridors adjacent to roads, buildings or parking lots in developed areas; or have an open water component. Based on field reconnaissance, most of the wetland sites are of low quality, although higher quality wetlands are present.

2.5 Floodplains

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps[15] for Cook and DuPage counties show 673 acres of 100-year floodplain (including Zone A floodplain) proximate to the project improvements. Table 2-18 lists watersheds containing 100-year floodplain near the proposed improvements. Some waterways have regulatory floodways.[16] Exhibit 2-9 shows the 100-year floodplain from the FEMA rate maps.

TABLE 2-18
Summary of Floodplain Areas Located near Proposed Improvements

Watershed	Floodplain (acres)	Contributing Floodplains
Addison Creek	96	Addison Creek and Addison Creek Tributary 2.
Des Plaines River	215	Bensenville Ditch, Crystal Creek, Crystal Creek Tributary, Industrial Tributary, Motel Tributary, Sexton Ditch, and Silver Creek.
Salt Creek	192	Devon Avenue Tributary, Meacham Creek, and Salt Creek.
West Branch DuPage River	16	West Branch DuPage River.
Willow Creek	154	Higgins Creek, Higgins Creek Tributaries A and B, Willow Creek, Willow Creek South Tributary, and Willow Creek North Tributary.

Sources: CBBEL, 2006; FEMA, 2004a; FEMA, 2008a.

[15] The FEMA FIRMs used for the portions of the proposed study area located in Cook County became effective on August 19, 2008 while the FIRMs for DuPage County were effective December 16, 2004. The floodplain of the Willow Creek North Tributary and Willow Creek South Tributary were refined based on the *DuPage County Countywide Stormwater and Flood Plain Ordinance Stormwater Management Report for the Willow Creek Tributaries Improvements, Bensenville, DuPage County, Illinois* (CBBEL, 2006).

[16] The floodway is defined as the channel of a waterway and its adjacent land areas that must be preserved to discharge the base flood (the 100-year flood) without cumulatively increasing the water surface elevation more than a designated height.

2.6 Biological Resources

The biological resources within the study area are varied in extent and quality, but generally consist of common/adaptable species. This section addresses vegetation, wildlife, and threatened and endangered species.

2.6.1 Vegetation and Cover Types

There are 1,803 species of plants recorded for Cook County and 1,311 for DuPage County (Iverson, 1999). Table 2-19 summarizes the land cover within the study area based on information from the *Land Cover of Illinois 1999–2000* inventory and associated database, which is the result of the Illinois Interagency Landscape Classification Project (IILCP).[17]

TABLE 2-19
Land Cover within the Study Area

Cover Type[a]	Area (mi^2)	Acres[b]	Percent of Total Land Cover within Study Area
Forested Land			
Upland	8.6	5,530.9	6.8
Partial canopy/savannah upland	3.6	2,305.2	2.8
Floodplain forest	0.2	105.3	0.1
Total	12.4	7,941.4	9.7
Urban and Built-up Land			
High density	32.4	20,753.8	25.4
Low/medium density	54.2	34,704.0	42.5
Urban open space	24.3	15,558.8	19.1
Total	110.9	71,016.6	87.0
Other			
Barren and exposed land	0.0	25.2	0.0
Total	0.0	25.2	0.0

Source: USDA National Agriculture Statistics Service, IDOA and IDNR, 2002.

[a] See subsections 2.2 for agriculture, 2.3 for surface waters, and 2.4 for wetlands Subcategories included in the IILCP data that were not mapped in the study area are not listed in the table. These subcategories include coniferous (forested land); clouds and cloud shadows (other).

[b] Land cover acreages for this table were calculated for the study area based on data from the *Land Cover of Illinois 1999–2000*; the data may vary from data provided by other sources found in other tables within this document.

The study area is 81,603 acres (127.5 square miles) in size. Roughly 87 percent of the total cover is urban and built-up land, including low-, medium-, and high-density development, and also urban open space (see Table 2-19). In high density areas, nearly all the land surface is covered with manmade structures, such as buildings, roads, parking lots, and driveways. The high percentage of impervious surface provides limited cover, foraging, and resting

[17] IILCP includes the following agencies: USDA National Agricultural Statistics Service, Illinois Department of Agriculture (IDOA), and IDNR

areas for wildlife. In areas of low/medium density, up to half of the land surface is covered with manmade structures. The remaining surface area is intermixed with urban landscaping, open space, or forested cover. Such areas can have more area for foraging and cover habitat. Urban open space includes parks, golf courses, cemeteries, and other grass-covered surfaces within developed areas.

Of the land cover types listed in Table 2-19, the most important for wildlife are forested lands and urban open space. Within the study area, large contiguous wooded areas generally are within special lands or adjacent to waterways. Roughly 10 percent of the study area comprises forested land and approximately five percent of the study area comprises wetlands or surface waters (see Table 2-19). Surface waters and wetlands are also important to wildlife. This combination of cover types provides important habitat for many species of plants and wildlife, including threatened or endangered species. Subsection 2.3, Water Resources and Quality, and subsection 2.4, Wetlands, discuss the general distribution of aquatic/wetland habitats.

Field reconnaissance near the proposed transportation improvements found that most of the open space habitat consists of old field successional areas and degraded woodlands, which are low to moderate quality. The old field successional areas are entirely herbaceous or have scattered trees. Nonnative or quickly colonizing plant species dominate these areas. Trees are beginning to colonize the old successional fields that have been abandoned or undisturbed for a long time. A moderate quality successional prairie dominated by native vegetation is located at the south end of the Ned Brown Preserve near the proposed transportation improvements. Three higher quality woodlands near the proposed project improvements are also associated with forest preserve property, including Fischer Woods,[18] Cricket Creek, and Salt Creek Marsh.

The least productive cover types for providing wildlife habitat in the study area are high- and medium-density developments. Wildlife may use such areas for foraging, but there is little opportunity for nesting or cover for most species. Plants and wildlife in these areas are limited primarily to species tolerant of disturbance or that have adapted to urban environments.

2.6.2 Wildlife

The study area contains limited areas of prime wildlife habitat. Roughly 87 percent of the study area is urban and built-up land (see Table 2-19). Development in the study area has limited the distribution of sensitive wildlife species to protected lands, such as forest preserves. The largest forest preserves in the study area are the Ned Brown Preserve and several properties located along the Des Plaines River, both in Cook County. There is also a cluster of forest preserves in DuPage County along Salt Creek and adjacent to I-290. The preserved open space and Salt Creek provide connectivity between the DuPage County preserves and may allow for animal movement between these areas. Overall, urban development and habitat fragmentation limits wildlife movement throughout much of the study area.

The developed parts of the study area provide minimal wildlife habitat. Wildlife species in urban/suburban areas tend to be tolerant of disturbance and human activities. Some will use urban and suburban habitats, but species diversity generally is lower than in forest

[18] Fischer Woods Forest Preserve includes one of the few wet forests in DuPage County (FPDDC, 2008b). A state threatened plant species has been recorded in the seasonally wet, unique wet forests at Fischer Woods (Swink and Wilhelm, 1994).

preserves and rural habitats. Urban tolerant wildlife species are generally common, adaptable species and include limited numbers of mammals, birds, reptiles, and amphibians. Aquatic species, such as fish, mussels, and crustaceans are discussed in subsection 2.3.5, Aquatic Species. A wildlife survey was not conducted as part of the study; instead, national, state, and county databases were searched for wildlife information.[19]

Birds. Based on information from a national public bird database and the Forest Preserve District of Cook County (FPDCC) and FPDDC, 226 bird species are known to use the study area including seasonal spring-fall migrants, breeding residents, and overwintering species. Of those, 126 species have been recorded as nesting within the study area. In general, most of the birds are passerine species (or perching birds), with a complement of birds of prey, waterfowl, woodpeckers, and shorebirds.

The study area is within the eastern half of the Mississippi flyway, which is used by migratory birds in the United States and Canada. Many bird species that migrate through the corridor also nest in the study area, including neotropical migrants. Neotropical migrants, including all or part of their population, fly through or breed in the United States and Canada but winter in the tropical habitats of Latin America and/or the Caribbean. Ninety-four neotropical migrants[20] are known to breed in the study area based on county forest preserve district data. Neotropical migrants may use the habitats found in the study area, such as wetlands, prairies, woodlands, and shrub-lands, for breeding. In general, based on habitat types, neotropical migrants that may be found in the study area include the house wren (*Troglodytes aedon*) in urban areas, eastern kingbird (*Tyrannus tyrannus*) in undeveloped areas, common yellowthroat (*Geothlypis trichas*) in wetlands/shrub-lands, and red-eyed vireo (*Vireo olivaceus*) in woodlands. Additional neotropical migrants that may commonly be observed in the study area include the barn swallow (*Hirundo rustica*), chimney swift (*Chaetura pelagica*), and gray catbird (*Dumetella carolinensis*).

Mammals. Based on data compiled from the INHS, the University of Illinois Museum of Natural History, the FPDCC, and the FPDDC, 43 mammal species have been recorded in the study area. Several mammal species listed for the study area are tolerant of development but require greenways or nearby natural areas for habitat. Common species relatively tolerant of urban areas include the eastern cottontail (*Sylvilagus floridanus*), grey squirrel (*Sciurus carolinensis*), Virginia opossum (*Didelphis viginiana*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), and to some extent white-tailed deer (*Odocoileus virginianus*).

Reptiles and Amphibians. Based on data compiled by the INHS, FPDCC, and FPDDC, 17 reptile species and 13 species of amphibians have been recorded in the study area. Three state-listed reptile species—eastern massasauga (*Sistrurus catenatus*), Kirtland's snake (*Clonophis kirtlandii*), and Blanding's turtle (*Emydoidea blandingii*)—are on the INHS lists and in the wildlife lists provided by the county forest preserves. However, the eastern massasauga was not included in the threatened and endangered species list for the study area provided by IDNR, while the other two species were on that list. FPDDC considers the

[19] FPDDC provided a wildlife species list for all preserves in the study area, except Salt Creek Greenway (list not available). The wildlife lists included birds, mammals, reptiles, amphibians, fish, and mussels.

[20] Based on a list of neotropical migrants provided by Cotton et al, 2008, and USFWS – Division of Bird Habitat Conservation, last updated February 2008. The migratory bird lists include both nearctic and neotropical migrants – no distinction between the two types is made.

massasauga a "historical record."[21] The snake may no longer exist within the study area, and it was not included in the FPDCC wildlife list. Other than the state-listed species mentioned above, most of the reptiles and amphibians in Cook and DuPage Counties are considered locally common.

Invasive Species. Invasive species are those not native to a particular ecosystem, whose introduction does or is likely to cause harm to the associated habitat, environment, economy, or human health. Under EO 13112 (*Invasive Species*), federal agencies are required to identify, control, and minimize/prevent actions that may cause or promote the introduction or spread of invasive species. Invasive species should be considered during all phases of the environmental process to meet NEPA requirements.

Based on available data, the U.S. Department of Agriculture (USDA)–Natural Resources Conservation Service (NRCS) *Noxious Weeds List for Illinois* includes invasive plant species that have been recorded within Cook and DuPage counties, such as Canada thistle (*Cirsium arvense*), Johnson grass (*Sorghum halepense*), marijuana (*Cannabis sativa*), musk thistle (*Carduus nutans*), and perennial sow thistle (*Sonchus arvensis*). Additional invasive plant species dominate many of the upland and wetland habitats in the study area, such as common buckthorn *(Rhamnus cathartica)*, garlic mustard (*Alliaria petiolata*), purple loosetrife *(Lythrum salicaria)*, reed canary grass (*Phalaris arundinacea*), Tartarian honeysuckle (*Lonicera tatarica*), and teasel (*Dipsacus* sp).

Invasive species also include several aquatic nuisance species[22] and injurious wildlife species[23] that can potentially harm an ecosystem. Examples of aquatic nuisance species and injurious wildlife that have been recorded from the study area include the Asiatic clam (*Carbicula fluminea*), common carp (*Cyprinus carpio*), grass carp (*Ctenopharyngodon idella*), rusty crayfish (*Orconectes rusticus*), and zebra mussel (*Dreissena polymorpha*).

2.6.3 Threatened and Endangered Species

Federal-Listed Species. Based on a letter from the USFWS (January 29, 2009), the study area includes two known locations of the federal-threatened eastern prairie fringed orchid (*Platanthera leucophaea*) (Rogner, 2009). Possible habitat for the eastern prairie fringed orchid includes mesic prairie, sedge meadows, marsh edges, and bogs. Any moderate to high quality wetland habitat within the study area could support the species. There is no known critical habitat for this protected species within the study area. A letter from the USFWS (April 10, 2008) states that the Indiana bat (*Myotis sodalis*) is not likely present in northeastern Illinois and that transportation projects are not likely to affect the species adversely (Rogner, 2008). The Indiana bat was not listed in USFWS's letter of January 29, 2009, regarding the study area. Appendix C contains copies of both letters.

---

[21] Historical records include wildlife species data for which a year of observation is not provided. Many of the historical wildlife observation records were made as early as the 1970s and it is possible that these species no longer inhabit the locale where they were identified.

[22] An aquatic nuisance species as defined in the *Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990* (16 USC 4701 *et seq.*) is a nonindigenous species that threatens the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural or recreational activities dependent on such waters.

[23] Injurious wildlife are mammals, birds, amphibians, reptiles, fish, crustaceans, mollusks and their offspring or gametes that are injurious to the interests of human beings, agriculture, horticulture, forestry, wildlife or wildlife resources of the United States. Refer to 18 USC 42 and 50 CFR Part 16. The list of Illinois "injurious species" can be found at 17 IAC §805.20.

State-Listed Species. Based on information provided by the IDNR and Illinois Natural Heritage Database, 23 state-listed threatened or endangered species[24] are potentially within the study area: 17 plants,[25] four birds, and two reptiles (see Table 2-20). No state-listed mammals, amphibians, fish, insects, mussels, snails, or crustaceans were mentioned in the information provided by IDNR for the study area. However, INHS identifies two state-listed threatened or endangered mussel species—slippershell mussel (*Alasmidonta viridis*) and rainbow mussel (*Villosa iris*)—as having been collected from Salt Creek in recent years (1997, 2006) in Cook County. Based on additional information provided by INHS, both mussels were found downstream of the study area as represented by relict or weathered dead shells.

In the study area, the presence of threatened and endangered species generally coincides with special lands, such as forest preserves or natural areas. Fischer Woods Forest Preserve, a protected resource located near the proposed transportation improvements, has six state-listed plant species within its boundaries. Wildlife lists from FPDDC include three more state-listed birds for Fischer Woods. Other special lands near the proposed transportation improvements with state-listed species recorded within their boundaries include the Ned Brown Preserve (with nine species) and a natural area near the southwest corner of the Ned Brown Preserve (with one species).

2.7 Special Lands

Special lands include publicly owned parks, recreational areas, wildlife and waterfowl refuges, and historic sites.[26] Within the study area, numerous properties in the public domain are managed and protected for their special resources, including 18 forest preserve areas, one nature preserve, eight Illinois Natural Areas Inventory (INAI) sites,[27] and several local parks (see Exhibit 2-10). These areas provide open space and habitat for different types of plants and wildlife, including common species and threatened and endangered species that rely on this habitat for survival. Forest preserves and parks also provide recreational activities. However, nature preserves and natural areas are usually not developed for public access. In cases where public forest preserves incorporate a nature preserve or natural area, access is usually limited or restricted to well-defined trails. Forest preserves and associated nature preserves and INAI Sites within the study area are described in Table 2-21.

---

[24] The alkali bulrush (*Bolboschoenus maritimus*) was delisted in 2009 by the Illinois Endangered Species Protection Board.

[25] Ibid.

[26] Properties with these qualities are protected under Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 USC 303). Special lands that would likely be affected by the proposed improvements are evaluated for their potential to qualify as 4(f) properties in Section 4.6. Lands purchased or developed using Land and Water Conservation funds (Section 6(f) lands) or Open Space Land Acquisition and Development (OSLAD) grant program funds are also protected. Potential impacts to Section 6(f) lands are also discussed in Section 4.6.

[27] One INAI site, WGN Marsh, is privately owned. It is located within the study area near the southwest corner of the Ned Brown Preserve – outside of forest preserve limits.

TABLE 2-20
State-Listed Species Potentially within the Study Area as Identified by IDNR

Common Name	Scientific Name	State Status[a]
Plants		
Alkali bulrush	*Bolboschoenus maritimus*	delisted[b]
Buffalo clover	*Trifolium reflexum*	LT
Dog violet	*Viola conspersa*	LT
Downy Solomon's seal	*Polygonatum pubescens*	LE
Dwarf raspberry	*Rubus pubescens*	LT
Ear-leafed foxglove	*Tomanthera auriculata*	LT
Eastern prairie fringed orchid	*Platanthera leucophaea*	LE
Marsh speedwell	*Veronica scutellata*	LT
Northern grape fern	*Botrychium multifidum*	LE
Pretty sedge	*Carex woodii*	LT
Purple fringed orchid	*Platanthera psycodes*	LE
(Brome hummock) sedge	*Carex bromoides*	LT
Small sundrops	*Oenothera perennis*	LT
Spotted coral-root orchid	*Corallorhiza maculata*	LT
Star-flower	*Trientalis borealis*	LE
Tuckerman's sedge	*Carex tuckermanii*	LE
White lady's slipper	*Cypripedium candidum*	LT
Birds		
Black-crowned night-heron	*Nycticorax nycticorax*	LE
Common moorhen	*Gallinula chloropus*	LE[c]
Least bittern	*Ixobrychus exilis*	LT
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	LE
Reptiles		
Blanding's turtle	*Emydoidea blandingii*	LE[c]
Kirtland's snake	*Clonophis kirtlandii*	LT

Sources: IDNR and Illinois Natural Heritage Database, 2008a; IDNR and Illinois Natural Heritage Database, 2008b).

[a] LE = state-listed as endangered; LT = state-listed as threatened
[b] The Illinois Endangered Species Protection Board delisted the alkali bulrush (*Bolboschoenus maritimus*) in 2009.
[c] The Illinois Endangered Species Protection Board changed the status of the common moorhen (*Gallinula chloropus*) and Blanding's turtle (*Emydoidea blandingii*) from state-threatened to state-endangered.

TABLE 2-21
County Forest Preserves and Associated Nature Preserves and INAI Sites within the Study Area

Forest Preserve Name	County	Approximate Size (acre)[a]	Function[b]	Nature Preserve/ Natural Area[c]
Cricket Creek	DuPage	192	R	None
Des Plaines River Preserves	Cook	1,650[d]	—	—
Axehead Lake	—	—	R	None
Catherine Chevalier Woods	—	—	R	None
Che-Che-Pin-Qua Woods	—	—	U	None
Chippewa Woods	—	—	R	None
Dam No. 4 Woods – East	—	—	R	None
Iroquois Woods	—	—	R	None
Robinson Woods	—	—	R	None
Schiller Woods	—	—	R	Schiller Woods Prairie INAI Site
Fischer Woods[e]	DuPage	149	U	Fischer Woods INAI Site
Fullerton Park	DuPage	185	R	None
Maple Meadows Golf Club	DuPage	245	G	None
Mallard Lake	DuPage	949	R	None
Meacham Grove	DuPage	252	R	Meacham Grove INAI Site
Medinah Wetlands	DuPage	23[f]	U	None
Ned Brown Preserve	Cook	3,700	R	Busse Woods INAI Site; Busse Forest Nature Preserve
Oak Meadows Golf Club	DuPage	210	B, G	None
Salt Creek Greenway	DuPage	49	U	None
Salt Creek Marsh	DuPage	100	U	None
Salt Creek Park	DuPage	90	R	None
Silver Creek	DuPage	18	U	None
Songbird Slough	DuPage	391	R	Songbird Slough INAI Site
Spring Creek Reservoir	DuPage	88	R	None
Swift Prairie	DuPage	106	U	Swift Road Meadow INAI Site
Wood Dale Grove	DuPage	187	R	Wood Dale Grove INAI Site

Sources: CH2M HILL, 2008; FPDDC, 2008a; FPDCC, 2006a; FPDCC, 2006b; FPDCC, 2008a; IDNR and Illinois Natural Heritage Database, 2008a.

[a] Unless otherwise noted, acreages are for the entire preserve and were obtained from forest preserve district websites listed below.
[b] B = banquet/meeting facilities; G = golf; R = recreational opportunities, U = undeveloped.
[c] One additional INAI site within the study area is not associated with a forest preserve (see Exhibit 2-10).
[d] Acreage from CH2M HILL GIS database; includes only part of forest preserve within study area.
[e] Fischer Farm Park at the south end of the preserve is operated by the Bensenville Park District through a lease with the FPDDC. Educational opportunities and other programs/events are available at Fischer Farm.
[f] Acreage from CH2M HILL GIS database; does not include proposed forest preserve acquisition areas.

2.7.1 Forest Preserves

Forest preserve properties, account for roughly nine percent of the study area (see Exhibit 2-10). The largest preserves are in Cook County and include the Ned Brown Preserve and several properties located along the Des Plaines River.[28] There is a cluster of several forest preserves located near the southwestern part of the study area in DuPage County. The forest preserves in the study area provide a combination of protected open space, plant/wildlife habitat, and recreational facilities. IDNR identified state-listed threatened and endangered species at 10 forest preserve sites within the study area. Of the 18 forest preserve sites, 12 provide trails or opportunity for recreation (fishing, picnicking, golfing)[29] The remaining six are open to the public but have no established recreational facilities or parking.[30]

Forest preserve trails provide opportunities for walking, jogging, hiking, bicycling, inline skating, and cross-country skiing. They also provide a means to travel within the preserve and connect with other trails outside the preserves. Parts of several regional trails have been constructed or are proposed to cross forest preserve property within the study area. These include the Des Plaines River Trail, Salt Creek Greenway Trail, North Central DuPage Regional Trail, and the East Branch DuPage River Greenway Trail (see Table 2-22).

TABLE 2-22
Summary of Regional Trails Crossing Through Forest Preserve Land within the Study Area

Trail Name	Existing Length (miles)[a]	Proposed Length (miles)[a]	Primary Use	Owner
Des Plaines River Trail	5.9	N/A	Multipurpose	FPDCC
Salt Creek Greenway Trail	6.6	6.1	Multipurpose	FPDDC; local communities
North Central DuPage Regional Trail[b]	8.9	N/A	Multipurpose	FPDDC; DuPage County Division of Transportation; IDOT; local communities
East Branch DuPage River Greenway Trail	1.7	0.1	Multipurpose	FPDDC, DuPage County Division of Transportation; local communities

Sources: DuPage County Department of Economic Development and Planning and the DuPage Mayors and Managers Conference, 2008; FPDDC, 2009; CH2M HILL, 2008.

[a] Approximate trail lengths within the study area are based on sources above. Trails may extend beyond study area limits.
[b] Includes part of a local trail system (3.3 miles in length).

Several forest preserves within the study area are in the floodplain or were purchased by the respective forest preserve districts for flood control/stormwater quantity and quality improvements. This was accomplished through floodplain acquisition, construction of

[28] The "Des Plaines River Preserves" include several individually named "woods." The woods form a large contiguous system of forest preserve property, including the Des Plaines River Trail System (South). This system of preserves is counted as one forest preserve site for the purposes of this section of the document.

[29] Che-Che-Pin-Qua Woods, one of several FPDCC woods located adjacent to the Des Plaines River, was included in the total.

[30] Fischer Woods Forest Preserve is described by FPDDC as undeveloped. Fischer Farm Park, which is located at the south end of the preserve, is leased by the Bensenville Park District. It includes an old farm house and offers programs/events and parking facilities.

reservoirs/stormwater facilities, preservation of wetlands and riparian habitat, and public education/awareness opportunities.

2.7.2 Parks

In addition to the Cook and DuPage County forest preserve sites, there are numerous local parks and golf courses within the study area owned by municipalities and park districts (see Exhibit 2-10). Parks provide open space, plant/wildlife habitat, educational opportunities, and recreational facilities, such as picnic sites, playgrounds, ball fields, skate parks, and trails. Based on information provided by IDNR, some municipal parks within the study area provide potential habitat for state-listed threatened and endangered species or overlap with INAI sites. There are no state parks within the study area.

2.7.3 Illinois Nature Preserves

Busse Forest Nature Preserve is the only nature preserve in the study area (see Exhibit 2-10). IDNR defines a nature preserve as "an area of land or water in public or private ownership that is formally dedicated, pursuant to the terms of the law, to being maintained in its natural condition." A major objective of the nature preserve system is the preservation of adequate samples of all the important natural features of the state, including threatened and endangered species. This 440-acre site is a registered National Natural Landmark by the U.S. Department of Interior for its rich mixture of flatwoods, upland forest, and marsh communities.

2.7.4 Illinois Natural Areas

The Illinois Natural Areas Preservation Act (525 ILCS 30) defines a "natural area" as "an area of land in public or private ownership which, in the opinion of the [Illinois Nature Preserves] Commission, either retains or has recovered to a substantial degree its original natural or primeval character, though it need not be completely undisturbed, or has floral, faunal, ecological, geological or archaeological features of scientific, educational, scenic or esthetic interest." Natural areas include lands registered under the Illinois Natural Areas Preservation Act or identified in the INAI. Many INAI sites are associated with nature preserves, land and water reserves, or natural heritage landmarks and may overlap a forest preserve. Based on information provided by the IDNR and Illinois Natural Heritage Database, there are eight INAI sites within the study area (see Exhibit 2-10), seven of which are associated with forest preserves (see Table 2-21).

2.8 Visual Resources

Visual resources are aspects of the environment that determine the physical character of an area and the manner in which it is viewed. Visual resources include scenery viewed at various distances, as well as cultural manmade modifications, vegetation, and other landforms.

Most landscape within the study area is urban, having been substantially altered for development purposes, resulting in the leveling of large areas of the natural topography. Within the study area, there are few long distance natural vistas, unless one looks skyward or the viewer is within an open area (a park, a forest preserve), on a manmade hill, or looking out the window of a multistory building. Otherwise, views generally are obstructed by roads, buildings, and tree lines. These urban features stand upon nearly flat to gently rolling terrain within the study area, with natural elevations ranging from 620 to 820 feet (North American Datum, 1927). Large hills within the study area are primarily manmade spoil piles, fill piles, or embankments for roadways or other development. No large naturally occurring hills exist within the study area.

Most of the study area (63 percent) is a mix of residential, industrial, institutional, and commercial land uses. Transportation accounts for an additional 11 percent. The transportation system includes an established roadway system, commuter and freight rail, a regional airport, and an international airport; and is complimented by bicycle routes and pedestrian paths. Thus, transportation is an integral part of the visual scene of the area and does not represent an unusual or uncommon visual image.

Residential areas are primarily concentrated along the southern and western parts of the study area, whereas O'Hare Airport and adjacent industrial facilities dominate the northern and eastern parts. Residential areas are representative of typical suburban areas with moderately dense populations and little undeveloped land. Complementing the suburban landscape are community centers that provide a sense of community and architectural style and have composition that creates integrity and intactness in visual quality.

Open space accounts for about 26 percent of the study area and primarily comprises forest preserves, parks, and other undeveloped land. Preliminary field reconnaissance of the land near the proposed improvements shows that most of the open space habitat consists of old field successional areas and degraded woodlands of low to moderate quality. Nestled among the developed landscape is the Ned Brown Preserve, the largest forest preserve in the study area, and several adjacent to the Des Plaines River, both in Cook County. There is also a cluster of forest preserves near the southwestern part of the study area in DuPage County. In general, the largest contiguous open spaces within the study area are located along the Des Plaines River and Salt Creek, or adjacent to existing transportation corridors (such as I-290 and Des Plaines River Road). These facilities are most sensitive to visual change and not only offer visual amenity; they also serve ecological and recreational purposes, such as habitat and wildlife corridors and trails.

Determining the potential effects of the project's visual resources requires identification of the visual quality of the study area and an understanding of potential viewers, the infrastructure to be installed, and the alteration such infrastructure has on the various levels of view, both near and far.

The degree to which viewers can be affected by changes to the visual environment varies with their financial and emotional investment in the aesthetic quality of the land and their urban surroundings. For example, people who reside or work near the project corridor may be affected to a greater degree by changes in visual character than people who spend very little time in and have little connection to that area. Even though a project may not alter the basic view within an urban environment, a change in distance of view length could change a viewer's perception, from open to enclosed space.

2.9 Air Quality

Chicago is the third largest metropolitan area in the nation, with a large number of both industrial and vehicle air emission sources. The USEPA National Ambient Air Quality Standards (NAAQS) set maximum allowable concentration limits for six criteria air pollutants. Table 2-23 lists the NAAQS. The primary standards are established at levels that are intended to protect the public health. Secondary standards are required to protect the public welfare from any known or anticipated adverse effects of a pollutant. Exceedances of the 24-hour and annual arithmetic mean standards for $PM_{2.5}$[31] were recorded in the study area, while no exceedances or violations within the study area were recorded for carbon monoxide, lead, nitrogen dioxide, and PM_{10}.[32] Ozone and sulfur dioxide were not monitored in the study area.

TABLE 2-23
National Ambient Air Quality Standards

	Primary Standards		Secondary Standards	
Pollutant	**Level**	**Averaging Time**	**Level**	**Averaging Time**
Carbon monoxide	9 ppm (10 mg/m^3)	8-hour[a]	None	
	35 ppm (40 mg/m^3)	1-hour[a]		
Lead	0.15 µg/m^3 [b]	Rolling 3-month average	Same as primary	
	1.5 µg/m^3	Quarterly average	Same as primary	
Nitrogen dioxide	0.053 ppm (100 µg/m^3)	Annual (arithmetic mean)	Same as primary	
Particulate matter (PM_{10})	150 µg/m^3	24-hour[c]	Same as primary	
Particulate matter ($PM_{2.5}$)	15.0 µg/m^3	Annual[d] (arithmetic mean)	Same as primary	
	35 µg/m^3	24-hour[e]	Same as primary	
Ozone	0.075 ppm (2008 std)	8-hour[f]	Same as primary	
Sulfur dioxide	0.03 ppm	Annual (arithmetic mean)	0.5 ppm (1300 µg/m^3)	3-hour [a]
	0.14 ppm	24-hour[a]		

Source: USEPA, 2009a.

[a] Not to be exceeded more than once per year.
[b] Final rule signed October 15, 2008.
[c] Not to be exceeded more than once per year on average over three years.
[d] To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.
[e] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m^3 (effective December 17, 2006).
[f] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective May 27, 2008).

31 $PM_{2.5}$ is particulate matter 2.5 micrometers or smaller.
32 PM_{10} is particulate matter 10 micrometers or smaller.

Areas in which air pollution levels persistently exceed the NAAQS may be designated "nonattainment" areas. The study area is located within Cook and DuPage counties, which are included in the moderate nonattainment area for the 8-hour ozone standard. Due to the nonattainment status of the area, the State of Illinois has developed a State Implementation Plan identifying programs intended to reduce emission of ozone precursors.

In addition, USEPA has designated Cook and DuPage counties as not attaining the $PM_{2.5}$ standard (70 Code of Federal Regulations [CFR] 944, 968). The designations became effective April 5, 2005.

Illinois EPA publishes air quality information for the state in its *Annual Air Quality Report*. Table 2-24 summarizes the 2007 status (the latest Air Quality Report available) for each air quality pollutant sampled in the study area.

TABLE 2-24
2007 Status on Air Quality Pollutants

Pollutant Name	Status (2007)
Carbon monoxide	No exceedances of the 1-hour standard of 35 ppm or the 8-hour standard of 9 ppm.
Lead	No violations of the 3-month maximum mean standard of 0.15 $\mu g/m^3$.
Nitrogen dioxide	No violations of the annual arithmetic mean standard of 0.053 ppm.
PM_{10}	No exceedances of the 24-hour standard of 150 $\mu g/m^3$.
$PM_{2.5}$	Exceedances of the 24-hour standard of 35 $\mu g/m^3$ and annual arithmetic mean of 15.0 $\mu g/m^3$.
Ozone	Not evaluated in the study area. However, no exceedances of the former 1-hour standard were recorded statewide, but exceedances of the current and former 8-hour standards were recorded at other monitoring stations in the Metropolitan Chicago Area.
Sulfur dioxide	Not evaluated in the study area. However, no exceedances of the annual arithmetic mean standard of 0.03 ppm, the 24-hour standard of 0.14 ppm, or the 3-hour standard of 0.5 ppm were recorded in the Metropolitan Chicago Area.

Source: IEPA, 2008a.

Metropolitan planning organizations (MPOs) are required under regulations promulgated in the Clean Air Act of 1990 to undertake conformity determinations on metropolitan transportation plans and transportation improvement programs before they are adopted, approved, or accepted. The purpose of the analysis is to develop transportation plans that conform to state or federal air implementation plans with the object being to preserve the public health. An update of the 2030 Regional Transportation Plan (RTP) was approved and found to conform to the State Implementation Plan by the MPO Policy Committee on October 9, 2008. The 2030 RTP includes a proposed extension of the Elgin O'Hare Expressway east from I-290 to a new western O'Hare access point. In the RTP, the West Bypass is envisioned to extend south from the extended Elgin O'Hare Expressway to I-294 as an access-controlled highway and north from the extended expressway to I-90 as an arterial type highway.

The Tier One analysis is exempt from conformity because it is a planning level study that would not directly involve construction or physical impacts and there would be no generation of pollutants that would substantially impact air quality. The federal regulations pertaining to this issue are contained in 40 CFR 93.126, which lists projects that are exempt from air quality conformity. These include specific activities that do not involve or lead directly to construction, such as planning and technical studies. During the Tier Two environmental studies, transportation conformity would be addressed including (1) confirmation of the date and status of the RTP conformity; (2) results of a $PM_{2.5}$ hotspot analysis to estimate the future localized PM concentrations and assess potential standard violations; and (3) a discussion of whether the project implements a Transportation Control Measure (TCM) in the applicable air quality plan, and if not, a determination as to whether the project would interfere with implementing TCMs. Because conformity is a Tier Two issue, it is not discussed further in this Tier One document.

Carbon monoxide levels are not permitted to exceed the 8-hour NAAQS of nine parts per million and the one-hour NAAQS of 35 parts per million. IDOT uses the computer screening model *Illinois Carbon Monoxide Screen for Intersection Modeling* (COSIM) to estimate worst-case carbon monoxide concentrations for proposed roadway projects affecting signalized intersections with a sensitive receptor within 1,000 feet of the intersection. A COSIM analysis will be performed during Tier Two to determine whether the proposed improvements have the potential to violate the 8-hour standard, and so is not discussed further in this Tier One document.

In addition to criteria air pollutants for which there are NAAQS, USEPA regulates air toxics. Mobile source air toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act. The MSATs are compounds emitted from highway vehicles and nonroad equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics result from engine wear or from impurities in oil or gasoline. FHWA's Interim Guidance on Air Toxics Analysis in NEPA Documents suggests a tiered approach for addressing MSATs in NEPA documents. In this approach, projects with no potential for meaningful MSAT effects do not need an analysis, including those exempt under the Clean Air Act Conformity Rule section 93.126. Therefore, no MSAT analysis will be completed at this time. Rather, it will be undertaken during Tier Two and is not discussed further in this Tier One document.

2.10 Noise

Sound is caused by the vibration of air molecules and is measured on a logarithmic scale with units of decibels (dB). Sound is composed of a wide range of frequencies, but the ear is not sensitive to all frequencies. The "A" weighted scale was devised to correspond with the ear's sensitivity, and sound levels are measured as dBA on this scale. Highway agencies use a one-hour equivalent sound level, Leq(h), as a descriptor of traffic noise levels. Studies show that a change of three dBA is a barely perceivable change in noise, whereas a change of 10 dBA is perceived as being twice or half as loud.

Title 23 CFR 772 has developed noise abatement criteria (NAC) for assessing potential noise impacts (see Table 2-25). The criteria set forth in the regulations consider appropriate noise levels based upon land use activity. A traffic noise impact occurs when traffic noise levels approach (in Illinois this means within one dBA), meet or exceed the NAC for the associated land use activity, or if a substantial increase (in Illinois this means an increase of more than

14 dBA over existing noise levels) in predicted traffic noise level occurs over existing traffic generated noise levels even though the applicable NAC has not been reached.

TABLE 2-25
Noise Abatement Criteria Hourly A-Weighted Sound Level

Activity Category	L_{eq} (h) [a]	Description of Activity Category
A	57 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if they are to continue to serve their intended purpose.
B	67 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (exterior)	Developed lands, properties or activities not included in Categories A and B.
D	—	Undeveloped lands.
E	52 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: FHWA. April 1992. Code of Federal Regulations. Title 23 CFR 772: Procedures for Abatement of Highway Traffic Noise and Construction Noise.

[a] Considered a noise impact if the traffic noise level approaches (within one dBA), meets, or exceeds the NAC, or increases more than 14 dBA above existing traffic noise levels.

2.10.1 Noise Sources and Existing Conditions

Noise monitoring or modeling to determine traffic noise impacts was not conducted for the Tier One analysis. Existing noise sources and conditions are described below, and potentially affected noise-sensitive receptors (e.g., residences, churches, schools, parks) located adjacent to the proposed improvements have been identified (see subsection 2.10.2 regarding their locations.) A detailed noise analysis will be undertaken in Tier Two to identify traffic noise impacts, and consideration of abatement measures where a traffic noise impact is identified will be undertaken, as necessary.

As the study area is moderately to highly urbanized and the population density is high, many noise-producing human activities are present. Noise sources include road, railroad, aircraft, and other human activity. Major roadway and interstate facilities are located in the study area as are passenger and freight railroads. One notable noise source is O'Hare Airport on the eastern side of the study area. The study area is beneath the flight paths.

2.10.2 Potentially Noise-Sensitive Residential Areas and Nonresidential Sensitive Receptors

Locations of potentially noise-sensitive residential areas and nonresidential receptors were identified in the study area. Forty-eight noise-sensitive residential areas representing concentrations of residential noise receptors and 30 noise-sensitive nonresidential receptors, including 24 parks, three schools, and three churches, are spread throughout the study area. The largest concentrations of properties potentially affected by noise are along Thorndale Avenue and west of IL 83, along I-90, and along County Line Road (see Exhibit 2-11).

2.11 Cultural Resources

Cultural resources include archeological and architectural items, places, or events considered important to a culture, community, tradition, religion, or science. Archeological resources are locations where human activity measurably altered the earth or left deposits of physical or biological remains. Prehistoric artifacts include arrowheads, rock chips from tool creation, and village remains. Architectural resources represent properties or districts that are notable in American history and culture. The National Historic Preservation Act and its implementing regulations require federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings.

2.11.1 Archaeological Resources

The Illinois Transportation Archaeological Research Program (ITARP) supplied information on known archaeological resources in the study area, locations where there is a high probability for archaeological resources, and locations where archaeological fieldwork had been previously conducted. The information provided was based solely on records research and involved no fieldwork.

There are 80 known prehistoric sites within the study area, three of which are mound or cemetery sites. The archaeological sites include Paleo Indian (12,000 years ago) sites through the Historic period. Six contain Paleo-Indian components, four Early Archaic, three Middle Archaic, 12 Late Archaic/Early Woodland, four Middle Woodland, six Late Woodland, nine Upper Mississippian, and 17 Historic (some sites are multicomponent). Only a few of the 80 known sites appear to represent small lithic scatters. There are 19 known historic cemeteries[33] within the study area.

Areas containing high probability for archaeological finds coincide with water bodies in the study area, including the Des Plaines River, Salt Creek, Spring Brook, and their tributaries. Twenty percent of the study area has a high probability for archaeological sites (see Exhibit 2-12).

One hundred forty-seven Phase I archaeological surveys were previously conducted, covering about 7.5 percent of the study area. The sites range from having no historical relevance to those warranting further investigation.

2.11.2 Architectural Resources

The Illinois Historic Preservation Agency (IHPA), specifically its Historic Architectural and Archaeology Resources Geographic Information System (HAARGIS) tool, provided locations of historic structures within the study area. Four are listed in the NRHP. Within the core communities, the historic Fischer School is located in Bensenville. The three other properties are a historic home in Schaumburg, and a historic home and an educational building in Elmhurst. According to HAARGIS, 96 properties within the study area are of undetermined status. That is, an evaluation of the structure has been logged with the IHPA but no determination was made regarding whether the property or structure is eligible for

[33] ITARP considers the cemeteries “historic”. However, the term “historic” applies only if the site is on or eligible for the National Register of Historic Places (NRHP). The cemeteries ITARP classifies as “historic” are not on or eligible for the NRHP.

listing on the National Register. Of the 96 properties, 15 are in Itasca, 12 in Bensenville, and two in Wood Dale.

Local officials and historical societies were contacted to identify properties that the communities consider to have local importance. No communities are Certified Local Governments (CLGs)[34] Wood Dale does not have any structures with a local historic designation. Itasca has an historic district and regards the Itasca Baptist Church, Itasca Historical Depot Museum, and the house once owned by the first Village President, A.G. Chessman, as locally important properties. Bensenville regards several properties as having historic relevance, some of which are marked with a plaque indicating its historic relevance.

2.12 Special Waste

"Special waste," as defined in the Illinois Environmental Protection Act (415 ILCS 5/3.475), includes hazardous waste, potentially infectious medical waste, and industrial process waste or pollution control waste[35] In Illinois, highway projects are evaluated to determine a project's potential involvement with special waste and other regulated substances, such as hazardous substances and petroleum products.

Sites reported to USEPA because of a release or potential release of a hazardous substance into the environment are listed in the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS). CERCLIS sites that rank high enough to be eligible for USEPA to expend funds for cleanup because the sites pose a risk to human health or the environment are placed on the National Priorities List. Based on USEPA data, no sites on the National Priorities List are within the study area (USEPA, 2008c).

Table 2-26 summarizes the special waste sites located within the greater study area and those located specifically near the proposed improvements. More detailed special waste assessment will be completed, as necessary, in the area of the improvements as part of any Tier Two studies. Most special waste sites are within industrial areas or along major arterial roadways within the study area (see Exhibit 2-13).

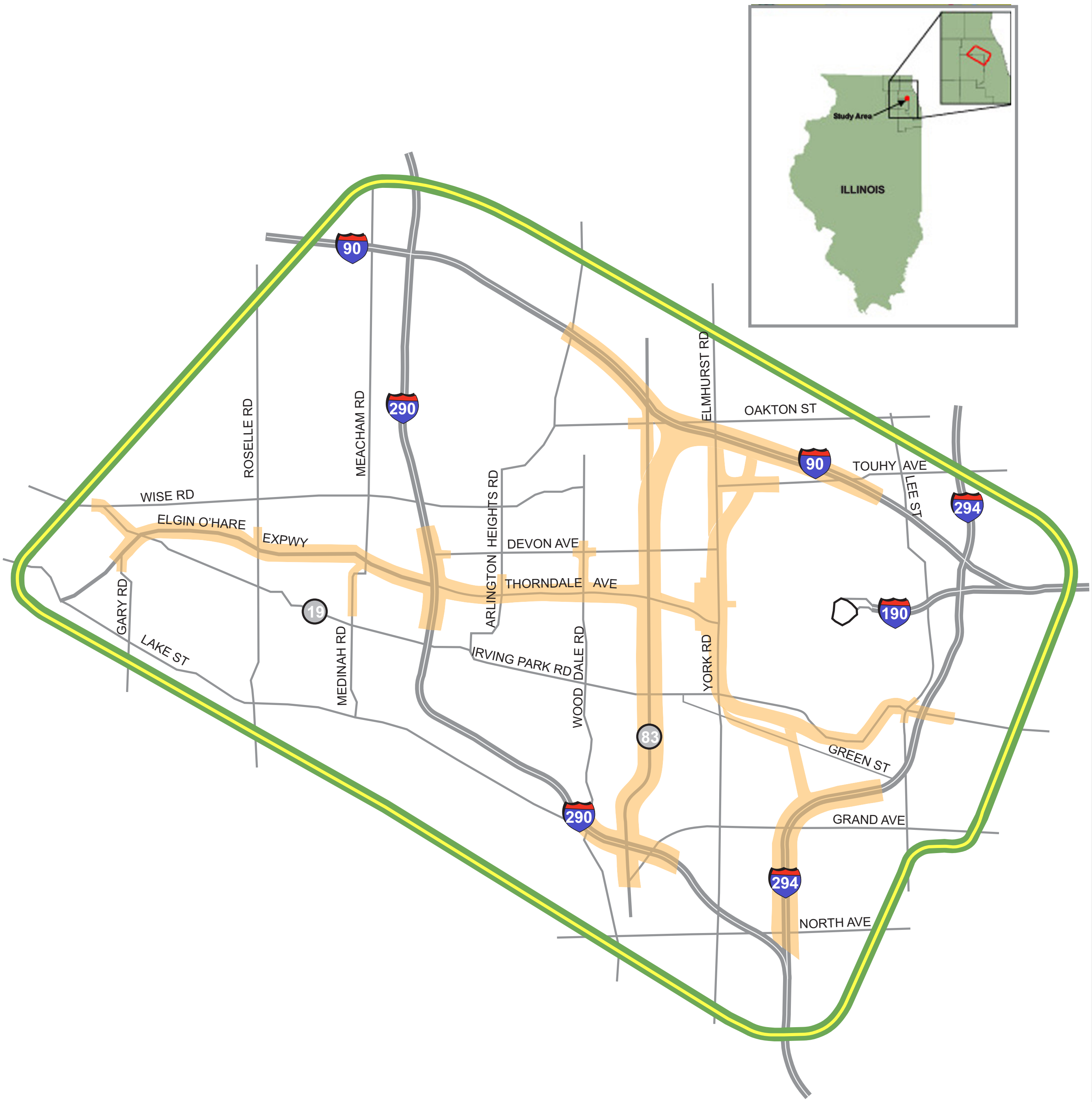
[34] The CLG is a preservation program jointly administered by the National Park Service (NPS) and the State Historic Preservation Offices (SHPOs) in each state, with each local community working through a certification process to become recognized as a CLG.

[35] Refer to the Illinois Environmental Protection Act for exceptions.

TABLE 2-26
Special Waste Sites within the Study Area

Type of Special Waste Site	No. within Study Area	No. near the Proposed Improvements[a]
CERCLIS[b]		
Active	14	13
Archived	42	36
Resource Conservation and Recovery Act (RCRA)[c]	1,803	324
UST[d]	2,846	529
Leaking Underground Storage Tank (LUST)[e]	1,304	443
Toxics Release Inventory (TRI)[f]	254	57
Site Remediation Program (SRP)[e]	201	40
Landfills[g]	9	3

[a] Includes CERCLIS sites within ±1 mile and LUST sites within ±1,000 feet of proposed improvements.
[b] Data provided by USEPA, dated October 7, 2008.
[c] RCRA data includes (1) Conditionally Exempt Generators, (2) Large Quantity Generators, and (3) Small Quantity Generators; *Source:* USEPA, dated January 21, 2009.
[d] UST data includes “all” facility status (e.g., active, closed, exempt, etc.) (Office of the State Fire Marshal, as of December 17, 2008).
[e] *Source:* IEPA, as of, December 17, 2008.
[f] TRI sites reported through 2007. Data from USEPA, as of November 4, 2008.
[g] *Source:* Illinois Waste Management and Research Center, 1997.



LEGEND

Study Area

Areas of Detailed Evaluation

N

Not to Scale

Exhibit 2-1
Study Area versus Areas of Detailed Evaluation

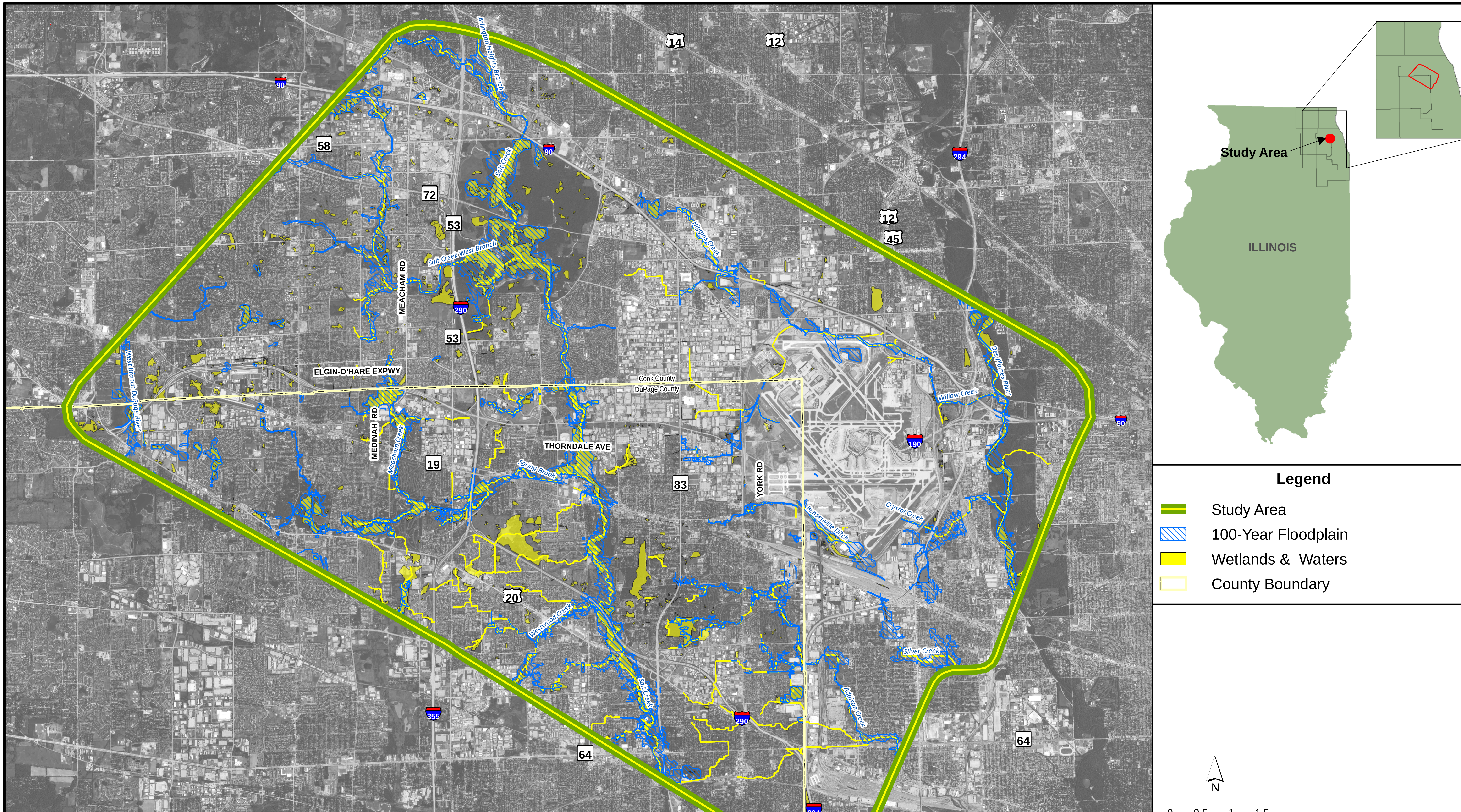


Exhibit 2-2

Environmental Features in the Study Area

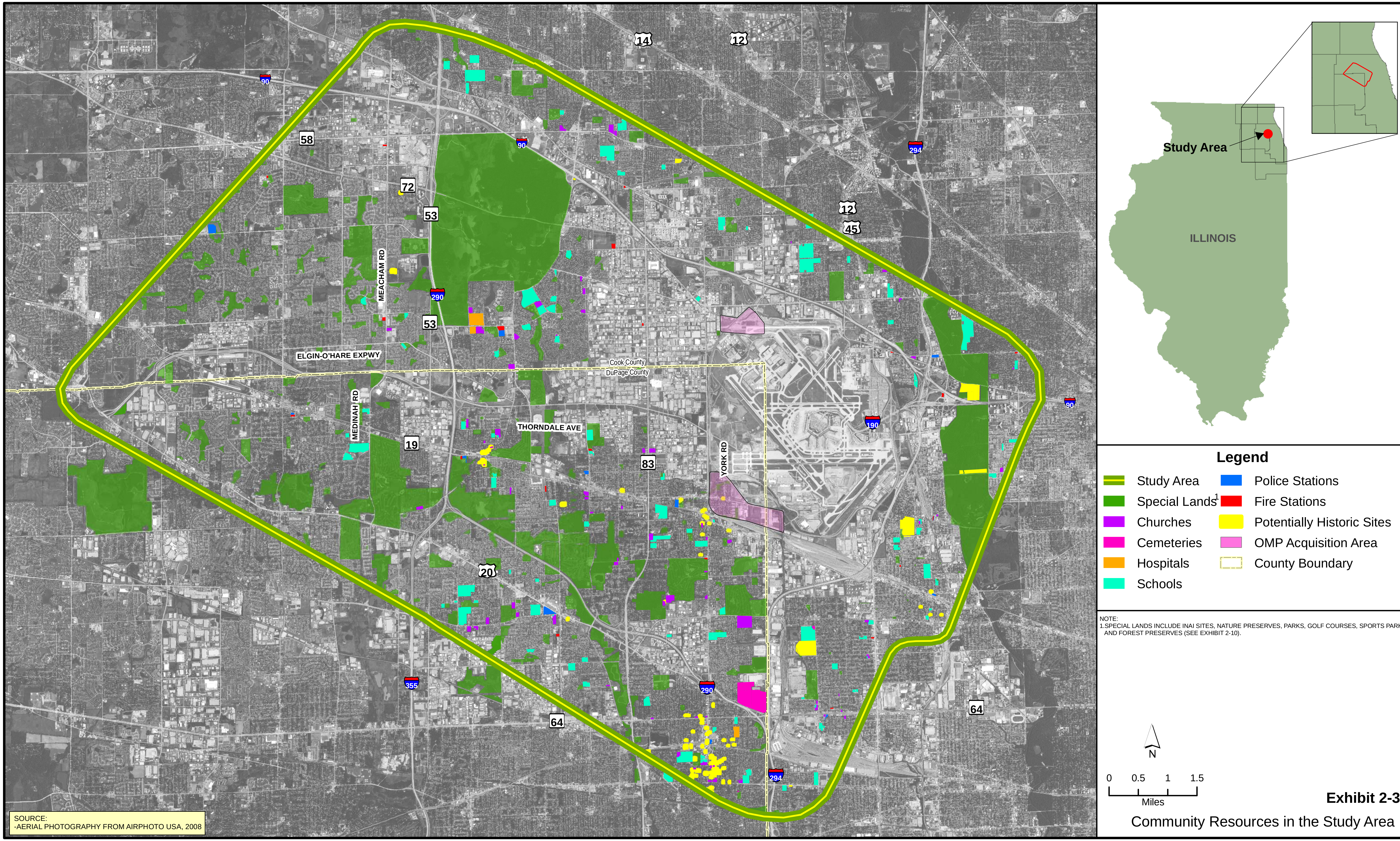


Exhibit 2-3

Community Resources in the Study Area

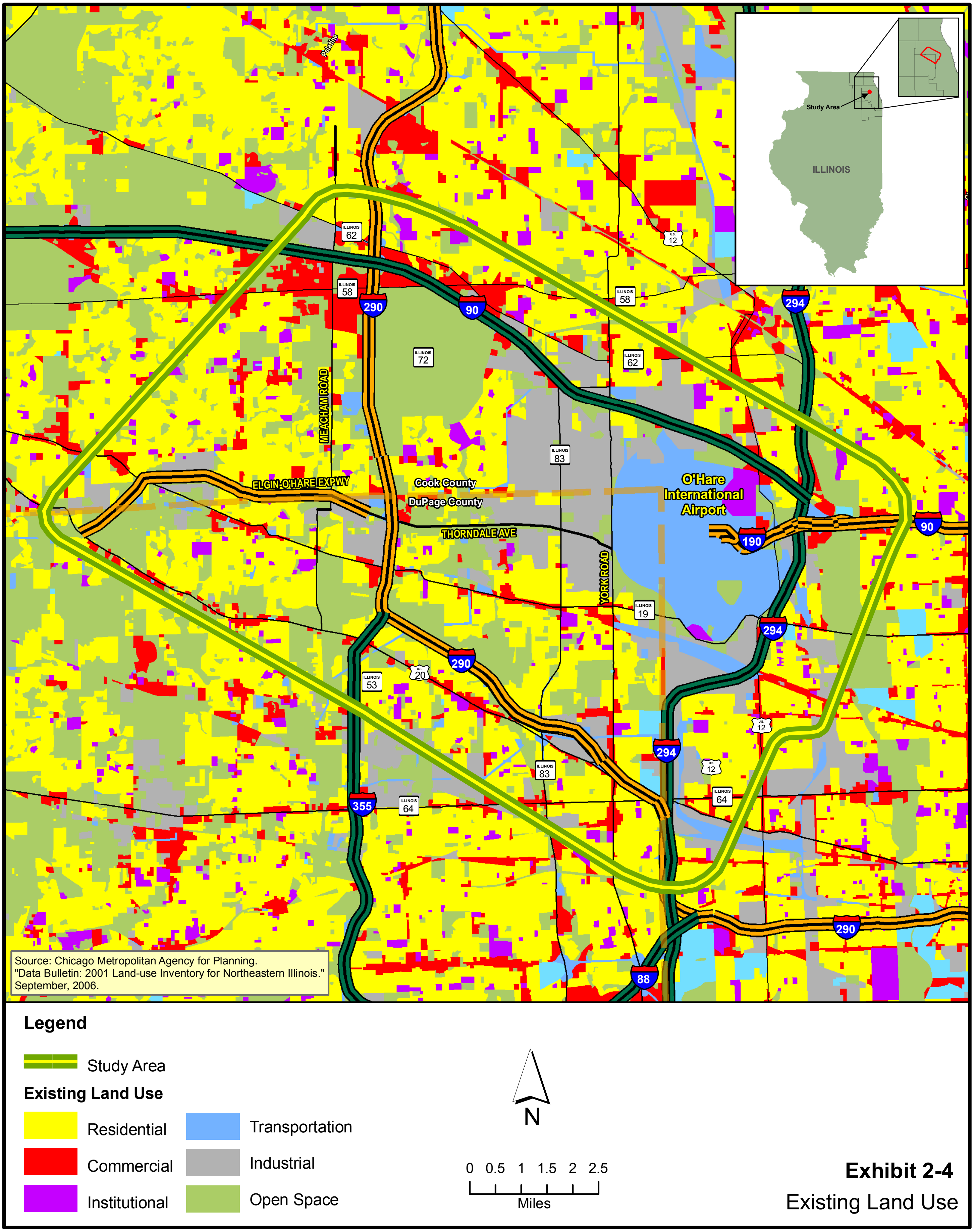
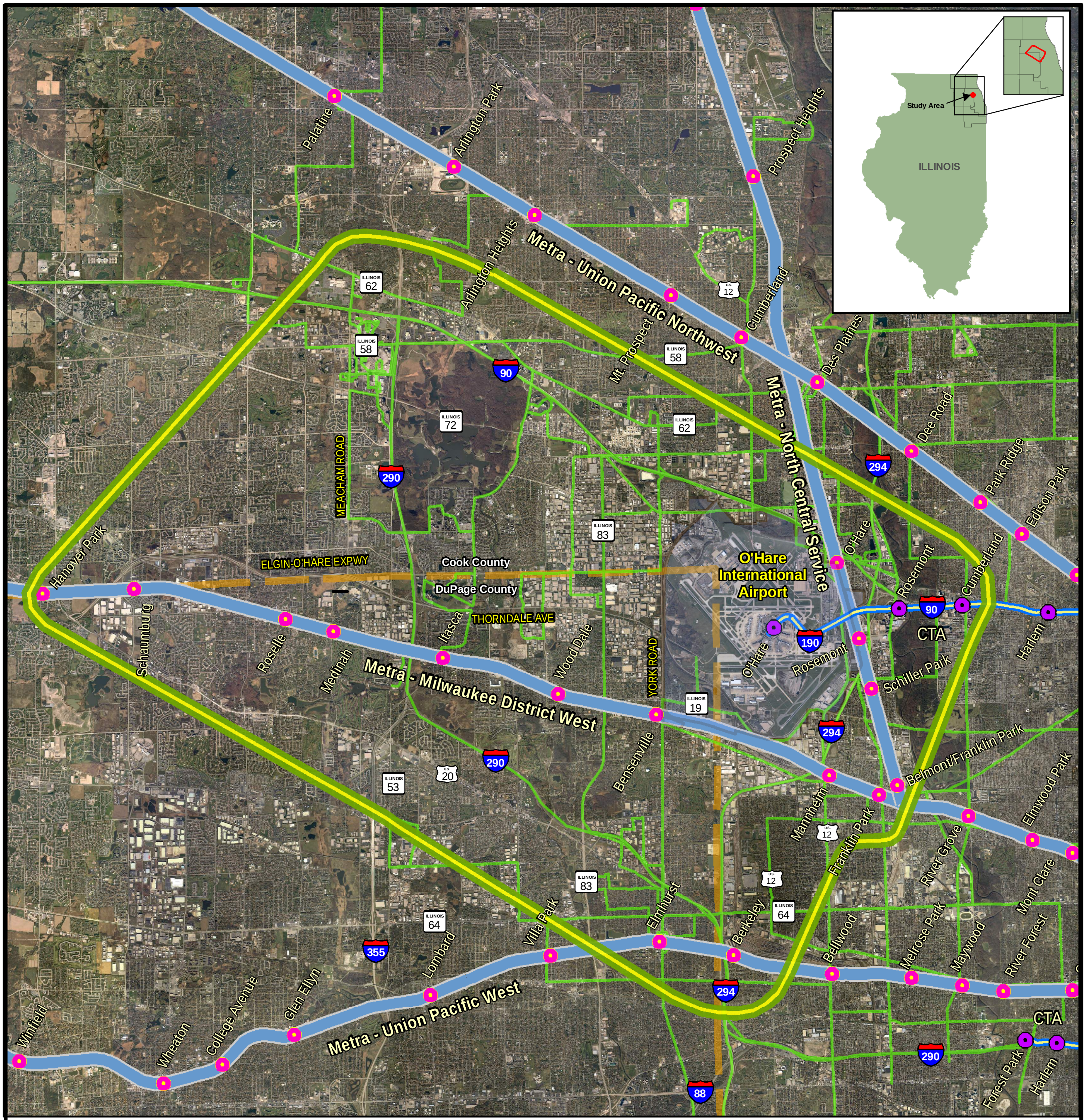


Exhibit 2-4
Existing Land Use



Legend

- Study Area
- CTA Rapid Transit Lines
- Metra Commuter Rail Lines
- Pace Bus Routes
- County Boundary
- Proposed Airport Boundary
- CTA Stations
- Metra Stations

N

0 0.5 1 1.5 2 2.5
Miles

Exhibit 2-5
Public Transit Map

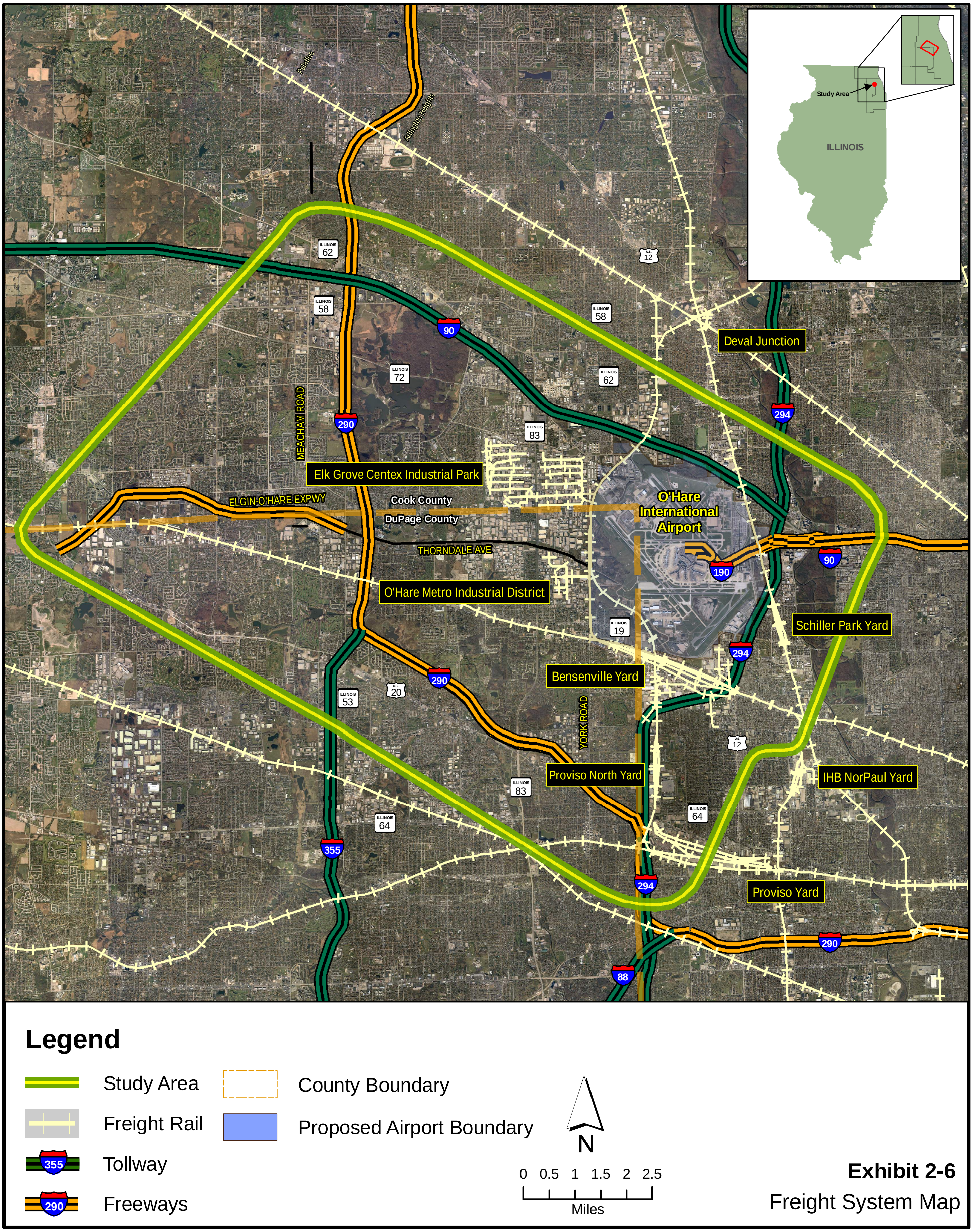
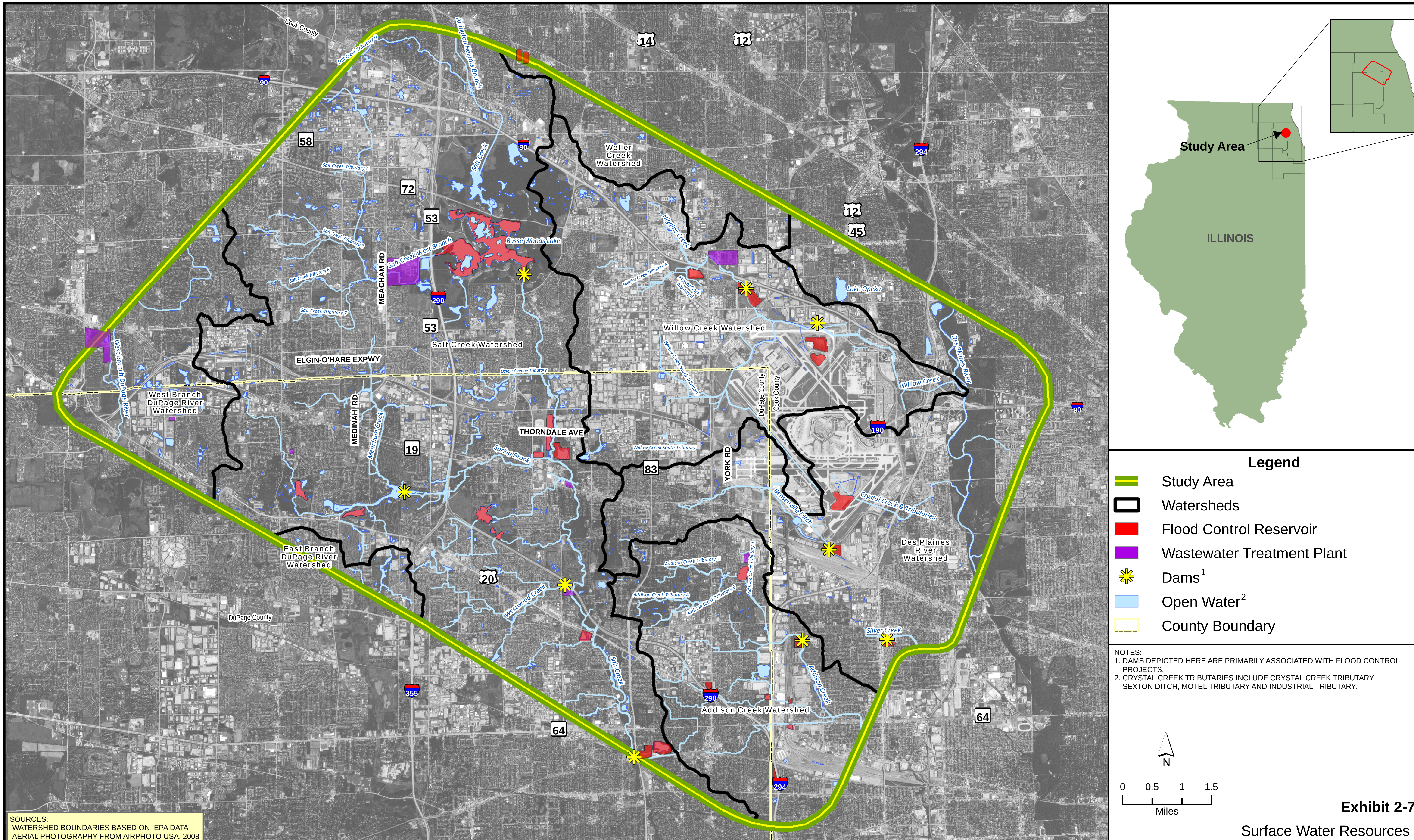


Exhibit 2-6
Freight System Map



ELGIN O'HARE WEST BYPASS
communities. opportunities. solutions.

Illinois Department of Transportation

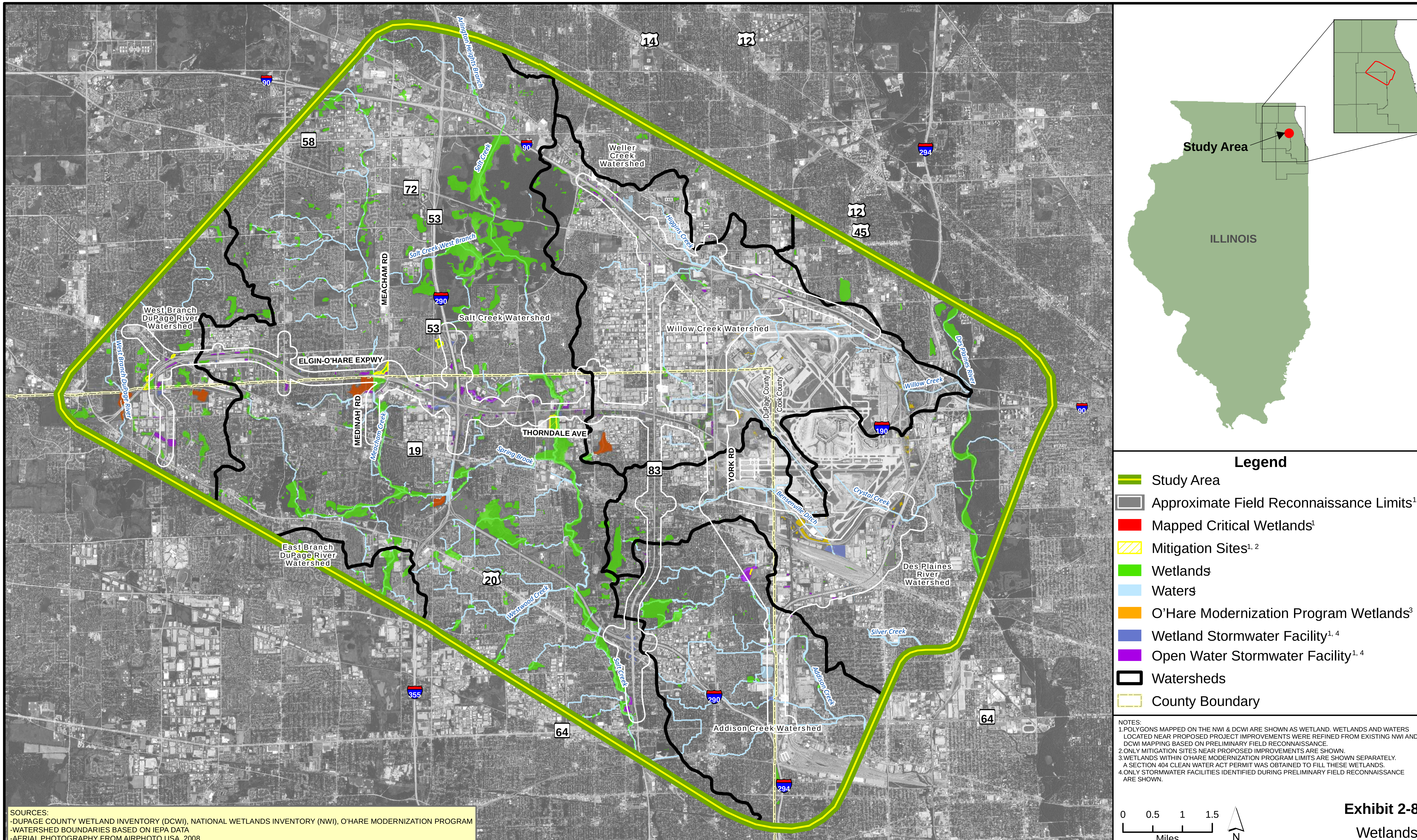


Exhibit 2-8

Wetlands

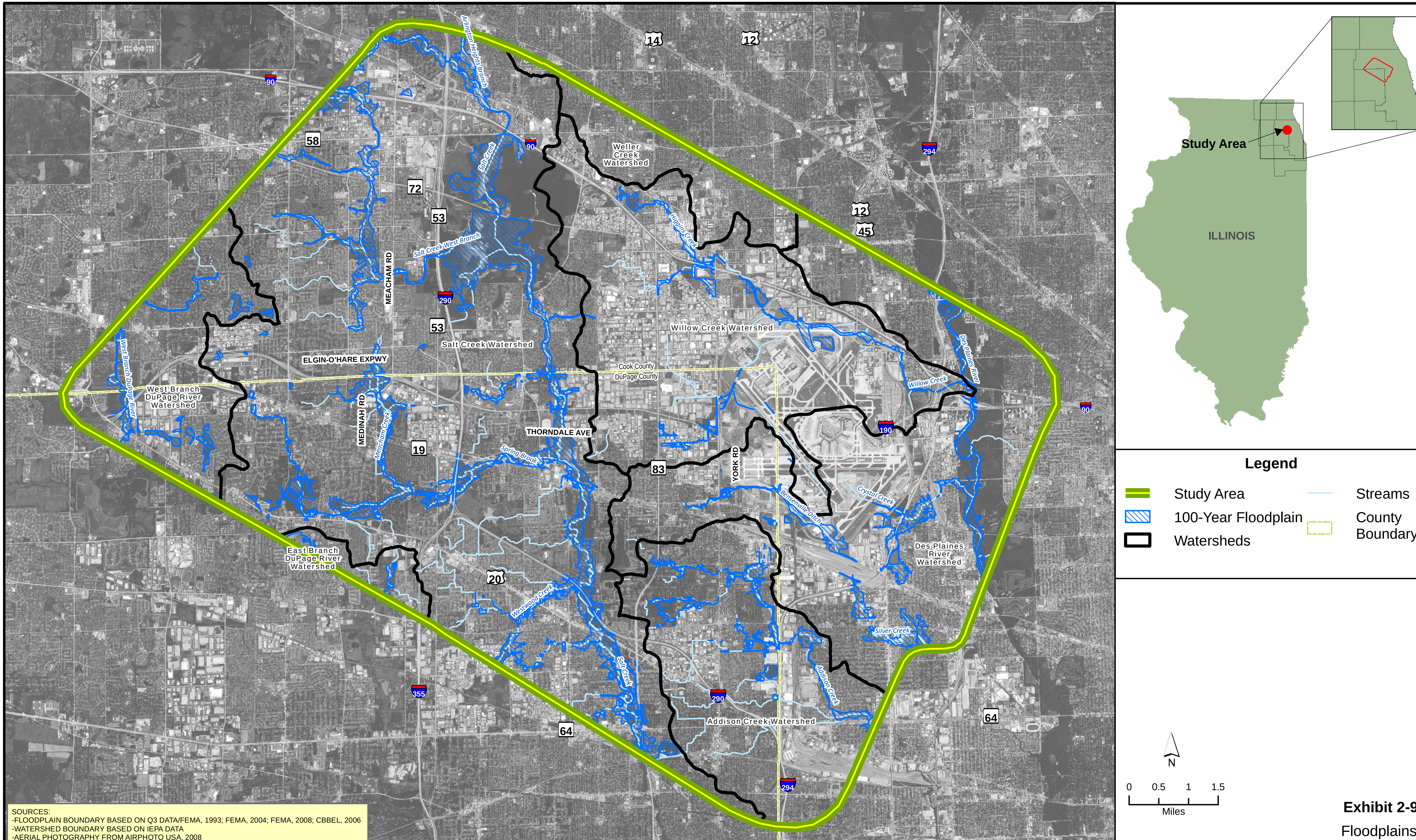


Exhibit 2-9

Floodplains

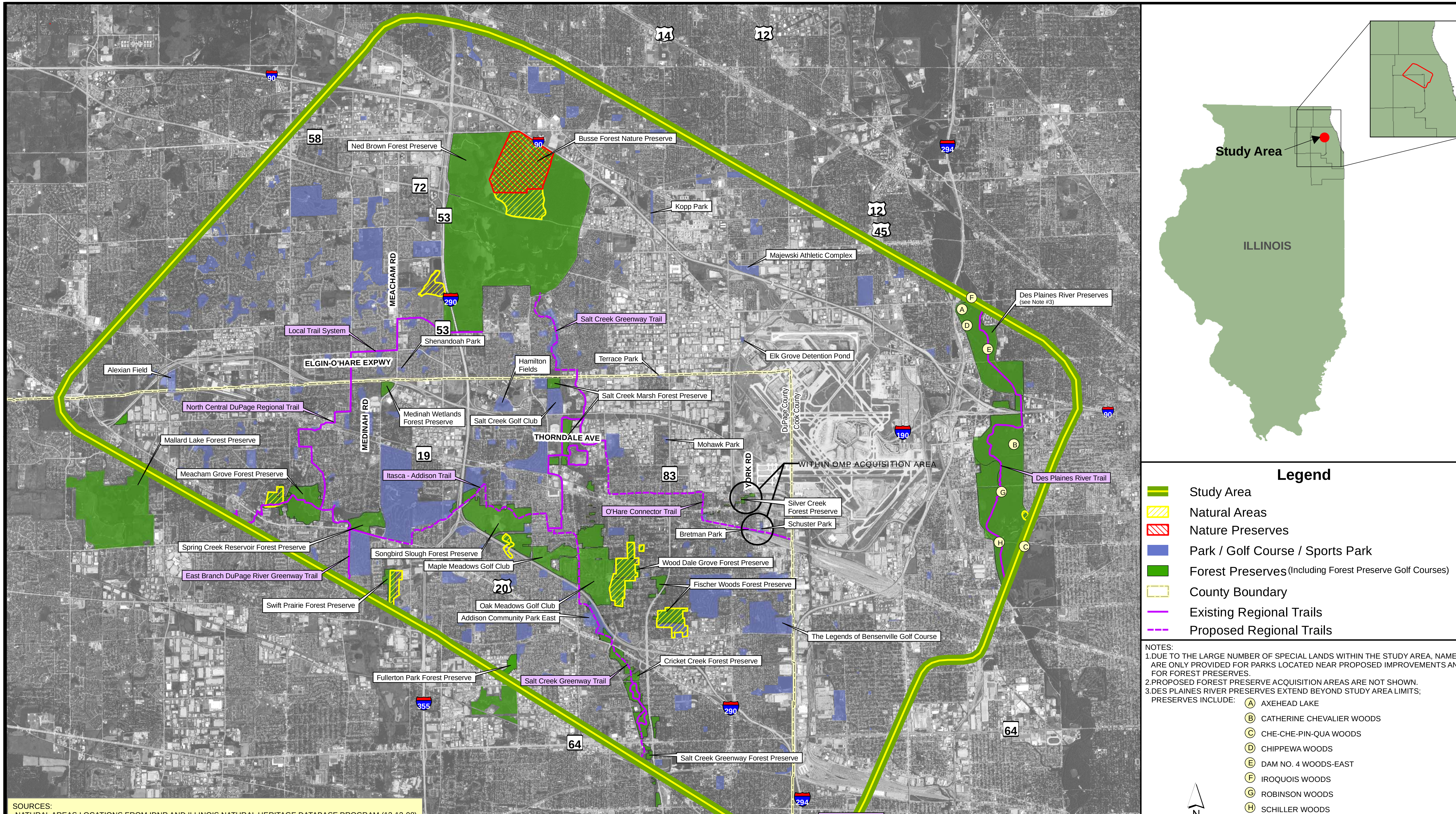


Exhibit 2-10

Special Lands

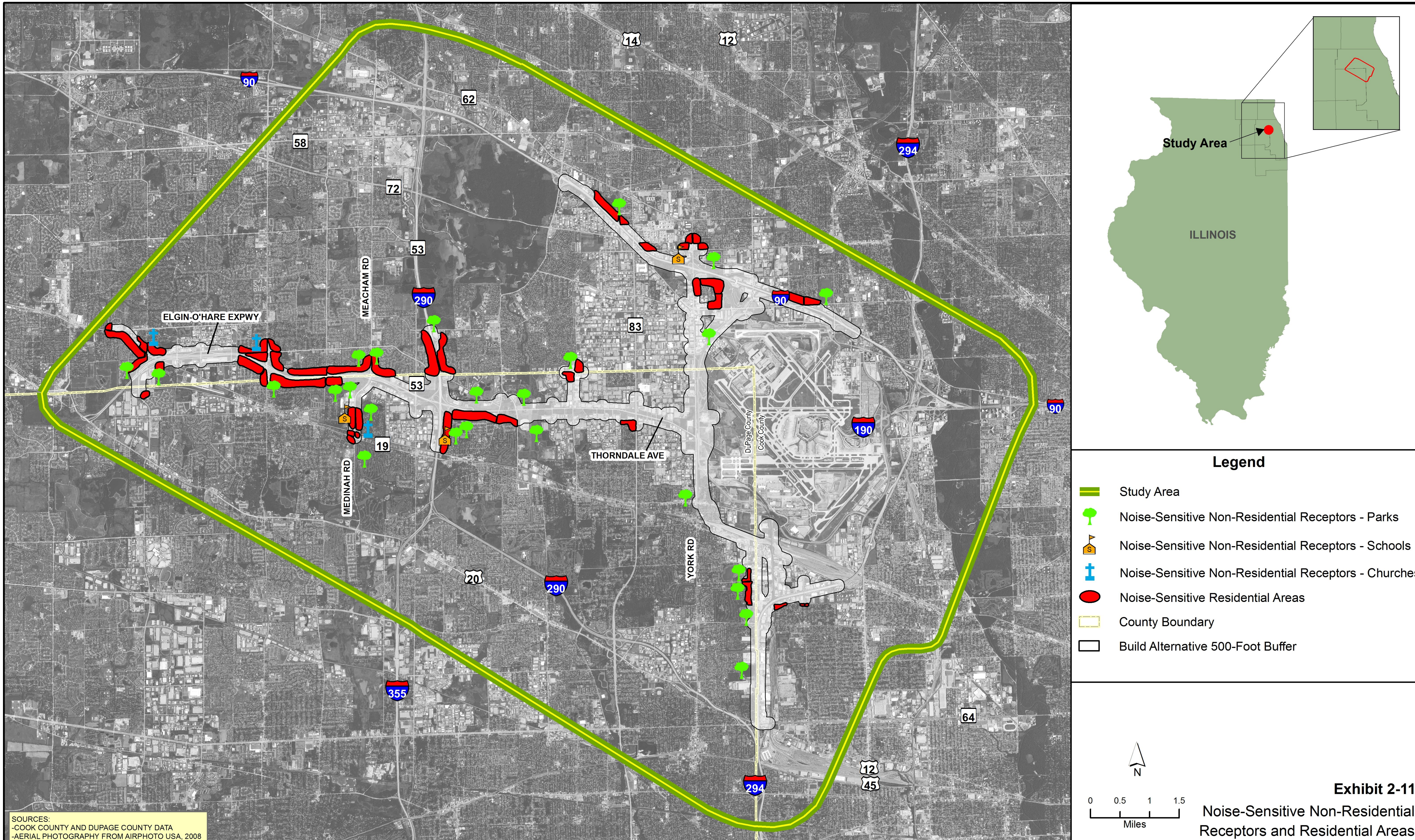
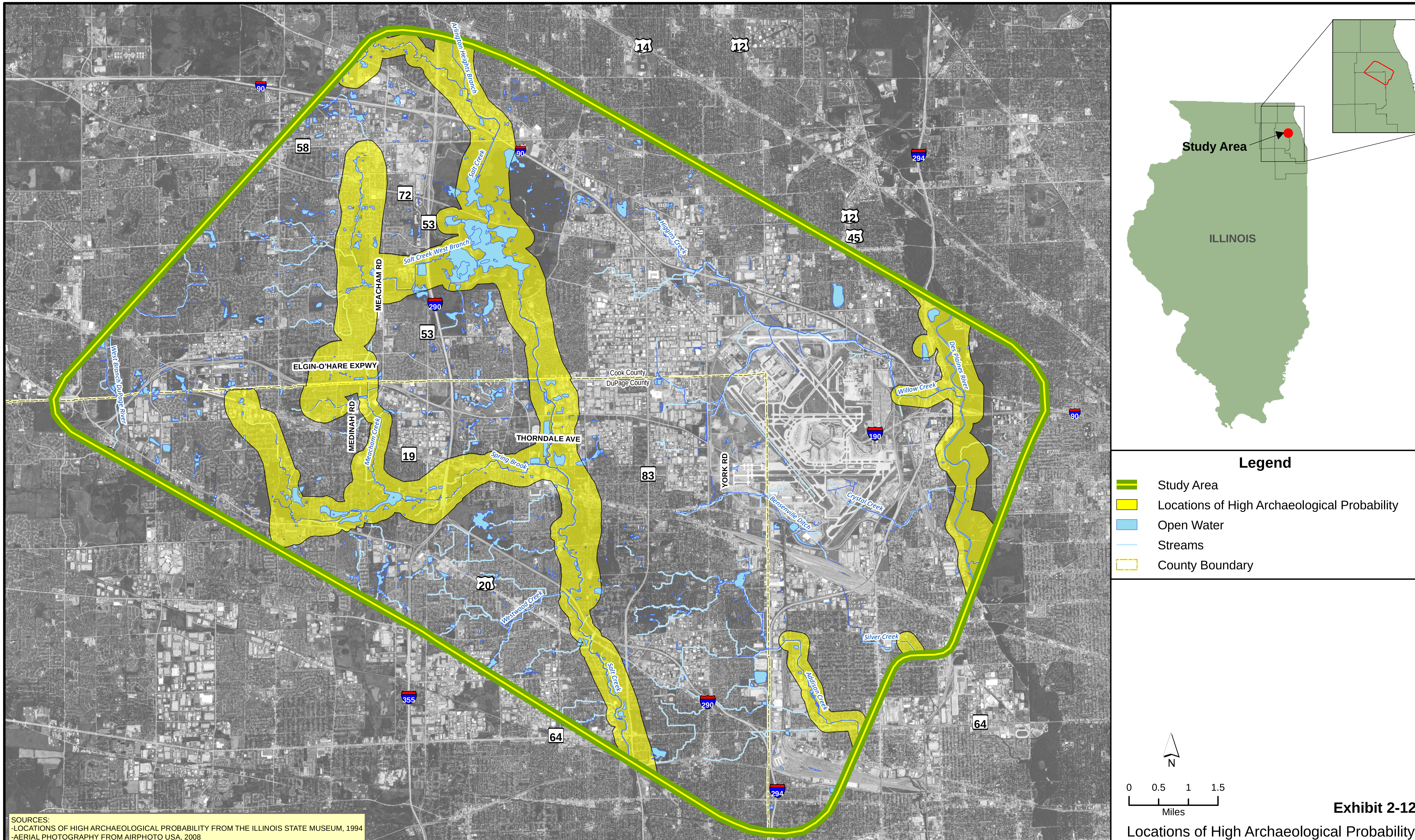


Exhibit 2-11

Noise-Sensitive Non-Residential Receptors and Residential Areas

ELGIN O'HARE WEST BYPASS
communities. opportunities. solutions.

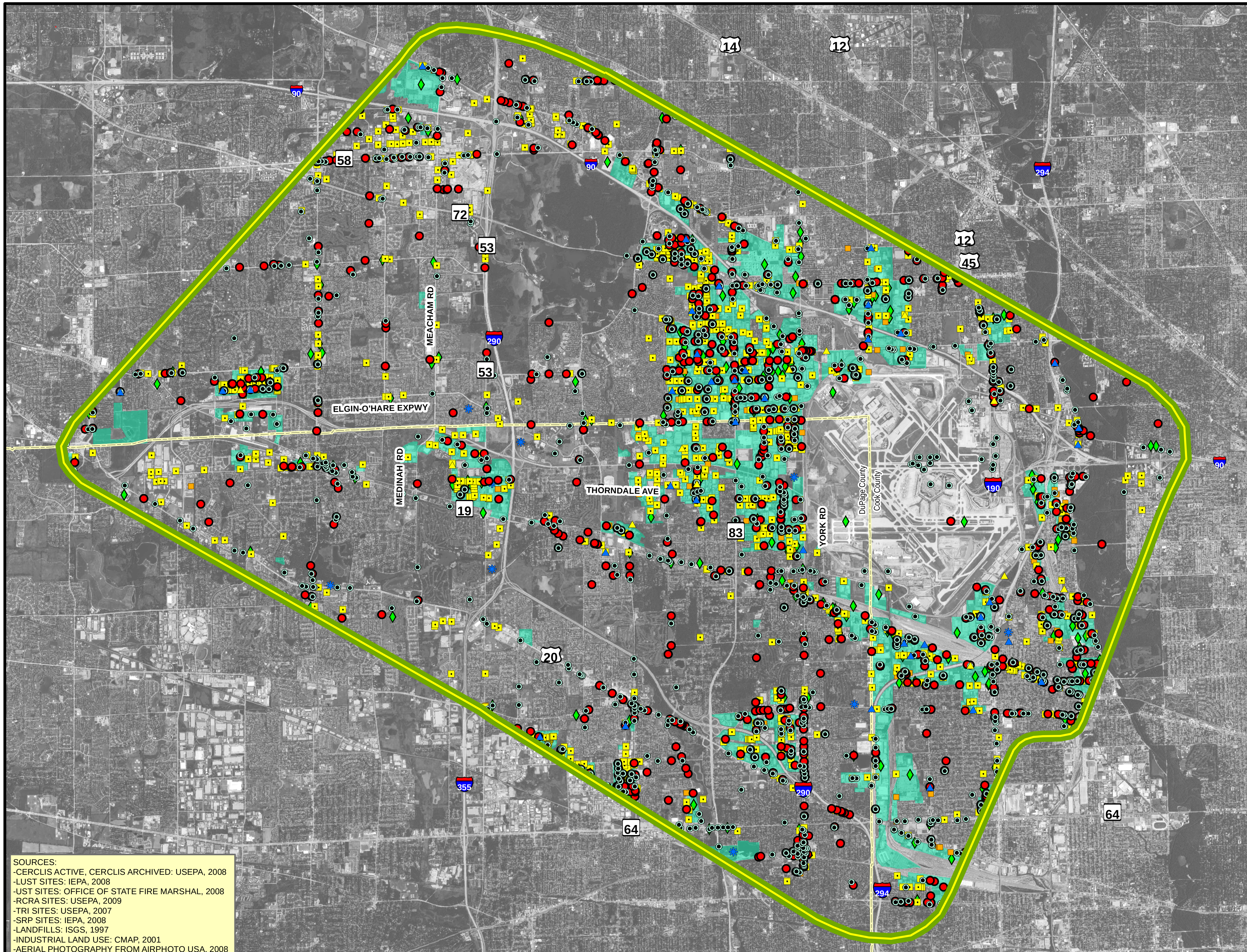
Illinois Department of Transportation

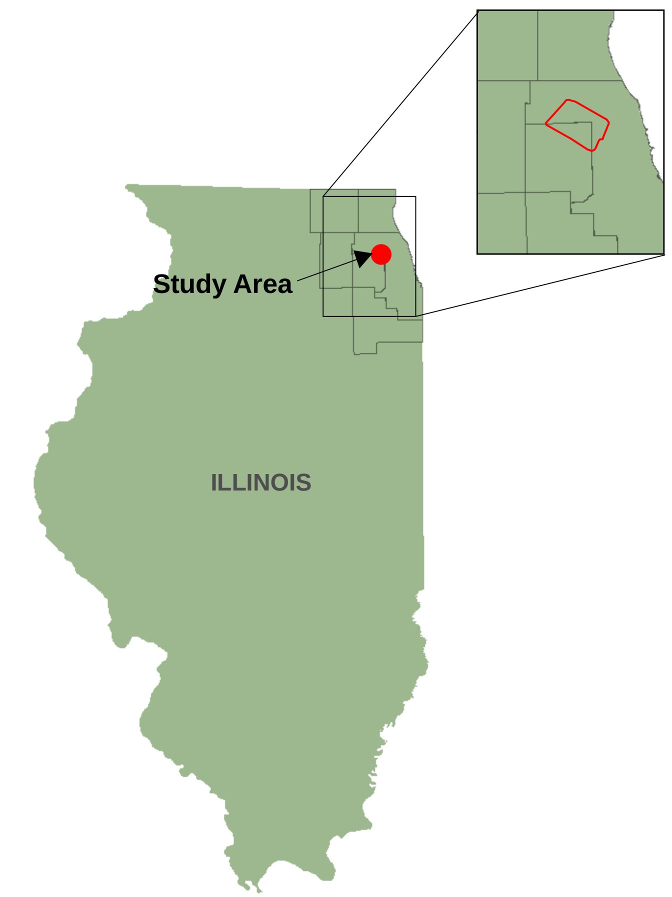


SOURCES:
-LOCATIONS OF HIGH ARCHAEOLOGICAL PROBABILITY FROM THE ILLINOIS STATE MUSEUM, 1994
-AERIAL PHOTOGRAPHY FROM AIRPHOTO USA, 2008

Exhibit 2-12

Locations of High Archaeological Probability





Legend[1]

- Study Area
- CERCLIS Active Sites
- CERCLIS Archived Sites
- Leaking Underground Storage Tank (LUST) Sites
- Underground Storage Tank (UST) Sites[2]
- Resource Conservation & Recovery Act (RCRA) Sites[3]
- Toxics Release Inventory (TRI) Sites
- Site Remediation Program (SRP) Sites
- Landfill Sites
- County Boundary
- Industrial Land Use

NOTES:
1. ALL IDENTIFIED LOCATIONS ARE APPROXIMATE AND ARE BASED ON AVAILABLE DATA.
2. UST SITES INCLUDE "ALL" FACILITY STATUS.
3. RCRA SITES INCLUDE LARGE QUANTITY GENERATORS, SMALL QUANTITY GENERATORS, AND CONDITIONALLY EXEMPT GENERATORS.

N

0 0.5 1 1.5
Miles

Exhibit 2-13

Special Waste Sites

SECTION 3

Alternatives

This section describes the project alternatives and the process used to develop, evaluate, screen, and refine them. The content is structured to provide an understanding of the methodology that began with the consideration of many alternatives and resulted in the selection and evaluation of two roadway build alternatives. Also included are a package of supporting transit, freight, and bike and pedestrian improvements that are common to both alternatives. Exhibit 3-1 illustrates the overall alternatives development and evaluation process. Further details are provided in the *Alternatives Development Report* (FHWA and IDOT, 2009) and in the Alternatives to be Carried Forward Technical Report (see Appendix D).

The study process has brought together stakeholders and transportation providers who have interests in improved transportation in the study area. Their involvement has been key, and their high level of participation has assisted in the development and evaluation of a broad range of transportation improvements. The build alternatives described in this section represent a consensus driven outcome derived from more than 100 stakeholder meetings. Stakeholders participated directly in defining transportation problems, identifying environmental and community constraints, identifying transportation improvements to consider, identifying the locations of those improvements, and identifying the criteria for evaluating improvements. Stakeholders also weighed in at various stages in the process regarding alternatives to be eliminated.

As noted, the EIS for the EO-WB study is being advanced in two tiers. In Tier One, a conceptual level of detail is applied with respect to the engineering. Working concepts for roadway and transit facilities are developed to assess environmental impacts and travel performance, develop initial costs, and make relative comparisons. In Tier Two, detailed engineering and environmental studies of the Preferred Alternative are conducted, including full engineering plans, profile and cross sections, access justification reports, interchange type studies, and interchange/intersection design studies. Detailed environmental studies and documentation, and the regulatory requirements of state and federal agencies will be completed in Tier Two.

This section begins with a discussion of the process used to develop and evaluate roadway and transit alternatives, leading to the identification of the build alternatives to be carried forward in the Draft EIS. Subsection 3.2 explains the roadway development and screening process, and subsection 3.3 describes the transit development and screening process. In subsection 3.4, the No-Action Alternative is detailed, followed by a description of the build alternatives retained for evaluation and their supporting improvements, including transit, freight, and bicycle and pedestrian improvements. Subsection 3.5 contains a comparative evaluation of transportation performance factors for the build alternatives.

The study area was established at the start of the project. As traffic impacts were further evaluated for various roadway alternatives, it became apparent that they would result in localized trip redistribution. Depending on the specific alternative, supporting improvements were required on roadways outside the original study area. Therefore, the study area (see Exhibit 3-2) was expanded to include areas where additional improvements would be evaluated.

3.1 Alternatives Development Process Overview

The methodology for developing and evaluating alternatives included technical analysis, environmental considerations and analysis, and stakeholder input. For roadway alternatives, the process involved four interrelated modules, or steps (refer to Exhibit 3-1):

1. Module 1 began with stakeholders identifying a range of potential improvements to address diverse transportation issues in the study area, such as physical, operational, and demand management strategies.
2. In Module 2, complete sets of roadway improvements termed "Initial System Strategies" were packaged. The Initial System Strategies were screened based on transportation performance measures compared to the purpose and need criteria, and identifying system alternatives to be carried to the next step for consideration.
3. Module 3 consisted of continued refinement and screening of the remaining roadway system alternatives, which were completed in two steps. The first step focused on screening out alternatives with relatively high environmental or social impacts. The second step focused on refining and evaluating the remaining alternatives on the basis of transportation performance, financial (initial cost), environmental/social factors, and stakeholder input. The determination of alternatives to carry forward into the Draft EIS occurred at the conclusion of Module 3.
4. Module 4 will occur with the development of the Final EIS and conclude with the identification of the Preferred Alternative. During this step, further refinement of the build alternatives may be warranted prior to selection of the Preferred Alternative based on stakeholder input from the Draft EIS and Public Hearing.

A key aspect of the process was an extensive stakeholder outreach program that was integrated with IDOT's CSS[1] policies. From project inception through refinement of alternatives to selection of alternatives to be analyzed in the Draft EIS, roughly 125 meetings were held with established stakeholder groups, communities, transportation service providers, federal and state resource agencies, and the general public. More details regarding outreach and coordination can be found in Section 5 of this Draft EIS. Several underlying assumptions guided the alternatives development process:

- The No-Action Alternative would serve as the baseline 2030 transportation condition for comparing the travel performance of the build alternatives.
- Existing roadway travel performance was established as the year 2007. The project design year would be 2030, consistent with the planning horizon established by the 2030 RTP.
- The development of alternatives was guided by the purpose of and need for the project (to improve local and regional travel, improve travel efficiency, provide O'Hare West Access,

[1] IDOT's CSS Policy and Procedural Memorandum 48-06 establishes project development guidance, stakeholder involvement processes, and design flexibility principles to be used in the project development process for major projects. CSS is an interdisciplinary approach that seeks effective, multimodal transportation solutions by working with stakeholders to develop, build, and maintain cost-effective facilities that fit into and reflect a project's surroundings.

and improve modal opportunities and connections). A two-part approach was used to identify transportation problems: (1) extensive stakeholder coordination;[2] and (2) a comprehensive technical analysis of transportation system performance[3] under existing (2007) and future (2030) conditions assuming no action is taken.

- The technical analysis of alternatives relied on two tools: a travel demand model and a GIS database. The travel demand model,[4] a computer analysis tool designed to replicate the transportation system, was used to evaluate the relative travel performance of the alternative transportation solutions. The GIS database,[5] a spatial and data management analysis tool, was developed to assist with the development of alternatives identifying the social and environmental constraints in the area, and the evaluation of the social and environmental impacts of the alternatives.

3.2 Roadway Alternatives Development, Evaluation, and Screening

This subsection describes how a broad-range of roadway alternatives were developed and subsequently narrowed to the alternatives carried forward and into the Draft EIS. The alternatives were developed and evaluated through an iterative process (modules) based on technical analysis, environmental constraints, and stakeholder input.

3.2.1 Module 1—Identifying Strategies

Module 1 consisted of a workshop where stakeholders identified both roadway and transit improvements needed in the study area. This involved project stakeholders applying their local knowledge of the transportation problems in the area, and marking aerial maps showing the desired locations and types of improvements (see Exhibit 3-3). The project team then assembled the stakeholder input into 15 roadway packages termed Initial Roadway System Strategies (see Exhibits 3-4A through 3-4I). The strategies were grouped into three general categories that best represented their individual characteristics:

- Improve Existing System (Group 1, contained two system strategies: 101 and 102).
- System Expansion (Group 2, contained five system strategies: 201, 202, 203, 204, and 205).
- Combined System Improvements and Expansions (Groups 3 to 6, contained eight strategies: 301, 302, 401, 402, 403, 404, 501, and 601).

The Initial Roadway System strategies included a high level of participation by interested stakeholders., They represent a broad range of alternative roadway concepts that capture the local knowledge of stakeholders in the study area. The range of strategies that evolved include improvements to existing roads, new corridors, and combinations of existing and

---

[2] From the project start through development of the first 15 alternatives, more than 50 meetings were held with communities, resource agencies, transportation service providers, stakeholder and corridor groups, and the public.

[3] Documented in the Transportation System Performance Report (TSPR) (FHWA and IDOT, 2009).

[4] The model is based on information used by CMAP.

[5] The GIS database has more than 120 data layers of environmental, land use, utility, socioeconomic, and transportation data in an electronic format. It was used in identifying where environmental and social resources should be avoided or impact to them minimized, as well as in calculating impacts associated with the various alternatives.

new roadways. The stakeholders and the project team considered north-south route improvements and east-west route improvements. North-south routes include the O'Hare West Bypass, IL 83, I-290, and Elmhurst Road/York Road; the east-west routes include Thorndale Avenue, Devon Avenue, and Higgins Road (see Exhibit 3-4A regarding Devon Avenue and Higgins Road). Improvements to freeways and tollways were considered, such as improving I-290 in Strategy 601 (see Exhibit 3-4I). Other such improvements are part of the No-Action Alternative, such as improvements to I-294 and I-90. These facilities are nearing buildout, and further widening is most likely unrealistic. The consideration of new east-west routes other than Thorndale Avenue as a freeway type improvement did not emerge from the stakeholder involvement process, given the extraordinary displacement of homes and businesses that would occur, and the strong desire of stakeholders to avoid or minimize community impacts. Stakeholders repeatedly identified Thorndale Avenue as the appropriate corridor for improving east-west travel. Thorndale Avenue is a logical extension of the Elgin O'Hare Expressway. Because it would provide continuity for travel to and from the west and connect to the proposed Western Terminal at O'Hare Airport, it was an element of many strategies.

Each Initial System Strategy included about 75 lane miles of new capacity. Major differences between the 15 strategies were locations of proposed major improvements (e.g., improvements along IL 83 versus York Road/Elmhurst Road versus new alignment) and facility type (e.g., arterial improvements versus freeway improvements).

3.2.2 Module 2—Purpose and Need Screening

Module 2 focused on determining which initial roadway system strategies satisfied the purpose of and need for the project. The evaluation was conducted using the travel demand model and systemwide travel performance measures related to purpose and need. With stakeholder input, various travel performance evaluation criteria and performance measures were developed to test the ability of each roadway system strategy to address transportation needs (see Table 3-1).

TABLE 3-1
Travel Performance Evaluation Criteria

Purpose and Need Objectives	Performance Criteria	Evaluation Measure
Improve local and regional travel	Vehicle hours of delay (VHD)	Daily P.M. peak period VHD.
	Congested vehicle miles of travel (VMT)	Miles traveled in congestion on arterials during P.M. peak period.
	Regional areas with travel time savings	Areas with travel time savings for representative regional trip origins (northwest, west, southwest).
Improve O'Hare West access	Selected trip pair travel time savings	Travel time savings for select study area trips to O'Hare West access.
Improve travel efficiency	Improved interstate accessibility	Area and number of trips within five minutes of a new or improved service interchange.
Improve modal connection opportunities	Modal opportunities	Population/employment served by potential new dedicated transit corridors.

The overall travel performance of each strategy was compared using a scoring system that ranked the performance of the 15 strategies from 1 to 15 for each criterion, and totaling the rankings for each criterion for each alternative. The scoring showed stratification in scores, with 10 options being substantially better than the other five (see Table 3-2). Five Initial System Strategies (Group 1, 101 and 102; Group 3, 301 and 302; Group 6, 601) did not meet purpose and need, as demonstrated by appreciably lower overall travel performance and consistently low comparative rankings. The lower performing strategies provided relatively less congestion relief on regional and local roadways, and only moderate improvements in access to major regional roadway corridors. Further, they did not appreciably improve the O'Hare West Access and provided only moderate new transit market potential.

This information was presented to stakeholders for review and comment. Based on their review and input, the five low ranking initial system strategies (including all in the "improve existing system" category) were dropped from further consideration. Stakeholders agreed that the remaining 10 strategies should be retained for further consideration: 201, 202, 203, 204, 205, 401, 402, 403, 404, and 501 (see Exhibits 3-4B, 3-4C, 3-4D, 3-4F, 3-5G, and 3-4H).

TABLE 3-2
Initial Roadway System Strategies: Purpose and Need Screening Results

Strategy Number	Rank (1–15)	Total Score
201	1	21
202	2	24
203	3	30
403	4	39
401	5	43
204	6	48
402	7	51
205	8	55
404	9	59
501	10	62
102[a]	11	99
302[a]	12	100
301[a]	13	102
101[a]	14	105
601[a]	15	112

[a] Alternative did not address purpose and need, and was dropped.

3.2.3 Module 3—Refinement, Evaluation, and Screening of Roadway Alternatives

Module 3 began with the 10 strategies retained from Module 2 and concluded with the alternatives to be carried forward for more detailed analysis in the Draft EIS. The analyses also included development and evaluation of options for roadway connections to I-90 and I-294 (see subsection 3.2.3.4).

3.2.3.1 Environmental / Socioeconomic Screening of 10 Roadway System Alternatives

The 10 roadway system alternatives were subjected to an initial environmental and socioeconomic impact analysis using the GIS tool. Preliminary roadway footprints were developed for each system alternative to allow a measurement and comparison of potential impacts to federal/state regulated resources, land use, economic, and community resources. The object was to establish an initial assessment of environmental and socioeconomic impacts. This step served to identify alternatives with high impacts (see Table 3-3, which shows the number of building displacements for each alternative).

Three roadway system alternatives (Group 2: 201, 204, and 205) were dropped because of greater socioeconomic impacts (primarily residential, commercial, and industrial displacements). It is important to note that these impact totals represent the initial layout of the roadway alternatives, which were then refined in subsequent steps.

Seven system alternatives were carried forward into the second step of Module 3 as Finalist Roadway System Alternatives (see Exhibit 3-4B, 3-4C, 3-4F, 3-4G, and 3-4H):

- Group 2: 202 and 203
- Group 3: 401, 402, 403, and 404
- Group 5: 501

TABLE 3-3
Initial Roadway System Strategies: Number of Potential Building Displacements

Alternative	Total Number of Displacements
203	42
402	49
401	60
202	88
404	109
403	151
501	139
205	302
204	344
201	368

3.2.3.2 Evaluation and Screening of Roadway System Alternatives

The seven remaining alternatives represented two general categories of improvements:

1. System expansion (202 and 203), which would provide new east-west and north-south freeway corridors in the study area; and
2. Combined system improvements and expansion (401, 402, 403, 404, 501), which would provide new partial east-west and north-south freeway corridors in combination with roadway widening improvement in the study area.

Engineering detail was added to each roadway alternative, including refinements in the conceptual layout, adjustments to avoid adjacent properties, and locations of interchanges. Adding to the detail were options for connecting the O'Hare West Bypass on the north with I-90, and on the south with I-294 (see subsection 3.2.3.4 for additional details). Following these refinements, representative roadway footprints were developed for each alternative and each connection option, and were used to assess environmental and social impacts, and design and constructability feasibility.

Among the other analyses at this stage was a second round of travel demand modeling to determine the effects of the improvement alternatives on existing roadways. The analysis showed that the alternatives would effect changes in volume and distribution of traffic that warranted improvements to adjacent and crossing roads. One notable conclusion of the analysis was that, regardless of the alternative, widening the existing Elgin O'Hare Expressway westward to the Gary Avenue interchange was consistently required. This finding caused IDOT to expand the study area, with the existing Elgin O'Hare Expressway now defining the western boundary (see Exhibit 3-2).

Using the information from the travel modeling results, further detail was added to the seven alternatives, with supporting improvements to adjacent and crossing roads. These improvements would improve travel efficiency to and from the major improvements and would consist of widened arterials to accommodate increased travel as service interchanges, improved intersections, or widened roadway sections.

The seven roadway alternatives and the north and south bypass connection options were evaluated separately. The following is a detailed description of the evaluation for the seven roadway system alternatives. In consideration of an evaluation method, IDOT concluded that the complexities of the evaluation warranted several methods to compare the relative merits of each of the alternatives with the goal being to identify the best overall performing alternatives. Thus, a three-part evaluation process was implemented consisting of a comparative scoring system, a qualitative comparison, and stakeholder input. The evaluation was performed using an expanded list of evaluation factors and greater depth of analysis. Additional detail about this process is documented in the Alternatives to be Carried Forward Technical Report (see Appendix D).

Comparative Scoring System. A comparative scoring system was used to assist in comparing the overall performance of the seven alternatives (see Table 3-4 for a summary of the results and see Appendix D for details of the scoring). The scoring system provided a means for comparing performance and impacts objectively and consistently across a broad array of criteria. The evaluation criteria aimed at comparing the overall performance, costs, and environmental and socioeconomic impacts of the alternatives. This included criteria suggested by stakeholders: travel performance (systemwide travel delay, accessibility, travel times); initial costs (construction, right-of-way); environmental impacts (floodplains, designated lands); and socioeconomic impacts (displacements, tax revenue loss, job loss). The following approach was used to score alternatives:

TABLE 3-4
Finalist Roadway System Alternatives: Total Scaled Score

Alternative	Total Score
402	76
401	77
202	79
203	81
501	107
403	118
404	119

Note: A lower score indicates better overall performance of the alternative.

- For the 24 criteria developed to compare alternatives, each criterion was scored using a scale of one to seven, with one being best and seven worst. Thus, regardless of the range of performance or impact for any individual criterion, an alternative is relatively the best while another is relatively the worst. For alternatives that fell between one and seven (best and worst), for each evaluation criteria, a scaled scoring system[6] was used to account for the range of performance or impact difference within each evaluation criteria.

- An overall score was calculated for each alternative by adding scores from each evaluation criterion (nine related to travel performance, one to cost, eight to environmental resources, and six to socioeconomic resources). The lower the total score, the better the performance of the alternative in terms of both travel performance and lower environmental impacts. No weighting was given to the criteria within the categories or in comparing the categories to one to another.

The numeric scoring and analysis identified four alternatives that were measurably superior (Alternatives 202, 203, 401, 402). This conclusion was reached assessing a large array of criteria that addressed key evaluation factors, including travel performance, construction cost, and environmental and socioeconomic impacts.

[6] For example, across all seven alternatives, wetland impacts ranged from 25.9 to 28.0 acres, for a total difference of 2.1 acres. Using the scoring system, the alternative with 25.9 acres of impact would be scored as 1, and the alternative with 28 acres of impact would be scored as 7. Regardless of the range of performance/impact for any individual criteria, something would be relatively the best and another would be relatively the worst. For alternatives between the best and the worst, the scaled system was used, wherein alternatives that had impact totals closer to 25.9 acres would have a score closer to 1, and those closer to 28 acres would have a score closer to 7. This scoring system acknowledges and accounts for the range of differences for individual evaluation criterion, whether narrow or wide.

Qualitative Analysis. Although the scoring approach provided insights into the best overall performing alternatives, a qualitative evaluation of the performance measures and impacts was also conducted to express differences in more relative terms. The Finalist Roadway System Alternatives represented two general categories of improvements:

- System Expansion (Alternatives 202 and 203), which would provide new east-west and north-south freeway corridors in the study area
- Combined System Improvements and Expansions (Alternatives 401, 402, 403, 404, 501), which would provide new partial east-west and north-south freeway corridors in combination with existing roadway widening improvements in the study area

For the qualitative evaluation, the alternatives within each category were compared. This approach was taken because of the functional similarities of the System Expansion alternatives (i.e., new freeways) and of the Combined System Improvements and Expansion alternatives. This allowed for a determination of the best alternatives within each category. The qualitative assessment was conducted using the criteria and measures shown in Tables 3-5 and 3-6.

Table 3-5 summarizes the relevant qualitative analysis factors and impacts for Alternatives 202 and 203. Based on travel performance, environmental and cost factors, Alternatives 202 and 203 generally had slight differences and were comparable in terms of these factors. Most of the travel performance characteristics, environmental impacts, and initial cost factors were within 10 percent of each other and considered comparable. However, in comparing socioeconomic factors, notable differences were found. Alternative 202 had 50 percent greater displacement of residential, commercial, and industrial buildings. It had far greater commercial and industrial building impacts (71 compared to 37 for Alternative 203). Most building displacements would occur in the IL 83 corridor in Elk Grove Village.

Commensurate with the high number of commercial and industrial displacements would be greater tax revenue loss and greater employment displacement. Employment loss under Alternative 202 was almost 30 percent greater than for Alternative 203, and tax loss was about 40 percent greater. The loss of businesses, employment, and tax base were major differences between the alternatives. Therefore, based upon the substantial differences in social impacts of the two alternatives, the qualitative analysis supported dismissal of Alternative 202 and retention of Alternative 203. Table 3-6 summarizes the relevant qualitative analysis factors and impacts for the Combined System Improvement and Expansion alternatives. The five alternatives in this category—401, 402, 403, 404, and 501—had comparable travel performance but exhibited considerable contrast in environmental, socioeconomic, and initial cost factors. Alternatives 401 and 402 had the least impact on socioeconomic and environmental factors, including displaced structures and effect on noise-sensitive land uses. Alternatives 403, 404, and 501 had more building displacements, the greatest impact to noise sensitive land uses, and the greatest impact to protected recreational lands. Additionally, Alternatives 403, 404, and 501 potentially affected threatened and endangered species.

Another factor associated with two alternatives was design feasibility. For Alternative 404, conceptual design studies revealed a design issue related to a new freeway system interchange near O'Hare Airport, for which feasibility would be complicated by restricted

TABLE 3-5
Qualitative Analysis: System Expansion Improvement Alternatives

	202	203
Improve Local and Regional Travel		
Percent increase in regional travel efficiency in study area	13%	11%
Percent decrease in congested VMT on secondary roadways (P.M. peak period)	20%	20%
Percent increase in network speeds on principal arterials (P.M. peak period)	8%	4%
Improve O'Hare West Access		
Selected trip pair travel time savings from northwest study area to O'Hare west (P.M. peak period)	39%	40%
Selected trip pair travel time savings from west study area to O'Hare west (P.M. peak period)	38%	39%
Improve Travel Efficiency		
Percent increase in trips within five minutes to interstate (P.M. peak period)	44%	53%
Environmental Impacts		
Acres of wetlands affected	27.1	28.0
Acres of waters affected	3.2	6.6
Acres of 100-year floodplains affected	29.1	24.6
Acres of designated/recreational lands affected	6.7	9.1
Socioeconomic Impacts		
Total structures potentially fully displaced	103	57
Potential noise sensitive areas	37	36
Lost tax revenue (2007)	$5.5M	$3.9M
Employees displaced	1,360	1,065
Financial Performance		
Initial total costs	$3.3B	$3.6B

Note: Shaded areas denote a considerable difference compared to the other alternative.

airspace. Accommodating air space requirements at this location requires a deep roadway tunnel section that raises constructability issues given conflicts with active railroads, high water table, adjacent floodplains, and other constraints.

There are also issues with Alternative 501, since it terminated a freeway cross-section at an arterial near IL 83. Terminating a freeway in this manner is undesirable from an operations and safety perspective, since it forces freeway traffic to transition abruptly onto a roadway with limited access control and lower travel speeds. To address these performance issues, the arterial improvements east of IL 83 would have to be upgraded to a fully access controlled highway, so as to provide continuity for freeway traffic. If an access controlled highway replaced the arterial improvements east of IL 83, Alternative 501 would be similar to Alternative 403.

In conclusion, the qualitative analysis supported dismissal of Alternatives 202, 403, 404, and 501 because of higher relative socioeconomic impacts, as well as design feasibility issues

TABLE 3-6
Relevant Qualitative Factors: Combined System Improvement Alternatives

	401	402	403	404	501
Improve Local And Regional Travel					
Percent increase in regional travel efficiency in study area	11	6	4	5	7
Percent decrease in congested VMT on secondary roadways (P.M. peak period)	19	19	20	17	16
Percent increase in network speeds on principal arterials (P.M. peak period)	8	7	8	10	13
Percent savings in annual work days per employee (actual number of days saved)	10 (1 day)	0	0	0	10 (1 day)
Improve O'Hare West Access					
Selected trip pair travel time savings from northwest study area to O'Hare west (P.M. peak period)	31	37	36	35	37
Selected trip pair travel time savings from west study area to O'Hare west (P.M. peak period)	38	40	41	41	34
Improve Travel Efficiency					
Area (mi^2) with travel time savings of greater than 5 percent in study area (P.M. peak period)	50	50	54	48	49
Environmental Impacts					
Acres of wetlands affected	26.9	26.5	27.5	26.1	25.9
Acres of waters affected	2.7	4.0	2.7	6.3	2.8
Acre-feet of stormwater detention	184.9	178.8	216.2	166.8	55.8
Acres of 100-year floodplains affected	29.1	24.6	29.1	17.6	28.7
Acres of designated/recreational lands affected	6.7	6.5	13.4	13.4	12.5
Number of state-listed species potentially affected	0	0	4	4	4
Socioeconomic Impacts					
Total structures potentially fully displaced	58	47	168	146	144
Potential noise sensitive areas	33	31	52	54	53
Lost tax revenue (2007)	$3.3M	$2.8M	$3.4M	$2.0M	$1.5M
Employees displaced	820	760	945	490	85
Financial Performance					
Initial total costs	$2.6B	$2.5B	$3.0B	$3.2B	$2.1B

Note: Shaded areas denote a considerable difference compared to the other alternatives.

with Alternatives 404 and 501. The qualitative analysis supported retention of Alternatives 203, 401, and 402 for further study.

Stakeholder Input. The third component of the screening process included consideration of stakeholder input. The consistent feedback from stakeholder meetings, more than 1,000 attendees at public meeting number three in March 2009, and responses from over 36,000 citizens in the area has been resounding support for Alternative 203, with the caveat that any alternative that involved improving IL 83 north of Thorndale Avenue would be unacceptable. Elk Grove Village in particular stated that any alternative with an IL 83 improvement north of Thorndale Avenue (such as 202, 401, 403, and 501) would be intrusive and damaging to the economic stability of the community. The more than 36,000 comments supporting Alternative 203 represented a strong consensus opinion from the project stakeholders.

Elk Grove Village and area stakeholders conducted an unprecedented effort to demonstrate support for Alternative 203 while providing reasoned arguments for dismissing alternatives including improvements to IL 83. The Village augmented the public comment cards with additional data that supported their views. In a letter to IDOT dated March 19, 2009, the Village presented two conceptually engineered roadway proposals for the IL 83 corridor improvements common to Alternatives 202 and 401, 403 and 501, along with employment associated with buildings displaced by the Village's concepts, impacts on emergency response systems, and an assessment of the community barrier effects of these alternatives. Appendix C contains a copy of that letter and the proposal for the improvement requirements along IL 83. The intent of the Village's analysis was to illustrate the damaging effects of the IL 83 corridor improvements upon their community.

Stakeholder comments and the Village's technical analysis, as additional factors, served to highlight a key area of concern that required closer examination by the project team—namely, the appropriate location for north-south roadway improvements north of Thorndale Avenue. This step was considered an additional and complementary refinement of the quantitative and qualitative analyses, which had yielded three alternatives to be carried forward (203, 401, and 402).[7] Alternative 203 involved a new north-south freeway along the west side of O'Hare Airport; Alternative 401 involved an upgraded arterial along IL 83; and Alternative 402 involved an upgraded arterial along York Road/Elmhurst Road. Regarding Alternatives 401 and 402, they differed only according to their northern leg improvements. Therefore, the team examined the north leg options for the two alternatives, the object being to determine the best location for an improvement. The evaluation criteria included those used in the prior quantitative and qualitative analyses, as well as additional considerations that were brought forth in the material presented by Elk Grove Village.

The alternatives provided comparable travel performance, were similar in cost, and were similar in impact to environmental resources. However, socioeconomic impacts diverged, with the alternative containing improvements along the IL 83 corridor creating measurably higher socioeconomic and community impacts. Alternative 401 resulted in more displacements, job loss, tax loss, utility relocation costs, circuitous travel, and interruption to emergency services, and lost business revenue when compared to Alternative 402 (see Table 3-7).

Fundamentally, the decision regarding improved transportation was one that would be most compatible with the fabric of the community. Neither Alternative 202 nor 401 maintained the relational aspects of the community. From Elk Grove Village's perspective, the alternatives were disruptive in ways that could seriously affect the competitive economic position of the community and would require a sizable public and private sector investment to reestablish what would be lost by implementing either alternative.

[7] Two alternatives identified in Elk Grove Village's analysis had already been eliminated (Alternative 202 had been eliminated due to high socioeconomic impacts and Alternative 501 had been eliminated due to high socioeconomic impacts and design feasibility); therefore, additional analysis of those alternatives was not undertaken.

TABLE 3-7
Comparing the North Leg Improvements for Alternatives 401 and 402

	Alternative 401	Alternative 402
North Leg Improvement	Arterial widening along the IL 83 corridor.	Arterial widening along York Road/Elmhurst Road.
Socioeconomic impacts	Comparatively higher socioeconomic impacts with North Arterial widening along IL 83: - 23 total structure displacements, or 27% higher - $3.3M lost tax revenue, or 17% higher - 820 employee displacements, or 8% higher	Lower socioeconomic impacts with North Arterial widening along Elmhurst Road: - 18 total structure displacements - $2.8M lost tax revenue - 760 employee displacements
Other considerations	Impacts to community cohesion related to widening IL 83 to four-through lanes in each direction with new interchanges at major cross roads through the center of Elk Grove Village Industrial Park. Interrupted existing east and west travel at some locations would result in circuitous or out-of-direction travel. Potential impacts to major utility lines including gas pipelines, along with potential interruption of services. Direct impacts to commercial and industrial properties related to partial loss of frontage along IL 83.	Arterial widening location supports proposed full service interchange at I-90 at Elmhurst Road, as reflected in regional and local plans. Elmhurst Road widening would not result in any apparent community cohesion issues. Arterial located along boundary between Elk Grove Village and O'Hare Airport.

Based on additional analysis resulting from stakeholder input, Alternative 402 was found to be superior to Alternative 401.

3.2.3.3 Finalist Roadway System Summary of Findings

Each step of the evaluation of the Finalist Roadway System Alternatives led to individual conclusions that collectively formed the basis for determining the alternatives to carry forward:

- The quantitative scoring and analysis identified four measurably superior alternatives (202, 203, 401, 402) when assessing the 24 criterion that addressed major considerations, including travel performance, environmental and socioeconomic impacts, and construction costs.
- The qualitative analysis concurred that Alternatives 403, 404, and 501 should be dismissed from further consideration. The three alternatives consistently showed greater adverse impacts for socioeconomic and environmental criteria considered, and two alternatives (404 and 501) also raised design issues that negated their feasibility. Analysis also determined that Alternative 203 should be retained, and Alternative 202 should be dismissed because of the higher socioeconomic impacts associated with the IL 83 freeway improvement.
- Stakeholder input clearly expressed preference for Alternative 203, and stated that any alternative involving IL 83 north of Thorndale Avenue would be unacceptable based on disruption to community land use and travel patterns, economic impacts, emergency service response and conflicts with existing underground utilities.

When considered in total, the evaluation process supported the conclusion that Alternatives 203 and 402 and the No-Action Alternative should undergo detailed analysis and that all other alternatives (202, 401, 403, 404, and 501) should be dismissed from further consideration.

3.2.3.4 Evaluation and Screening of the North and South Bypass Connection Options

Various location options were considered for the O'Hare West Bypass freeway connections to I-90 and I-294. Location options were also developed for connections to I-90 at IL 83; however, since all alternatives using IL 83 were dismissed through the alternatives screening process, those connection options are not presented in this section. They are documented in the Alternatives to be Carried Forward Technical Report (see Appendix D).

The I-90 and I-294 connection options were developed with input from stakeholders compiled during the alternatives development process. The connection options were developed and evaluated independently of the roadway system alternatives, with the object of identifying a range of locations for new freeway connections near I-90 and I-294 (see Exhibits 3-5A and 3-5B).

An iterative process was used to develop, evaluate, and screen connection options. The evaluation employed criteria similar to those used in the evaluation of roadway system alternatives: initial cost (construction and right-of-way); environmental impact (to wetlands, floodplains, designated lands); and socioeconomic impact (displacements, tax revenue loss, job loss). Travel performance was not used, as the sections of roadway were too short to have measurably different travel performance results. Design performance characteristics of the connection options were evaluated using a combination of quantitative and qualitative analyses aimed at identifying potential major performance issues with the connection options.

North Bypass Connection to I-90. Connection Options A, B, C, D, and E were developed for the O'Hare West Bypass freeway corridor near I-90. Options A, B, C and E were eliminated for the following reasons: (1) Option A did not provide a full system interchange at I-90 and had greater socioeconomic impacts, greater impacts to high quality wetlands, and higher initial costs; (2) Option B had the greatest socioeconomic impact and affected high quality wetlands; (3) Option C had high socioeconomic impacts and floodplain impacts; and (4) Option E, though virtually identical to Option D, lacked new local access along I-90 from Elmhurst Road. The evaluation yielded one preferred location for the I-90 West Bypass north connection (Option D).

South Bypass Connection to I-294. Connection Options A, B, C, D, E, F, and G were developed for the O'Hare West Bypass freeway corridor near I-294. Options E, F, and G were dismissed because of major design feasibility issues (conflicts with adjacent O'Hare Airport runway protection zones), and major impacts to the Bensenville Yard.

For the I-294 O'Hare West Bypass south connection, Options A, B, C, and D were retained for further consideration. The O'Hare West Bypass connection to I-294 options (see Exhibit 3-6) were refined and evaluated with targeted stakeholder input. The representative conceptual layout of the options was refined to allow a more detailed analysis of their design feasibility, relative impacts, and relative costs. Findings for Options A, B, C and D indicated the following:

- **Design Feasibility—**Option C has major constructability issues associated with constructing a freeway over an active railroad. Severely constrained construction periods (imposed by the railroad), and construction staging (longer construction period and remobilization issues) make Option C unworkable.
- **Cost—**Costs for Options B (west of UPRR) and C (over UPRR) are relatively higher than for Options A and D because of higher construction costs complicated by freight rail facilities and higher right-of-way costs.
- **Environmental Impacts—**Potential natural resource impacts (wetlands, waters, floodplains, threatened and endangered species) and impacts to designated/recreational lands are comparable among options, with only small impacts to environmental resources.
- **Socioeconomic Impacts—**There are substantial differences in socioeconomic impacts across the evaluation criteria. Option A has the highest relative structure displacements and highest relative impacts to noise sensitive areas, but lowest overall tax revenue loss and employee displacements. Option B had substantially higher tax revenue loss and employee displacement than the other options, and thus has higher socioeconomic impacts compared to the other connection options.

Stakeholder input was an important consideration in the evaluation of the south bypass connection options. A public meeting was held on March 11, 2009. In addition, the project team coordinated with the Village of Bensenville, the Village of Franklin Park, and representatives of the UPRR and CPRR to get focused input. Stakeholders raised the following key issues:

- The Village of Bensenville expressed strong opposition to Option A, which would site a new freeway corridor adjacent to residential areas and displace commercial and industrial properties along County Line Road.
- UPRR expressed strong opposition to Option C and established unworkable constraints to constructing the option while maintaining the existing operation of the tracks.
- The Villages of Franklin Park and Bensenville expressed concern with socioeconomic impacts related to Option B, which would displace several major large industrial employers in the area.
- The general public had somewhat mixed opinions regarding Options A, B, C, and D. Some individuals expressed strong opposition to Option A because of direct impacts in Bensenville, including impacts to adjacent residential areas. Others expressed concern with displacement of major area industrial employers (under Options B, C, and D).

Based on the analysis findings and stakeholder input, Options B and C were dismissed from more detailed analysis. For Options A and D, neither the analysis nor community input provided a strong rationale to eliminate either option, so both were retained for more detailed consideration as part of Alternatives 203 and 402.

Summary of North and South Bypass Connection Options. In summary, the following north and south bypass connections options were retained for evaluation in this EIS:

- North Bypass Connection to I-90: Option D
- South Bypass Connection to I-294: Options A and D

The following connections were eliminated from further consideration:

- North Bypass Connection to I-90: Options A, B, C and E
- South Bypass Connection to I-294: Options B, C, E, F, and G

3.3 Multimodal Alternatives Development, Evaluation, and Screening

The development and evaluation of transit improvements used a three-step process to arrive at a set of improvements to be carried forward in the Draft EIS.

3.3.1 Level One: Development of Transit Corridors and Screening

The transit alternatives development and evaluation process began with the March 2008 Stakeholder's Workshop, where project stakeholders identified potential transit improvements in the study area. Input was sought from transit agencies through Transit Agency Coordination Meetings. The project team then assembled the collective ideas into a workable system of 20 transit-related corridors (see Exhibit 3-7).

The first level of screening of the 20 transit corridors was a joint project team and transit agency exercise. Initial evaluation measures were developed and validated with the transit agencies. In addition to the analysis of compatibility with transportation plans or the ability to build a transit improvement by 2030 (projects that could not be implemented by 2030 were categorized as beyond the planning period, and not considered relevant), an analysis of population and employment factors was conducted. Population and employment data were mapped proximate to each transit corridor, and analyses were performed to determine the density of households, employment, and workers residing in the study area, as well as the origins and destinations of airport travelers. Table 3-8 summarizes the Level One Screening criteria.

TABLE 3-8
Level One Screening Criteria

Criteria	Measures of Effectiveness	Factor
Travel Performance		
Improve travel/service	Connect concentrations of population to work	Households and employment per route mile
		Study area workers by residence TAZ
	Serve major employment concentrations	Sites with 75 or more employees
	Connect to O'Hare's air traveler markets	Trips (daily origins and destinations) per route mile
Improve O'Hare West access	Connect to O'Hare's west entrance	Yes or no
Other Criteria		
Compatibility	With adopted transportation plans	Yes or no
Implementation horizon	Can be implemented by 2030	Yes or no

Of the 20 corridors evaluated, five had at least one "fatal flaw" and thus were eliminated from further consideration. For example, the Inner Circumferential corridor was eliminated because of conflicts with freight rail operations and because the likely implementation horizon for this corridor falls beyond the 2030 horizon of this study. Also, the Metra Rail Connector was eliminated because of freight conflicts, a high cost point to low travel benefit, and because it does not appear in the RTP. Five of the remaining 15 corridors were modified based on the findings of the corridor-level market analysis (see Table 3-9).

3.3.2 Level Two: Refinement of Transit Corridors and Screening

For this step, the remaining 15 transit improvement corridors were validated and further defined. Greater definition was established for each corridor to include potential mode (rail, heavy or commuter rail, bus rapid transit, arterial rapid transit, express bus, local bus, or local circulator) and operational aspects, and transit station locations. Other considerations included station spacing, intermodal transfer opportunities and physical feasibility of transfer connections.

During this refinement and screening step, the study area was expanded (as noted in the introduction to Section 3 and shown in Exhibit 3-2). As a result, additional transit elements were developed for the expanded study area, including (1) an extension of the Thorndale Avenue transit corridor from the O'Hare West Terminal to the Schaumburg Metra Station; (2) local circulator routes; (3) a Roselle Road bus route; (4) a service upgrade to Pace Route 554; and (5) employer shuttles designed to provide frequent, convenient and direct "last mile" connection service between rail and transfer stations and employment or activity centers.

At this stage of evaluation, further analysis was conducted for transportation performance, and environmental and socioeconomic measures. As a result of the screening, three corridors were eliminated from further consideration (see Table 3-10).

3.3.3 Level Three: Refinement of Transit Corridors and Screening

At this step, the remaining transit corridors and elements were refined. For example, to reinforce the IL 83 section of the J-Line as a BRT line, its southern terminus was relocated from the future STAR line station at Naperville Road/95th Street to the I-88/Naperville Road interchange. This section of the route was replaced with a connecting shuttle service to link to the BRT service and coordinate with the BRT schedule. Another J-line refinement occurred in the section linking West O'Hare Airport to the STAR Line's Schaumburg/IKEA station. This section originally was to operate in the I-290 corridor, but it was moved to the Rowling Road/ Martingale Road/IL 53 alignment to facilitate station development and access to neighboring employment and activity centers. Other refinements include modifications of station locations to accommodate parking requirements or further input from communities or transit agencies.

Other socioeconomic evaluation factors were introduced to assess the number of transit-dependent populations near proposed facilities. These factors included determining how many zero- or one-car households represent potential transit users near transit facilities; how many people are more than 65 years old; and how many households had incomes of $50,000 or less.

TABLE 3-9
Alternatives Subject to Fatal Flaw and Level One Screening

Alignment or Facility	Result
Rail or BRT Alternatives	
STAR Line connection to West Terminal	Retained.
CTA Blue Line Extension to West Terminal	Retained.
CTA Blue Line Express Track from Chicago Loop	Retained.
J-Line: West O’Hare to IKEA and STAR Line	Retained.
J-Line: IL-83 to Aurora and Naperville	Retained.
Inner Circumferential	Eliminated: cannot implement by 2030 and freight conflicts.
Rail Connector: Metra UP-NW Line to UP-W Line	Eliminated: not in 2030 RTP; freight conflicts; high cost-low benefit.
Mid-City Connector	Modified: retained for screening as express bus or BRT; rail eliminated.
CTA Yellow Line Extension to Old Orchard Shopping Center, Skokie	Eliminated: too far from study area.
Arterial Rapid Transit or Express Bus	
Golf Road: Evanston to Woodfield	Retained.
Dempster Street: East O’Hare to Yellow Line, Skokie	Retained.
I-94 Yellow Line Transfer: Jefferson Park to Yellow Line Dempster Street terminal	Retained.
I-294 North to Lake County: East O’Hare to Gurnee	Modified: route shortened to terminate at Lake-Cook Road because of low densities farther north.
I-294 South to Homewood: East O’Hare to Homewood	Modified: route shortened to terminate at Ogden Avenue because of low densities farther south.
Mannheim Road: East O’Hare to Orland Park	Modified: route shortened to terminate at I-55 because of low densities farther south.
I-355: Thorndale Avenue to Shorewood	Modified: route shortened to terminate at I-55 because of low densities farther south, and at Higgins Road to conform to Pace plans.
Local Limited Stop Bus Service	
East Airport to West Airport via Irving Park Road	Retained.
West Airport Metra Connector via York Road, UP-NW to UP-W	Retained.
Other Facilities	
Metra Transfer Station: NCS to UP-NW at Des Plaines	Eliminated: physically infeasible.
Metra Transfer Station: STAR Line and proposed North-South rail connector	Eliminated: North-South rail connector is eliminated.

TABLE 3-10
Alternatives Subject to Level Two Screening

Alignment or Facility	Result
Rail or BRT Alternatives	
STAR Line connection to West Terminal	Retained.
CTA Blue Line Extension to West Terminal	Retained.
CTA Blue Line Express Track from Chicago Loop	Retained as a "regional supporting project."
J-Line: West O'Hare to IKEA and STAR Line	Retained.
J-Line: IL-83 to Aurora and Naperville	Retained.
J-Line: West O'Hare to Schaumburg Metra MDW station	Retained for screening. Alignment added to address markets in expanded study area.
Mid-City Connector	Retained as a "regional supporting project."
Arterial Rapid Transit or Express Bus	
Golf Road: Evanston to Woodfield	Retained.
Dempster Street: East O'Hare to Yellow Line, Skokie	Retained. Corridor to be extended to Evanston, consistent with Pace plans.
I-94 Yellow Line Transfer: Jefferson Park to Yellow Line Dempster Street terminal	Eliminated: low market potential for express service.
I-294 North to Lake County: East O'Hare to Gurnee	Eliminated: low market potential.
I-294 South to Homewood: East O'Hare to Homewood	Eliminated: low market potential
Mannheim Road: East O'Hare to I-55	Retained.
I-355: Higgins Road to I-55	Retained.
Local Limited Stop Bus Service	
Irving Park Road, East Airport to West Airport	Retained.
York Road Shuttle, UP-NW to UP-W	Retained.
Local Services	
Golf Road West (Pace Route 554), Northwest Transportation Center to Elgin	Retained.
Roselle Road, Palatine to Glen Ellyn	Retained.
Circulators	Not evaluated at this stage; to be assessed in later analysis.
Employer Shuttles	Not evaluated at this stage; to be assessed in later analysis.

Level Three screening supported the conclusions of Level Two, confirmed ridership demand and benefit based on population and employment, and confirmed the presence of a potential transit-dependent population within the area. This final analysis confirmed that all 15 remaining transit elements should be retained and combined with other multimodal elements and roadway improvements to form complete transportation system alternatives for the Tier One Draft EIS evaluation.

3.4 Alternatives Carried Forward

3.4.1 No-Action Alternative

The No-Action Alternative consists of transportation improvements to existing roadway and transit facilities in the study area that are expected to be constructed by 2030. It represents an investment aligned to current program funding levels, and thus, does not include the major transportation improvements considered in this study. Development of the No-Action Alternative required extensive coordination with the region's transportation service providers to gather information on funded or anticipated transportation improvements in the study areas. The roadway improvements identified in the 2030 RTP and in the 2007–2012 Proposed Highway Improvement Program were the foundations for developing the No-Action Alternative. Through coordination with area transportation providers, including IDOT, Illinois State Toll Highway Authority (ISTHA), Cook County, DuPage County, Chicago Department of Transportation, transit service providers, and CMAP (the MPO), it was agreed that improvements identified in the 2030 RTP for parts of the region outside the study area would be included in the No-Action Alternative modeling. Also, the federally approved OMP, including a western terminal complex, would be completed within the planning period. Recognizing that other projects likely would be implemented as part of multiple short-range programs beyond 2012, additional improvement projects were identified through the end of the planning period (2030) in coordination with transportation providers. The additional projects were added to the No-Action Alternative.

The transportation improvements for the No-Action Alternative represent 80 lane miles of additional capacity and 135 miles of rehabilitation improvements to roadways, 54 interchange/intersection location improvements, and bus and rail transit improvements (see Exhibits 3-8 and 3-9, and Table 3-11). The No-Action Alternative includes no individual bicycle/pedestrian or TDM/TSM improvements, although such improvements could be components of specific baseline projects included in the No-Action Alternative. The No-Action Alternative will be carried forward throughout the NEPA process to serve as the baseline for comparing the performance of the build alternatives.

3.4.2 Build Alternatives

The alternatives that best satisfy project purpose and need and have lower overall impacts are Alternatives 203 and 402 (see Exhibits 3-10 and 3-11). Each is described below, with an analysis of its respective travel performance in subsection 3.5.1. Environmental and socioeconomic impacts for the two alternatives are compared in Section 4, Environmental Consequences. The two alternatives are similar except for their north connection to I-90. The following elements are the same for both:

- **Elgin O'Hare Expressway Section** includes upgrading and extending the Elgin O'Hare Expressway. The expressway would be improved with additional travel lanes in each direction for 4.4 miles from IL 19/Gary Avenue to I-290. A new expressway with three basic lanes in each direction is proposed from I-290 to the proposed O'Hare West Bypass, a distance of about 5.4 miles.
- **O'Hare West Bypass South Section** includes a new freeway facility extending 1.85 miles from the Bensenville Yard tunnel south to I-294 with four basic lanes in each direction. South Bypass Connection Options A and D occur between the Bensenville Yard and I-294.

TABLE 3-11
2030 Roadway and Transit Baseline Projects Included in the No-Action Alternative

Name	Project Type	Project Limits
Roadway		
Balmoral Avenue	New interchange, extend roadway	Bessie Coleman Drive to east of US 12/20/45
Des Plaines River Road	Bidirectional turn lane, utility/drainage relocation	River Street to Lawrence Avenue
IL 53 (Rohlwing Road)	Add lanes, bridge replacement	Elgin O'Hare Expressway to Army Trail Road
I-190	Corridor improvement	US 12/20/45 to I-294
I-290	Corridor improvement, high occupancy vehicle, auxiliary lanes	St. Charles Road to IL 50 (Cicero Avenue)
I-294 (Tri-State Tollway)	Widening, reconstruction	Balmoral Avenue to Dempster Street
I-90 (Jane Addams Tollway)	Add lane, reconstruction	I-294 (Tri-State Tollway) to IL 53
Meacham Road	Add lanes	IL 62 (Algonquin Road) to Old Plum Grove Road
Meacham Road	Add lanes, traffic signals	IL 62 (Algonquin Road) to IL 72 (Higgins Road)
Meacham Road	Add lanes, reconstruction w/change lane width	Kirchoff Road to IL 62 (Algonquin Road)
Medinah Road	Reconstruction, bidirectional turn lanes, channelization	IL 19 (Irving Park Road) to US 20 (Lake Street)
Thorndale Avenue	Add lane	I-290 to York Road
US 12/20/45 (Mannheim Road)	Widen Mannheim Road to three lanes in each direction	IL 19 (Irving Park Road) to IL 72 (Higgins Road)
Wood Dale Road	Reconstruction, channelization	Montrose Avenue to North of US 20 (Lake Street)
Arlington Heights Road	Intersection improvement	Landmeier Road
Arlington Heights Road	Intersection improvement	Oakton Avenue
Devon Avenue	Intersection improvement	Arlington Heights Road
Grand Avenue	Intersection improvement	York Road
IL 58 (Golf Road)	Intersection improvement	New Wilke Road
IL 62 (Algonquin Road)	Intersection improvement	New Wilke Road
York Road	Intersection improvement	IL 19 (Irving Park Road)
West Terminal Entrance	Intersection improvement	Thorndale Avenue
Wood Dale Road	Intersection improvement	IL 19 (Irving Park Road)
I-294 (Tri-State Tollway)	Add interchange ramp	Balmoral Road
Transit		
CTA Blue Line	Express service	Dedicated line from Block 37 to O’Hare
Metra – UP-W Line	Capacity upgrades	TBD
Metra – UP-NW Line	Capacity upgrades & extension	TBD
Metra – STAR Line	New rail segment	O’Hare to Hoffman Estates
CREATE	New crossovers and signals	Franklin Park
	Track additions	UP Line in Bellwood
	Track additions	UP Line in Melrose Park

Note: The projects listed were compiled from both the 2030 RTP (as revised in 2006) and feedback from the transit service agencies.

The elements that differ for the O'Hare West Bypass are the location of the north roadway section and the connection to I-90. For Alternative 203, the north section is proposed as a freeway, located mostly on the western edge of O'Hare Airport property, consistent with a planned transportation corridor described in the Airport's adopted *Airport Layout Plan* (2005). The northern terminus of Alternative 203 alignment is the Des Plaines Oasis on the Northwest (Jane Adams) Tollway. The north section for Alternative 402 is proposed as an arterial improvement to York Road/Elmhurst Road. The proposed improvement would add a travel lane in each direction, for a total of three travel lanes in each direction. The arterial improvement would extend along York Road/Elmhurst Road from the east end of the new Elgin O'Hare Expressway to the service interchange at I-90. The partial interchange would become a full interchange and accommodate exiting and entering movements from all directions.

The roadway build alternatives were developed to a concept design level of detail sufficient to facilitate a planning level decision related to the type and location of improvements. Detail was sufficient to identify the general right-of-way footprint to ensure that the improvements could be accommodated, develop construction and right-of-way cost estimates, and analyze the relative environmental and socioeconomic impacts.

3.4.2.1 Alternative 203

Elgin O'Hare Expressway Section. Alternative 203 consists of new freeway/tollway facility extending from the Elgin O'Hare Expressway between I-290 to the O'Hare West Bypass for about 5.4 miles. Between IL 19/Gary Avenue and I-290, the expressway would be widened and upgraded for 4.4 miles. The facility would have three basic lanes in each direction, with additional auxiliary lanes between high volume interchanges. The center median would vary between 70 to 144 feet, which could accommodate potential dedicated transit service including stations. Service interchanges would be provided at major crossroads, and to accommodate access to local road system, a frontage road would be provided between Meacham Road and Rohlwing Road and east of the I-290 interchange to York Road/Elmhurst Road.

System and service interchanges would be provided at the locations listed in Table 3-12. There would be 10 service interchanges: four would provide partial access, and six would provide full access. Partial interchanges would provide only two interchanging movements between local roads and a freeway, whereas full access interchanges would provide for all directions of movement. System interchanges are provided at two locations and provide freeway to freeway access.

Supporting crossroad improvements are planned to manage efficient traffic circulation. In some cases, the crossroad improvements would extend several hundred feet north and south of the intersections. In other situations, more extensive capacity improvements are needed for adjacent roadways. Among these are proposed widening for Meacham/ Medinah Road and Roselle Road for a short distance north and south of the expressway. Improvements to I-290 are also planned between IL 19 and Biesterfield Road, which would accommodate system ramp connections, lane balance requirements, and entering and exiting transitions. In total there are more than 12 miles of supporting improvements associated with the Elgin O'Hare Expressway section. See Appendix E for a summary of these improvements.

See Table 3-12 for a summary of the system and service interchanges for Alternative 203.

TABLE 3-12
Summary of Interchange Improvements for Alternative 203 in the Elgin O'Hare Expressway Section

Interchange	Type	Access
Gary Avenue	Service	Partial
IL 19/Springinsguth Road	Service	Full
Wright Boulevard	Service	Partial
Roselle Road	Service	Full
Meacham Road	Service	Full
Rohlwing Road	Service	Partial
I-290	System	Full
Arlington Heights Road	Service	Partial
Prospect Avenue	Service	Full
Wood Dale Road	Service	Full
IL 83	Service	Full
West Terminal	System	Full

Interchange studies and FHWA approval will be required to determine interchange type and design in subsequent design phases for the project.

O'Hare West Bypass Section. Alternative 203 includes a freeway section that would extend from I-90 at the current location of the Des Plaines Oasis, south along the western edge of O'Hare Airport to the Bensenville Yard for about 4.35 miles.

The freeway would consist of four basic lanes in each direction, with additional auxiliary lanes at interchanges, and a 70-foot median to accommodate transit service north of Thorndale Avenue. System interchanges are proposed at I-90, the Elgin O'Hare Expressway, and I-294. Service interchanges are proposed at IL 72, Devon/Pratt, the proposed O'Hare West Terminal, IL 19, and Green/Franklin Street.

There are two alignment options for connecting to I-294 that would begin at the tunnel under the yard. They are described below and shown on Exhibits 3-12a and 3-12b.

- **South Bypass Connection Option A**—The freeway generally would proceed south along the western edge of County Line Road to a new system connection with I-294 near Grand Avenue (1.9 miles). The freeway would be located west of County Line Road. County Line Road would be retained as a one-way frontage road on the east side, and a new one-way frontage road would be provided on the west side of the proposed facility.
- **South Bypass Connection Option D**—The freeway generally would extend southeast along the southern edge of the rail yard, then cross the UPRR and proceed south, paralleling the east side of the UPRR, to a new system connection with I-294 near Grand Avenue (1.8 miles).

These options also include a new bridge that reconnects Taft Road across the Bensenville Yard, linking Franklin Avenue and IL 19. A full-access system interchange would be provided at I-294. Part of I-294, extending roughly from Grand Avenue south to North Avenue, would be improved to accommodate system ramp connections and lane balance requirements.

Service and system interchanges would be provided along the O'Hare West Bypass. System interchanges would be located at the north and south ends of the bypass. The north system interchange would exchange traffic between I-90 and the O'Hare West Bypass, and would be located in the vicinity of the Des Plaines Oasis. The full access interchange would have long flyover ramps spanning the Metropolitan Water Reclamation District of Greater Chicago flood control reservoirs near I-90. The north system interchange would also require improvements along I-90 (from Devon Avenue to Arlington Heights Road) to accommodate system ramp connections and lane balance. The south system interchange would interconnect I-294 and the O'Hare West Bypass, and would include I-294 improvements between Grand Avenue and North Avenue to accommodate system ramp connections and lane balance requirements.

Service interchanges would be provided at Elmhurst Road and I-90, IL 72, Elmhurst Road/Pratt Boulevard/Devon Avenue, IL 19, Franklin Boulevard/Green Street/Taft Road, I-294, and IL 64. The Elmhurst Road and I-90 interchange would be a total reconstruction of the partial interchange to a full access interchange. Partial access will be provided at IL 72 through a half diamond service interchange with service to and from the south. At Elmhurst Road, partial access will be provided by ramps that form a split interchange at Pratt Boulevard and Devon Avenue. The Franklin Boulevard/Green Street/Taft Road interchange would be a partial access service interchange with an off-ramp from northbound O'Hare West Bypass to Franklin Boulevard/Green Street and an on-ramp from Franklin Boulevard/ Green Street/Taft Road to southbound I-294. A full access service interchange is provided at IL 19. The northbound off-ramp to IL 19 will be offset at Greenlawn Avenue. A partial access service interchange will also be provided at IL 64. A new northbound on-ramp from IL 64 and new southbound I-294 off-ramp to IL 64 will be provided.

Local improvements would accommodate traffic circulation and would include Elmhurst Road (from Higgins Road to Oakton Avenue), IL 72 (from Elmhurst Road to Mt. Prospect Road) including grade separation of Touhy Avenue and UPRR, widening Franklin Boulevard/Green Street between County Line Road and Taft Avenue to two lanes with an 18-foot median in each direction. A new connector road would be provided from Franklin Boulevard spanning the Bensenville Yard to a connection on the north with IL 19. Supporting local improvement would total 11 miles of improved local roads associated with the bypass. See Appendix E for a summary of supporting roadway improvements.

3.4.2.2 Alternative 402

The Elgin O'Hare and south bypass sections for Alternative 203 is the same for Alternative 402. However, the north section (north of Thorndale Avenue; about 3.1 miles) for Alternative 402 is proposed as an arterial improvement to York Road/Elmhurst Road. The arterial improvement would extend along York Road/Elmhurst Road from the east end of the new Elgin O'Hare Expressway to the service interchange at I-90. The arterial facility would be upgraded to provide three lanes in each direction separated by a raised median along York Road/Elmhurst Road. Provision for double left turns will be made at large volume intersections requiring a 30-foot median. Outside the interchange influence areas, the median will be narrowed to 18 to 22 feet to avoid unnecessary right-of-way impacts. Local improvements would include grade separation of Touhy Avenue from the UPRR tracks. The interchange at York Road/Elmhurst Road and I-90 would be upgraded to full access with added access to and from the west. See Appendix E for a summary of supporting roadway improvements.

3.4.2.3 Multimodal Elements

The EO-WB Study is seeking a multimodal transportation solution for the study area. The commitment to that objective has been fulfilled throughout the process, and attention to all modes has been demonstrated. Transit, bicycle and pedestrian, freight rail, and transportation system and travel demand management elements are part of the two build alternatives. Each element is common to the build alternatives carried forward in the Draft EIS analysis. As stated by stakeholders early in the study process, more is needed from other modes to help reduce travel and congestion on area roadways. The study has established the foundation for the elements, which other transportation providers may now use to advance these initiatives. The four common elements is described below.

Transit. Part of developing a transportation plan for the study area has been to find ways to improve transit service. Stakeholders at the very earliest meetings stated the need for more transit opportunities as part of the overall solution. The project team, transit providers in the region, and other stakeholders brought forth numerous ideas that were used in developing an overall transit plan. The plan that emerged from an evaluation of 20 initial ideas was refined to a final set of 15 transit corridors and strategies, each with a specific proposed transit service—rail, heavy or commuter rail, bus rapid transit, arterial rapid transit, express bus, local bus, or local circulator—and operational criteria. Table 3-13 and Exhibit 3-13 detail each proposed corridor.

Upgrades to transportation centers and new transportation centers also are proposed (see Table 3-14). Transportation centers provide connections and transfer points between modal services and are vital to the overall function of the system. This component would add opportunities and convenience for improved automobile connections, passenger dropoff, bus-to-bus interconnections, bus-to-rail, and airport to bus or rail interconnections at five key locations: East O'Hare Airport, I-290/Elgin O'Hare Expressway, the Northwest Transportation Center, Schaumburg Metra, and West O'Hare Airport. Each location would include bus stands, bicycle and pedestrian access, bicycle storage, and real-time displays of service information. Timed coordination of bus schedules is important to allow easy transfer to rail services and between bus routes and transportation centers.

Another aspect of the transit component is employer shuttles. This service helps to fill the "last mile" connection service between rail and transfer stations and employment or activity centers. The provision of frequent, convenient and direct service to employers and activity centers is central to shifting automobile trips to transit. Application of this type of service is considered critical in an area that has a large potential for attracting new transit ridership.

One aspect of the transit plan that would improve connectivity between the automobile and rail/bus is new or upgraded park and ride facilities at two existing and two new sites (see Table 3-15).

TABLE 3-13
Proposed Transit Improvements

Corridor	Route Detail	Mode and Operating Assumptions
Blue Line Extension to West Terminal	Connects O'Hare Terminal station to proposed West Terminal. These are the only two stops along this proposed corridor.	Heavy rail transit; dedicated subway tunnel with seven-minute headways.
STAR Line Spur	Rail spur that connects the proposed West O'Hare Terminal station to the Metra STAR Line. West terminal is the only stop along the spur section.	DMU-type vehicles that operate commuter rail service with undetermined headway times, contingent upon Metra STAR line headways.
J Line West to Schaumburg Metra	Connects West O'Hare Terminal station to Schaumburg Metra MDW station. Stop locations include West Terminal, IL 83, Wood Dale, Prospect, Meacham, and Roselle roads, and Schaumburg Metra.	High capacity transit corridors (BRT or rail). A-B service with 15-minute headways along branches and seven-minute headways along shared section of Elgin O'Hare Expressway alignment.
J-Line Northwest to Woodfield	Connects West O'Hare Terminal station to IKEA store at Meacham Road. Stop locations include West Terminal, IL 83, Wood Dale, Prospect, Devon, and Biesterfield roads, Higgins Northwest Transportation Center, and IKEA.	
J Line South to Aurora	Connects West O'Hare Terminal station to Aurora. Stop locations include West Terminal, Elgin O'Hare Expressway and IL 83, Grove Avenue, Lake Street, North Avenue, Oakbrook Mall, 22nd and Highland, Warrenville and Naperville Road, Naperville Metra, IL 59 and Ogden Avenue, and Aurora STAR line station at 95th Street.	BRT service with few stops placed at major nodes of activity. Headways are seven-minute peak/15-minute off-peak.
I-355	Connects Northwest Transportation Center with Bolingbrook. Stop locations include Higgins Northwest Transportation Center, Biesterfield Road, Devon, Lake Street, Army Trail Road, North Avenue, Roosevelt, Butterfield, Ogden Avenue, Maple, 63rd Street, 75th Street, and 87th Street.	Express bus service running exclusively along expressway lanes. Headways are 15-minute peak/30-minute off-peak.
Golf Road West	Local stops every two to four blocks.	Local bus service with 15-minute peak/30-minute off-peak minute headways. Upgrade to an existing Pace service.
Mannheim Road	Connects O'Hare East Terminal with I-55. Stop locations include East O'Hare, Irving Park Road, Grand, North, St. Charles, Butterfield, Roosevelt, Cermak, Ogden Avenue, LaGrange Metra, 55th Street (Countryside Village Hall), Joliet Road, and I-55.	Arterial Rapid Transit also can be conceptualized as an express bus that runs along a local arterial and incorporates technologies designed to five transit vehicles priority. 15-minute peak/30-minute off-peak.
Dempster Street	Connects O'Hare East Terminal with Skokie. Stops include East O'Hare, Mannheim and Touhy, River Road Des Plaines Metra, Carlean Court (Maine High School), Luther Road (Lutheran General Hospital), Milwaukee Avenue, Harlem, Waukegan, Central, and Skokie Yellow Line station.	Arterial Rapid Transit also can be conceptualized as an express bus that runs along a local arterial and incorporates technologies designed to five transit vehicles priority. 15-minute peak/30-minute off-peak.

TABLE 3-13
Proposed Transit Improvements

Corridor	Route Detail	Mode and Operating Assumptions
Golf Road East	Connects Evanston to Woodfield Mall. Stop locations include Higgins (Northwest Transportation Center), Gold and STAR Line station at Northwest Highway and Golf Road, Arlington Heights Road, Elmhurst Road, Wolf Road, River Road Des Plains Metra, Greenwood Road, Waukegan Road, Gold Road and US Highway 41, Church and Crawford, Church and Dodge, and CTA Purple Line Davis Station.	Arterial Rapid Transit; also can be conceptualized as an express bus that runs along a local arterial and incorporates technologies designed to five transit vehicles priority. 15-minute peak/30-minute off-peak.
Irving Park Road	Connects the East and West Terminals at O'Hare Airport. Stop locations include East O'Hare, Mannheim, Post Office, and West O'Hare.	Local express service. Headways are seven-minute peak/15-minute off-peak.
Roselle Road	Connects Palatine UP-NW Metra Station to the UP-W Metra Glen Ellyn station. Local stops every two to four blocks.	Local bus service. Headways are seven-minute peak/15-minute off-peak.
York Road Shuttle (UP-NW to UP-W)	Connects the UP-NW Metra Mt. Prospect station to the MDW Metra Elmhurst station. In addition to local stops every two to four blocks, route serves proposed STAR line, O'Hare West Terminal, and MDW Metra Bensenville station.	Local bus service. Headways are seven-minute peak/15-minute off-peak.
Circulators	Several proposed routes; connections include Woodfield, NW Transportation Center, Devon Intermodal Transit facility, and various high-level transit stations in the western part of the study area.	Local shuttle service linking residential areas to high level transit stations. Proposed headways are 15-minute peak/30-minute off-peak.
Employer Shuttles	Several proposed routes serving the industrial area directly west of O'Hare Airport as well as concentrated areas of commercial and industrial use within the vicinity bounded north-south by the UP-W and MDW Metra lines and east-west by IL-83 and Roselle Road.	Local shuttle service linking employment centers to high level transit stations. Peak period scheduled runs; no off-peak service.

TABLE 3-14
Proposed Transportation Transfer/Intermodal Facilities

Name	Intersection	Status	Park and Ride	Connecting Transit Service		
				Corridor	Mode	Status
East O'Hare	Near Mannheim Road and E. Higgins Road	Proposed	Yes	Metra NCS	Commuter rail	Existing
				O'Hare Airport Transit System	Fixed guideway	Existing
				Dempster Street	ART	Proposed
				Mannheim Road	ART	Proposed
				Irving Park Road	Express bus	Proposed
I-290/Elgin O'Hare Airport vicinity	Rohlwing Road/Elgin O'Hare Expressway	Proposed	No	J-Line NW	High capacity transit	Proposed
				I-355	Express bus	Proposed
				Circulator	Shuttle	Proposed
				Employment	Shuttle	Proposed
NW Transportation Center	E. Higgins Road between I-290 and Meacham Road (at Mall Drive)	Existing	Yes	J-Line NW to Woodfield	High capacity transit	Proposed
				Golf Road East	ART	Proposed
				Golf Road West	Local bus	Proposed
				I-355	Express bus	Proposed
				11 Pace Routes	Various bus services	Existing
				Circulator	Shuttle	Proposed
Schaumburg Metra	Elgin O'Hare Expressway and S. Springinsguth Road	Existing	Yes	Metra MDW	Commuter rail	Existing
				J-Line West to Schaumburg Metra	High capacity transit	Proposed
				#602 Pace	Local/feeder bus	Existing
				Circulator	Shuttle	Proposed
West O'Hare	York Road/Elmhurst Road and Thorndale Avenue	Proposed	No	STAR Line	Commuter rail	Proposed
				CTA Blue Line	HRT/subway	Proposed
				J-Line West to Schaumburg Metra	High capacity transit	Proposed
				J-Line NW to Woodfield	High capacity transit	Proposed
				J-Line South	BRT	Proposed
				Irving Park Road	Express bus	Proposed
				York Road	Local bus	Proposed

TABLE 3-15
Additional Park and Ride Facilities

Name	Intersection	Status	Connecting Transit Service: Corridor	Mode	Status
Bensenville	N. York Road and W. Main Street	Existing	Metra MDW	Commuter rail	Existing
			York Road Shuttle	Local bus	Proposed
			#319 Pace	Regular/express bus	Existing
			#332 Pace	Regular/express bus	Existing
Bolingbrook	I-355 and I-55	Proposed	I-355	Express bus	Proposed
Countryside	LaGrange Road and Joliet Road	Proposed	Mannheim	ART	Proposed
			#330 Pace	Regular/express bus	Existing
Skokie	Dempster Street between Gross Point Road and Skokie Boulevard	Existing	CTA Yellow Line	HRT	Existing
			Dempster	ART	Proposed
			#250 Pace	Regular/express bus	Existing
			#97 CTA	Local bus	Existing
			#626 Pace	Regular/express bus	Existing
			#54A CTA	Limited local bus	Existing

Bicycle/Pedestrian. Early in the study process, stakeholders identified the need for more bicycle/pedestrian opportunities within the study area as a means of reducing vehicular travel. Promoting bicycle and pedestrian facilities starts with understanding where people want to travel. Destinations for bicyclists and pedestrians are much like auto travel, but generally shorter trips (e.g., community or activity centers, places of employment, or recreational attractions). The framework for improving bicycle and pedestrian mobility in the area began with the existing trail system combined with planned improvement in the study area by others. The proposed bicycle/pedestrian improvements recommended by the EO-WB study focus on filling the gaps in bicycle trail and pedestrian paths to provide better connections to transit stations, park and ride facilities, community activity centers, regional trail systems, and employment areas. The recommendations for bicycle and pedestrian improvements are common features of both Alternatives 203 and 402.

Exhibit 3-14 shows the existing and planned regional trail system within and near the study area. The area is conveniently located near major regional trails, including the Illinois Prairie Path, the Great Western Trail, and the Des Plaines River Trail. The location of these trails in relation to the study area is shown in Exhibit 3-14. Regional trail improvements have also been planned by others, which total 10 miles of new trails. These planned improvements provide linkages between existing trail sections to existing regional trails. The EO-WB expands on these other planned improvements to fill gaps in the system that would provide for a complete regional trail loop. It would pass through the study area extending from the Des Plaines River Trail (just north of the study area) to the west in the vicinity of Busse Road, extending south in the general vicinity of Salt Creek to a connection on the south with the Great Western Trail, and to the east with the Des Plaines River trail.

The regional trail improvements proposed by the EO-WB total an additional seven miles of trail improvements and include three primary links:

- A section in Elk Grove Village primarily on Oakton Avenue and Tonne Road extending from Higgins and Oakton, west on Oakton and south on Tonne Road (Regional Trail A).
- A section in Elk Grove Village primarily on Walnut Lane and along Salt Creek extending along Tonne Road between Pratt Boulevard and Walnut Lane, then west along Walnut, south on Ridge Avenue, west on Devon Avenue, and finally south along Salt Creek (Regional Trail B).
- A section in Elmhurst primarily on York Road connecting a proposed trail along Lake Street to a proposed trail along Wrightwood Avenue by York Road (Regional Trail C).

Exhibit 3-15 shows the principal existing and planned community trail system in the study area. The location of employment and community centers, and transit stations and facilities in relation to the trail system, is also shown in Exhibit 3-15. An examination of the existing trail network (Exhibit 3-15) shows many gaps in linking these activity nodes. Others have planned trail improvements for the area including those by DuPage County, DuPage County Forest Preserve District, CMAP, and others. The proposals by others total more than 18 miles of improvements that begin to link gaps between trails and to link trails with community and employment centers. The EO-WB study has looked at additional trail improvements beyond those recommended by others to include opportunities for bicycle and pedestrian facilities in conjunction with the roadway and transit aspects of the EO-WB plan. The EO-WB study proposes an additional 15 miles of trails that would improve access to communities, employment centers, and transit facilities.

One notable proposal included in the build alternatives is the bicycle/pedestrian trail along the existing and proposed Elgin O'Hare Expressway from the west end of the study area to O'Hare Airport (Community Trail Improvement One, see Exhibit 3-15). This link would provide intercommunity travel and easy access to transit stations proposed in the corridor. Other proposed community trail sections include a north-south link that would connect Busse Woods with Irving Park Road generally between Salt Creek and IL 83 (Community Trail Improvement Two; see Exhibit 3-15), and a proposed trail section between Lake Street and Irving Park Road in Bensenville (Community Trail Improvement Three, see Exhibit 3-15). Finally, several smaller trail improvements proposed throughout the community trail system would fill gaps between existing and proposed improvements by others.

The plan includes safe identifiable crossings for bicycle and pedestrian facilities at major roadway crossings (I-290, Elgin O'Hare Expressway, I-90, etc.) that represent a barrier to non-motorized travel. The "starred" locations in Exhibit 3-14 illustrate the locations where special design considerations are warranted to accommodate the safe movement of bicycle and pedestrian traffic for north-south and east-west travel.

The proposed community trail system would link major activity areas. In several cases, more is needed to improve bicycle and pedestrian access within the expansive commercial and industrial developments in the area. Exhibit 3-14 also shows the areas where a local trail framework should be expanded within those areas to enhance access for workers using non-motorized transportation. Further examination of these areas is recommended for the local communities to explore opportunities for bicycle and pedestrian facilities.

The planned improvements by the EO-WB study and others for both the community and regional trail system represent a comprehensive bicycle and pedestrian trail system for the study that provide non-motorized access to communities, job centers, activity centers, transit, and recreational facilities. The EO-WB study has sought to integrate bicycle and pedestrian facilities into the overall transportation plan for the study area. Bicycle and pedestrian improvements are common to both Alternatives 203 and 402. In locations where proposed bicycle improvements overlap roadway improvements, the roadway footprint has been sized to accommodate the bicycle facilities. Non-motorized facilities are an important part of the overall EO-WB plan and have a role in reducing automobile travel on the area roadways, and will be considered in further detail during Tier Two.

Freight Rail. The numerous freight rail facilities throughout the study area include a large track network (mainline tracks, industrial spur tracks, and yard tracks), classification/ marshalling yards, and intermodal facilities. The numerous at-grade crossings (120) complicate automobile movement and reduce travel efficiency. In considering all the transportation modes in the study area, the project team addressed freight rail needs as part of the overall transportation solution. Three areas of freight rail improvements are proposed: separation of highway and rail at key locations, interlocking improvements, and improved access to intermodal facilities.

- *Highway-Rail Grade Crossings.* Several at-grade crossings of road and rail have been identified as key locations for grade-separating these crossings.
  - A proposed grade separation of the CPRR in Bensenville at Irving Park Road and York Road. This grade separation would improve roadway traffic where traffic delays for crossing trains can be up to 15 minutes. This location is named in the region's CREATE program as a priority location.
  - A proposed improvement of Metra's MDW at Irving Park Road and Wood Dale Road. This location has long traffic delays and many accidents. The improvement, consistent to an interim project, would provide for a new roadway under the Metra track connecting Wood Dale and Irving Park roads, thereby improving roadway operations at that location.
  - The UPRR and CPRR would be grade separated in many locations along the proposed O'Hare West Bypass including from north to south:
    - Improved existing grade separation of the UPRR and CPRR crossing I-90 (Jane Adams Tollway) north of O'Hare Airport
    - The UPRR and CPRR crossing Touhy Avenue on the north side of O'Hare Airport
    - The east-west spur line crossing Elmhurst Road near Pratt Boulevard
    - The mainline of the O'Hare West Bypass crossing under the UPRR and CPRR near Devon Avenue
    - System interchange ramps (seven ramps either over or under the railroads) at the intersection of the Elgin O'Hare Expressway and the O'Hare West Bypass
    - The mainline of the O'Hare West Bypass crossing under the UPRR tracks and the CPRR tracks near the west end of the Bensenville Yard

        - The UPRR crossing over Green Street near Taft Road
        - UPRR and CPRR spurs service industrial areas in Franklin Park and Bensenville, south of Green Street and Franklin Avenue
        - Taft Road improvement over the Bensenville Yard
    - Railroad separations would be provided at two location on the Elgin O'Hare Expressway:
        - A north-south spur line east of Wright Boulevard
        - A north-south spur line east of IL 83

- *Interlock Improvements.* Track interlockings are a complex system of signals and special trackwork that ensure safe and efficient train movements between one track and another. Potential improvements to interlocking in the study area include B-17 and Bryn Mawr interlocker. Numerous trains pass daily through these interlock systems. Current operations are slowed by aged signal systems, train length, and limited track capacity. Improving these conditions would include improvements at the interlockers, or system improvements in other locations that would assist movement through the capacity limited interlockers. One benefit of these improvements would be reducing backups at railroad/roadway at-grade crossings.
- *Intermodal Considerations.* Intermodal freight operations are co-located with railroad classification/marshalling yards in the study. There are three intermodal facilities in or near the study area, where containerized freight from one mode of transportation is transferred to another (e.g., truck to rail, or rail to truck). Attention has been given to improving these connections. One example is the local access that would be provided from the south bypass connection to industrial development in Franklin Park and Bensenville. Hundreds of truck movements (more than 500 to the intermodal facility alone) that enter and leave the area daily experience circuitous travel to and from the nearest freeway connection. This single improvement will save travel time, travel and operation costs, and reduce fuel consumption. The benefit of this new access could affect the competitive attractiveness of the area, and should have a positive benefit on occupancy, land values, and development and redevelopment potential.

Transportation System Management and Travel Demand Management. TSM and TDM represent another component of the transportation alternatives. These components are considered supporting improvements to the overall plan. TSM techniques and strategies would add efficiency in travel on the system. TSM techniques include modernized traffic signal control systems that adjust themselves to optimize traffic flow, freeway traffic flow management, incident detection and response, system surveillance, intersection improvements, and traveler information services. TDM attempts to reduce single occupancy automobile travel or during peak periods of travel and includes strategies or techniques such as car pooling, van pooling, park and ride facilities, and alternate work hours, etc. The specific strategies that would be implemented would be developed during Tier Two. During this phase of analysis, the effects of these strategies have been approximated in the travel modeling work and have resulted in a small reduction in travel on the roadway.

3.5 Performance Comparison of Alternatives Carried Forward

3.5.1 Travel Performance Measures

The travel performance of the build alternatives is similar, but do show some differences when compared to the No-Action Alternative. The similarity in performance is attributed to many features of the alternatives being the same with the exception of the north leg either as a freeway or improved arterial. The travel performance of each build alternative was conducted with the use of an alternative-specific population and employment forecast that was developed with the aid of CMAP (a process acknowledged by CMAP to be appropriate). The relative performance of each alternative is described for several criterion including VMT, vehicle hours of travel (VHT), VHD, regional travel efficiency, decreased congestion on secondary roads, network speed, transit ridership, and others.

3.5.1.1 Alternative 203

For Alternative 203, the Elgin O'Hare Expressway component has the greatest impact in terms of traffic growth and traffic pattern changes. Estimates from the travel model show that the year 2030 bidirectional average daily traffic (ADT) along the Elgin O'Hare Expressway improvement from I-290 to the O'Hare West Bypass ranges from 179,000 to 246,000, and that from Gary Avenue to I-290 ranges from 122,000 to 203,000. These volumes clearly show that the corridor operates as a primary travel route for traffic to and from the west of the study area.

The other major component of Alternative 203 is the O'Hare West Bypass corridor, which has two distinct travel patterns: to the north and to the south. The connection to the south operates as a parallel travel corridor to I-290, thereby supporting travel patterns to and from the west to the south. The bidirectional ADT along with the south bypass connection ranges from 120,000 to 195,000. The connection to the north operates as a connector facility between the Elgin O'Hare Expressway improvement, O'Hare West Bypass, the I-90 corridor, and has bidirectional ADT ranging from 165,000 to 204,000.

Table 3-16 summarizes the systemwide travel characteristics. The daily VMT is 23.0 million, and freeway facilities account for almost 67 percent of the total VMT, thereby supporting efficient travel entering, leaving, and through the study area.

TABLE 3-16
Systemwide Travel Performance Measures—Build Alternatives (Daily)

Performance Measures	Alternative 203	Alternative 402
VMT	22,971,000	22,669,000
VHT	718,000	719,900
VHD	209,300	209,800

3.5.1.2 Alternative 402

For Alternative 402, the Elgin O'Hare Expressway component also has the most significant impact in terms of traffic growth and traffic pattern. Bidirectional ADT along the Elgin O'Hare Expressway improvement from I-290 to the O'Hare West Bypass ranges from 176,000 to 263,000, and from Gary Avenue to I-290 ranges from 151,000 to 238,000. Like Alternative 203, this component of Alternative 402 operates as a primary travel corridor for traffic to and from the west of the study area.

For Alternative 402, the O'Hare West Bypass component is limited to the south section connecting the east-end of the Elgin O'Hare Expressway improvement and I-294. The connection to and from the north is served by an arterial improvement on York Road. Similar to Alternative 203, the south bypass operates as a parallel travel corridor to I-290, thereby supporting travel patterns to and from the west going south. Bidirectional ADT along with the south section of the bypass ranges from 130,000 to 203,000. The improvement along York Road facilitates travel from the I-90 corridor accessing the west side of O'Hare and local travel in the study area. It does not serve as a through traffic corridor like the north bypass connection does in Alternative 203. Bidirectional ADT along York Road ranges from 36,000 to 59,000.

Table 3-16 summarizes the systemwide travel characteristics for Alternative 402. The daily VMT is 22.7 million. Freeway facilities accounted for almost 68 percent of the total VMT, thereby supporting through and efficient travel to and from the west, which is the predominant travel pattern observed in the study area.

Both build alternatives would manage the increased VMT and provide efficient travel in and through the study area. This is measured as a percent increase in regional travel efficiency in the study area. For Alternative 203, there is a net increase of 10 percent over the No-Action Alternative. For Alternative 402, there is an increase of eight percent (Table 3-17). For this measure, Alternative 203 provides an additional benefit with the north freeway connection facilitating better through travel in the study area, carrying most of through travel on access controlled facilities, as opposed to Alternative 402, where the arterial improvement on York Road/Elmhurst Road acts as a local connection between I-90 and the Elgin O'Hare Expressway improvement.

Both alternatives demonstrate the ability to manage more traffic efficiently by reducing delay on the system. The reduction in congestion is demonstrated by the build alternatives reducing congestion on secondary roadways. Exhibit 3-16 shows the traffic demand for the build alternatives. The freeway/interstate and tollway facilities (access controlled facilities) carry most of the traffic in the study area, supporting through travel and access to the study area. The Elgin O'Hare corridor acts as an additional parallel route to support the east-west travel choices through the region along with providing direct access to O'Hare Airport. The access controlled facilities are well connected at various locations reducing the need for using localized facilities as through travel and cut through routes thereby facilitating the use of the secondary roadway facilities for local area access and travel choices. Alternative 203 performs the best with a reduction in congested VMT on secondary roads during the P.M. peak period by 15.2 percent (see Table 3-17). Alternative 402 reduces congestion on secondary roads by 12.3 percent when compared to the No-Action Alternative. The reduction in congestion yields increases in average speeds on the system, and as shown in Table 3-17, network speed on the principal arterials would increase by eight percent under Alternative 203 and by seven percent under Alternative 402.

Another way to illustrate improved travel conditions on the roadway system is to compare changes in travel speed and roadway capacity with the improvements. Exhibit 3-17 shows where future (2030) speeds and capacity either improve or decline with the build alternative compared to the baseline condition. The findings show that Alternative 203 would improve speed and capacity on 70 percent of the study area roadways, whereas Alternative 402 would improve 71 percent.

TABLE 3-17
Systemwide Travel Performance Comparisons—2030 Baseline and Build Alternatives

Alternatives	2030 Baseline	Build Alternative 203	Build Alternative 402
Percent Increase in Regional Travel Efficiency in Study Area	—	10%	8%
Percent Decrease in Congested VMT on Secondary Roadways (P.M. Peak)	—	15.2%	12.3%
Percent Increase in Network Speeds on Principal Arterials (P.M. Peak)	—	8%	7%
Improve O'Hare West Access—Travel Time Savings from the Study Area West to O'Hare	—	49%	47%
Improve Accessibility—Percent Increase in Trips within Five Minutes to Interstate/Freeway facilities	—	50%	41%
Percent Increase in Transit Trips	—	37%	34%

Improving access to the west side of O'Hare Airport is one of the key elements of the purpose of and need for the project. The Elgin O'Hare Expressway extension facilitates effective and efficient travel to and from the west, which has the highest forecast demand as part of the project. Both alternatives demonstrate the ability to save significant travel time to access O'Hare west. For select trips, Alternative 203 will improve travel times from the west by 49 percent and Alternative 402 improves the travel times by 47 percent.

Along with improved access to O'Hare, the study area will benefit from additional interchange locations providing effective connections to freeway and interstate facilities. Both alternatives substantially increase the number of trips within five minutes of a freeway. As compared to the No-Action Alternative, Alternative 203 would increase trips by 50 percent, and Alternative 402 by 41 percent.

The proposed transit improvements improve transit trips for the build alternatives. Alternative 203 would increase the number of transit trips by 37 percent over the No-Action Alternative, and Alternative 402 by 34 percent.

3.5.2 Cost

Preliminary cost estimates, including construction and right-of-way costs, were prepared for each build alternative. Standard IDOT contingencies have been applied to the cost estimate, and to the inclusion of engineering design and construction management/inspections costs. Under either south bypass connection option, Alternative 203 is estimated to cost $3.6 billion in 2009 dollars, and Alternative 402 $2.8 billion. Preliminary costs to construct transit improvements were also developed and are limited to transit infrastructure improvements within the proposed roadway improvement corridors. Transit costs in 2009 dollars would be would be $430 million for Alternative 203 and would be $250 million for Alternative 402 . The difference in cost is related to the north leg of Alternative 402, which is proposed as an arterial improvement. The arterial improvement would have insufficient right-of-way to incorporate the proposed STAR Line; therefore, this aspect of transit is not provided in conjunction with Alternative 402 and the cost is lower.

3.5.3 Financing Strategies

The government traditionally has financed major transportation infrastructure primarily through a combination of federal and state monies. These resources typically are combined to fund projects on a pay-as-you-go basis, meaning that projects often are built in phases or increments as funds become available over time. The pay-as-you-go approach has the benefit of simplicity and avoids the interest costs associated with debt. However, delayed implementation involves the hidden costs associated with inflation and foregone economic development, foregone safety improvement, and environmental benefits.

Project funding has been tied closely to federal and state cash management policies, with nearly exclusive responsibility for the process vested in state and local public transportation agencies.

Because public resources are limited, state and local governments are faced with the challenge of inadequate funding to meet transportation needs, and critical projects may face years of delay before funding is available. In an era of constrained public funding, new funding mechanisms are being considered across the country and the use of alternative methods is being implemented in some locales.

The alternative funding methods include the following:

- Credit Instruments
  - Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA): A new Federal transportation credit program authorized as part of Transportation Equity Act (TEA)-21 that provides direct Federal loans, lines of credit, and loan guarantees provided through U.S. Department of Transportation (USDOT) to large projects of national significance, under criteria developed by Congress. However, Illinois does not have enabling legislation to allow for TIFIA assistance in transportation financing.
  - Section 129 Loans: Section 129 of Title 23 of U.S. Code permits states to use federal funds to make loans to any federally eligible project. The loans must be repaid with a dedicated, nonfederal source. Illinois does not have enabling legislation in place to use Section 129 loans for surface transportation projects.
- Grant Management Initiatives and Techniques
  - State Infrastructure Banks (SIBs): A state or multistate revolving fund that provides loans, credit enhancement, and other forms of financial assistance to surface transportation projects. Illinois does not have enabling legislation in place to allow for use of the SIB at this time. Such legislation must designate how the SIB would be funded and how it would operate.
  - Grant Anticipate Revenue Vehicle Bonds (GARVEEs): A GARVEE is any bond or other form of debt repayable, either exclusively or primarily, with future federal highway funds under Section 122 of Title 23 of the U.S. Code. Although the source of payment is federal funds, GARVEEs cannot be backed by a federal guarantee but are issued at the sole discretion of, and on the security of, the state issuing entity. At this time, Illinois does not have enabling legislation to allow GARVEEs for transportation financing.

 – Tapered Match: TEA-21 section 1302 removed the requirement that federal share of project costs be applied to each progress payment, thereby allowing the FHWA to establish a more flexible matching share policy for progress payments, as long as the appropriate matching ratio is achieved by the end of the project. Tapered match may be useful when the government sponsor lacks the funds needed to match a federal project at the start but will accumulate the match over the life of the project. The state, when requesting a tapered match, should include in its request for project approval, a statement that tapered match will achieve earlier project completion, reduced project costs, or allow additional nonfederal funds to be leveraged for the project. With or without the authorization of tapered match, the state remains committed to providing the required nonfederal share of project costs. The state must also be able to control the federal share amount in its billing system.

- Public and Private Partnerships (PPP): A contractual agreement that is formed between public and private sector partners, which allows more private sector participation in the delivery or operation of a transportation project than is traditional. The agreements usually involve a government agency contracting with a private company to renovate, construct, operate, maintain, and/or manage a facility or system. While the public sector usually retains ownership in the facility or system, the private party will be given additional decision rights in determining how the project or task will be completed. The term public-private partnership defines an expansive set of relationships from relatively simple contracts (e.g., A+B contracting), to development agreements that can be very complicated and technical (e.g., design-build-finance-operate-maintain). PPP projects are often undertaken to supplement conventional procurement practices by taking additional revenue sources and mixing a variety of funding sources, thereby reducing demands on constrained public budgets. However, Illinois does not have enabling legislation to allow for PPPs in transportation financing.

No funding currently is committed to the project, except for the $140 million funded by SAFETEA-LU as a nationally and regionally significant project and a $35 million state match. Thus, there is a considerable shortfall for construction of any build alternative. Further funding requirements for the project will be given detailed attention in future steps of this project, including Tier Two environmental documents.

3.5.4 Implementation Strategy and Tier Two Studies

The EO-WB Tier One Study considered various highway projects and improvements to other modes of transportation as being part of the solution to satisfy the travel needs of the study area. The study brought together various transportation providers who have interests in improved transportation in the study area. They have participated at a high level of involvement, allowing a broad range of transportation improvements to be considered through the process. The study results that have evolved from Tier One serve as a platform for highway agencies and for other transportation providers to prioritize and potentially initiate their respective processes for advancing projects in the plan.

Because the implementation of either build alternatives will be costly, the work likely will likely be completed over time in phases or sections. Phased construction of highway projects are guided by the definition of operational independence—an operationally independent phase of work is a portion of the work described in this environmental document that can be built and function as a viable transportation facility even if the remainder of the work is never built. Environmental commitments (wetland mitigation, relocation assistance of residents or businesses, etc.) associated with the phase of work to be built must be implemented as part of the project. Potential phased implementation scenarios for proposed highway projects will be considered in detail with future Tier Two studies. Ultimately, a detailed implementation plan for improvements will be developed, per Section 6002 guidance, establishing a proposed sequence for implementing highway projects with operational independence based on funding scenarios and schedules.

A preferred transportation system alternative, specifically the proposed package of highway projects identified in Tier One, will be advanced for Tier Two studies. Whereas a detailed implementation plan and funding sources have not yet been established, this approach will allow completion of the required NEPA studies for all highway improvements in Tier Two. Tier Two will consist of detailed Phase I engineering and environmental studies of the proposed highway improvements, including consideration of design alternatives and of complementary improvements (e.g. travel demand management strategies and transportation system management improvements), their environmental consequences, and of proposed environmental mitigation measures. Study findings will be presented in the *Tier Two Environmental Impact Statement* and *Record of Decision*.

The phased implementation of the project would be the focus of Tier Two of this process, where detailed engineering and environmental studies would be prepared leading to final design and construction. The development of a phased improvement plan can only be generally defined in Tier One. Many more details are required to sequence the development of a project of this magnitude. Further work will be done in Tier Two to prepare a development plan for overall implementation of the project.

The EO-WB study has considered a variety of modes of transportation in attempting to satisfy the travel needs of the study area. It has brought together various transportation providers who have interests in improved transportation in the study area. They have participated at a high level of involvement in the transit improvements and others that have been identified as part of the plan. The study results that have evolved from Tier One and to be further developed in Tier Two serve as a platform for other transportation providers to initiate their respective processes for advancing projects in the plan.

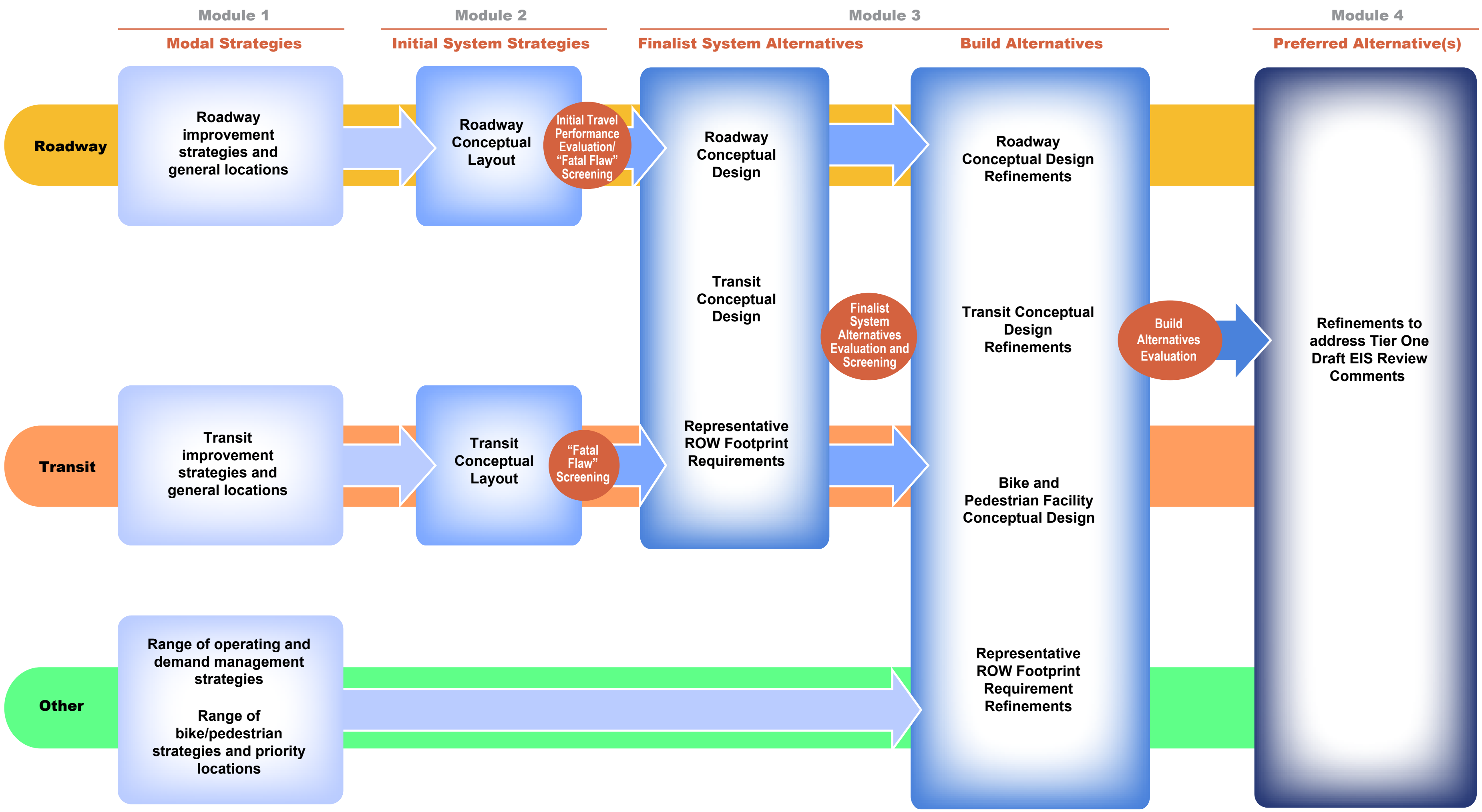
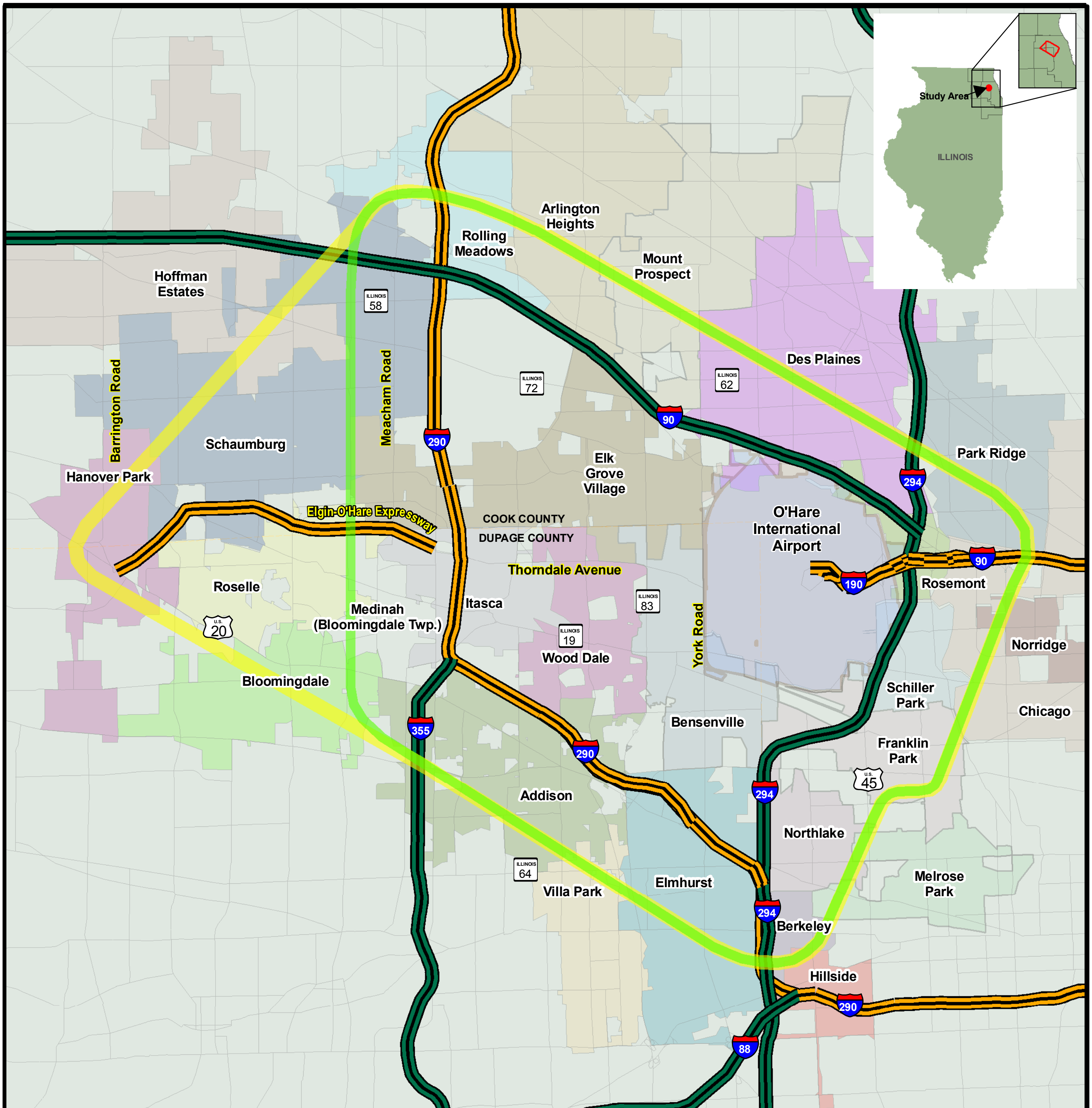


Exhibit 3-1
Alternative Development and Evaluation Process



Legend

Revised Study Area

Original Study Area

N

0 0.5 1 1.5 2 2.5

Miles

Exhibit 3-2

Original Study Area and Revised Study Area Map

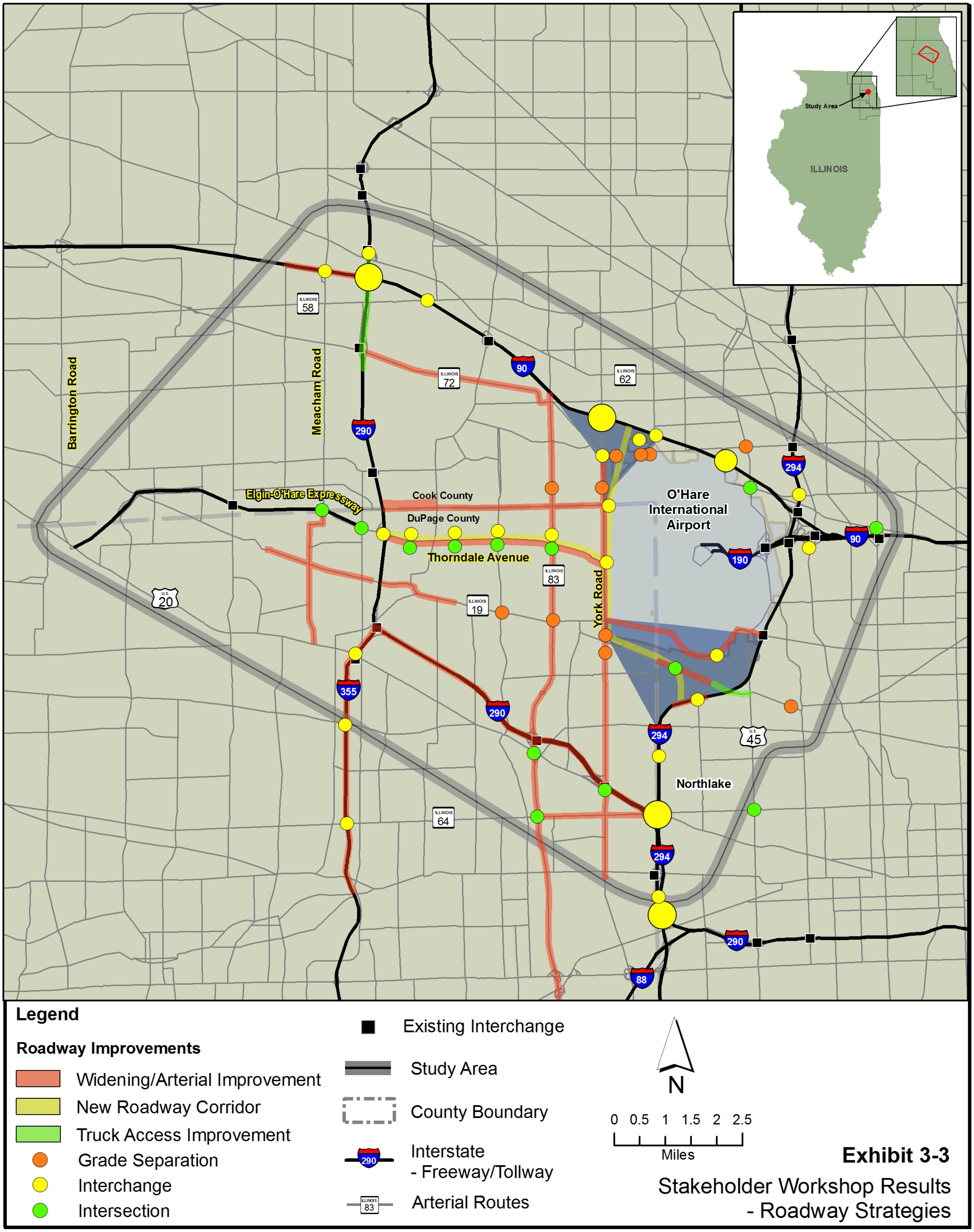
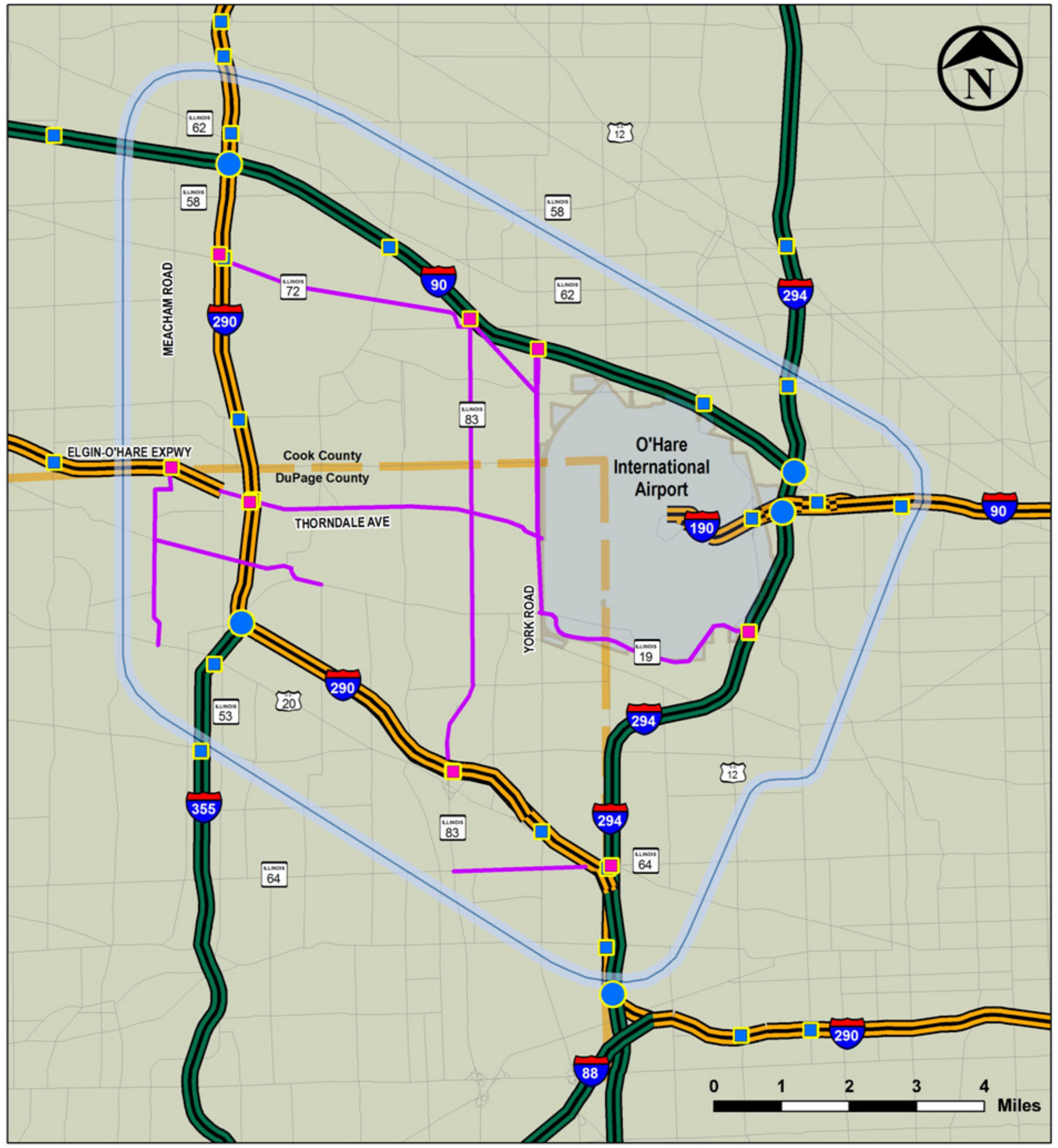


Exhibit 3-3

Stakeholder Workshop Results - Roadway Strategies

Group 1, Option 1 (Strategy 101)

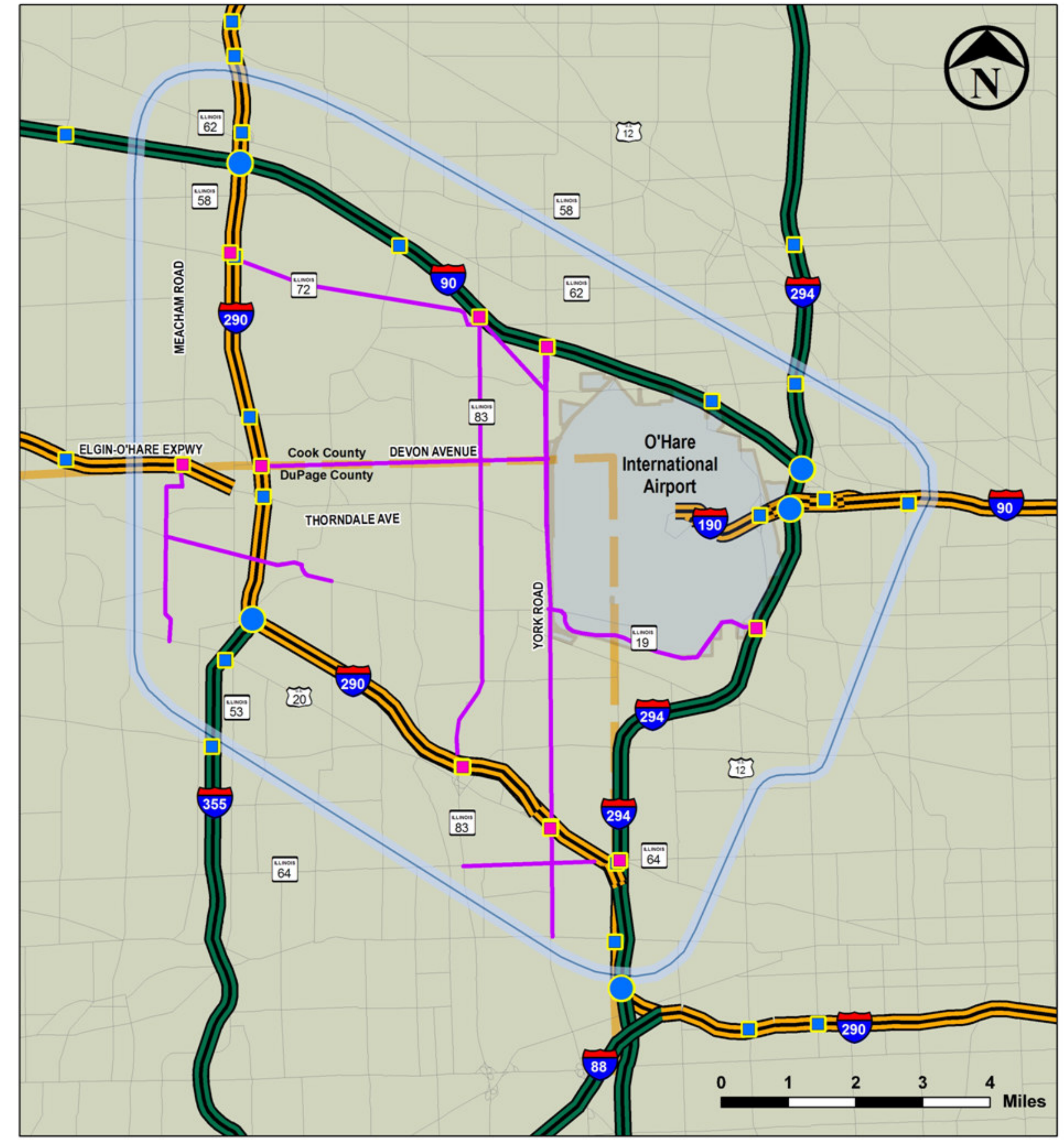


Name	Description	From	To	No. of Lanes
Thorndale Avenue	Widen Arterial	Rohlwing Rd	W. Terminal	8
IL Rt 83	Widen Arterial	I-290	I-90	8
York Road	Widen Arterial	IL Rt 19	I-90	6
IL Rt 19 (Irving Park Road)	Widen Arterial	York Road	I-294	6
IL Rt 72 (Higgins Road)	Widen Arterial	I-290	York Road	6
IL Rt 19 (Irving Park Road)	Widen Arterial	Medinah Rd	Mill Road	4
Medinah Road	Widen Arterial	EO	US 20	4
IL Rt 64	Widen Arterial	IL Rt 83	I-294	6
IL Rt 83/I-90	New Service Interchange - Full Access			
Elmhurst Rd/I-90	Existing Partial Service Interchange - Upgrade to Full Service Interchange			
IL Rt 19/I-294	Existing Partial Service Interchange - Upgrade to Full Service Interchange			
IL Rt 64/I-294	Existing Partial Service Interchange - Upgrade			
IL Rt 83/I-290	Existing Full Service Interchange - Upgrade			
Thorndale/I-290	Existing Full Service Interchange - Upgrade			
Meacham Rd/EO	Existing Full Service Interchange - Upgrade			
IL Rt 72/I-290	Existing Full Service Interchange - Upgrade			

Legend

- County Boundary
- Original Study Area
- Interstate - Freeway
- Interstate - Tollroad
- US Route
- State Route
- Arterial
- Existing Service Interchange
- Existing System Interchange
- Proposed/Improved Service Interchange
- Proposed/Improved System Interchange
- Widen Arterial
- New Corridor - Expressway

Group 1, Option 2 (Strategy 102)



Name	Description	From	To	No. of Lanes
Devon Avenue	Widen Arterial	I-290	York Rd	6
IL Rt 83	Widen Arterial	I-290	I-90	8
IL Rt 19 (Irving Park Road)	Widen Arterial	York Road	I-294	6
IL Rt 72 (Higgins Road)	Widen Arterial	I-290	York Road	6
IL Rt 19 (Irving Park Road)	Widen Arterial	Meacham Rd	Mill Road	4
Medinah Road	Widen Arterial	EO	US 20	4
IL Rt 64	Widen Arterial	IL Rt 83	I-294	6
York Road	Widen Arterial	St. Charles Rd	I-90	6
IL Rt 83/I-90	New Service Interchange - Full Access			
Elmhurst Rd/I-90	Existing Partial Service Interchange - Upgrade to Full Service Interchange			
IL Rt 19/I-294	Existing Partial Service Interchange - Upgrade to Full Service Interchange			
IL Rt 64/I-294	Existing Partial Service Interchange - Upgrade			
York Rd/I-290	Existing Full Service Interchange - Upgrade			
IL Rt 83/I-290	Existing Full Service Interchange - Upgrade			
Meacham Rd/EO	Existing Full Service Interchange - Upgrade			
Devon Ave/I-290	New Service Interchange - Full Access			

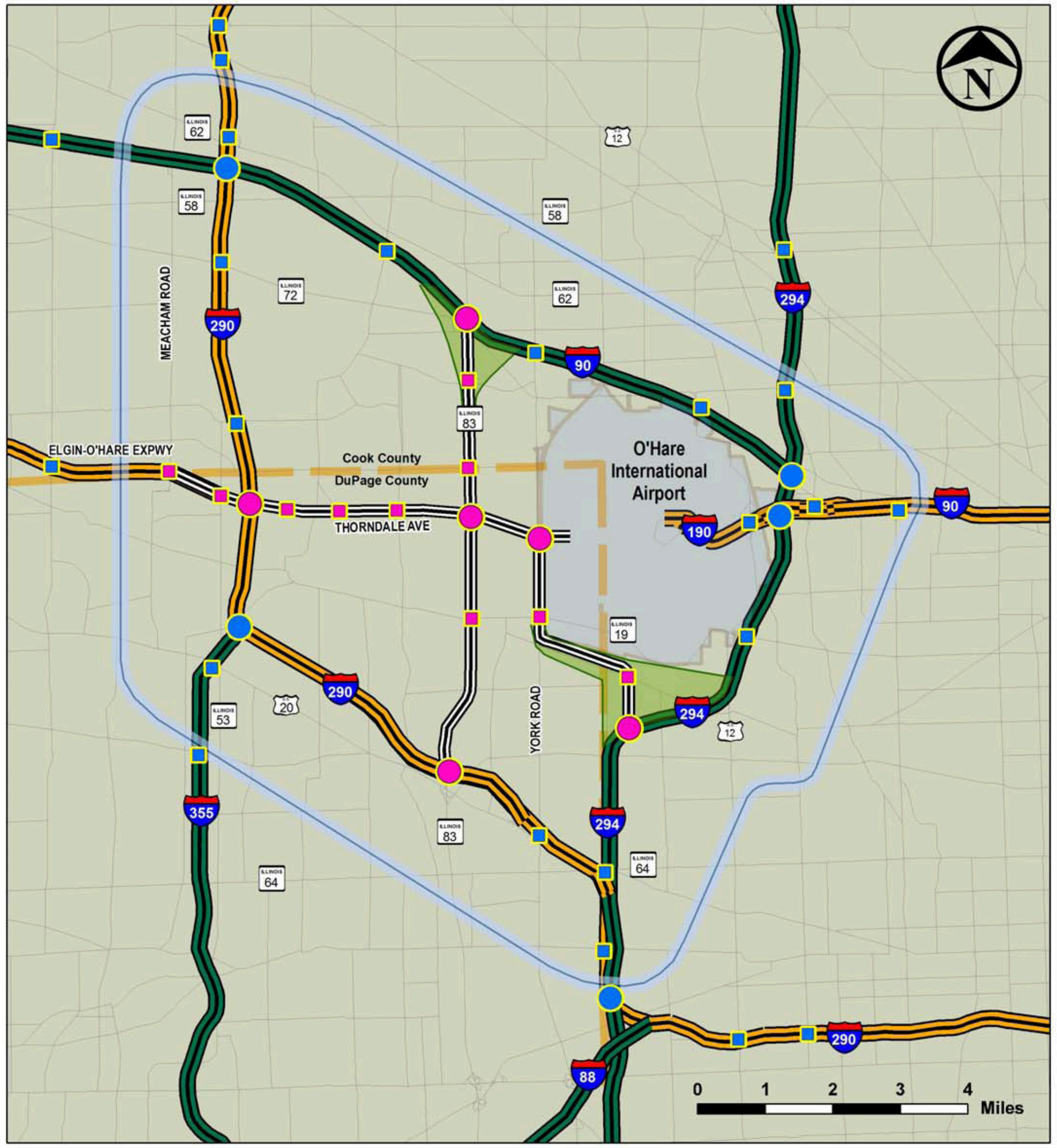
Legend

- County Boundary
- Original Study Area
- Interstate - Freeway
- Interstate - Tollroad
- US Route
- State Route
- Arterial
- Existing Service Interchange
- Existing System Interchange
- Proposed/Improved Service Interchange
- Proposed/Improved System Interchange
- Widen Arterial
- New Corridor - Expressway

Exhibit 3-4A

Initial Roadway System Strategies

Group 2, Option 1 (Strategy 201)



Name	Description	From	To	No. of Lanes
Elgin-O'Hare	New Corridor - Expressway	Meacham Rd	W. Terminal	6
O'Hare Bypass (South Leg)	New Corridor - Expressway	I-294	EO	6
IL Rt 83	New Corridor - Expressway	I-290	I-90	6
Meacham Rd/Elgin-O'Hare	Existing Full Service Interchange - Upgrade			
Rohlwing Rd/Elgin-O'Hare	New Service Interchange - Full Access			
I-290/Elgin-O'Hare	Existing Full Service Interchange - Upgrade to Full System Interchange			
Park Blvd/Elgin-O'Hare	New Service Interchange - Full Access			
Prospect Ave/Elgin-O'Hare	New Service Interchange - Full Access			
Wood Dale Rd/Elgin-O'Hare	New Service Interchange - Full Access			
IL Rt 83/Elgin-O'Hare	New System Interchange - Full Access			
Elgin-O'Hare/O'Hare Bypass (South Leg)	New System Interchange - Full Access			
IL Rt 83/I-90	New System Interchange - Full Access			
IL Rt 83/Landmeier Rd	New Service Interchange - Full Access			
IL Rt 83/Devon Ave	New Service Interchange - Full Access			
IL Rt 83/ IL Rt 19	New Service Interchange - Full Access			
IL Rt 83/I-290	Existing Full Service Interchange - Upgrade to Full System Interchange			
O'Hare Bypass (South Leg)/I-294	New System Interchange - Partial Access			
O'Hare Bypass (South Leg)/IL Rt 19	New Service Interchange - Full Access			
O'Hare Bypass (South Leg)/Franklin Ave/Geen St	New Service Interchange - Partial Access			

Legend

- County Boundary
- Original Study Area
- Interstate - Freeway
- Interstate - Tollroad
- US Route
- State Route
- Arterial
- Existing Service Interchange
- Existing System Interchange
- Proposed/Improved Service Interchange
- Proposed/Improved System Interchange
- Widen Arterial
- New Corridor - Expressway

Group 2, Option 2 (Strategy 202)

Name	Description	From	To	No. of Lanes
Elgin-O'Hare	New Corridor - Expressway	Meacham Rd	W. Terminal	6
O'Hare Bypass (South Leg)	New Corridor - Expressway	I-294	EO	6
IL Rt 83	New Corridor - Expressway	EO	I-90	6
Meacham Rd/Elgin-O'Hare	Existing Full Service Interchange - Upgrade			
Rohlwing Rd/Elgin-O'Hare	New Service Interchange - Full Access			
I-290/Elgin-O'Hare	Existing Full Service Interchange - Upgrade to Full System Interchange			
Park Blvd/Elgin-O'Hare	New Service Interchange - Full Access			
Prospect Ave/Elgin-O'Hare	New Service Interchange - Full Access			
Wood Dale Rd/Elgin-O'Hare	New Service Interchange - Full Access			
IL Rt 83/Elgin-O'Hare	New System Interchange - Full Access			
Elgin-O'Hare/O'Hare Bypass (South Leg)	New System Interchange - Full Access			
IL Rt 83/I-90	New System Interchange - Full Access			
IL Rt 83/Landmeier Rd	New Service Interchange - Full Access			
IL Rt 83/Devon Ave	New Service Interchange - Full Access			
O'Hare Bypass (South Leg)/ IL Rt 19	New Service Interchange - Full Access			
O'Hare Bypass (South Leg)/I-294	New System Interchange - Partial Access			
O'Hare Bypass (South Leg)/Franklin Ave/Green St	New Service Interchange - Partial Access			

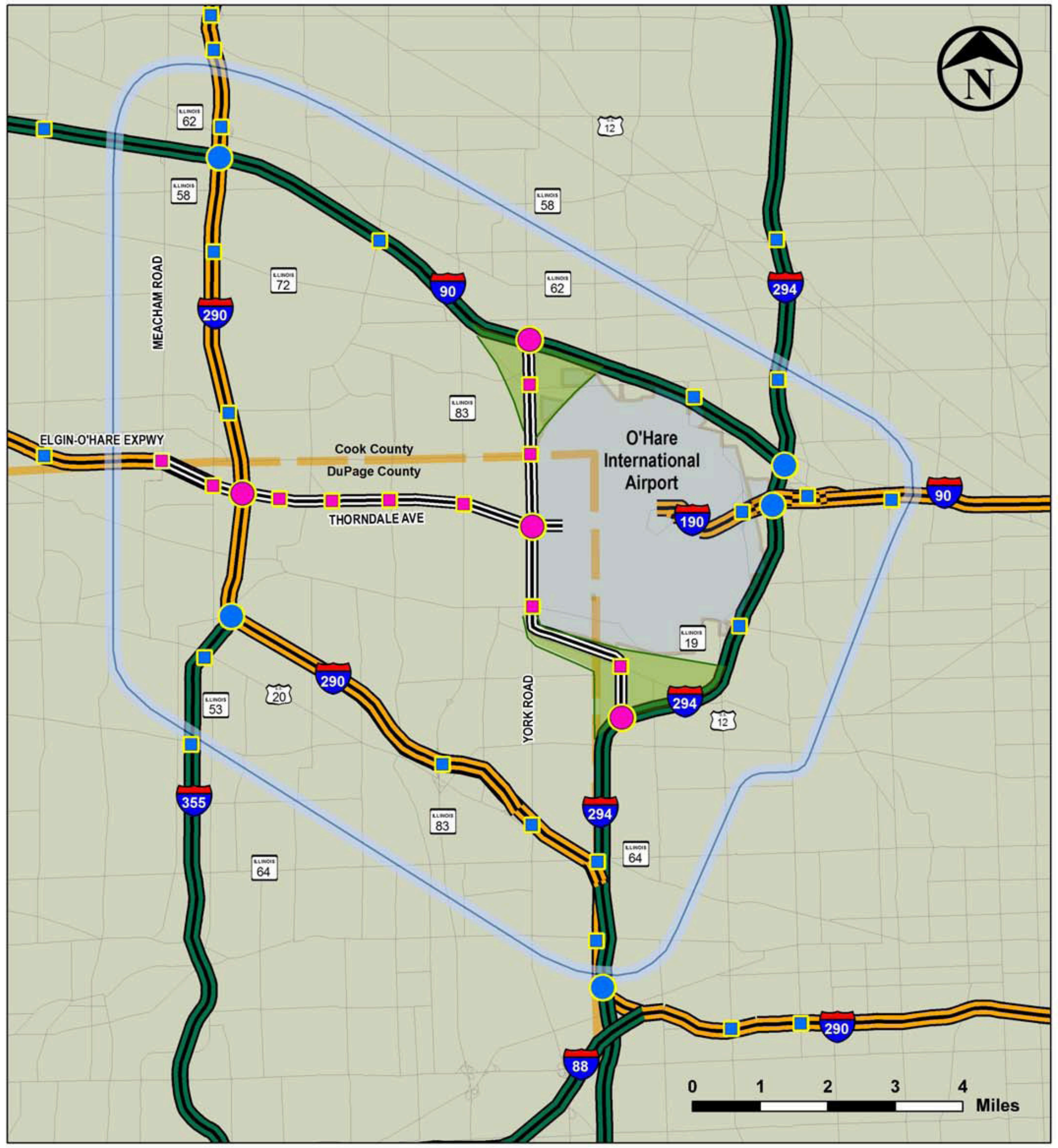
Legend

- County Boundary
- Original Study Area
- Interstate - Freeway
- Interstate - Tollroad
- US Route
- State Route
- Arterial
- Existing Service Interchange
- Existing System Interchange
- Proposed/Improved Service Interchange
- Proposed/Improved System Interchange
- Widen Arterial
- New Corridor - Expressway

Exhibit 3-4B

Initial Roadway System Strategies

Group 2, Option 3 (Strategy 203)

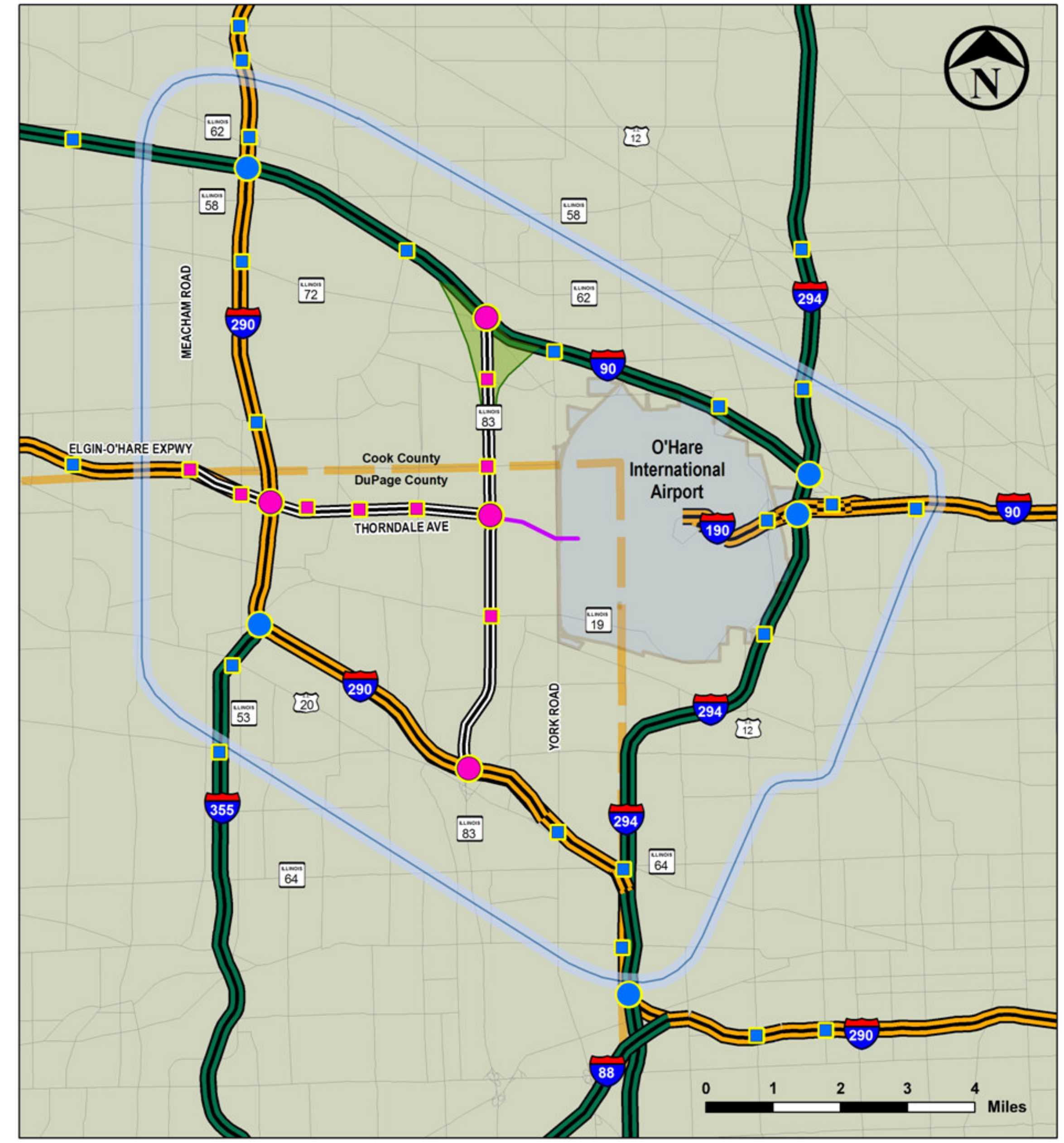


Name	Description	From	To	No. of Lanes
Elgin-O'Hare	New Corridor - Expressway	Meacham Rd	W. Terminal	6
O'Hare Bypass (South Leg)	New Corridor - Expressway	I-294	EO	6
O'Hare Bypass (North Leg)	New Corridor - Expressway	EO	I-90	6
Meacham Rd/Elgin-O'Hare	Existing Full Service Interchange - Upgrade Interchange			
Rohlwing Rd/Elgin-O'Hare	New Service Interchange - Full Access			
I-290/Elgin-O'Hare	Existing Full Service Interchange - Upgrade to Full System Interchange			
Park Blvd/Elgin-O'Hare	New Service Interchange - Full Access			
Prospect Ave/Elgin-O'Hare	New Service Interchange - Full Access			
Wood Dale Rd/Elgin-O'Hare	New Service Interchange - Full Access			
IL Rt 83/Elgin-O'Hare	New Service Interchange - Full Access			
Elgin-O'Hare/O'Hare Bypass	New System Interchange - Full Access			
O'Hare Bypass (South Leg)/IL Rt 19	New Service Interchange - Full Access			
O'Hare Bypass (South Leg)/I-294	New System Interchange - Partial Access			
O'Hare Bypass (South Leg)/Franklin Ave/Green St	New Service Interchange - Partial Access			
O'Hare Bypass (North Leg)/I-90	New System Interchange - Full Access			
O'Hare Bypass (North Leg)/IL Rt 72	New Service Interchange - Full Access			
O'Hare Bypass (North Leg)/Devon Ave	New Service Interchange - Full Access			
Elmhurst Rd/I-90	Existing Partial Service Interchange - Upgrade			

Legend

- County Boundary
- Original Study Area
- Interstate - Freeway
- Interstate - Tollroad
- US Route
- State Route
- Arterial
- Existing Service Interchange
- Existing System Interchange
- Proposed/Improved Service Interchange
- Proposed/Improved System Interchange
- Widen Arterial
- New Corridor - Expressway

Group 2, Option 4 (Strategy 204)



Name	Description	From	To	No. of Lanes
Elgin-O'Hare	New Corridor - Expressway	Meacham Rd	IL Rt 83	6
IL Rt 83	New Corridor - Expressway	I-290	I-90	6
Thorndale Avenue	Widen Arterial	IL Rt 83	W. Terminal	8
Meacham Rd/Elgin-O'Hare	Existing Full Service Interchange - Upgrade			
Rohlwing Rd/Elgin-O'Hare	New Service Interchange - Full Access			
I-290/Elgin-O'Hare	Existing Full Service Interchange - Upgrade to Full System Interchange			
Park Blvd/Elgin-O'Hare	New Service Interchange - Full Access			
Prospect Ave/Elgin-O'Hare	New Service Interchange - Full Access			
Wood Dale Rd/Elgin-O'Hare	New Service Interchange - Full Access			
IL Rt 83/Elgin-O'Hare	New System Interchange - Full Access			
IL Rt 83/I-290	Existing Full Service Interchange - Upgrade to Full System Interchange			
IL Rt 83/IL Rt 19	New Service Interchange - Full Access			
IL Rt 83/Devon Ave	New Service Interchange - Full Access			
IL Rt 83/Landmeier Rd	New Service Interchange - Full Access			
IL Rt 83/I-90	New System Interchange - Full Access			

Legend

- County Boundary
- Original Study Area
- Interstate - Freeway
- Interstate - Tollroad
- US Route
- State Route
- Arterial
- Existing Service Interchange
- Existing System Interchange
- Proposed/Improved Service Interchange
- Proposed/Improved System Interchange
- Widen Arterial
- New Corridor - Expressway

Exhibit 3-4C

Initial Roadway System Strategies

Group 2, Option 5 (Strategy 205)

Name	Description	From	To	No. of Lanes
Elgin-O'Hare	New Corridor - Expressway	Meacham Rd	W. Terminal	6
O'Hare Bypass (North Leg)	New Corridor - Expressway	EO	I-90	6
IL Rt 83	New Corridor - Expressway	I-290	EO	6
Meacham Rd/Elgin-O'Hare	Existing Full Service Interchange - Upgrade			
Rohlwing Rd/Elgin-O'Hare	New Service Interchange - Full Access			
I-290/Elgin-O'Hare	Existing Full Service Interchange - Upgrade to Full System Interchange			
Park Blvd/Elgin-O'Hare	New Service Interchange - Full Access			
Prospect Ave/Elgin-O'Hare	New Service Interchange - Full Access			
Wood Dale Rd/Elgin-O'Hare	New Service Interchange - Full Access			
IL Rt 83/Elgin-O'Hare	New System Interchange - Full Access			
IL Rt 83/IL Rt 19	New Service Interchange - Full Access			
IL Rt 83/I-290	Existing Full Service Interchange - Upgrade to Full System Interchange			
OBP (North Leg)/Elgin-O'Hare	New System Interchange - Full Access			
OBP (North Leg)/Devon Ave	New Service Interchange - Full Access			
OBP (North Leg)/IL Rt 72	New Service Interchange - Full Access			
OBP (North Leg)/I-90	New System Interchange - Full Access			
Elmhurst Rd/I-90	Existing Partial Service Interchange - Upgrade			

Legend

- County Boundary
- Original Study Area
- Interstate - Freeway
- Interstate - Tollroad
- US Route
- State Route
- Arterial
- Existing Service Interchange
- Existing System Interchange
- Proposed/Improved Service Interchange
- Proposed/Improved System Interchange
- Widen Arterial
- New Corridor - Expressway

Exhibit 3-4D

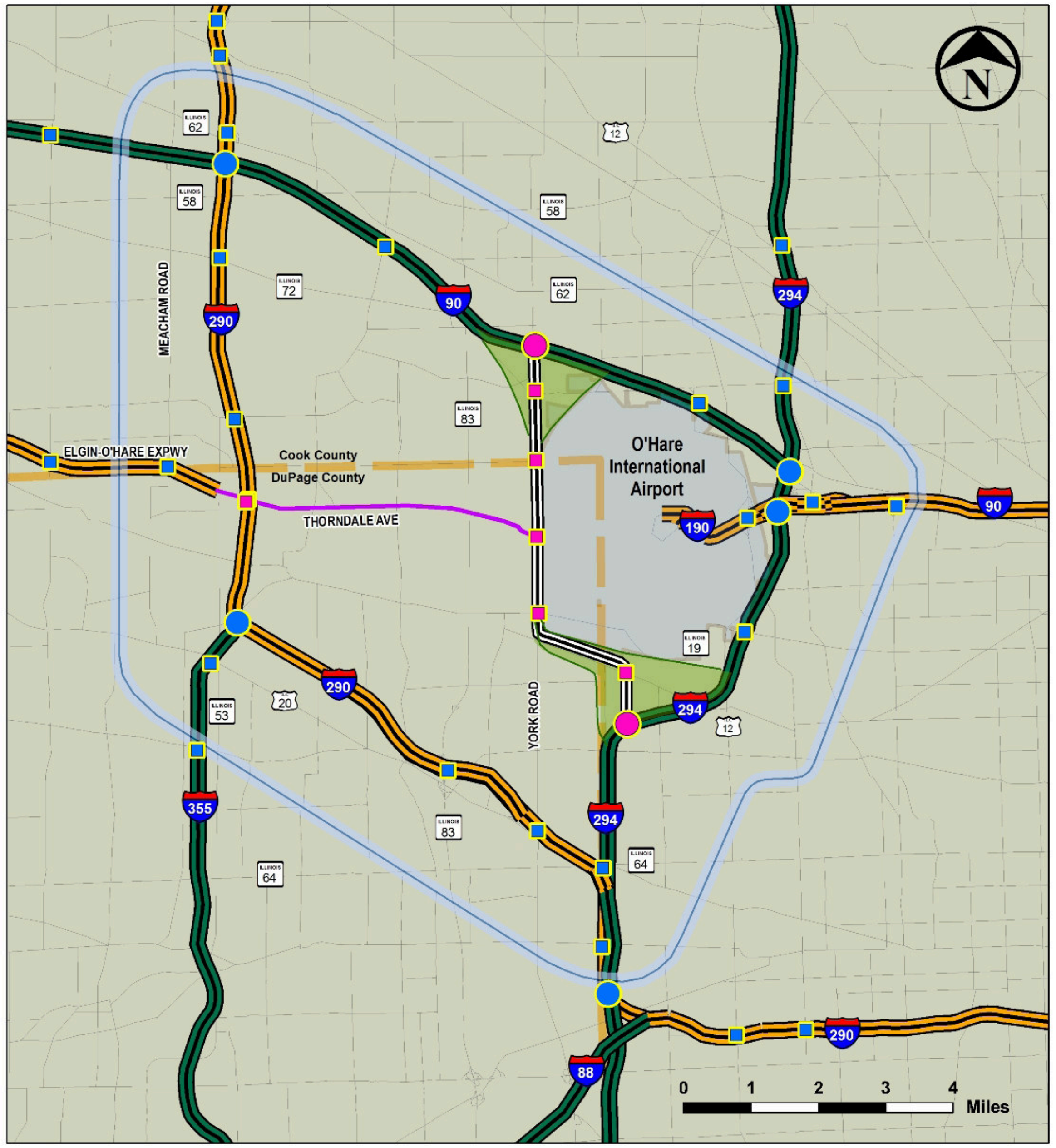
Initial Roadway System Strategies

ELGIN O'HARE WEST BYPASS

communities. opportunitie

Illinois Department of Transportation

Group 3, Option 1 (Strategy 301)

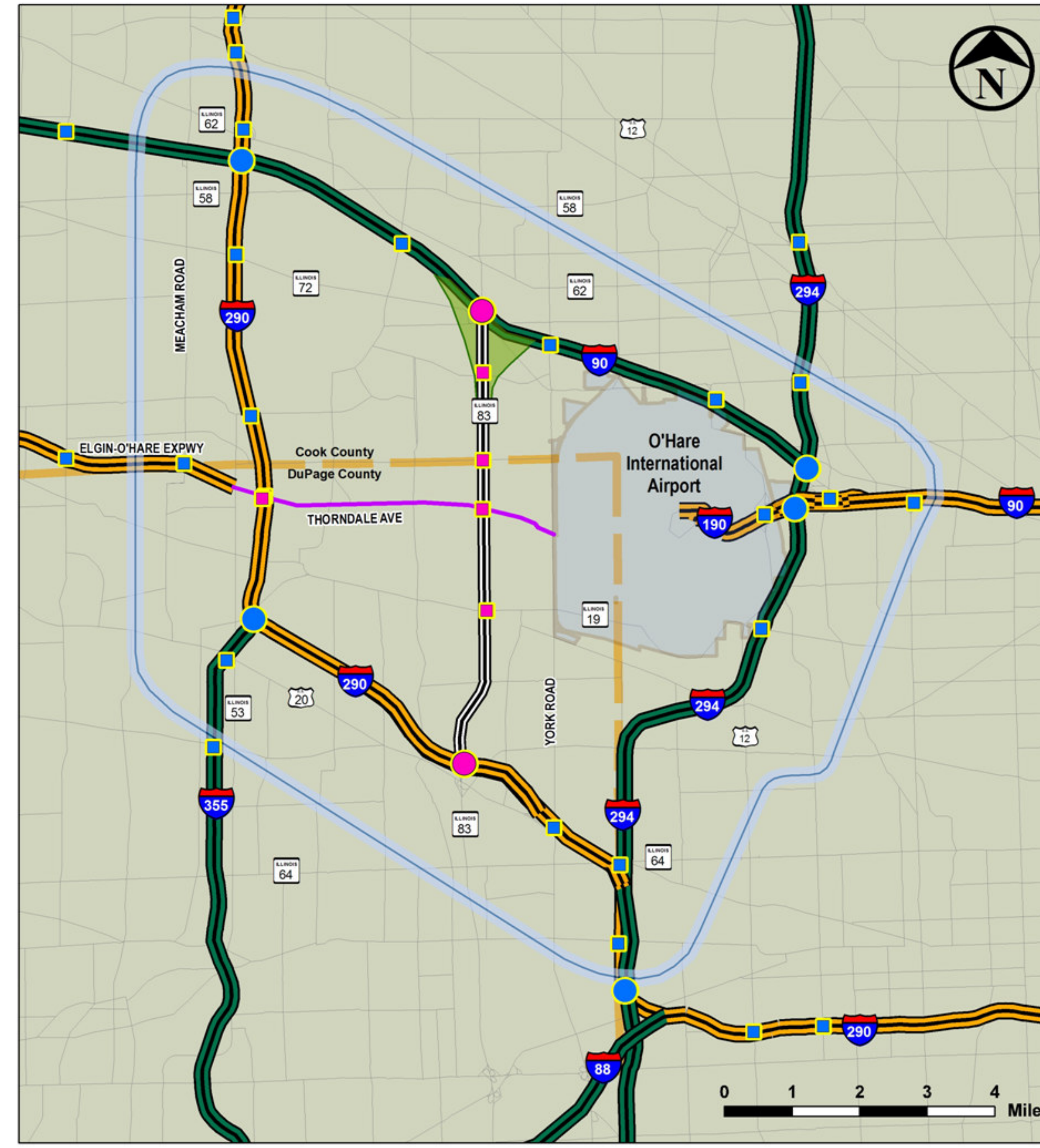


Name	Description	From	To	No. of Lanes
Thorndale Avenue	Widen Arterial	Rohlwing Rd	W. Terminal	8
O'Hare Bypass (North Leg)	New Corridor - Expressway	Thorndale	I-90	6
O'Hare Bypass (South Leg)	New Corridor - Expressway	I-294	Thorndale	6
O'Hare Bypass/Thorndale Ave	New Service Interchange - Full Access			
O'Hare Bypass (South Leg)/I-294	New System Interchange - Partial Access			
O'Hare Bypass (South Leg)/IL Rt 19	New Service Interchange - Full Access			
O'Hare Bypass (South Leg)/Franklin Ave/Green St	New Service Interchange - Partial Access			
O'Hare Bypass (North Leg)/Devon Ave	New Service Interchange - Full Access			
O'Hare Bypass (North Leg)/IL Rt 72	New System Interchange - Full Access			
O'Hare Bypass (North Leg)/I-90	New System Interchange - Full Access			
Thorndale/I-290	Existing Full Service Interchange - Upgrade			
Elmhurst Rd/I-90	Existing Partial Service Interchange - Upgrade			

Legend

County Boundary
Existing Service Interchange
Original Study Area
Existing System Interchange
Interstate - Freeway
Proposed/Improved Service Interchange
Interstate - Tollroad
Proposed/Improved System Interchange
US Route
Widen Arterial
State Route
Arterial
New Corridor - Expressway

Group 3, Option 2 (Strategy 302)



Name	Description	From	To	No. of Lanes
Thorndale Avenue	Widen Arterial	Rohlwing Rd	W. Terminal	8
IL Rt 83	New Corridor - Expressway	I-290	I-90	6
IL Rt 83/Thorndale Avenue	New Service Interchange - Full Access			
IL Rt 83/I-290	Existing Full Service Interchange - Upgrade to Full System Interchange			
IL Rt 83/IL Rt 19	New Service Interchange - Full Access			
IL Rt 83/Devon Ave	New Service Interchange - Full Access			
IL Rt 83/Landmeier Rd	New Service Interchange - Full Access			
IL Rt 83/I-90	New System Interchange - Full Access			
Thorndale Ave/I-290	Existing Full Service Interchange - Upgrade			

Legend

County Boundary
Existing Service Interchange
Original Study Area
Existing System Interchange
Interstate - Freeway
Proposed/Improved Service Interchange
Interstate - Tollroad
Proposed/Improved System Interchange
US Route
Widen Arterial
State Route
Arterial
New Corridor - Expressway

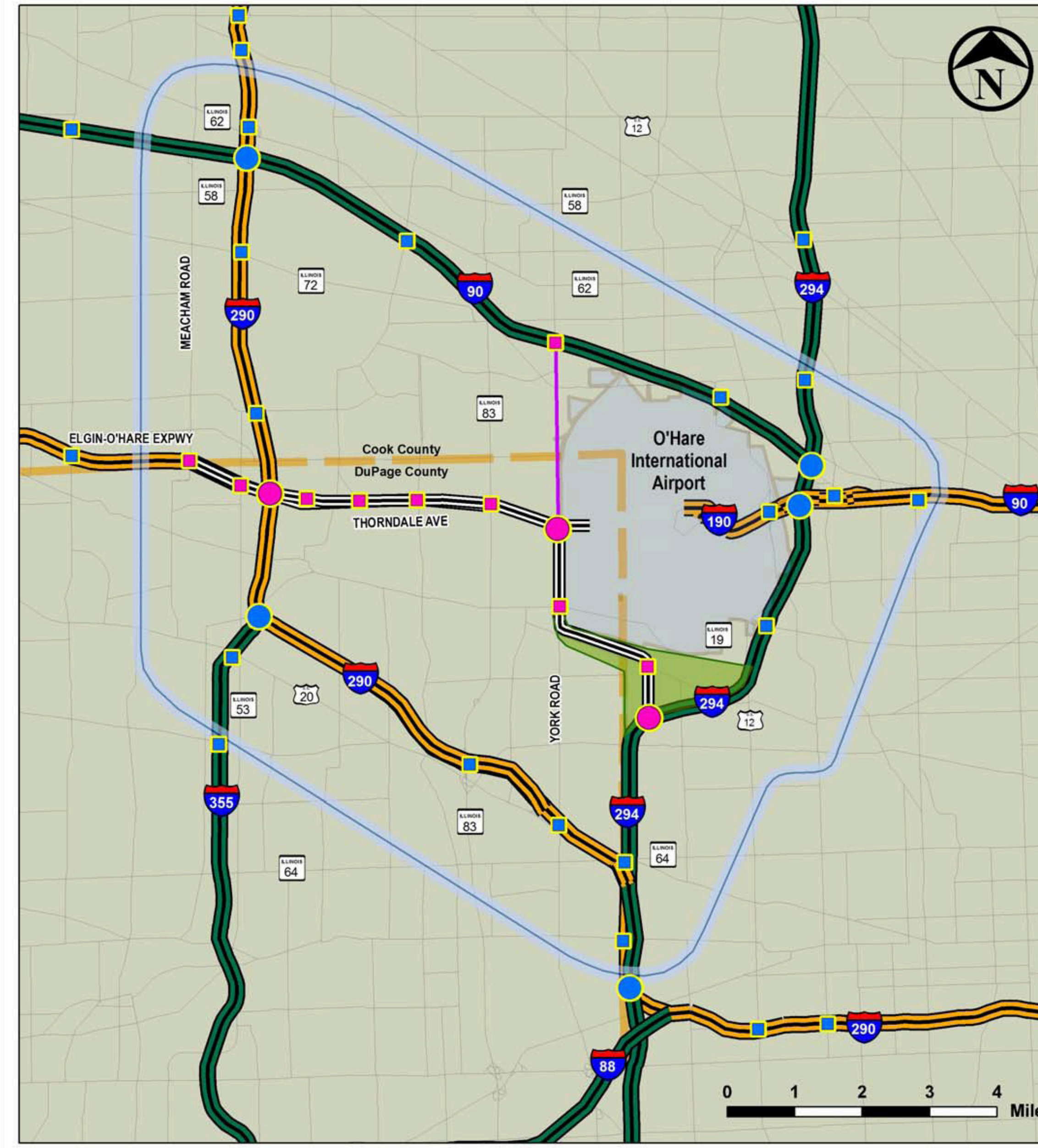
Group 4, Option 1 (Strategy 401)

Name	Description	From	To	No. of Lanes
Elgin-O'Hare	New Corridor - Expressway	Meacham Rd	W. Terminal	6
O'Hare Bypass (South Leg)	New Corridor - Expressway	I-294	EO	6
IL Rt 83	Widen Arterial	EO	I-90	8
Meacham Rd/Elgin-O'Hare	Existing Full Service Interchange - Upgrade			
Rohlwing Rd/Elgin-O'Hare	New Service Interchange - Full Access			
I-290/Elgin-O'Hare	Existing Full Service Interchange - Upgrade to Full System Interchange			
Park Blvd/Elgin-O'Hare	New Service Interchange - Full Access			
Prospect Ave/Elgin-O'Hare	New Service Interchange - Full Access			
Wood Dale Rd/Elgin-O'Hare	New Service Interchange - Full Access			
IL Rt 83/Elgin-O'Hare	New Service Interchange - Full Access			
O'Hare Bypass (South Leg)/Elgin-O'Hare	New System Interchange - Full Access			
O'Hare Bypass (South Leg)/IL Rt 19	New Service Interchange - Full Access			
O'Hare Bypass (South Leg)/I-294	New System Interchange - Partial Access			
O'Hare Bypass (South Leg)/Franklin Ave/Green St	New Service Interchange - Partial Access			
IL Rt 83/I-90	New Service Interchange - Full Access			

Legend

- County Boundary
- Original Study Area
- Interstate - Freeway
- Interstate - Tollroad
- US Route
- State Route
- Arterial
- Existing Service Interchange
- Existing System Interchange
- Proposed/Improved Service Interchange
- Proposed/Improved System Interchange
- Widen Arterial
- New Corridor - Expressway

Group 4, Option 2 (Strategy 402)



Name	Description	From	To	No. of Lanes
Elgin-O'Hare	New Corridor - Expressway	Meacham Rd	W. Terminal	6
O'Hare Bypass (South Leg)	New Corridor - Expressway	I-294	EO	6
York Rd	Widen Arterial	EO	I-90	6
Meacham Rd/Elgin-O'Hare	Existing Full Service Interchange - Upgrade			
Rohlwing Rd/Elgin-O'Hare	New Service Interchange - Full Access			
I-290/Elgin-O'Hare	Existing Full Service Interchange - Upgrade to Full System Interchange			
Park Blvd/Elgin-O'Hare	New Service Interchange - Full Access			
Prospect Ave/Elgin-O'Hare	New Service Interchange - Full Access			
Wood Dale Rd/Elgin-O'Hare	New Service Interchange - Full Access			
IL Rt 83/Elgin-O'Hare	New Service Interchange - Full Access			
O'Hare Bypass (South Leg)/Elgin-O'Hare	New System Interchange - Full Access			
O'Hare Bypass (South Leg)/IL Rt 19	New Service Interchange - Full Access			
O'Hare Bypass (South Leg)/I-294	New System Interchange - Partial Access			
O'Hare Bypass (South Leg)/Franklin Ave/Green St	New Service Interchange - Partial Access			
Elmhurst Rd/I-90	Existing Partial Service Interchange - Upgrade to Full Service Interchange			

Legend

- County Boundary
- Original Study Area
- Interstate - Freeway
- Interstate - Tollroad
- US Route
- State Route
- Arterial
- Existing Service Interchange
- Existing System Interchange
- Proposed/Improved Service Interchange
- Proposed/Improved System Interchange
- Widen Arterial
- New Corridor - Expressway

Exhibit 3-4F

Initial Roadway System Strategies

Group 4, Option 3 (Strategy 403)

Name	Description	From	To	No. of Lanes
Elgin-O'Hare	New Corridor - Expressway	Meacham Rd	W. Terminal	6
IL Rt 83	Widen Arterial	I-290	I-90	8
O'Hare Bypass (South Leg)	New Corridor - Expressway	I-294	Elgin-O'Hare	6
Meacham Rd/Elgin-O'Hare	Existing Full Service Interchange - Upgrade			
Rohlwing Rd/Elgin-O'Hare	New Service Interchange - Full Access			
I-290/Elgin-O'Hare	Existing Full Service Interchange - Upgrade to Full System Interchange			
Park Blvd/Elgin-O'Hare	New Service Interchange - Full Access			
Prospect Ave/Elgin-O'Hare	New Service Interchange - Full Access			
Wood Dale Rd/Elgin-O'Hare	New Service Interchange - Full Access			
IL Rt 83/Elgin-O'Hare	New Service Interchange - Full Access			
O'Hare Bypass (South Leg)/Elgin-O'Hare	New System Interchange - Full Access			
O'Hare Bypass (South Leg)/IL Rt 19	New Service Interchange - Full Access			
O'Hare Bypass (South Leg)/I-294	New System Interchange - Partial Access			
O'Hare Bypass (South Leg)/Franklin Ave/Green St	New Service Interchange - Partial Access			
IL Rt 83/I-90	New Service Interchange - Full Access			
IL Rt 83/I-290	Existing Full Service Interchange - Upgrade			

Legend

- County Boundary
- Original Study Area
- Interstate - Freeway
- Interstate - Tollroad
- US Route
- State Route
- Arterial
- Existing Service Interchange
- Existing System Interchange
- Proposed/Improved Service Interchange
- Proposed/Improved System Interchange
- Widen Arterial
- New Corridor - Expressway

Group 4, Option 4 (Strategy 404)

Name	Description	From	To	No. of Lanes
Elgin-O'Hare	New Corridor - Expressway	Meacham Rd	W. Terminal	6
O'Hare Bypass (North Leg)	New Corridor - Expressway	EO	I-90	6
IL Rt 83	Widen Arterial	I-290	EO	8
Meacham Rd/Elgin-O'Hare	Existing Full Service Interchange - Upgrade			
Rohlwing Rd/Elgin-O'Hare	New Service Interchange - Full Access			
I-290/Elgin-O'Hare	Existing Fulll Service Interchange - Upgrade to Full System Interchange			
Park Blvd/Elgin-O'Hare	New Service Interchange - Full Access			
Prospect Ave/Elgin-O'Hare	New Service Interchange - Full Access			
Wood Dale Rd/Elgin-O'Hare	New Service Interchange - Full Access			
IL Rt 83/Elgin-O'Hare	New Service Interchange - Full Access			
OBP (North Leg)/Elgin-O'Hare	New System Interchange - Full Access			
OBP (North Leg)/Devon Ave	New Service Interchange - Full Access			
OBP (North Leg)/IL Rt 72	New Service Interchange - Full Access			
OBP (North Leg)/I-90	New System Interchange - Full Access			
I-290/IL Rt 83	Existing Full Service Interchange - Upgrade			
Elmhurst Rd/I-90	Existing Partial Service Interchange - Upgrade			

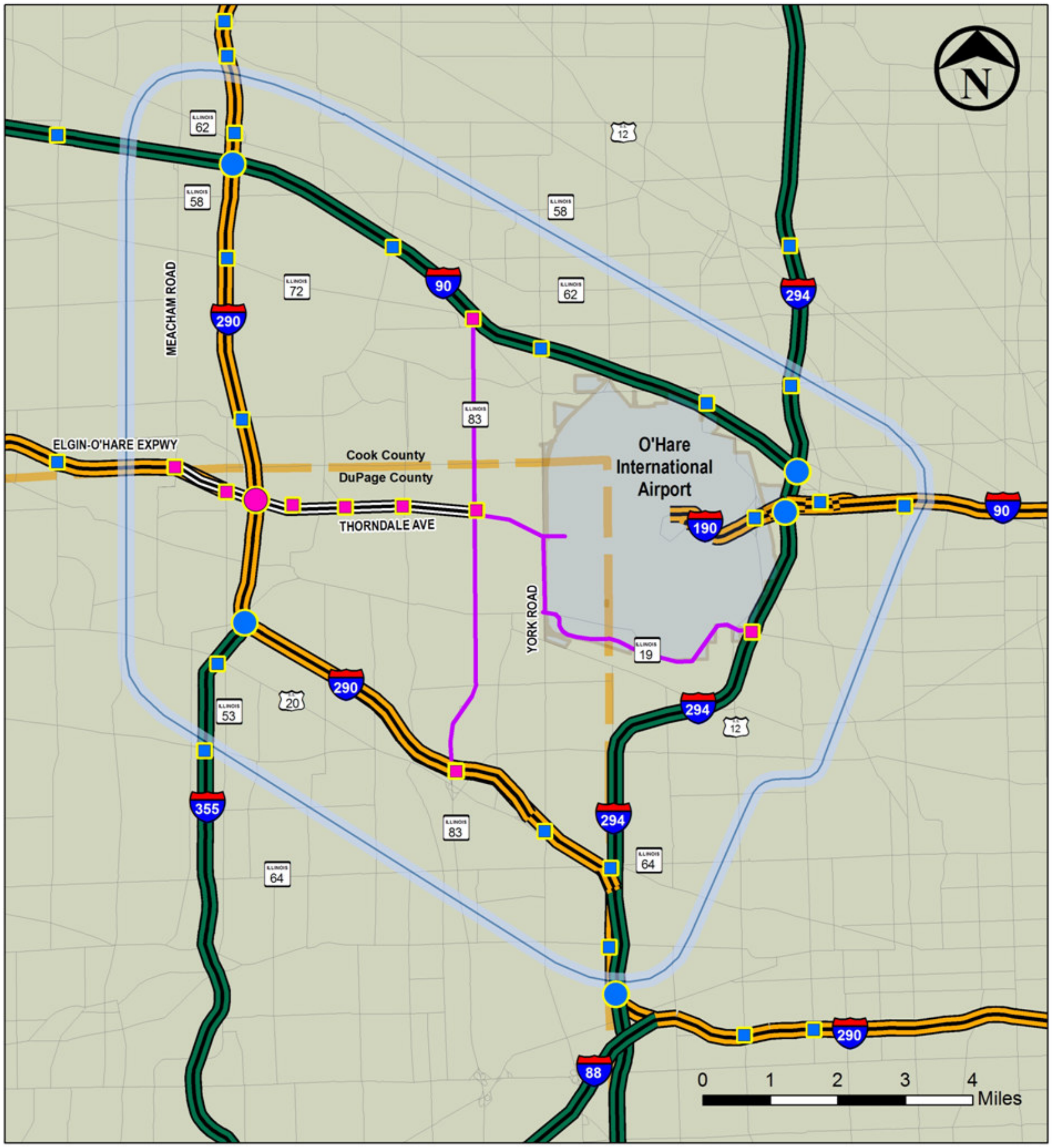
Legend

- County Boundary
- Original Study Area
- Interstate - Freeway
- Interstate - Tollroad
- US Route
- State Route
- Arterial
- Existing Service Interchange
- Existing System Interchange
- Proposed/Improved Service Interchange
- Proposed/Improved System Interchange
- Widen Arterial
- New Corridor - Expressway

Exhibit 3-4G

Initial Roadway System Strategies

Group 5, Option 1 (Strategy 501)



Name	Description	From	To	No. of Lanes
Elgin-O'Hare	New Corridor - Expressway	Meacham Rd	IL Rt 83	6
Thorndale Ave	Widen Arterial	IL Rt 83	W. Terminal	8
IL Rt 83	Widen Arterial	I-290	I-90	8
York Road	Widen Arterial	Thorndale Ave	IL Rt 19	6
IL Rt 19	Widen Arterial	York Rd	I-294	6
Meacham Rd/Elgin-O'Hare	Existing Full Service Interchange - Upgrade			
Rohlwing Rd/Elgin-O'Hare	New Service Interchange - Full Access			
I-290/Elgin-O'Hare	Existing Full Service Interchange - Upgrade to Full System Interchange			
Park Blvd/Elgin-O'Hare	New Service Interchange - Full Access			
Prospect Ave/Elgin-O'Hare	New Service Interchange - Full Access			
Wood Dale Rd/Elgin-O'Hare	New Service Interchange - Full Access			
IL Rt 83/Elgin-O'Hare	New Service Interchange - Full Access			
IL Rt 83/I-90	New Service Interchange - Full Access			
IL Rt 83/I-290	Existing Full Service Interchange - Upgrade			
IL Rt 19/I-294	Existing Partial Service Interchange - Upgrade to Full Service Interchange			

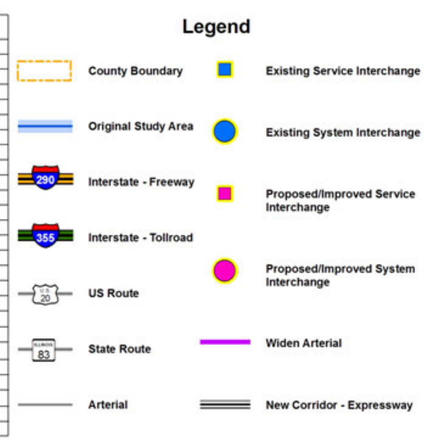


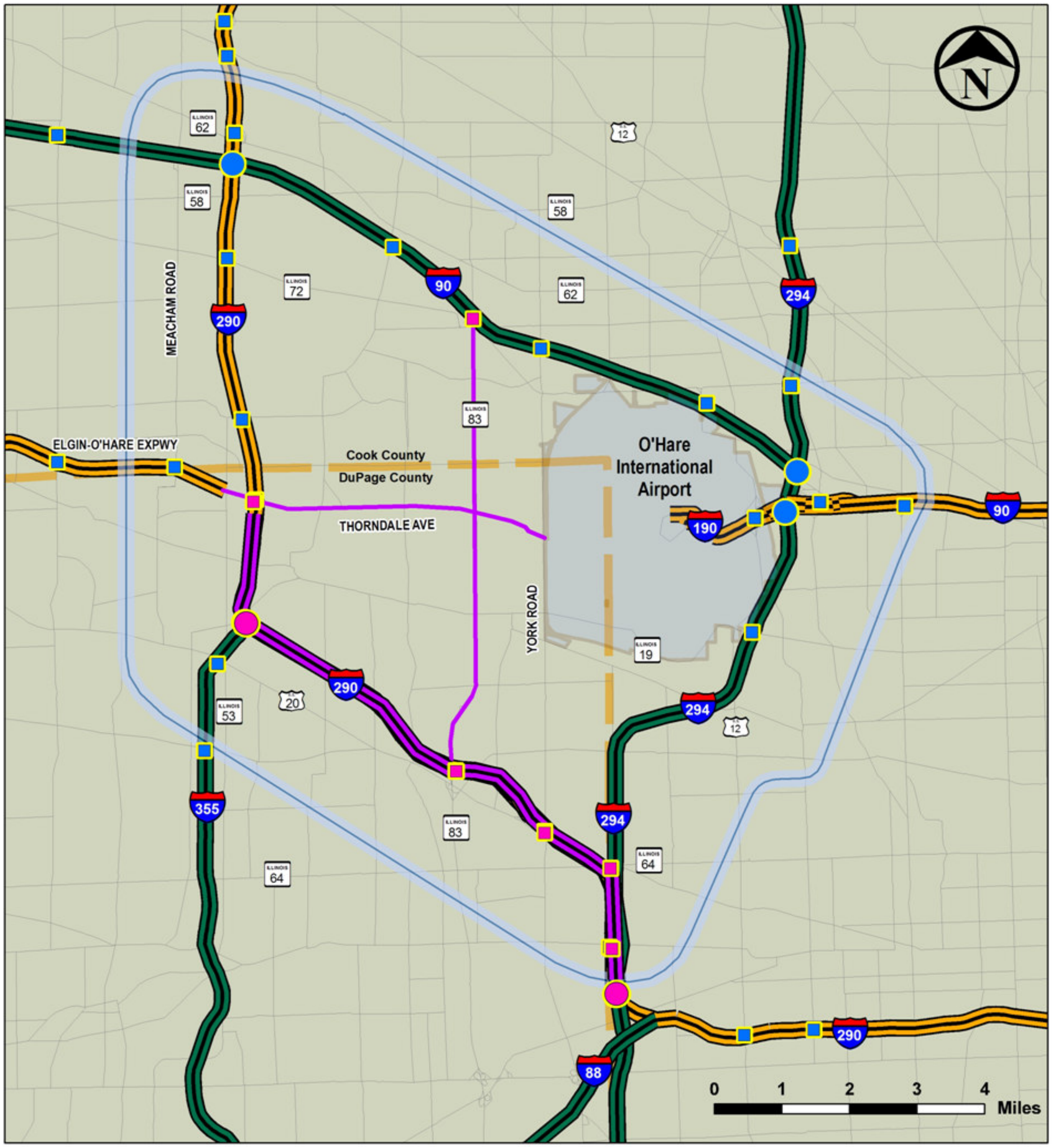
Exhibit 3-4H

Initial Roadway System Strategies

ELGIN O'HARE WEST BYPASS
communities. opportunitie

Illinois Department of Transportation

Group 6, Option 1 (Strategy 601)



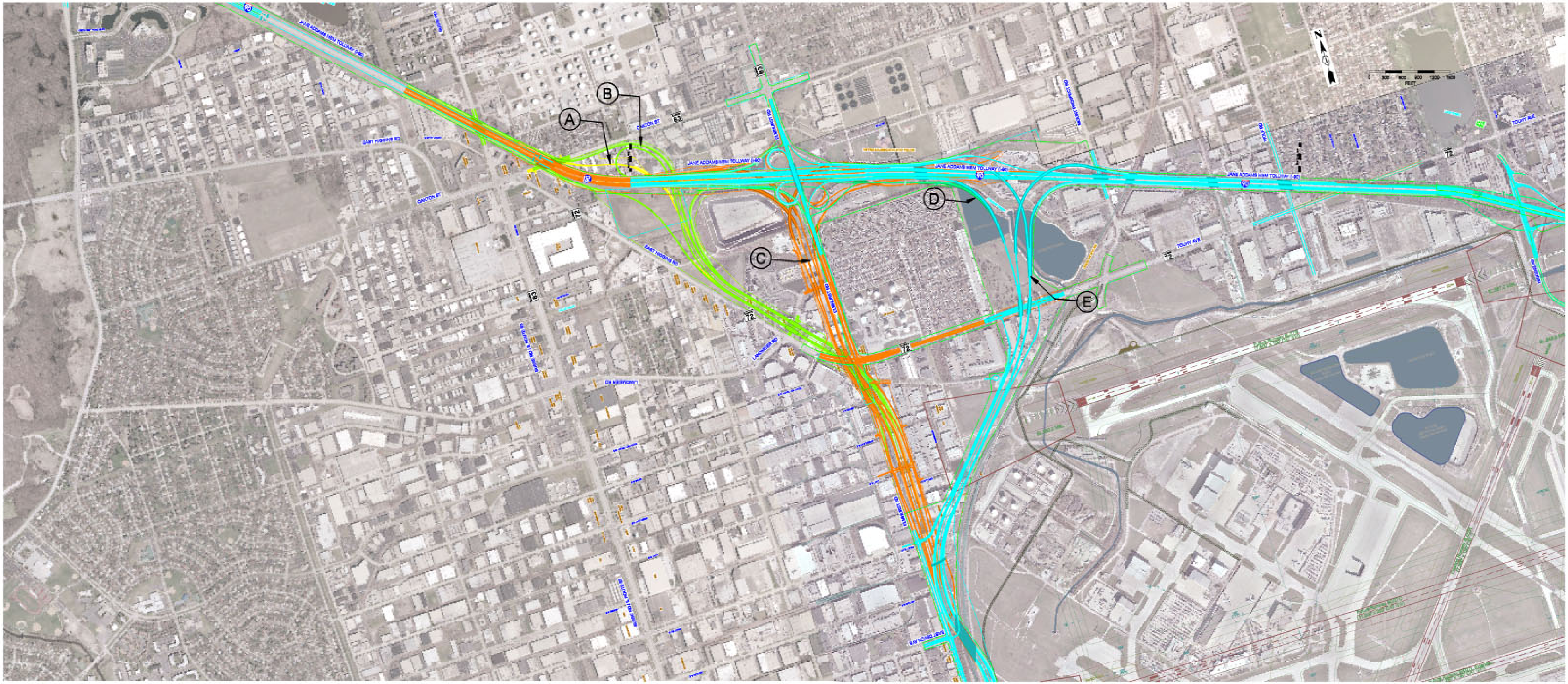
Name	Description	From	To	No. of Lanes
Thorndale Ave	Widen Arterial	IL Rt 83	W. Terminal	8
IL Rt 83	Widen Arterial	I-290	I-90	8
I-290	Widen Expressway - 1 lane	Thorndale Ave	I-294	
I-290/Thorndale Avenue	Existing Full Service Interchange - Upgrade			
I-290/I-355	Existing System Interchange - Upgrade			
I-290/IL Rt 83	Existing Full Service Interchange - Upgrade			
I-290/York Rd	Existing Full Service Interchange - Upgrade			
I-290/IL Rt 64	Existing Partial Service Interchange - Upgrade			
I-290/St. Charles Rd	Existing Full Service Interchange - Upgrade			
I-290/I-294/I-88	Existing System Interchange - Upgrade			
IL Rt 83/I-90	New Service Interchange - Full Access			

Legend

- County Boundary
- Original Study Area
- Interstate - Freeway
- Interstate - Tollroad
- US Route
- State Route
- Arterial
- Existing Service Interchange
- Existing System Interchange
- Proposed/Improved Service Interchange
- Proposed/Improved System Interchange
- Widen Arterial
- New Corridor - Expressway

Exhibit 3-4I

Initial Roadway System Strategies



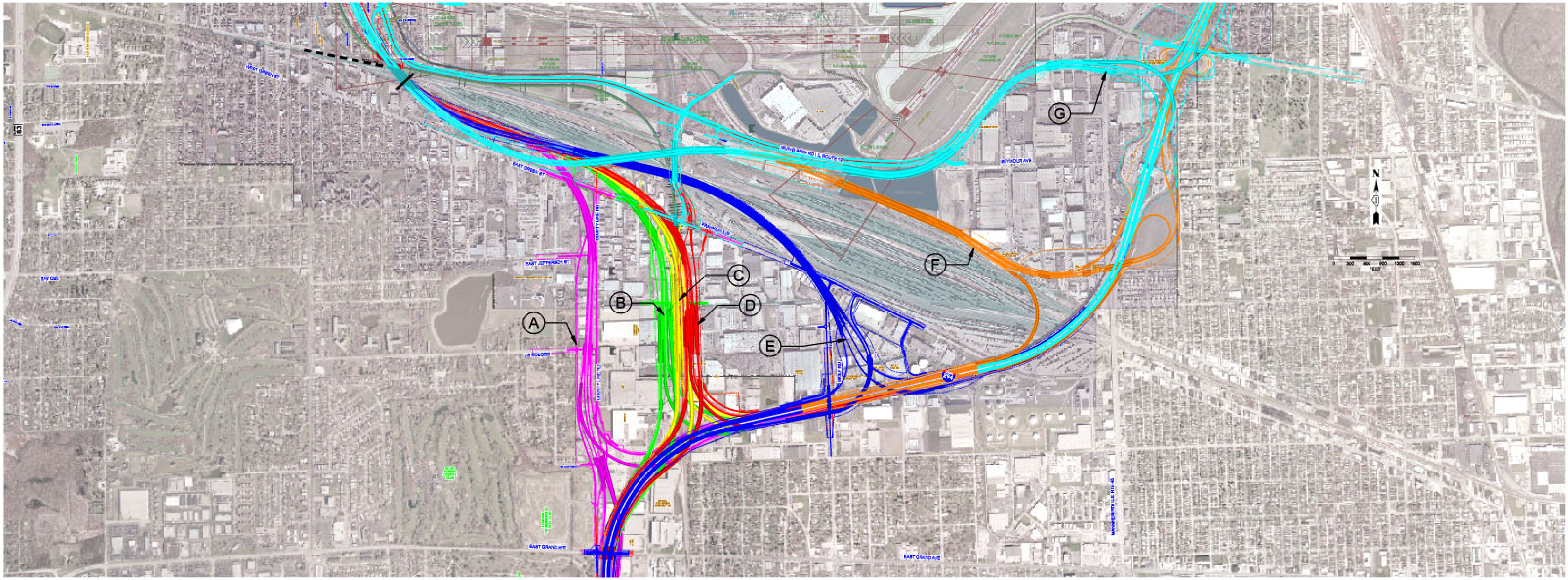
LEGEND

- OPTION A
- OPTION B
- OPTION C
- OPTION D
- OPTION E
- FOOTPRINT

Exhibit 3-5A

O'Hare West Bypass North Connection Options

December 2008



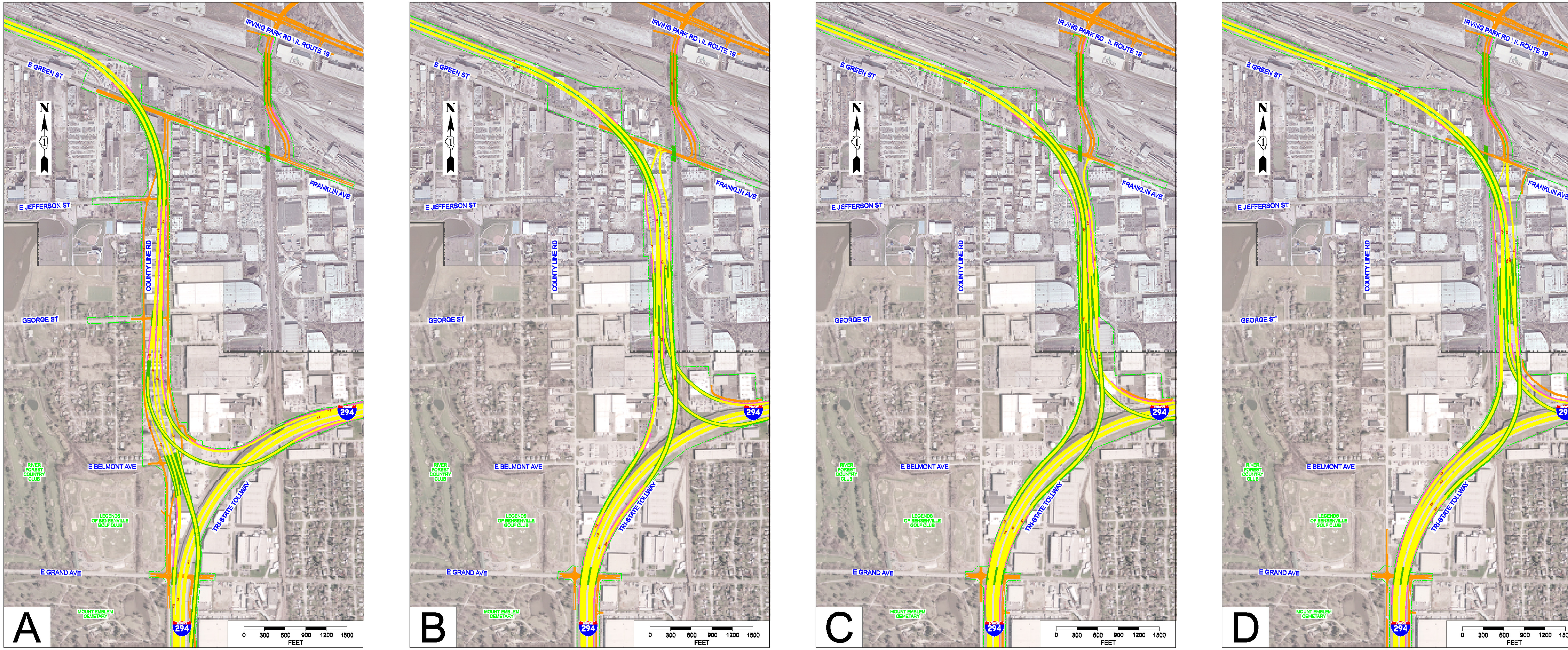
LEGEND

- OPTION A
- OPTION B
- OPTION C
- OPTION D
- OPTION E
- OPTION F
- OPTION G

Exhibit 3-5B

O'Hare West Bypass South Connection Options

December 2008



LEGEND

- INTERSTATE AND RAMPS
- ARTERIAL OR LOCAL STREETS
- RETAINING WALL
- BRIDGE
- FOOTPRINT

Exhibit 3-6

O'Hare West Bypass South Connection Options

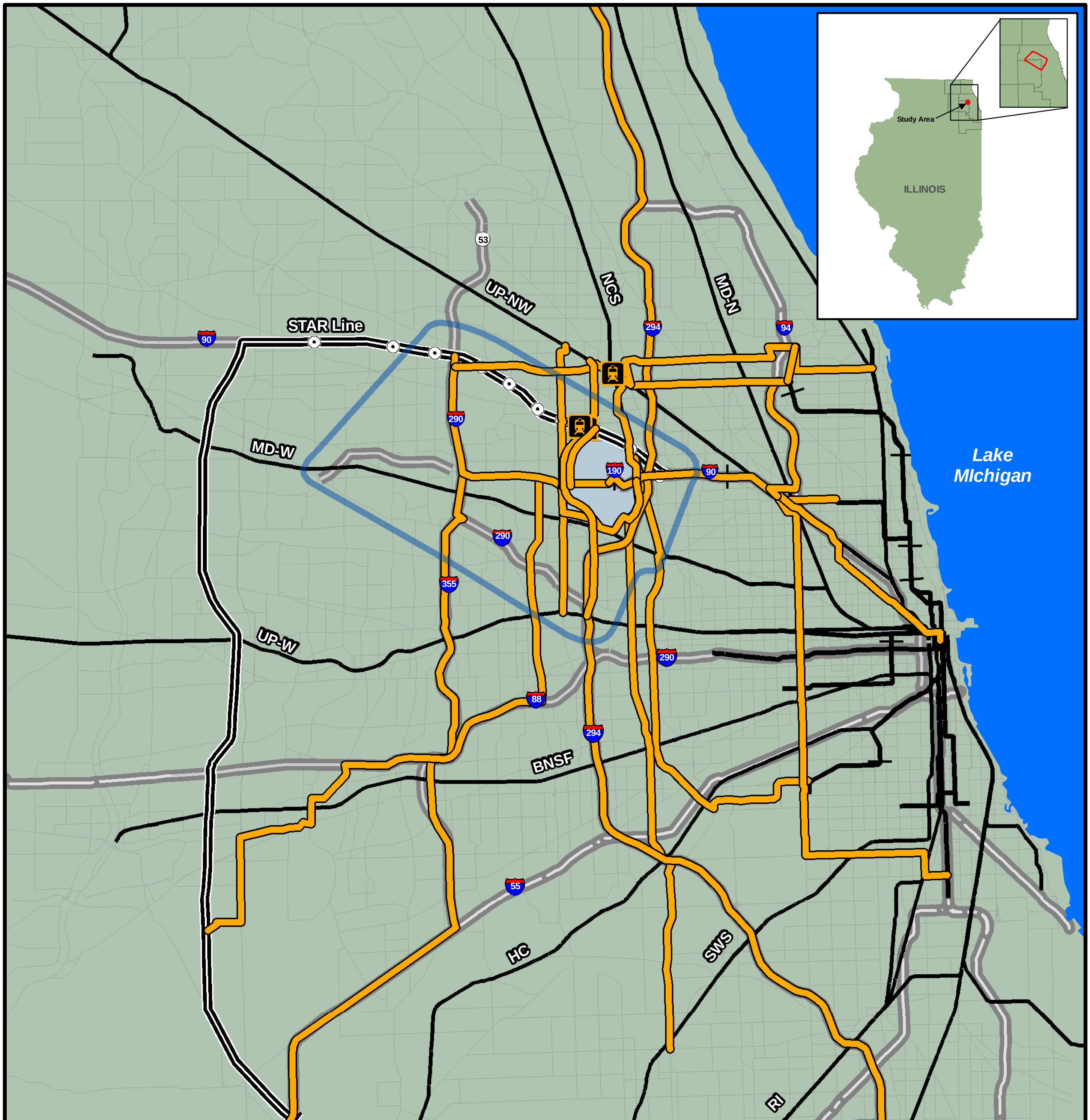
January 2009

ELGIN O'HARE WEST BYPASS

communities. opportunities. solutions.

T361180.AA.PI.11 Typ Sec Key_Map for Cr sec 02_03_09 lg

Illinois Department of Transportation



Legend

- Study Area
- Suggested Transit Improvement Locations
- Existing Public Transit Lines (CTA and Metra)
- STAR Line
- Tollway/Freeways
- Arterials

N

0 0.5 1 1.5 2 2.5

Miles

Exhibit 3-7

March 2008 Stakeholder Workshop Results-
Transit Strategies

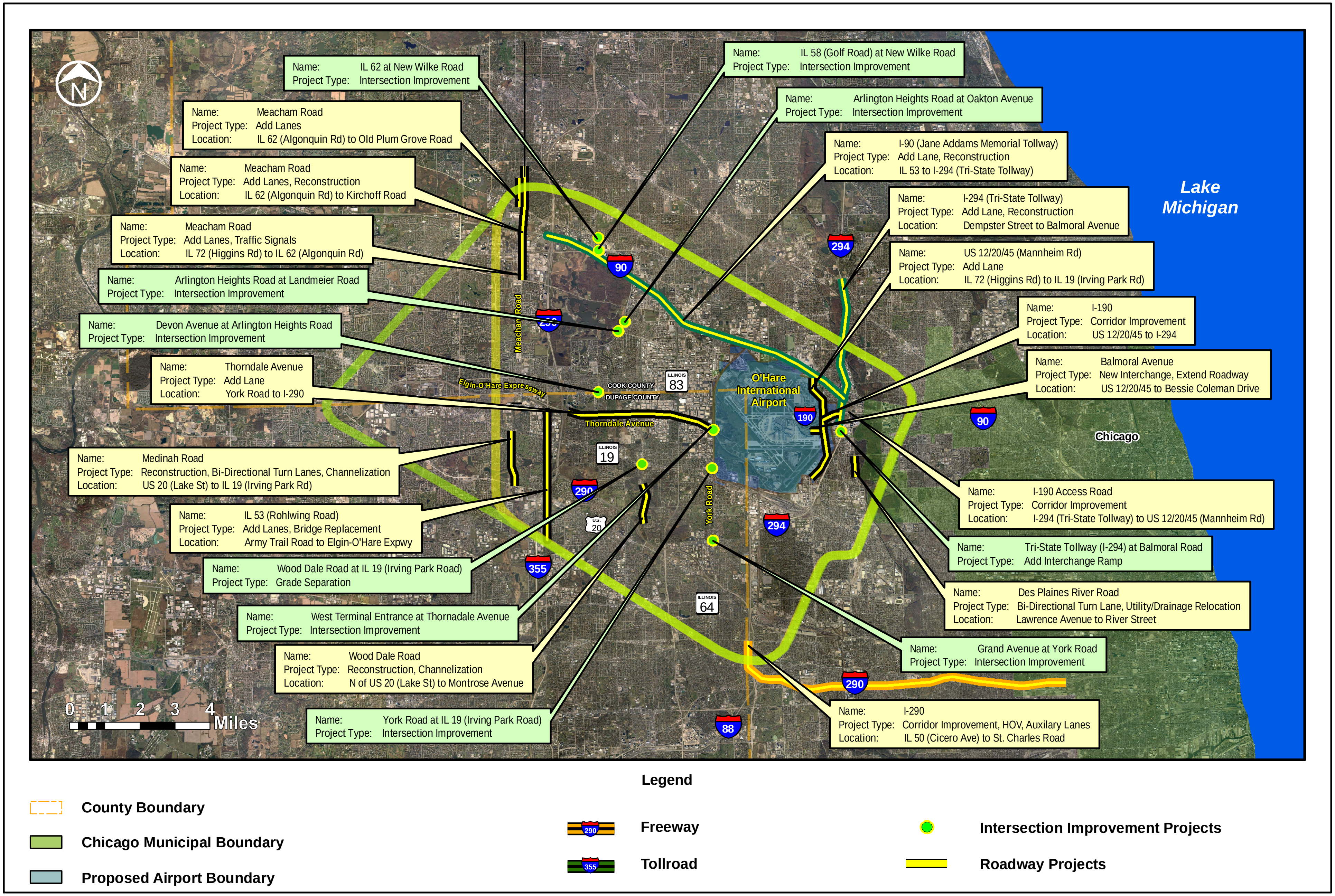


Exhibit 3-8

2030 Baseline - Roadway Projects Map

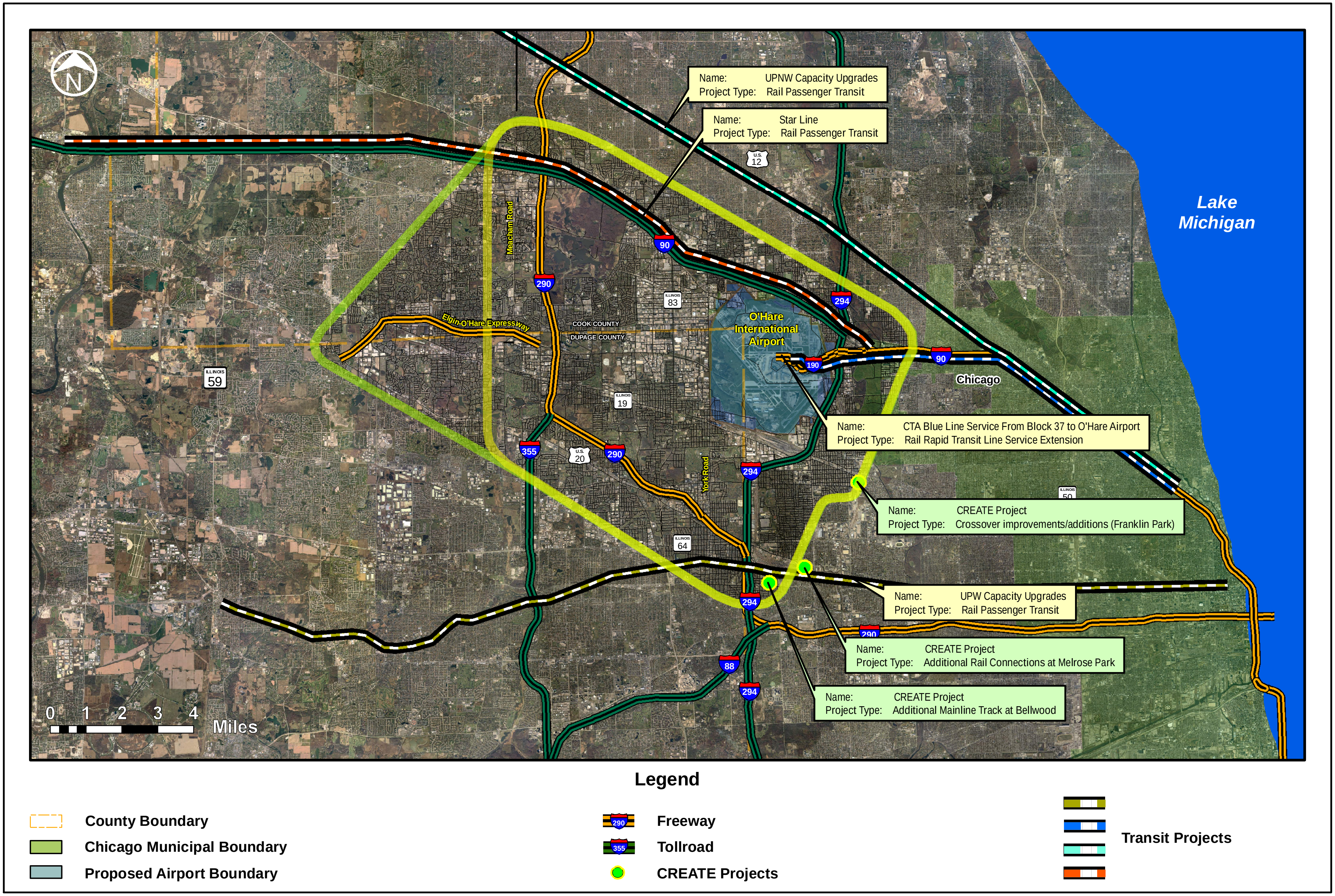
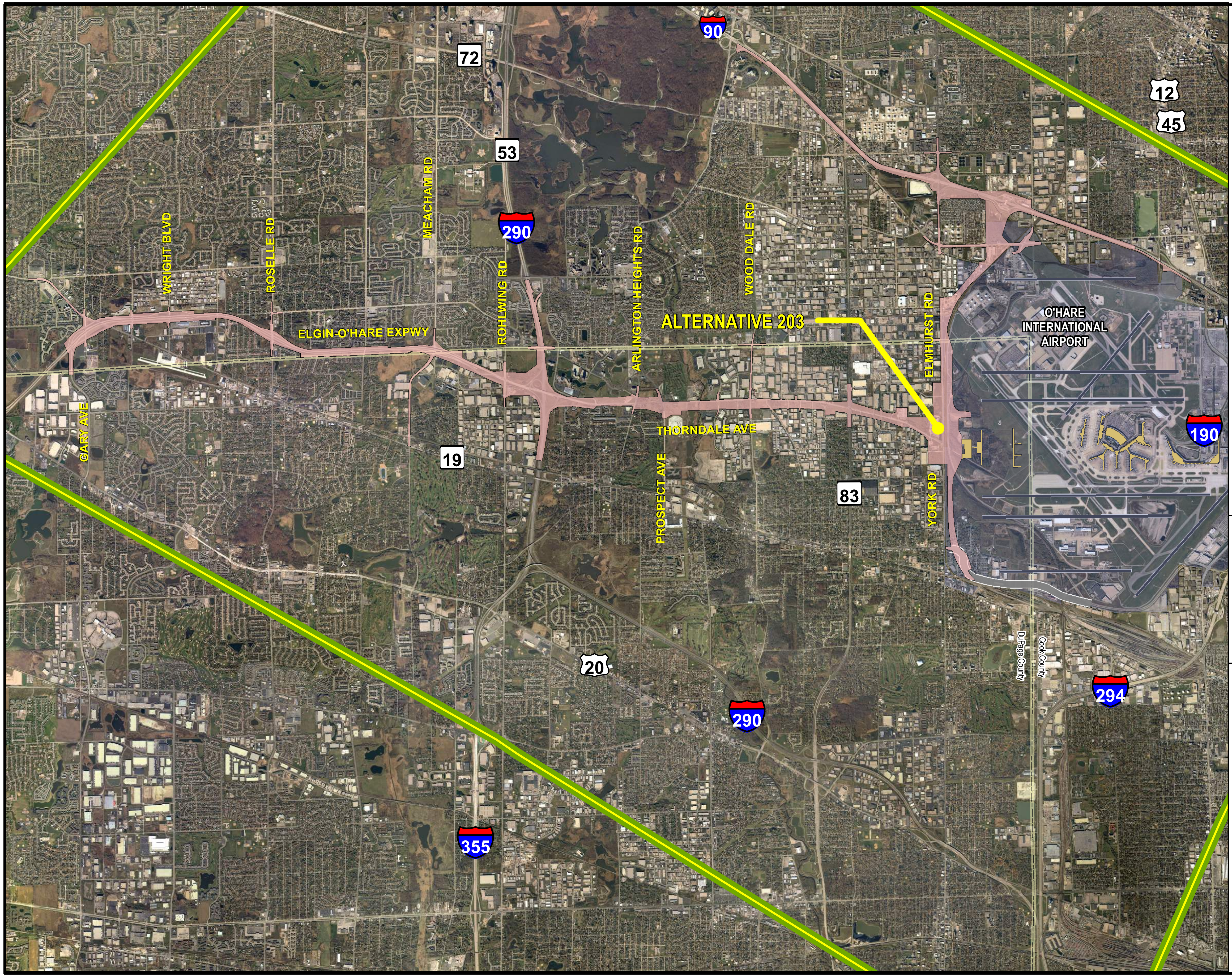
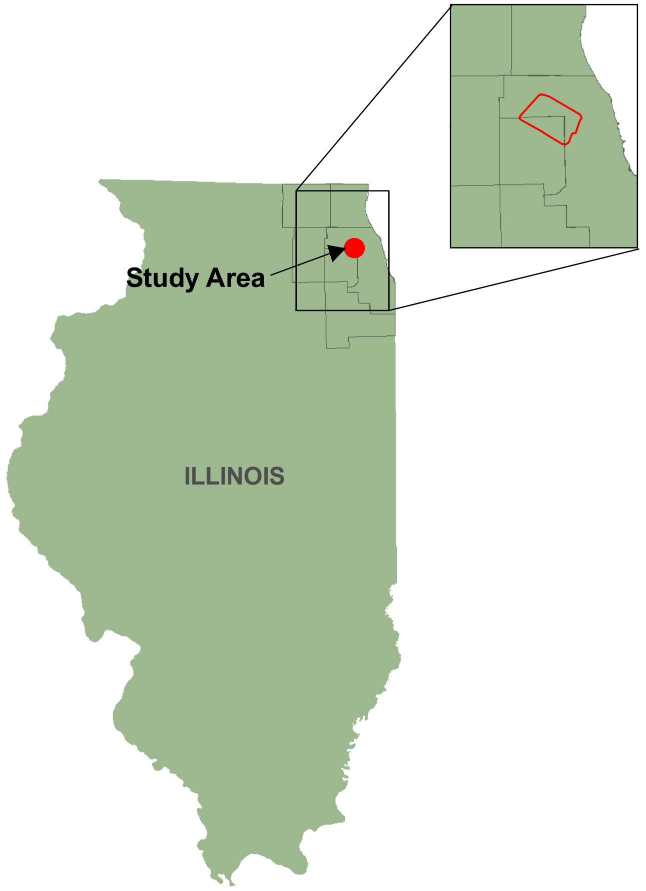


Exhibit 3-9

2030 Baseline - Transit Projects Map





Legend

Study Area

Footprint

N

0 0.55 1.1

Miles

Exhibit 3-10

Build Alternative 203

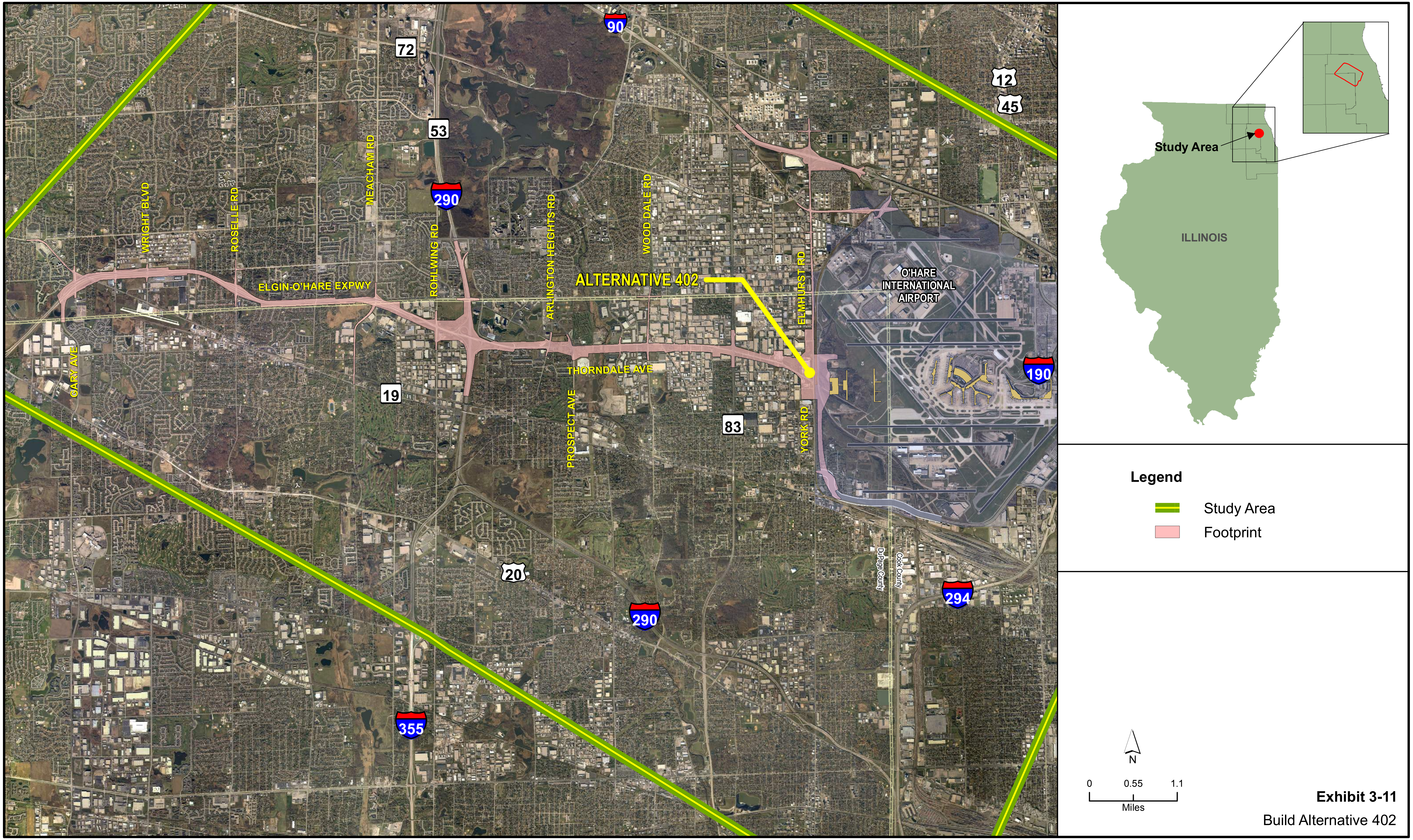
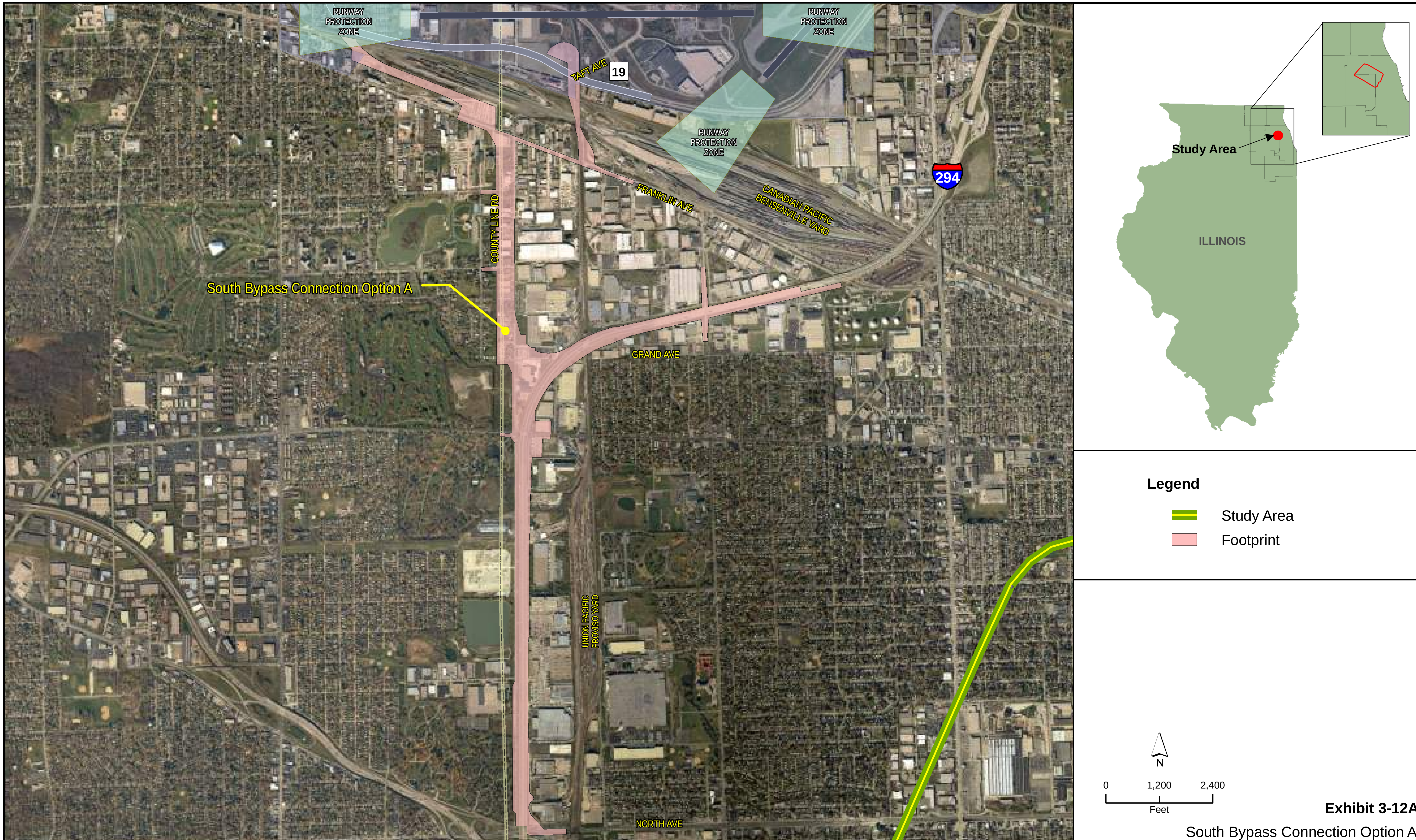


Exhibit 3-11

Build Alternative 402



Legend

Study Area

Footprint

N

0 1,200 2,400

Feet

Exhibit 3-12A

South Bypass Connection Option A

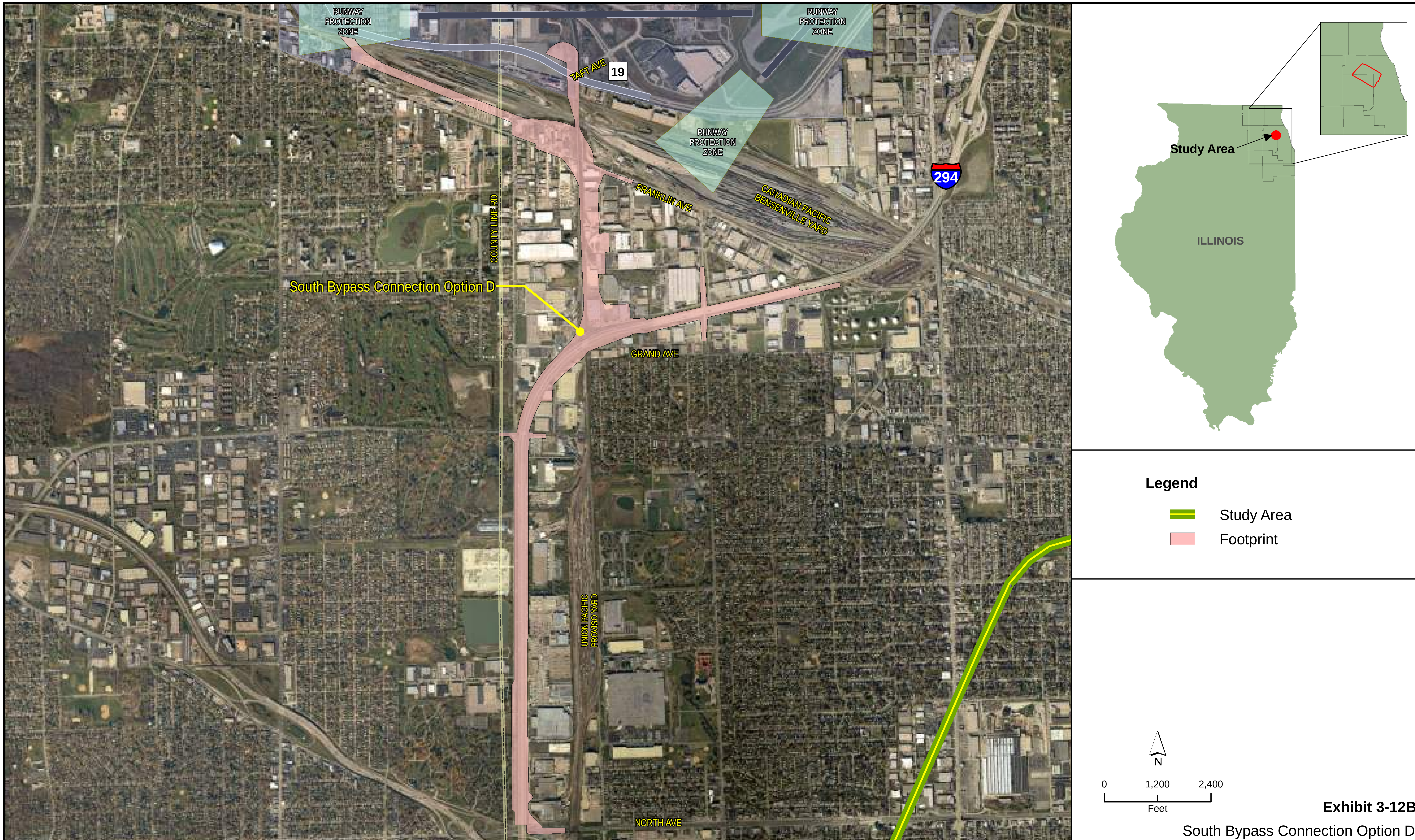
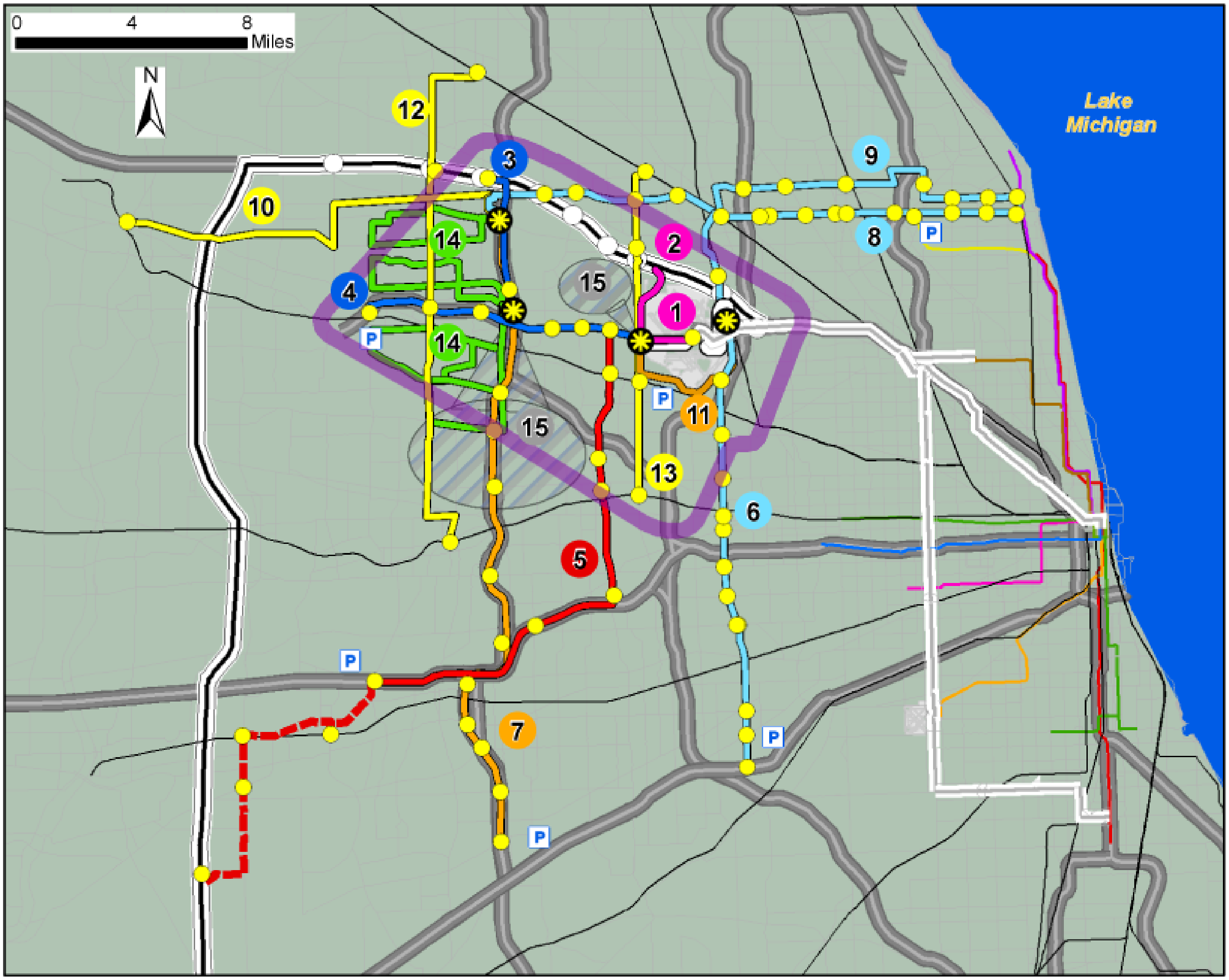


Exhibit 3-12B

South Bypass Connection Option D



Corridor Name (Mode)

1. STAR Line Spur (Commuter Rail)
2. Blue Line Extension to West Terminal (Heavy Rail)
3. J-Line Northwest to Woodfield (Rail or Bus Rapid Transit)
4. J-Line West to Schaumburg MDW Metra (Rail or Bus Rapid Transit)
5. J-Line South to Naperville and Aurora (Bus Rapid Transit to Naperville; Link Service From Naperville to Aurora)
6. Mannheim Road (Arterial Rapid Transit)
7. I-355 (Express Bus)
8. Dempster Street (Arterial Rapid Transit)
9. Golf Road East (Arterial Rapid Transit)
10. Golf Road West (Local Bus)
11. Irving Park Road (Express Shuttle Bus)
12. Roselle Road (Local Bus)
13. York Road Shuttle (Local Bus)
14. Circulators (Local Circulators)
15. Employment Shuttle Zones

- Proposed Stop Locations
- STAR Line
- STAR Line Station
- Intermodal Facilities
- P Park and Ride
- Regional Supporting Projects

Exhibit 3-13

Transit Elements Proceeding to Level Three Screening

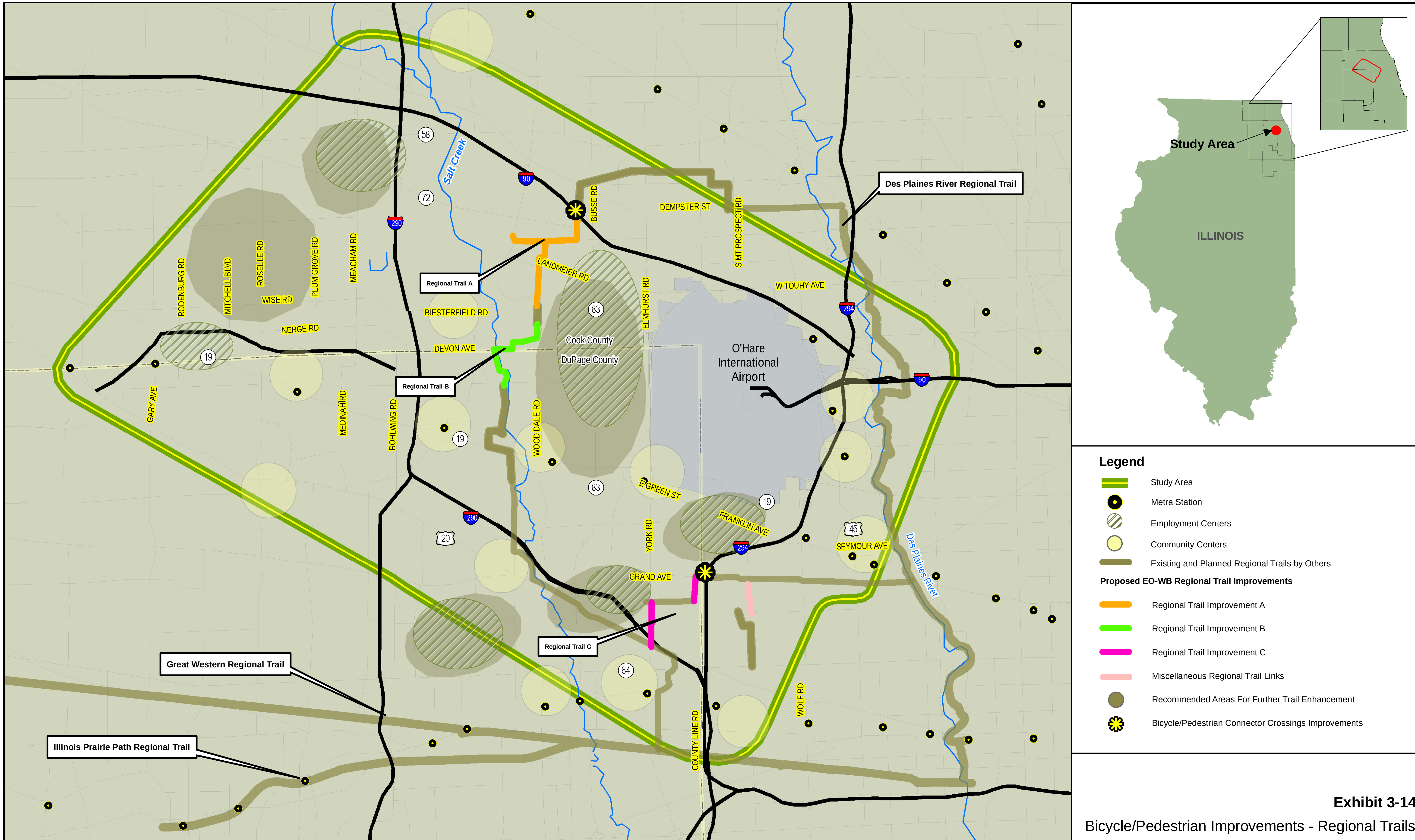


Exhibit 3-14

Bicycle/Pedestrian Improvements - Regional Trails

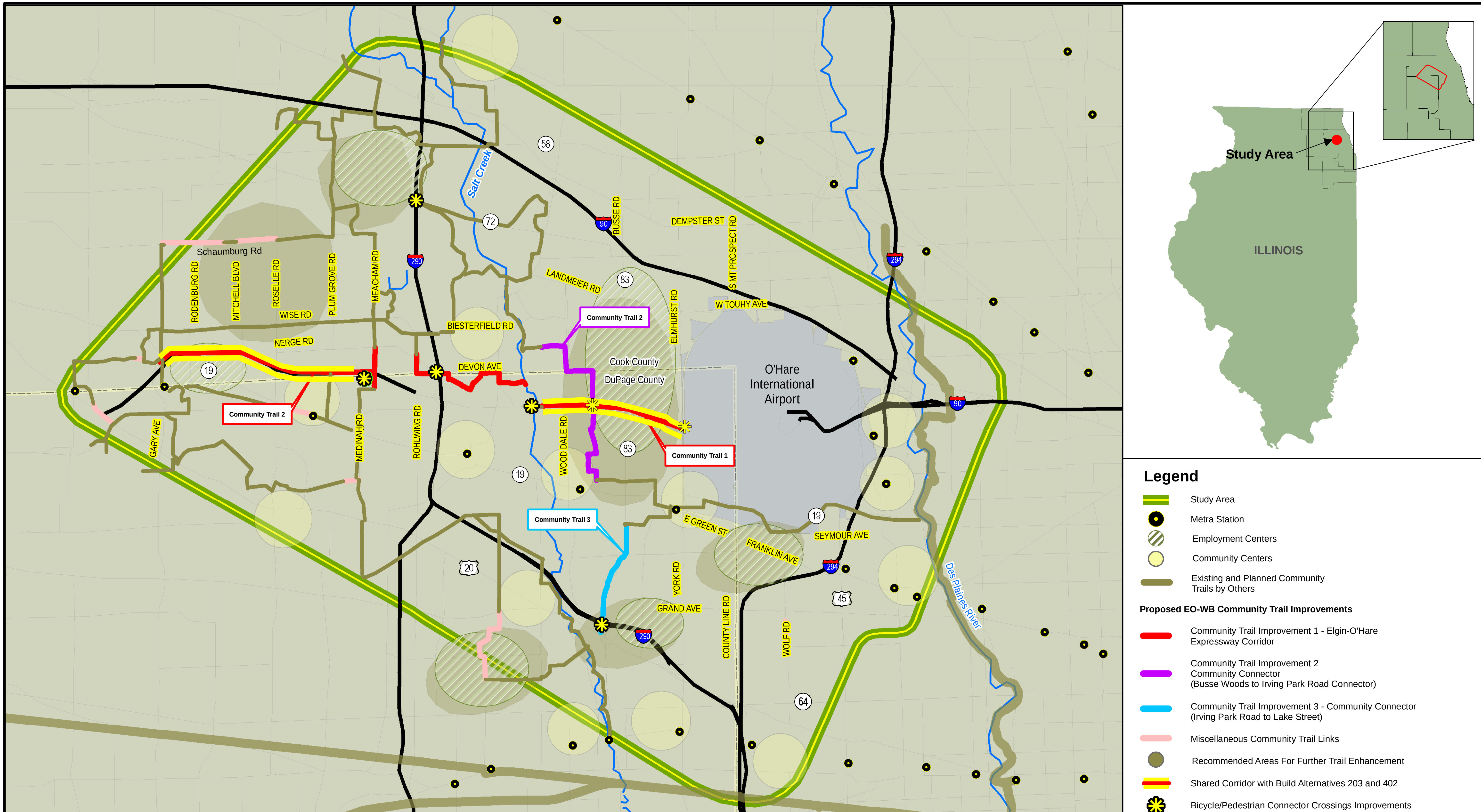
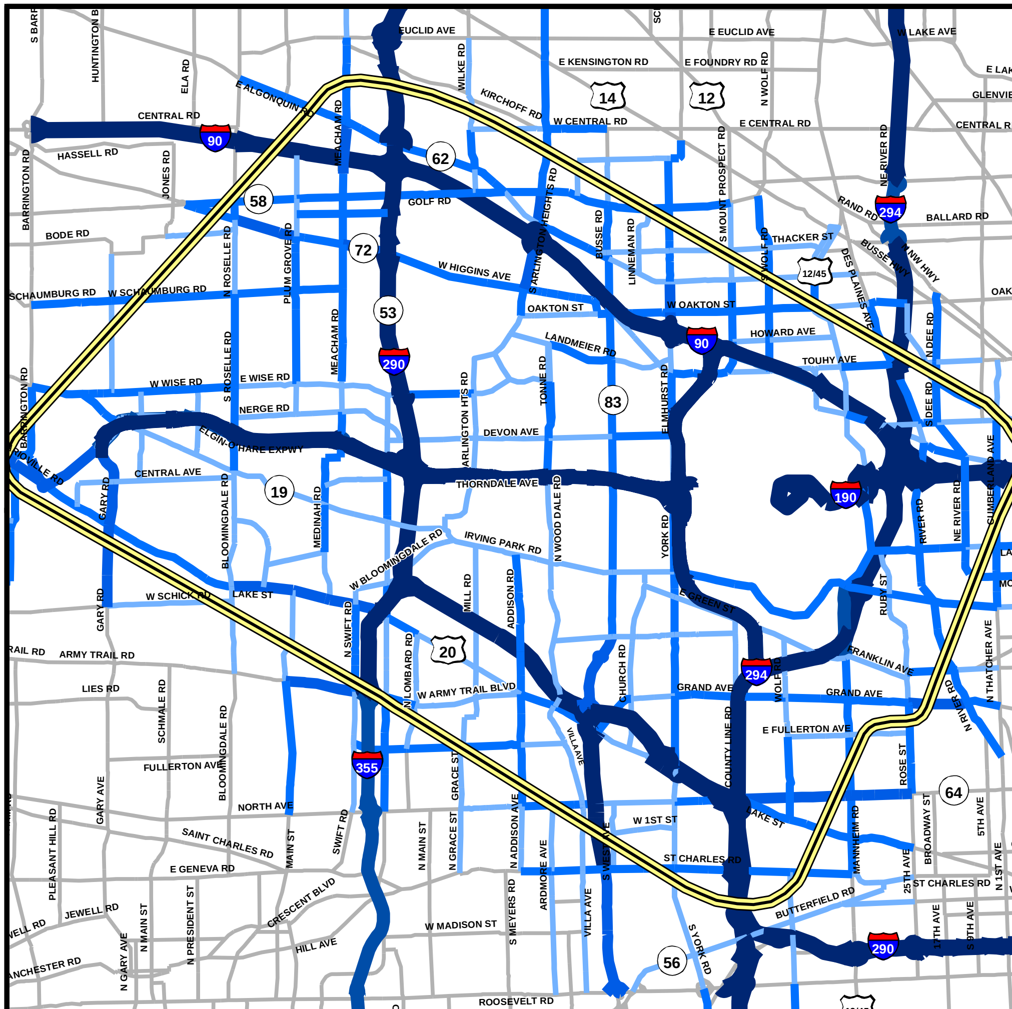
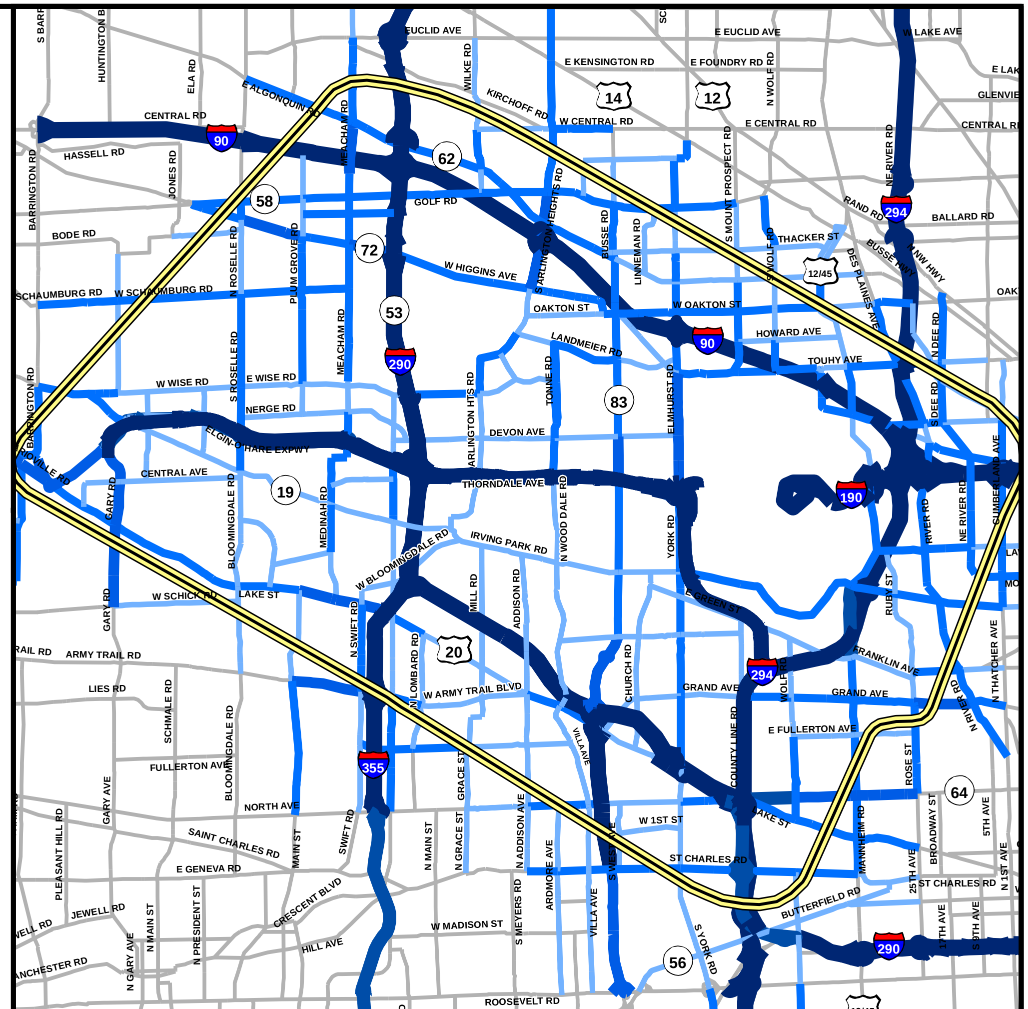


Exhibit 3-15

Bicycle/Pedestrian Improvements - Community Trails



Build Alternative 203



Build Alternative 402

Legend

Study Area Boundary

Build Alternatives Average Daily Traffic Forecast (2030)

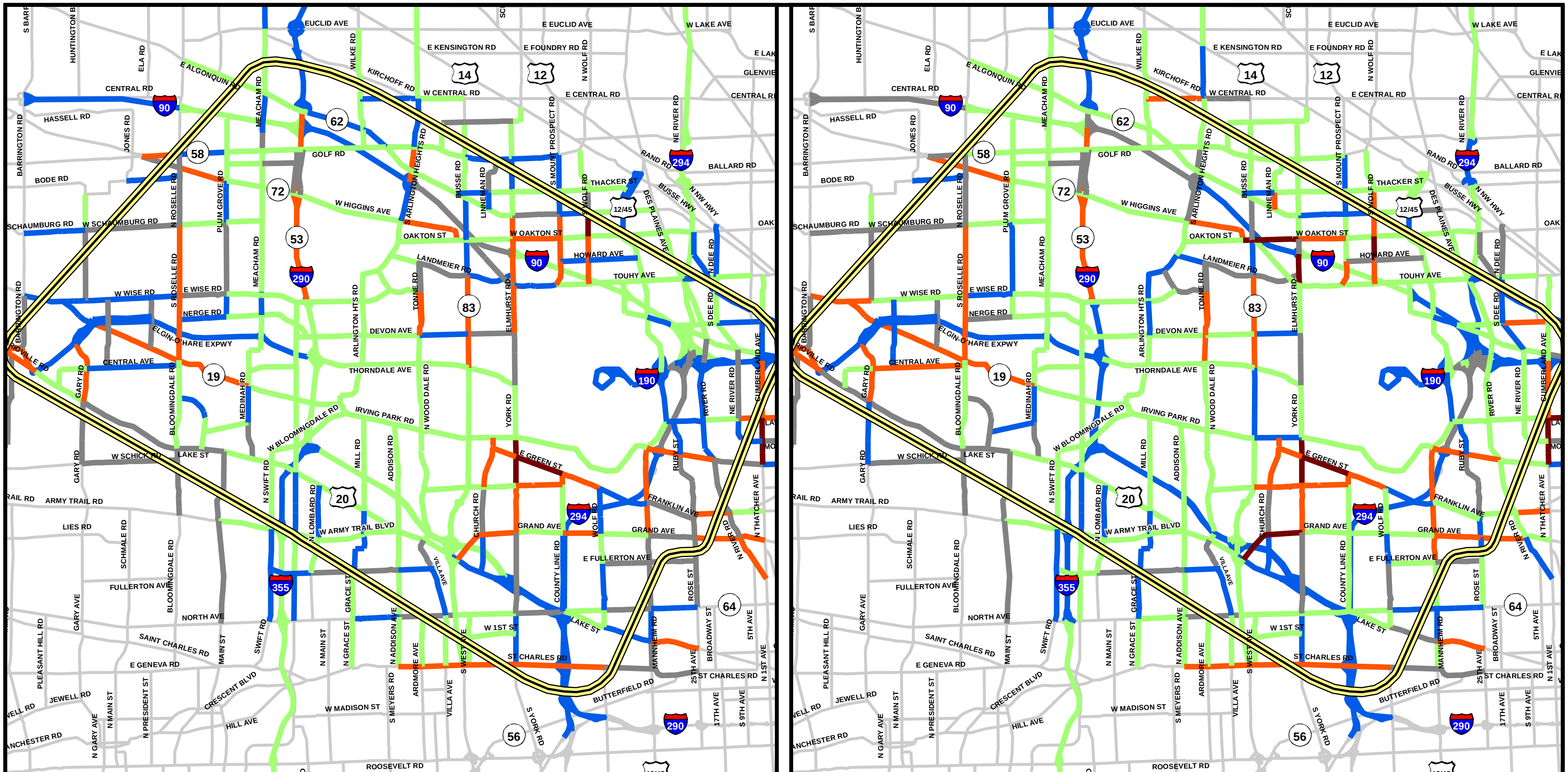
- < 20,000
- 20,000 - 40,000
- 40,000 - 60,000
- 60,000 - 80,000
- > 80,000

N

0 2 4 Miles

Exhibit 3-16

Build Alternatives Average Daily Traffic Forecast (2030)



Build Alternative 203

Build Alternative 402

Legend

Study Area Boundary

Travel Performance Comparison over No-Action Alternative (2030 P.M. Peak Period)

- Substantial Improvement (> 25%)
- Moderate Improvement (5% ~ 25%)
- No Significant Change (-5% ~ 5%)
- Moderate Decrease (-5% ~ -25%)
- Substantial Decrease (< -25%)

N

0 2 4 Miles

Exhibit 3-17

Travel Performance Comparison of Build Alternatives to No-Action Alternative (2030 P.M. Peak Period)

SECTION 4

Environmental Consequences

This section describes the potential beneficial and adverse, social, economic and environmental effects of Build Alternatives 203 and 402. The content and level of analysis in this section is consistent with the two-tiered environmental process used to advance the project. For Tier One, the build alternatives were developed at a conceptual level of detail sufficient to compare their environmental consequences. Existing and available data in conjunction with GIS were used to evaluate the potential impacts of the build alternatives. The GIS database was improved following field verification for select resources (wetlands, parks, commercial, industrial properties, etc.) in areas near the proposed improvements for each alternative to determine more accurately impacts on socioeconomic and environmental resources. For some resource topics, impacts are described as "potential" (e.g., archaeological, historical, threatened and endangered species), pending full field investigations in Tier Two of the process. Tier Two of the process will involve detailed environmental studies and engineering plans for individual projects within the context of the preferred alternative. The work ultimately will lead to the preparation of contract plans, full right-of-way acquisition, and construction.

Alternatives 203 and 402 were retained for further consideration because of their ability to satisfy the purpose of and need for the project while minimizing potential environmental and socioeconomic impacts. Also, Options A and D were retained for the south bypass connection. Table 4-33, at the end of this section, summarizes impacts for the complete alternatives, that is, combining Alternatives 203 and 402 with Option A or D. Other modal improvements (transit, bicycle and pedestrian facilities, TDM/TSM) were common to the roadway alternatives. The roadway footprints were adjusted to accommodate transit and bicycle facilities co-located with proposed roadway improvements. In these instances, impacts are reflected in the analysis contained in the Draft EIS. Transit and bicycle facilities outside planned roadway improvements are common to both Alternatives 203 and 402; therefore, impacts are the same and are not a deciding factor in terms of impacts.

Fundamentally, two comparisons are being made in this document, one between Alternative 203 and 402, and the other between Options A and D. These comparisons could lead to the identification of one preferred alternative and option or it could be concluded that both alternatives and/or both options will be identified as preferred alternatives and options. Accordingly, the discussion of environmental and social impacts in this section are described separately for Alternatives 203 and 402 and the Options A and D. This format is observed for most resources; however, this method does not always apply. In some cases, the discussion of impacts is broader. Combining Alternative 203 or 402 with Option A or D constitutes a complete alternative and the full extent of their impact as shown in Table 4-33. The images on page 4-3 show the location of Alternatives 203 and 402 with the Options A and D.

The No-Action Alternative, consisting only of transportation improvements to existing roadway and transit facilities in the study area that are expected to be constructed by the design year (2030), has also been carried forward as a basis of comparison to the build alternatives. The No-Action Alternative is common to both build alternatives; therefore, the impacts would also be common. Thus, a discussion of the environmental and socioeconomic impacts for the No-Action Alternative would not provide a distinction between the build alternatives and is not included in this section.

The impacts described in this section are consistent with the resources presented in Section 2, except those for which no impact would occur: agriculture and air quality. In addition to analyzing direct impacts associated with the build alternatives, indirect and cumulative impacts were also analyzed. Mitigation measures designed to reduce or off-set environmental and social impacts are discussed at a conceptual level in Section 4.14. The section concludes with a summary of the project's potential environmental consequences.

4.1 Socioeconomic Impacts

4.1.1 Population, Households, and Employment

Using CMAP's 2030 RTP socioeconomic forecasts (CMAP, 2006), the project team developed population, household, and employment forecasts specific to the No-Action Alternative, Alternative 203, and Alternative 402.[1] Detail about how the forecasts were developed is documented in the EO-WB Finalist Build Alternatives and No Build Baseline Alternative 2030 Socioeconomic Data Forecasts: Estimation and Distribution Methodology (FHWA and IDOT, 2009) and is part of the project files. Because both south bypass connection options (A and D) are the same facility type and provide identical connections to the larger system, the socioeconomic forecasts do not differentiate between A and D.

Each build alternative would result in slightly different population, household, and employment forecasts in 2030. Table 4-1 details the change associated with each alternative. Comparing the no-action scenario to existing (2006) data, the forecasts show that the study area will experience a nominal increase in population and households over the next 20+ years, which is characteristic of a mature area.[2] A much higher growth rate for employment is forecasted, with a 14.1 percent increase over the next 20-year period.

Each build alternative would result in slightly different population, household, and employment forecasts in 2030. There is not a wide range of difference in the forecasted population or number of households between the two build alternatives—less than a one percent difference in population and households, and less than a two percent difference in employment. This is because little vacant or undeveloped land use available, and most development or redevelopment will tend to be industrial (a predominant use through much of the study area) rather than residential.

[1] The forecasts, which were developed using CMAP's methodology, are based on accessibility and additional lane-miles available above and beyond the CMAP 2030 RTP. The population and employment redistribution only pertains to whether or not there is a connection, and does not take into account a specific alignment location. Because both South Bypass Connections Options (A and D) are the same facility type and provide identical connections to the larger system, the redistribution does not differentiate between Options A and D.

[2] It was preferable to compare to the baseline forecasts rather than the RTP forecasts; as the RTP assumed that the Elgin O'Hare Expressway and West Bypass would be in place by 2030 when developing the associated demographic forecasts.

Alternative 203

Alternative 402

TABLE 4-1
Study Area Population, Household, and Employment Changes by Alternative

	Population	Households	Employment
2006 estimate[a]	509,900	198,850	569,500
No-Action Alternative: 2030 forecast	537,620[b] (+5.4%[c])	202,500[b] (+1.8% [c])	649,600[b] (+14.1% [c])
Alternative 203: 2030 forecast	540,790 (+0.6% [d])	207,400 (+2.4% [d])	712,100 (+9.6% [d])
Alternative 402: 2030 forecast	539,040 (+0.3% [d])	206,800 (+2.1% [d])	698,100 (+7.5% [d])

[a] *Source*: CMAP, 2006.
[b] Forecasts developed by CH2M HILL in coordination with CMAP.
[c] Percent increase from 2006 estimate.
[d] Percent increase over No-Action projection.

Under Alternative 203, the 2030 population in the study area would increase by 3,170, or 0.6 percent, over 2030 no-action population. The number of households would increase by 4,900, or 2.4 percent, and employment would increase by 62,500, or 9.6 percent.

Under Alternative 402, the 2030 population forecast is projected to increase by an additional 1,420 persons, or 0.3 percent, over the 2030 no-action population. Households are forecast to increase by 2.1 percent and employment in the study area by 7.5 percent.

4.1.2 Displacements

The proposed transportation improvements would displace residences and commercial and industrial structures in the study area (see Exhibit 4-1A through D and Exhibit 4-2). Impacts to residents and businesses by alternative and south bypass connection option are described below and summarized in Table 4-2. No multifamily residential structures would be displaced by the proposed improvements. Losses in tax revenue resulting from the displacement of residences and commercial and industrial structures by the build alternatives are described in subsection 4.1.5.

Alternatives 203 and 402 would displace the same 11 residences. One is located along the east side of Medinah Road between the Elgin O'Hare Expressway and Irving Park Road. Eight are concentrated on the north and south sides of the extended Elgin O'Hare Expressway between Arlington Heights Road and Prospect Avenue. Another is located in Itasca east of Prospect Avenue on the south side of the extended Elgin O'Hare Expressway. Alternatives 203 and 402 will displace a residence within a mobile home community along Touhy Avenue in Des Plaines. The few residential displacements and their locations will not eliminate any residential neighborhoods. They are distributed among several communities and do not disproportionately affect the residential nature of any one community.

All commercial and industrial structures affected by Alternative 402 are common to Alternative 203. Two commercial structures in Itasca with one business and 14 employees each would be affected. A vacant commercial structure and six industrial structures (with four businesses and 96 employees) on the east end of the extended Elgin O'Hare Expressway in Bensenville would be displaced. Another industrial structure with one business and five employees would be displaced along Elmhurst Road in Elk Grove Village. Alternative 203 affects an additional commercial structure and another three industrial structures. One industrial structure with one business and five employees in Elk Grove Village and two

TABLE 4-2
Displacements per Build Alternative and South Bypass Connection Option

Alternative	Residential Displacements (residences/residents)[a]	Commercial Structure Displacements	Industrial Structure Displacements	Businesses Displaced	Employees Displaced
203	**11/33**	**4**	**10**	**12**	**292**
Medinah[b]	1/3	0	0	0	0
Itasca	9/27	2	0	2	28
Des Plaines	1/3	1	2	3	158
Bensenville	0	1	6	5	96
Elk Grove Village	0	0	2	2	10
402	**11/33**	**3**	**7**	**8**	**129**
Medinah[b]	1/3	0	0	0	0
Itasca	9/27	2	0	2	28
Des Plaines	1/3	0	0	0	0
Bensenville	0	1	6	5	96
Elk Grove Village	0	0	1	1	5
Option A	**7/21**	**0**	**28**	**45**	**600**
Bensenville	7/21	0	24	41	316
Franklin Park	0	0	2	2	76
Northlake	0	0	2	2	208
Option D	**0**	**8**	**17**	**22**	**911**
Bensenville	0	8	4	8	356
Franklin Park	0	0	12	12	521
Northlake	0	0	1	2	34

[a] The number of displaced residents is calculated by multiplying the number of displaced residences by the average household size. According to the 2000 U.S. Census, the average household size for communities where displacements would occur is three.
[b] Medinah is not an incorporated community but an area within unincorporated DuPage County.

industrial structures in Des Plaines, each with one business and 108 employees, would be affected along the north leg of the O'Hare West Bypass. The commercial structure has one business with 50 employees and is located in Des Plaines. The proposed interchange with I-90 would affect another commercial structure in Des Plaines with one business and 50 employees.

Table 4-2 summarizes the socioeconomic impacts of the south bypass connection option. Option A would displace seven residences, but Option D would not displace any residences. The seven displaced residences are located along the west side of County Line Road in Bensenville.

Option A would affect no commercial structures and 28 industrial structures containing 45 businesses. Those businesses are along the west side of County Line Road and where the

O'Hare West Bypass would connect with I-294. Two of the 28 industrial structures are within the Bensenville Yard. Twenty-two industrial structures with 41 businesses would be displaced on the west side of County Line Road in Bensenville; 316 employees would be displaced. The impacts from the O'Hare West Bypass/I-294 interchange include two industrial buildings (containing two businesses and 76 employees) in Franklin Park and three industrial buildings (two businesses and 208 employees) in Northlake.

Option D would affect two industrial structures within the Bensenville Yard, eight commercial and two industrial structures on the north side of Green Street (in Bensenville), 12 industrial structures on the east side of the railroad tracks (in Franklin Park), and one industrial structure on the southeast side of I-294 in Northlake. The eight commercial structures on the north side of Franklin Avenue contain six businesses with 175 employees; the two industrial structures have two businesses with a total of 181 employees. The 12 displaced industrial structures on the east side of the railroad tracks in Franklin Park contain 12 businesses with 521 employees. The industrial structure on the southeast of I-294 has two businesses with 34 employees.

Relocation assistance will be provided without discrimination and in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and IDOT's *Land Acquisition Procedures Manual*. For further information, see subsection 4.14.3.

4.1.3 Community and Land Use Impacts

Carefully planned roadway improvements can foster beneficial results, such as making communities more cohesive and supporting future growth and planning policies. Lack of planning for roadway improvements can bring undesirable effects to a community, including fracturing community cohesion. The discussion below describes the potential effects of each alternative on community cohesion and land use.

4.1.3.1 Consistency with Land Use Plans

Alternatives 203 and 402 traverse the core communities of Schaumburg, Roselle, Itasca, Wood Dale, Elk Grove Village, and Bensenville in generally the same geographic area. Their comprehensive plans were reviewed to assess whether the proposed improvements would be consistent with their long-range plans. Each community's plan is addressed below:

- **City of Wood Dale—**The City of Wood Dale does not have a communitywide comprehensive plan, but it is developing a Thorndale Corridor subarea plan that incorporates applicable elements of this transportation study. The City has incorporated recommendations to upgrade and extend the Elgin O'Hare Expressway into this subarea plan. The plan notes that within its corporate boundaries, the Thorndale Corridor is primarily a location for business and industry. The plan proposes additional commercial, industrial, residential and mixed transit land use development with the eastern extension of the Elgin O'Hare Expressway. The plan states that it intends to capitalize on the eastern extension of the Elgin O'Hare Expressway and other improvements planned for the area's roads and expressways (City of Wood Dale, 2009).
- **Village of Roselle—**Within the Village of Roselle, the Elgin O'Hare Expressway is an existing facility. The Village's comprehensive plan delineates residential, commercial,

industrial, and open space land uses near the expressway corridor (Village of Roselle, 1995). Its plan states that no plans have been made to develop additional land unless it provides a benefit to the Village or if the development can provide services to the property at no additional cost to present residents.

- **Village of Itasca—**The Village of Itasca's comprehensive plan identifies the eastern extension of the Elgin O'Hare Expressway in its document (Village of Itasca, 1994). Existing and future land uses adjacent to the project corridor are a mix of residential, industrial, and commercial uses. The Village has been an engaged stakeholder in the study, and acknowledges that Thorndale Avenue is an important corridor in the community that needs to provide efficient travel and access to the community and businesses.
- **Village of Schaumburg—**The Elgin O'Hare Expressway is within the Village of Schaumburg. The Village's plan delineates residential and industrial land uses adjacent to the expressway (Village of Schaumburg, 1996). The Village proposes continued residential and industrial uses through the area.
- **Village of Bensenville—**The Village of Bensenville's plan recognizes the possibility of the eastern extension of the Elgin O'Hare Expressway (Village of Bensenville, 2004). Its plan encourages development of new office/research and light industrial uses along Thorndale Avenue. The Village has developed another document containing short-term development strategies that can be implemented independent of activities related to the airport expansion or O'Hare West Bypass facilities. The *Alternative Redevelopment Strategies Final Report* indicates that the Village will reevaluate future land use policies if the eastern extension of the Elgin O'Hare Expressway becomes a reality (Village of Bensenville, 2009). The Village has been an active participant in this project's planning process and has provided comments concerning alternatives to be considered and the location of proposed improvements. It remains concerned, however, about infrastructure improvements that would adversely affect neighborhoods and the economic vitality of the community.
- **Elk Grove Village—**The Village last developed its comprehensive plan in the 1960s and considers it out-of-date. Elk Grove Village has been an active stakeholder in the project planning process. It indicates that current land uses (industrial) will continue if upgraded transportation facilities are constructed. Representatives have commented that alternatives that involve IL 83 would impose barrier effects costly to its business vitality and to emergency response times for fire, police, and ambulance services and would disrupt community cohesion. Because the build alternatives do not involve IL 83, the Village acknowledges that they are reasonably compatible with its future plans.
- **DuPage County—**DuPage County's Comprehensive Plan (DuPage County, 2005) and its West O'Hare Corridor Economic Development Study (DuPage County, 2006) identify and plan for an eastern extension of the Elgin O'Hare Expressway and an O'Hare West Bypass of the O'Hare Airport. Northeastern DuPage County encompasses all major land use categories throughout the study area including residential, commercial, industrial, open spaces, transportation and utilities, and agricultural properties. The County's plans propose future uses that would be compatible with these roadway improvements.

Overall, community plans or strategies complement the concept of the proposed build alternatives, and there are no material distinctions in impacts to land use proposed by the core communities between Alternatives 203 and 402. Either communities have already included the proposed transportation project, or they will include the project in their plans if the project becomes a reality. In all cases, the design aspects of the final system of improvements will require consideration of several designs to fit the needs of the various communities. Besides the local planning issues, the proposal to construct the Elgin O'Hare Expressway has been part of the region's long-range plan since the late 1960s, and the proposal to construct an O'Hare West Bypass extending from I-294 to I-90 has been part of the regional plan since the 1990s. For that reason, the communities have had the opportunity to consider and plan for compatible land uses near the proposed facilities. Further, over the years (in particular, when the existing section of the Elgin O'Hare Expressway was being designed and built), some of the right-of-way along the Thorndale Avenue corridor was purchased in anticipation of a future upgraded roadway. This has enhanced the possibility that future land use and development would be compatible with a future upgraded roadway facility.

4.1.3.2 Airspace Compatibility

The FAA regulates airspace and clearance requirements near airport operations. Clearance requirements control the height of structures or objects in aircraft operating areas. The FAA encouraged early review of the proposed transportation improvements and their possible conflicts with controlled air space. Early review is voluntary and was considered preliminary, with the object of assisting IDOT with future design parameters. Because of the project's proximity to the airport, early coordination was initiated to determine if there were issues of concern regarding airspace. Although the FAA typically conducts airspace reviews (using Form 7460 and required information) for projects much further into design, it agreed that a preliminary 7460 review would be beneficial to facilitate later the stages of design. The FAA conducted the review and offered the following comments in its response dated March 6, 2009 (included in Appendix F), to be considered as the design/planning process proceeds:

- Four locations were identified as having instrument flight rule (IFR) impacts, which concern departing aircraft initial climb surfaces. Points 9R-PT5 and 9R-PT6 are located near proposed Runway 9R, where Elgin O'Hare Expressway connects to the O'Hare West Terminal. FAA noted that if those points were reduced by the amount of penetration (two to seven feet), there would be no IFR impacts. Failure to do so could result in a reduction of aircraft departure weights allowed by the carriers. Point 4R"G"-PT3 is located along the O'Hare West Bypass South Connection Option G, which was eliminated from further study during the initial alternatives evaluation process. Point 14R-PT3 is located near runway 14R, which will be decommissioned in the near future as part of the OMP.
- The FAA also provided a table of critical points for Part 77 height restrictions. The points show where potential penetrations to Part 77 Approach Surfaces could occur. See FAA memorandum dated March 6, 2009, in Appendix F for the full list.
- Highway light poles must be affixed with visual delineation/safety light for aircraft safety.
- As the project proceeds to design, a formal 7460 Review will be required before actual construction may commence.

Per the March 6, 2009 memorandum, FAA cited no major concerns resulting from the location of the build alternatives, bypass, north connection, or the south bypass connection options. All conflicts described above relate to future highway lighting considerations. The issues identified can all be adjusted in during the detailed design. As planning and design proceed, FAA will review the updated design plans from the standpoint of an airspace use.

4.1.3.3 Consistency with Land Use Patterns

The study area benefits from extensive transportation infrastructure (including proximity to I-90, I-290, and I-294; multiple rail yards, lines, and intermodal facilities; and the O'Hare Airport). Therefore, commercial and industrial land uses are concentrated within the study area. Much of the development just west of the airport took place in the 1950s and 1960s, as regional growth pushed development out to areas where land was available. The presence of O'Hare Airport was a further influence for new or relocating industries that relied on easy access to air and railroad facilities. Industrial development in the study area generally is concentrated in Elk Grove Village and Bensenville, and is adjacent to much of the Thorndale corridor and the Elgin O'Hare Expressway (west of I-290). Within the study area there is little available developable land (five percent of area), so change to land uses would represent either infill or redevelopment of underused properties. Table 4-3 summarizes the land use impacts of the build alternatives.

The common sections of Alternatives 203 and 402 (the Elgin O'Hare Expressway part and the south section of the O'Hare West Bypass) are aligned through areas that are primarily industrial or airport properties. Through the shared roadway sections, neither alternative crosses community centers or residential neighborhoods. There would be changes to property access along the improved routes. Frontage roads would be provided at critical locations along Elgin O'Hare Expressway alignment on both the north and south sides of the upgraded facility to provide local property access. Access to and from the freeway facility would be channeled to specific interchange locations, as identified in Section 3. Freeway overpasses would be provided in several locations along the expressway to provide continuity for travel on crossing roadways, to accommodate bicycle and pedestrian travel, and community linkages. For Alternative 203, the north section of the O'Hare West Bypass is located primarily on O'Hare Airport property, where access is restricted and land use is airport-related. No property access changes would result from the improvements and adjacent land-use would remain unchanged.

Alternative 402 would cause only minor changes to property access along the north leg of the improvement, between the Elgin O'Hare facility and I-90. Property access generally would be modified by consolidating ingress and egress in areas of concentrated development and at intersections. Major roadway intersections would remain at grade, except at the interchange with I-90. Intersections would be upgraded to accommodate high-volume turning movements. To maintain efficient traffic movement and operation at intersections, access to nearby properties may be controlled, possibly by limiting the number of ingress and egress points or by limiting turning movements to right-in and right-out. The partial interchange at I-90 would be upgraded to a full interchange.

Where properties are already developed adjacent to the proposed improvement (which is the case for most areas adjacent to proposed project), design details could protect those areas from access issues and barrier effects resulting from an access controlled facility.

TABLE 4-3
Land Use Impacts per Build Alternative and South Bypass Connection Option

	Compatibility with Land Use Patterns	Consistency with Land Use Plans and Policies
Alternative 203	The Elgin O'Hare Expressway segment is routed through an area where land use anticipates a future high-type transportation facility. Industrial and commercial uses will benefit from an upgraded facility and improved access. Much of the O'Hare West Bypass (middle section) would be on O'Hare Airport property reserved for a roadway corridor. No land use changes would occur on airport property. The roadway segments not on airport property would be within the Bensenville Yard. It is not expected that changes to land use would occur as a result of placement of the roadway in the vicinity of that property.	The six-core communities' plans or stated policies support and reflect eventual presence of the improved transportation facilities.
Alternative 402	The Elgin O'Hare Expressway segment is routed through an area where land use anticipates a future high-type transportation facility. Industrial and commercial uses will benefit from an upgraded facility and improved access. Much of the O'Hare West Bypass (south section) would be on O'Hare Airport property reserved for a roadway corridor. No land use changes would occur on airport property. The roadway segments not on airport property would be within the Bensenville Yard. It is not expected that changes to land use would occur as a result of placement of the roadway near that property. O'Hare West Bypass (north section) would be an upgraded arterial facility on Elmhurst/York Road. Industrial and commercial uses would benefit from upgraded roadway facility.	The six-core communities' plans or stated policies support and reflect eventual presence of these improved transportation facilities.
Option A	Adjacent lands are industrial to the east and commercial/light industrial/residential/park to the west. This alignment, which is on the eastern fringes of the community, avoids major disruption or compatibility issues, but it would require the use of extensive design features to soften the effects especially to the neighboring residential area. Improved access to this area would potentially benefit new investment in industrial and commercial uses.	While not explicitly stated in its plan documents, the Village of Bensenville has expressed opposition to South Bypass Connection Option A. The Village stated its concerns for Option A at the March 11, 2009, Public Meeting, as well as at one-on-one meetings conducted with the Village following the public meeting. The Village's position is that Option A would site a new freeway corridor adjacent to residential areas and displace remaining commercial and industrial properties along County Line Road.
Option D	Adjacent industrial lands would benefit from improved access (aside from those directly impacted).	While not stated in its plan documents, the Village of Franklin Park has expressed support for a south bypass connection and favors Option A.

Although both build alternatives are compatible with the core communities' comprehensive plans and adjacent land uses, coordination and review by communities directly affected by the improvements would be required at each successive design phase.

Both Options A and D involve construction of a tunnel under the western Bensenville Yard, and then extending east on the south edge of the facility. This alignment location is compatible with existing uses at the rail yard and avoids displacement of any existing track. It would require the relocation of the (no longer used) roundhouse and machine shop. Table 4-3 summarizes the land use impacts for the south bypass connection options.

Option A on County Line Road runs through an industrial area. The buildings on the east side of County Line Road (which generally would not be affected) are large industrial facilities, whereas those on the west side of the roadway (which would be affected) tend to be small industrial/commercial facilities. Uses just west of the proposed improvements tend to be residential and park uses.

Option D, which extends south along the east side of the UP rail tracks, is aligned through an existing and antiquated industrial area before connecting at I-294.

4.1.4 Environmental Justice

This subsection describes the potential for disproportionate impacts to low-income and minority populations that could occur with the build alternatives. The assessment included a technical analysis to determine potential effects and the use of public involvement activities that included all residents and population groups in the study process. It did not exclude anyone based on income, race, color, religion, national origin, sex, age, or handicap. For each alternative, the influence area is defined by the census tracts bordering the proposed improvements. A disproportionate impact to these populations exists when they bear more than their "fair share." An analysis of these populations showed that, compared to the general population, there would be no disproportionate impact to low-income populations (in accordance with the U.S. Department of Health and Human Services Poverty Guidelines) or minority populations within the influence area of the alternatives.

Demographic and income characteristics were compiled for the census blocks and block groups, respectively, for the 2000 census within each alternative corridor and combined to represent the residential nature of each alternative and south bypass connection option. This information, along with similar information for DuPage and Cook counties and the State of Illinois, is presented in Tables 4-4 and 4-5 for comparison purposes. Information for individual block groups and blocks within which displacements would occur were reviewed to determine whether there are locations along the proposed improvements with a high percentage of minority populations or families with income levels below the U.S. Department of Health and Human Services Poverty Guidelines.

Alternative 203 lies within 318 census tract blocks. Minority residents account for 26.7 percent of the Alternative 203 area (see Exhibit 4-3A). This percentage is similar to the statewide average, lower than the Cook County average, but higher than DuPage County. Alternative 402 lies within 279 blocks. Minority residents account for 22.9 percent of the Alternative 402 area. This is higher than DuPage County but lower than Cook County and the State of Illinois percentages.

TABLE 4-4
Comparison of Build Alternative and South Bypass Connection Option Demographic Characteristics to Those of DuPage County, Cook County, and the State of Illinois

Race	Alt. 203	Alt. 402	Option A	Option D	DuPage County	Cook County	State of Illinois
White	12,303 (73.3%)	10,245 (77.1%)	185 (76.4%)	55 (76.4%)	759,924 (84.0%)	3,025,760 (56.3%)	9,125,471 (73.5%)
Black or African American	498 (3.0%)	438 (3.3%)	0 (0.0%)	0 (0.0%)	27,600 (3.1%)	1,405,361 (26.1%)	1,876,875 (15.1%)
American Indian and Alaska native	60 (0.4%)	53 (0.4%)	0 (0.0%)	0 (0.0%)	1,520 (0.2%)	15,496 (0.3%)	31,006 (0.2%)
Asian	1,920 (11.4%)	1,133 (8.5%)	26 (10.7%)	9 (12.5%)	71,252 (7.9%)	260,170 (4.8%)	423,603 (3.4%)
Native Hawaiian and other Pacific islander	13 (0.1%)	10 (0.1%)	0 (0.0%)	0 (0.0%)	217 (0.0%)	2,561 (0.0%)	4,610 (0.0%)
Other race	1,462 (8.7%)	1,063 (8.0%)	21 (8.7%)	8 (11.1%)	28,166 (3.1%)	531,170 (9.9%)	722,712 (5.8%)
Two or more races	518 (3.1%)	343 (2.6%)	10 (4.1%)	0 (0.0%)	15,482 (1.7%)	136,223 (2.5%)	235,016 (1.9%)
Total population	**16,774**	**13,285**	**242**	**72**	**904,161**	**5,376,741**	**12,419,293**
Percent minority	**26.7%**	**22.9%**	**23.6%**	**23.6%**	**16.0%**	**43.7%**	**26.5%**
Hispanic population (any race)	24.8%	21.4%	19.0%	19.4%	9.0%	19.9%	12.3%
Average household size	2.5	2.4	2.4	2.3	2.7	2.7	2.6

Source: U.S. Bureau of the Census, 2000.

TABLE 4-5
Comparison of Build Alternative and South Bypass Connection Option Income Characteristics to Those of DuPage County, Cook County, and the State of Illinois

	Alt. 203	Alt. 402	Option A	Option D	DuPage County	Cook County	State of Illinois
Total population	**57,784**	**49,169**	**13,857**	**10,562**	**904,161**	**5,376,741**	**12,419,293**
1999 median family income	$64,418	$65,902	$59,610	$57,786	$79,314	$53,784	$55,545
Average family size	4.0	4.0	4.6	4.6	3.3	3.4	3.2
Poverty status	5.7%	5.0%	7.2%	7.8%	3.6%	13.5%	10.7%

Source: U.S. Bureau of the Census, 2000.

Census blocks with higher percentages of minority residents than the state average are located throughout the study area. Census blocks within DuPage County with minority percentages higher than the County are spread across the study area as well. Census blocks within Cook County with minority percentages higher than the County are located mostly along the I-90 corridor where Alternative 203 improvements extend farther (west and east) than Alternative 402 improvements. The Asian population makes up the highest percentage of minorities under both alternatives. Census blocks consisting of a higher percentage of Asian population than the county and state averages are distributed at locations along the western portion of the Elgin O'Hare Expressway, the area southwest of O'Hare Airport, and north and west of the I-90 interchange at Elmhurst. The notable difference between Alternatives 203 and 402 are the additional census blocks with higher than average percentages of Asian residents along Alternative 203, where it extends farther west along I-90 than Alternative 402. Census block data were further analyzed in areas where displacements would occur. Displacements from Alternatives 203 and 402 occur in 18 and 22 census blocks, respectively, three of which have higher minority percentages than the state or county they are located and are common to both alternatives.

The U.S. Department of Health and Human Services defined the 2009 poverty guideline for a family of four (the average family size for census tract block groups in the study area) at $22,050. Alternatives 203 and 402 lie within 33 and 27 census tract block groups, respectively (see Exhibit 4-4). The median family income for families in Alternative 203 census trace block groups is $64,418 and the median family income of the Alternative 402 area is $65,902, both of which are much higher than the poverty threshold and exceed the median family income levels of Cook County and the State of Illinois (although they are lower than DuPage County) (see Table 4-5). No block group where displacements would occur has a median family income below the 2009 poverty guideline. One block group has a median family income slightly below the 2009 poverty guideline for the average family size of that block group and is common to both alternatives. However, the residential portion of the block group does not intersect with and is not proximate to the Alternative 203 footprint.

Based on the evaluation of the demographic and income characteristics in the study area, neither alternative has the potential to exert high or disproportionate adverse impacts on minority or low-income populations. Census block groups and blocks with minority populations are distributed across the study area; therefore, it cannot be concluded that improvements causing access changes or displacements are confined to a minority population in a particular location. Conversely, improvements causing displacements and access changes are proposed in locations without minority or low income populations. Local access would be maintained in nearly all locations by means of frontage roads (e.g., Thorndale Avenue). Thus, local trips would not require indirect or circuitous travel. Though employees would be displaced as a result of business impacts, the potential for relocation in the proximate area is high and therefore, is not expected to adversely affect any employees living and working in this area. Therefore, it cannot be concluded that minority or low income populations will bear more than their fair share of impacts.

Options A and D are located within 53 and 50 census tract blocks, respectively. Of the census blocks within the options, six blocks within Option A and three within Option D are populated; all populated census blocks are located within DuPage County along the west side of County Line Road. The percentage of minority residents for both options is 23.6 percent—higher than in DuPage County but below the State of Illinois or Cook County (see Table 4-4 and Exhibit 4-3A). As with the alternatives, the highest percentage of the minority population is Asian. Under Option A, displacements would occur in three populated census blocks, only one of which has a minority population. All displacements under Option D would occur in nonpopulated census blocks. The percentage of residents of Hispanic origin in these census tract blocks is also higher than DuPage County or state percentages. Two census blocks have Hispanic populations higher than DuPage County or state percentages, one of which would experience displacements.

Options A and D are located within 10 and eight census tract block groups, respectively (see Exhibit 4-4). Median family incomes of the Option A and D areas are $59,610 and $57,786, much higher than the poverty threshold and exceeds the median family income levels of Cook County and the State of Illinois (although it is lower than DuPage County). No individual block group along these options has a median family income below the 2009 poverty guidelines.

Based on the evaluation of the demographic and income characteristics in the study area, neither option has the potential to exert high or disproportionate adverse impacts on minority or low-income populations. No low-income population is located along the south bypass connection options. The residential population within the census blocks along the proposed options is very low (only 11 percent of census blocks along Option A and six percent along Option D are populated). The percentage of minority residents is the same for both options and slightly higher than the DuPage County average but lower than the State average. The percentages of Hispanic residents along both options are higher than for both DuPage County and the state. However, displacements would occur (under Option A) in only one census block with a higher percentage of Hispanic residents than the county or state averages. Further, access changes and improvements are spread across the proposed connection options and would be experienced by minority and nonminority populations alike. Local access would be maintained in most all locations by means of frontage roads (e.g., County Line Road). Thus, local trips would not require indirect or circuitous travel. Though employees would be displaced as a result of business impacts, the potential for relocation in the proximate area is high and, therefore, not expected to adversely affect employees living and working in the area. Therefore, it cannot be concluded that minority populations will bear more than their fair share of impacts.

4.1.5 Economic Impacts

The build alternatives have a varied impact upon the study area in terms of beneficial and adverse impacts to businesses, employment, and taxes.

4.1.5.1 Beneficial Impacts Resulting from Improved Access

The build alternatives address purpose and need issues identified early in the environmental process:

- Improve local and regional travel
- Improve travel efficiency (e.g., better access)

The proposed transportation improvements are expected to improve access and opportunities to industrial and commercial properties, which would enhance the possibility of redeveloping underused property. Both build alternatives would improve access and shorten travel times to industrial areas within the study area. More than 40 percent of the study area is more than 10 minutes driving time from interstate facilities, which is considered a competitive disadvantage to many industrial and commercial properties in the area.

Both build alternatives would provide improved access and travel benefits throughout the study area. The proposed build alternatives would assist in shifting nonlocal travel from arterial roadways to higher capacity roads, and to some degree shift automobile travel trips to transit, thus reducing travel on local roadways. Construction of a freeway would relieve local roadways of through traffic that use roads throughout the study area. It would provide the appropriate facility for the nonlocal trips.

For the common elements of the build alternatives, the proposed improvements would enhance access to the study area with an upgraded and extended Elgin O'Hare Expressway that would provide a freeway with nine interchanges (four existing, five new) throughout its length. The improvements would maintain full access at all major crossings on existing Thorndale Avenue. Minor crossings would be maintained under the proposed Elgin O'Hare Expressway facility to maintain community and business connectivity across the freeway and provide access to industrial areas at key interchange locations.

Improved access would strengthen the competitive position of a thriving industrial area, which could lead to additional investment in redeveloping older or obsolete structures and modernizing the industrial parks. Improvements to the O'Hare West Bypass (both north and south sections) would enhance access[3] to the west side of O'Hare Airport and industrial businesses in the area with a facility that provides the following benefits:

- An upgraded interchange at Elmhurst Road and I-90 (both alternatives)
- An interchange at Touhy Avenue/IL 72, and at Pratt Street/Devon Avenue, providing access to the north (Alternative 203)
- An interchange at IL 19 (both alternatives)
- An interchange to Franklin Avenue from the south (both south bypass connection options)
- Improved access from Franklin Avenue/Green Street to Irving Park Road on a new Taft Road bridge over the Bensenville Yard

4.1.5.2 Beneficial Economic Impacts

Dollars invested in transportation flow through all sectors of the economy. Such investments spur increased jobs, income, profit and tax revenue, and provide an economic stimulus far exceeding the original investment. This transportation investment not only will benefit the local economy by providing needed infrastructure; it also will benefit the economy and increase economic output through a multiplier effect. The project will employ construction workers and their suppliers. It will stimulate employment in other sectors of the economy to support those workers, such as medical facilities, laundries, restaurants, and other service industries throughout the area. These multiplier effects were estimated using IMPLAN PRO.[4] The model estimates economic impacts by tracing spending and consumption in various economic sectors. By their nature, total economic impacts are greater than initial project costs where the magnitude of the increase is termed the *multiplier effect.*

[3] All interchange modifications or new interchanges will be approved by the FHWA during review of access justification reports, which would be completed in subsequent design phases.

[4] IMPLAN is a modeling system originally developed by the U.S. Forestry Service in the late 1970s. Today, the Minnesota IMPLAN Group (MIG Inc.) owns the copyright and distributes data and software. It is probably the most widely used economic impact model in existence. IMPLAN comes with databases containing the most recently available economic data for geographic areas from a variety of sources.

The estimate of economic impacts from each alternative's construction activities on the regional economy[5] was measured in terms of value added and employment. The following construction cost estimates were used (2009 dollars):

- Alternative 203[6]: $3.0 billion for construction and $660 million for right-of-way[7]
- Alternative 402: $2.3 billion for construction and $473 million for right-of-way

It was assumed the construction costs would be evenly spread over a three-year period.[8]

Table 4-6 details the results of the analysis. Economic impact of Alternative 203, with construction costs of $1.0 billion per year, would result in creation of 9,200 jobs per year in the region (during the three years of construction) in the highway construction industry, and a total of 21,600 jobs per year (during the three years of construction), including those in other services and industries (benefits accrue to all industries throughout the regional economy). Total value added per year would be an estimated $1.6 billion, translating to $4.8 billion over the three-year period. For perspective, the value added resulting from the project is roughly one percent of the value added in the region (the Chicago MSA plus Kenosha County, Wisconsin), which is $479 billion. Value added is the net measure of the economic contribution of an industry to the regional economy less the intermediate goods and services used.

TABLE 4-6
Economic Impacts from Construction [a]

	Alternative 203	Alternative 402
Construction costs total	$3.0 B	$2.3 B
Construction costs per year	$1.0 B	$770 M
Total value added per year	$1.6 B	$1.3 B
Total value added	$4.8 B	$3.9 B
Jobs directly[b] created per year	9,200	7,000
Total jobs[c] created per year	21,600	16,600

[a] The economic benefits from construction (value added and jobs created) are for the region (the Chicago MSA plus Kenosha County, Wisconsin).
[b] These are jobs related to construction of the transportation improvement.
[c] These include jobs in all sectors of the economy that are created as a result of the initial investment.

Alternative 402, with construction costs of $770 million per year, would result in creation of 7,000 jobs per year in the highway construction industry, and a total of 16,600 jobs annually in the region. Total value added per year would be an estimated $1.3 billion, translating to $3.9 billion over the three-year period.

4.1.5.3 Employment Loss

The build alternatives would affect commercial and industrial structures within the proposed footprint, as discussed in subsection 4.1.2, causing the displacement of businesses and their employees. Employee estimates for displaced businesses range from two to 174 workers per business; no major employers will be displaced as a result of the proposed

[5] For this analysis, the region included the Chicago MSA (Cook, DuPage, Kane, Lake, McHenry, and Will counties) and Kenosha County, Wisconsin.

[6] Construction costs for Alternatives 203 and 402 include Option D. Option D was used as a representative south bypass connection option and presents the "worst case," as its construction costs are higher than those for Option A.

[7] Right-of-way costs typically are treated as transfer payments and therefore do not contribute to an increase in economic activity in terms of jobs and value added.

[8] Three years is the anticipated construction time for this project.

improvements. Communities affected will incur a reduction of 1.90 percent or less in their employee bases (see Table 4-7).

TABLE 4-7
Employee Loss per Community by Build Alternative and South Bypass Connection Option

Alternative	Employees per Community[a]	Employees Displaced	Employment Loss (%)
203			
Des Plaines	60,359	158	0.26
Itasca	31,374	28	0.09
Bensenville	29,903	96	0.32
Elk Grove Village	61,121	10	0.02
Total	**182,757**	**292**	**0.16**
402			
Itasca	31,374	28	0.09
Bensenville	29,903	96	0.32
Elk Grove Village	61,121	5	0.01
Total	**122,398**	**129**	**0.11**
Option A			
Bensenville	29,903	316	1.06
Franklin Park	60,359	76	0.13
Northlake	10,934	208	1.90
Total	**101,196**	**600**	**0.59**
Option D			
Bensenville	29,903	356	1.19
Franklin Park	27,474	521	1.90
Northlake	10,934	34	0.31
Total	**68,311**	**911**	**1.33**

[a] *Source:* CMAP, 2006.

The economic impacts of the employee displacements include the loss of earned wages, further employment loss in the region, and loss of added value to the affected industry. The economic impact to the region from displaced businesses and employees was estimated using the IMPLAN model (see Table 4-8). Because it is beyond the scope of this project to investigate whether or not the potentially displaced businesses would relocate in the area, the analysis is conservative and reflects the "worst case" in that it assumes none of the businesses and their employees will relocate in the region.

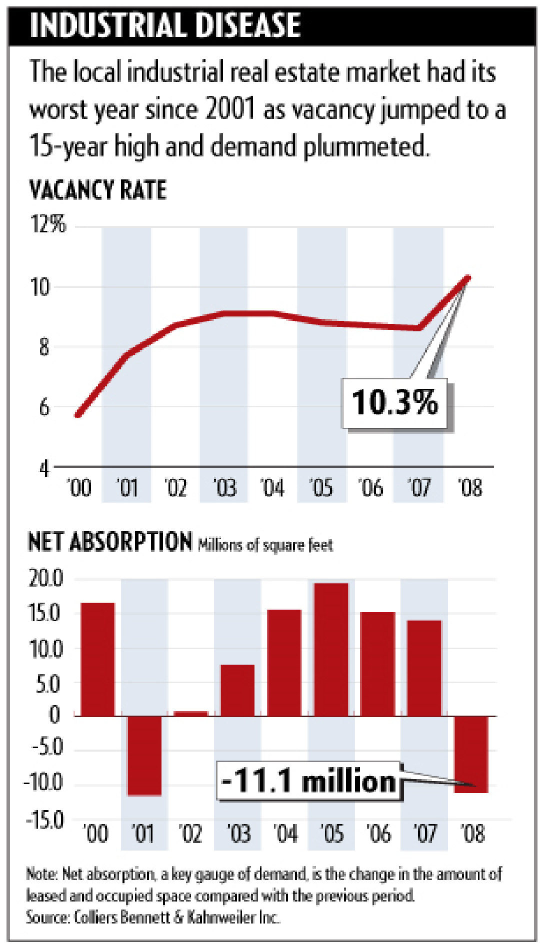
Alternative 203 would directly affect 292 employees by displacing 12 businesses. IMPLAN predicts their employment could ultimately affect 692 jobs in the region. The direct loss in employee compensation is $13.7 million, or $46,900 per employee. Alternative 402 would directly affect 129 employees by displacing eight businesses. Their displacement ultimately affects the employment of 277 workers in the region. The direct loss in employee compensation is $4.7 million, or $36,000 per employee. The loss in total value added is $20.1 million.

TABLE 4-8
Worst Case Economic Impacts from Employee Displacement by Build Alternative and South Bypass Connection Option (2009 $)

	Alternative 203	Alternative 402	Option A	Option D
Employees directly displaced	292	129	600	911
Total employees displaced	692	277	1,460	2,939
Direct employee compensation lost	$13.7 M	$4.7 M	$34.1 M	$61.9 M
Total value added lost	$54.0 M	$20.1 M	$126.0 M	$287.2 M

Source: IMPLAN, 2009.

Table 4-8 lists the results from the IMPLAN analyses for Options A and D. The direct loss of 600 employees under Option A ultimately affects the employment of 1,460 workers in the region. The direct loss in employee compensation is $34.1 million, which averages $57,000 per employee. The loss in total value added is $126.0 million. The displacement of businesses by Option D results in the loss of 911 employees. Their displacement ultimately affects the employment of 2,939 workers in the region. The direct loss in employee compensation is $61.9 million, which averages $68,000 per employee. The loss in total value added is $287.2 million.



4.1.5.4 Business Relocation and Labor Absorption Potential

The effects of employment loss assumed a "worst case" whereby none of the businesses and their employees will relocate in the region. Although the businesses presumably selected their specific locations for some comparative advantage (e.g., low rent, access to nearby businesses as either clients or suppliers), it does not appear that any businesses are tied to a specific location, as in the case of a gravel mining operation.

Therefore, the affected businesses have the opportunity to readily relocate. An impediment may be the lack of a desirable location and site. It is beyond the scope of this analysis to determine whether a business will choose to relocate, but market conditions suggest the availability of industrial real estate in the Chicago area is the highest in 15 years (Baeb, 2009). This suggests that displaced businesses that wish to relocate within the region should have sufficient locations from which to choose.

The potential for displaced workers to be absorbed into the workforce is a function of the local and national labor market conditions, which are important determinants of employment outcomes. Personal characteristics, household circumstances, and ascribed skills are also important, as employers use these attributes to screen potential recruits.

4.1.5.5 Tax Revenues

Tax revenues for affected taxing jurisdictions (e.g., municipalities, townships, fire department districts, etc.) will decrease from the conversion of private property to transportation use. Table 4-9 is a summary of tax revenue loss by alternative and south bypass connection option within each community. Tax revenues from 2007 were used to complete the analysis.

TABLE 4-9
Tax Revenue Loss per Alternative and South Bypass Connection Option (2007 $)

	Alternative 203	Alternative 402	Option A	Option D
Bensenville	$151,055	$161,086	$150,913	$419,590
Des Plaines	$978,813	$276,502	$0	$0
Elk Grove Village	$259,780	$198,387	$0	$0
Elmhurst	$0	$0	$27	$27
Franklin Park	$0	$0	$587,603	$1,777,237
Hanover Park	$4,474	$4,474	$0	$0
Itasca	$59,650	$59,650	$0	$0
Mount Prospect	$13,681	$13,681	$0	$0
Northlake	$0	$0	$543,404	$434,105
Roselle	$18,506	$18,506	$0	$0
Schaumburg	$48,254	$48,254	$0	$0
Wood Dale	$44,225	$44,225	$0	$0
Unincorporated	$222,351	$67,859	$2,621	$15,357
Total	$1,800,789	$892,624	$1,284,568	$2,646,306

4.1.6 Public Facilities

A review of publicly available information found that no fire stations, hospitals, or places of worship would be directly affected by the proposed improvements. Alternatives 203 and 402 would affect a Chicago Police Department K-9 Training Center on the north side of Touhy Avenue between Elmhurst and South Mount Prospect Roads. The footprints for Alternatives 203 and 402 potentially encroach upon the property of Medinah Intermediate School on Medinah Road (see Exhibit 4-1B). At that location, Medinah Road would be widened from two to three lanes in each direction. Only the landscape strip between the school and the sidewalk would be shortened. No structures or activity centers on the property would be impacted, and the sidewalk would be replaced. In addition, Options A and D both would displace the Northlake water tower on the east side of I-294.

School bus routes and emergency response routes are not expected to be adversely affected. Rather, movement is expected to be enhanced by the diversion of vehicles from lower type facilities onto higher type facilities or frontage roads and by the addition or improvement of access points to and from higher type facilities.

4.2 Water Resources and Quality

4.2.1 Groundwater Resources

This analysis focuses on potential effects of the build alternatives to community and private water supplies. The communities that will be affected by the build alternatives all receive their drinking water supply from Lake Michigan; therefore, impacts to their drinking water are not anticipated. However, based on available data from IEPA and ISGS, well locations mapped within the alternative footprints must be considered.

Every community near to the proposed build alternatives has municipal wells. The active wells are used for irrigation, for water supply at parks, or other facilities that do not have a Lake Michigan water supply. Some of the wells are remnants from pre–Lake Michigan water supply and are kept operational in case the Lake Michigan water supply is compromised. Similarly, private wells are used for various purposes; not every owner is on Lake Michigan water, and therefore, wells may be used to provide potable water.

No sole source aquifers, as defined by section 1424(e) of the Safe Drinking Water Act, are located in Illinois (USEPA, 2008). No measurable change to the available groundwater supply is expected due to the build alternatives; the additional impervious area associated with the build alternatives would represent a small reduction in potential recharge area that would likely be mitigated by construction of the stormwater management basins.

The project will not create any new potential routes for groundwater pollution or any new potential sources of groundwater pollution as defined in the Illinois Environmental Protection Act (415 ILCS 5/3, et seq.). Accordingly, the project is not subject to compliance with the minimum setback requirements for community water supply wells or other potable water supply wells as set forth in 415 ILCS 5/14, et seq.

Noncommunity water supply wells, private water wells, and community water supply wells near the build alternatives and the south bypass connection options (see Tables 4-10 and 4-11, respectively) have a potential risk for contamination from roadway runoff. The potential for contaminating groundwater supply wells depends on well construction, proximity to pollutant sources, and geological conditions. It is expected that well impacts near the project will be minimal because of the generally clayey soils with low permeability above the aquifers, controlled roadway drainage pattern (e.g., stormwater conveyed/ captured by curb and gutter, storm sewer, and open ditches), and the dilution of runoff associated with proposed stormwater facilities.

Although roadways and other supporting transportation improvements are not considered a source for groundwater contamination, the following information is provided as documentation of consideration of the setback requirements. The Illinois Groundwater Protection Act (Chapter 415 ILCS Section 55) establishes setback zones for the location of potential sources of pollution, such as underground storage tanks (USTs), dry wells, borrow pits, and deicing salt storage facilities. The minimum setback zone around a community water supply well is 400 feet for protection of groundwater, 200 feet for private wells. Up to a 1,000-foot setback is allowed for community water supply wells, if technical data supports a wider zone. Alternative 203 has six more noncommunity/private water wells within 200 feet and an equal number of community water supply wells within 400 feet when compared to Alternative 402. Options A and D have an equal number of noncommunity/private water wells within 200 feet and no community water supply wells within 400 feet (see Tables 4-10 and 4-11).

TABLE 4-10
Noncommunity and Private Water Wells within 200 feet of the Build Alternatives and South Bypass Connection Options

Alternative/Option	Wellheads within 200 ft
203	66
402	60
Option A	7
Option D	7

Source: ISGS, 2008.

Note: A noncommunity water system is a public water system that is not a community water system. It has at least 15 service connections used by nonresidents or regularly serves 25 or more nonresident individuals daily at least 60 days per year (Illinois Groundwater Protection Act, 415 ILCS 55/9). A private water system is any supply that provides water for drinking, culinary, and sanitary purposes and serves an owner-occupied single family dwelling (Illinois Groundwater Protection Act, 415 ILCS 55/9).

Investigations would be completed during Tier Two environmental studies to define the potential risk of well/groundwater contamination from the build alternatives, as necessary.

4.2.2 Surface Water Resources

This subsection discusses impacts to surface water resources that would be associated with the construction, operation, and maintenance of the alternatives, including the pollutants that could be deposited into receiving waters, potential impacts to water quality, and direct impacts through construction and the placement of fill material. Pollutants, such as sediments, solids, heavy metals (e.g., lead, zinc, and copper), oil and grease, deicing chemicals, and fertilizers/nutrients, may be released into the environment during construction or may accumulate on roadway surfaces and adjoining rights-of-way as a result of motor vehicle operations and maintenance. They can be transported to receiving waters in stormwater runoff.

TABLE 4-11
Community Water Supply Wells[a] near the Build Alternatives and South Bypass Connection Options

Alternative/Option	Wellheads within Setback Distance		
	200 ft	400 ft	1,000 ft
203	6	6	20
402	6	6	17
Option A	0	0	0
Option D	0	0	0

Source: IEPA, 2008b.

[a] A community water system is a public water system that serves at least 15 service connections used by residents or regularly serves at least 25 residents for at least 60 days per year (Illinois Groundwater Protection Act, 415 ILCS 55/9).

Surface water impacts would be associated with the construction, operation, and maintenance of the build alternatives. The build alternatives cross 16 streams or tributaries in four different watersheds (see Exhibits 4-1A through 4-1E, Exhibit 4-5, and Table 4-12). The build alternatives would not cross the West Branch DuPage River or any streams within the West Branch DuPage River Watershed. The number of stream crossings and type of in-stream/streambank work (abutment/pier placement, bank shaping, and temporary haul roads) could result in construction-related impacts. Temporary construction-related impacts could also result even if a waterway is not crossed, depending on the proximity of the activity to the waterway, drainage patterns, and implementation of best management practices (BMPs).

TABLE 4-12
Summary of Stream Crossings by Build Alternative, South Bypass Connection Option, and Watershed

Waterway	Alternative/Option	Tributary Area at Crossing[a] (mi^2)	Total Number of Crossings[b]
Addison Creek Watershed			
Addison Creek	Option A, Option D	5.8	1
Unnamed Tributary to Addison Creek	Option A, Option D	1.3	1
Des Plaines River Watershed			
Bensenville Ditch	203, 402	2.5	1
Silver Creek	Option A, Option D	5.5	1
Salt Creek Watershed			
Salt Creek	203, 402	54.7	1
Spring Brook (Creek)	203, 402	0.4	1
Unnamed Tributary to Meacham Creek	203, 402	0.1	1
Meacham Creek	203, 402	3.1[c]	3
Devon Avenue Tributary	203, 402	0.7	1
Willow Creek Watershed			
Willow Creek	203	5.0[d]	2[d]
	402	5.0[d]	1[d]
Unnamed Tributary to Willow Creek	402	0.3	1
Unnamed Tributary to Willow Creek North Tributary	203, 402	0.2	1
Willow Creek South Tributary	203, 402	1.5	1
Higgins Creek	203	6.4[e]	4
	402	5.7[f]	3
Higgins Creek Tributary A	203, 402	2.1	1
Unnamed Tributary to Higgins Creek	203	0.4[g]	2
	402	0.2[h]	1
Total	203	—	19
	402	—	17
	Option A	—	3
	Option D	—	3

Source: USGS Quadrangle Map; DuPage County FIS (FEMA, 2007), Cook County FIRM (FEMA, 2008); Streamstats (USGS, 2007).

[a] Approximate tributary area was determined using Streamstats. When there are multiple crossings on one stream, the largest approximate tributary area is provided.

[b] Of the watersheds located proximate to proposed EO-WB improvements, no crossings are located within the Weller Creek or West Branch DuPage River Watersheds.

[c] At Medinah Road crossing.

[d] At York Road crossing, where three span land bridge considered one crossing.

[e] At Touhy Avenue crossing.

[f] At I-90 crossing east of Elmhurst Road.

[g] Drainage area provided at I-90 crossing southwest of Lake Briarwood for Alternative 203.

[h] Drainage area provided at I-90 crossing at Oakton Street for Alternative 402.

4.2.2.1 Direct Impacts to Surface Waters

Direct impacts to surface waters would result from construction and the placement of fill to construct the proposed improvements. Construction associated with transportation projects include earthmoving practices (e.g., clearing/grubbing, grading, filling, excavation, etc.) that remove vegetative cover and expose soils. Such activities increase the potential for erosion and sedimentation by exposing disturbed soils to precipitation. Increased impervious surface area and compaction of soils by heavy equipment may result in less stormwater infiltration and additional stormwater runoff. In-stream construction, streambank modification, and placement of structures in the streams could cause minimal increases in turbidity and sedimentation and temporarily alter downstream hydraulics and substrate conditions. Downstream aquatic systems could be temporarily affected by the increases in turbidity and sedimentation. The magnitude of impact would vary based on several conditions, such as proposed type of crossing, stream characteristics, and soil type.

The placement of fill for stream crossings and additional lanes would also have a direct impact on surface waters (see Exhibits 4-1 and 4-5 and Tables 4-12 and 4-13). Improvements associated with the build alternatives primarily will take place adjacent to and within existing transportation corridors. As such, several surface water impacts will be associated with the replacement, widening, or lengthening of existing stream crossing structures.

TABLE 4-13
Summary of Impacts to Surface Waters and Water Basins by Build Alternative, South Bypass Connection Option, and Watershed

	Surface Waters[a] Impacts (acre)[b]				Water Basin[a, c] Impacts (acre)[b]			
Watershed	**Alt. 203**	**Alt. 402**	**Option A**	**Option D**	**Alt. 203**	**Alt. 402**	**Option A**	**Option D**
Addison Creek	0	0	0.1	0	0	0	0.1	0
Des Plaines River	0.1	0.1	0.2	0.2	0	0	0	0.1
Salt Creek	1.0	1.0	0	0	4.7	4.7	0	0
West Branch DuPage River	0	0	0	0	3.3	3.3	0	0
Willow Creek	6.4	3.4	0	0	2.3	2.3	0	0
Total[d]	**7.5**	**4.5**	**0.3**	**0.2**	**10.3**	**10.3**	**0.1**	**0.1**

[a] Surface waters and water basins included a predominance of open water at the time of preliminary field reconnaissance. Open waters may include in-channel wetland and fringe wetland at the perimeter.
[b] Acreages are approximate. Field delineations will be completed during Tier Two environmental studies and may result in different surface water boundaries than those that are mapped (see Section 2, Affected Environment). Impact acreages are rounded and were calculated by determining the water area within the alternative footprint. Impact acreage of 0 acre represents impacts of less than 0.05 acre.
[c] Water basins represent primarily open water stormwater management facilities. The basins are included in the table because of their potentially jurisdictional nature, but several may be exempt from federal regulation following a review of soils data, site records, and/or coordination with the USACE. A jurisdictional determination was completed as part of the OMP; therefore, within OMP limits, only jurisdictional waters are included.
[d] Depending on the source used for the data, the information in this table may vary from the information found in other tables within this document.

It is expected that the crossing structures would match existing/nearby crossing treatments at each location, but the types of crossing structures would be determined as part of Tier Two environmental studies. Efforts would be made to avoid and minimize impacts to surface waters. When impacts are unavoidable, waterway crossings would be enclosed in a culvert, bridged, or otherwise designed to accommodate anticipated high water flows to allow movement of aquatic biota, and not impede low water flows in order to minimize negative effects to the aquatic ecosystem.

The build alternatives have similar footprints and alignments along most of the improvement corridors. Most of the stream crossings are shared between Alternatives 203 and 402 with the exception of three crossings associated with Alternative 203 at the following creeks/ tributaries (one crossing each): Willow Creek, Higgins Creek, and an Unnamed Tributary to Higgins Creek. There is only one location where a tributary is crossed by Alternative 402 but not by Alternative 203; this includes the crossing of an Unnamed Tributary to Willow Creek at Elmhurst Road (see Exhibits 4-1A through 4-1E and Exhibit 4-5). Stream crossing impacts are identical for both Options A and D.

Five of the assessed streams that would be affected by the build alternatives are impaired (on the IEPA 303(d) list),[9] and parts have been channelized or modified. None is listed as a natural area (INAI site) or rated as a higher quality Class A or B stream (based on biological diversity or integrity; see subsection 2.3.1, Water Resource and Watershed Characterization).[10] Alternative 203 would have 19 crossings at 12 creeks and would affect 7.5 acres of stream substrate/surface waters.[11] Alternative 402 would have two fewer crossings than Alternative 203, resulting in 17 crossings at 13 creeks and 4.5 acres of stream substrate/surface waters affected. The impacts to surface waters associated with Options A and D are similar (see Table 4-13). Eleven of the 19 creek crossings for Alternative 203 would be within the Willow Creek Watershed.

Based on available mapped soils data from NRCS (1999), highly erodible soils[12] are mapped as being present, though these soils have a minimal surface area near the proposed stream crossings. However, even though highly erodible soil types have been mapped by the NRCS, most of the soils within the build alternative footprints have been affected by past grading associated with the existing infrastructure and other development or historic farming. Therefore, the mapped soil characteristics may not accurately represent actual conditions.

To protect the downstream aquatic environment, a Storm Water Pollution Prevention Plan (SWPPP) would be prepared that identifies soil erosion and sediment control practices to be used throughout the construction process. The soil erosion and sediment control practices would be implemented before any clearing, grading, excavating, or fill activities. The IDOT *BDE Manual, Chapter 59, Landscape Design and Erosion Control* would be implemented to minimize the release of sediment into the study area streams during construction.

---

[9] One additional stream (Meacham Creek) is impaired for aquatic life use, but it is not listed on IEPA's 2008 303(d) list.

[10] A segment of Meacham Creek southwest of the Medinah Road/Elgin O'Hare Expressway interchange is adjacent to a mapped DuPage County critical wetland.

[11] Impacts to open water stormwater management facilities, summarized in Table 4-14, are assumed to be exempt from federal regulation (subject to regulatory concurrence), and are not discussed further. Refer to 33 CFR Part 328 for the definition of waters of the U.S. and to the *Final Rule for Regulatory Programs of the Corps of Engineers* (*Federal Register*, Volume 51, No. 219, November 13, 1986) for waters generally not considered federally jurisdictional.

[12] Highly erodible soils were considered to be soils mapped to have slopes of four percent or greater.

Compliance with Section 280 of the IDOT *Standard Specification for Road and Bridge Construction* would also be met. Exposed soils adjacent to surface waters, and any work below the ordinary high water mark (of a stream), would be stabilized as soon as practicable.

Increased sedimentation during construction has the potential to cover stream natural substrate, thereby affecting habitat for some species of fish, mussels, and/or macroinvertebrates. The degree of impact would vary based on site-specific conditions, such as the type of crossing structure, stream substrate, stream depth, and stream velocity. With the implementation of BMPs, adverse impacts to aquatic organisms due to siltation, turbidity, and suspended solids are expected to be minimal.

4.2.2.2 Operational Impacts to Surface Waters

Operation includes the use and maintenance of the transportation system. Potential impacts associated with the operation of the build alternatives would result from pollutant accumulation on roadway surfaces, median areas, and adjacent rights-of-way. Pollutants accumulate through use and maintenance of the transportation system, natural processes, and as a result of airborne deposition. Pollutant concentrations are highly variable and are affected by numerous factors, such as traffic characteristics (volume and speed), weather (precipitation and wind), maintenance practices, and adjacent land uses. Roadway runoff transports pollutants that have accumulated on impervious surfaces.

Additional travel lanes and other impervious surfaces would be constructed under both build alternatives. When undeveloped land is converted to impervious surfaces, the volume of stormwater runoff typically increases and stormwater infiltration decreases. Use and maintenance of the additional impervious surfaces would generate and accumulate more pollutants. Table 4-14 compares the added impervious area and required stormwater detention. BMPs to control the quantity and quality of stormwater runoff are discussed later in this subsection and in subsection 4.14.4.

TABLE 4-14
Summary of Detention Parameters by Build Alternative and South Bypass Connection Options A and D

Alternative/Option	Added Impervious Area (acre)	Potential Required Detention[a] (acre/acre-foot)
Alternative 203	304.3	32.8/163.8
Alternative 402	249.4	27.7/138.7
Option A	46.3	3.7/18.6
Option D	47.8	3.8/18.8

[a] Detention requirements were analyzed in accordance with the *Illinois Drainage Manual*, Section 1-302.03 Storm Water Storage." Local ordinance requirements were also considered. For a more detailed description of stormwater detention refer to the Stormwater Detention Analysis Memorandum.

Alternative 203 would result in approximately 55 more acres of additional impervious area than Alternative 402. Both Alternatives have a similar footprint along the Elgin O'Hare Expressway corridor, existing Thorndale Avenue, and at the southwest corner of the OMP future airport limits – resulting in a similar increase in impervious area. The 55 additional acres of increased impervious surface area under Alternative 203 is primarily due to the wider footprint associated with a freeway component that parallels the western limits of the OMP in the Willow Creek Watershed. The increase in impervious area is similar between the two south bypass connection options, with Option D resulting in approximately 1.6 acres more impervious area in the Des Plaines River Watershed than Option A. Detention would be provided to compensate for the increase in impervious area associated with all build alternatives (see Table 4-14).

Highway runoff pollution may affect the quality of receiving waters through shock or acute loadings during storms and through chronic effects from long-term accumulation within the receiving water. The significance of these impacts is site-specific and depends heavily on the characteristics of the highway and the receiving waters. The degree of pollutant loading is linked directly to the amount of roadway traffic. Research indicates few significant impacts for highways with less than 30,000 ADT (Young et al., 1996; Dupuis et al., 1985). Under these conditions, potential impacts are generally short-term, localized, acute loadings from temporary water quality degradation, with few (if any) long-term/chronic effects.

The estimated ADT in 2030 for the build alternatives ranges from 58,700 to 186,400 vehicles for parts of Alternative 203, and 44,200 to 187,800 vehicles for parts of Alternative 402.[13] For both build alternatives, the proposed ADTs associated with the proposed Elgin O'Hare Expressway and the O'Hare West Bypass (highway component) would generally be near the higher end of that range and would include portions of the West Branch DuPage River, Salt Creek, Willow Creek, Des Plaines River, and Addison Creek Watersheds. The proposed arterial improvements to York Road/Elmhurst Road located north of existing Thorndale Avenue in the Willow Creek Watershed, associated with the O'Hare West Bypass component of Alternative 402, would have the lowest proposed ADT (excluding ramps, frontage roads, and other arterial improvements) – at approximately 44,200 vehicles. East of IL 19, in the West Branch DuPage River Watershed, the ADT is near 58,700 vehicles for both build alternatives. Existing ADTs for similar parts of the Elgin O'Hare Expressway, Thorndale Avenue, and York Road/Elmhurst Road range from 14,200 to 87,000 vehicles.[14] For streams receiving runoff along these corridors, the pollutant loading from traffic would be higher and the potential impact could be greater depending upon the stream characteristics and the post construction stormwater BMPs used. No water quality modeling was performed for the Tier One analysis. As necessary, pollutant loading analyses will be completed as part of the Tier Two environmental studies.

In general, existing pollutant concentrations and habitat modifications have affected the water quality of the streams that cross the build alternatives. Five of the streams listed in Table 4-12 (Addison Creek, Higgins Creek, Salt Creek, Spring Brook, and Willow Creek) are 303(d) impaired streams, as defined by the federal CWA and as identified by IEPA (2008a). Refer to Table 2-15 for causes and sources of impairments. Potential causes of impairment for these streams include chloride from maintenance practices, phosphorus, dissolved oxygen (DO), and/or other signature highway runoff pollutants, such as heavy metals and TSS. The present and future ADTs will cause impacts to the study area streams. TMDLs

---

[13] ADT forecasts were obtained from the EO-WB Travel Demand Model and should be used only for planning purposes. Bidirectional ADTs are provided for the proposed Elgin O'Hare Expressway and West Bypass only (including proposed improvements to York Road/Elmhurst Road for Alternative 402); ramps, frontage roads, and other arterial improvements are not included. Design traffic will be provided in Tier Two.

[14] 2007 existing condition ADTs are provided for the Elgin O'Hare Expressway, Thorndale Avenue, and York Road/Elmhurst Road (from Thorndale Avenue to I-90). ADTs were obtained from IDOT's "Getting Around Illinois" Web site (IDOT, 2009).

have been approved by USEPA for the Salt Creek Watershed[15,16] to address chloride and DO,[17] and for the West Branch DuPage River to address chloride (CH2M HILL, 2004b). Chloride used for road deicing is a primary pollutant associated with highway maintenance and is discussed in subsection 4.2.2.3.

Stormwater runoff and highway pollutants could cause further degradation of receiving waters, flooding, erosion, harm/stress to aquatic life, algal blooms, and decreased recreational use/aesthetics. BMPs would be incorporated into the preferred alternative to minimize adverse impacts to the downstream aquatic environment. Water quality would be managed through a combination of stormwater runoff and drainage collection facilities and the implementation of other post-construction BMPs in accordance with state and federal water quality goals of restoring water quality of the impaired/degraded streams. Because of the land use constraints associated with the heavily developed study area, the opportunity to retrofit, or upgrade, stormwater management facilities within the project limits will also be considered. Improvements would be designed so that stormwater runoff would be infiltrated, detained, or treated before discharge to surface waters. Stormwater controls that treat stressors of concern based on TMDLs or typical highway pollutants (e.g., suspended solids/sediment, heavy metals, inorganic salts, aromatic hydrocarbons) and that control the volume of stormwater runoff would be considered in Tier Two environmental studies to reduce pollutant loads to the receiving waters while maintaining the hydrology of the watershed to the extent possible.

As practical, BMP selection during Tier Two environmental studies would include a watershed approach to stormwater management that integrates both water quantity and quality control. Stormwater controls would be designed to meet regulatory requirements to capture and treat the "first flush" water quality volume of a storm, as necessary. The first flush is often referred to as the first one inch of runoff per impervious area in a drainage basin and typically includes a higher concentration of pollutants compared to later during the storm (CMAP, 2008).

In addition to the detention facilities that would be provided to compensate for the increase in impervious area associated with the preferred alternative, other practices such as naturalized basins, vegetated buffers, infiltration basins, and/or bioswales, would be installed where practicable to minimize transport of sediment, heavy metals, and other pollutants to surface waters. Pollutant removal in stormwater basins could be accomplished through gravity settling, assimilation of nutrients, bacterial degradation, and filtration. Vegetated stormwater conveyance channels could be used alone or in conjunction with stormwater basins to remove pollutants by filtering particulates through the vegetation and infiltration into the subsoil, which would remove soluble pollutants. Studies show that BMPs such as infiltration basins, detention basins, and vegetated swales can have a pollutant removal effectiveness of

[15] The Salt Creek TMDLs address segments of the following waterways within the study area: Salt Creek, Addison Creek, Spring Brook, Meacham Creek, and Busse Woods Lake (CH2M HILL, 2004a). Meacham Creek is not on the IEPA's 2008 303(d) list.

[16] The build alternatives cross surface waters that are in the first of three stages of TMDL development to address additional impairments (IEPA, 2008a). Additional TMDLs and other National Pollutant Discharge Elimination System (NPDES) requirements would be followed, as necessary.

[17] The dissolved oxygen (DO) TMDL includes load allocations for carbonaceous biochemical oxygen demand (CBOD), volatile suspended solids (VSS), and ammonia-nitrogen. In general, the DO TMDL recommendations pertain to wastewater treatment plants and dam removal on Salt Creek. Stormwater control for MS4s would be accomplished through the NPDES Phase II General Permit No. ILR40.

90 percent or more for TSS and similarly high removal percentages for other pollutants such as metals. Studies suggest that by controlling TSS, other constituents with the same particle sizes (e.g., metals and nutrients), could also be controlled. Refer to FHWA's *Stormwater Best Management Practices in an Ultra-Urban Setting: Selection and Monitoring* for a summary of water quality BMPs and their pollutant removal effectiveness (Shoemaker et al., 2002).

Based on available data, most of the aquatic species found in the surface waters that cross the build alternatives generally are locally common, widespread, and/or tolerant of urban conditions. Several waters are impaired for support of aquatic life (see Table 2-15). As a result, potential impacts to fishing and other recreational surface water uses near the proposed improvements would be minimal with implementation of BMPs.

4.2.2.3 Maintenance Impacts (Deicing Chemicals)

Seasonal deicing with salt, commonly sodium chloride, along with plowing and other alternative measures, are used to reduce snow and ice build-up on roads. Deicing assists with safe traffic movement by improving road conditions in winter, but road salt application contributes chloride loads to surface waters. Road salt is highly soluble and moves through the environment in solution as runoff, splash, spray, and dust. The General Use Water Quality Standard for chloride in Illinois is 500 milligrams per liter (mg/L).[18] Sodium does not have a numeric standard.

The primary methods of snow and ice removal in IDOT, District One, are plowing and the application of road salt. Two IDOT maintenance yards (Rodenburg and Northside Yards) have snow and ice removal responsibilities for existing roads under IDOT's jurisdiction within the EO-WB build alternatives' footprints. Together, the two maintenance yards spread approximately 19,100 tons of salt in the winter of 2008/2009 and 87,400 tons of salt over the last five winter seasons (2004/2005 through 2008/2009).

Parts of the build alternatives are within the Salt Creek, Addison Creek, and/or West Branch DuPage River Watersheds, which have a chloride TMDL.[19] A Stage 1 TMDL Report for chloride has also been prepared for Higgins Creek.[20] The IEPA's General National Pollutant Discharge Elimination System (NPDES) Permit No. ILR40 requires that small Municipal Separate Storm Sewer System (MS4) permittees, such as IDOT, implement TMDLs, as applicable.[21]

Of the creeks crossed by the EO-WB footprints, a chloride TMDL is in effect for Salt Creek and Addison Creek; however, the TMDL and BMPs to address chloride loads can be applied to protect other streams located downstream of the proposed EO-WB transportation improvements, as well. Elevated levels of chloride in receiving streams are seasonal and occur predominantly during the winter months as a result of road salt application

[18] Title 35 Illinois Administrative Code, Subtitle C, Chapter 1, Part 302.

[19] The Salt Creek TMDL includes Addison Creek. Based on the Salt Creek TMDL report (CH2M HILL, 2004a), Salt Creek and Addison Creek are listed for TDS/conductivity impairments. Chloride constitutes a significant part of TDS/conductivity and chloride management provides a means to control exceedances of the TDS/conductivity standard.

[20] Refer to the Des Plaines River/Higgins Creek Watershed Stage 1 TMDL Report (AECOM, Inc., 2009) for Higgins Creek. In addition to chloride, the TMDL for Higgins Creek is also being prepared for dissolved oxygen and fecal coliform.

[21] Road deicing is necessary for public safety. Thus, the implementation of the chloride TMDL by MS4s should be based on prudent and practicable road salting BMPs to the extent that the safety of the public is not compromised (CH2M HILL, 2004a).

(CH2M HILL, 2004a). Though road deicing is necessary, the overall goal of the TMDL is to reduce chloride loading from winter road salting applications.

BMPs and recommendations for chloride reduction are provided in the chloride TMDLs and in the *Chloride Usage Education and Reduction Program Study* published by the DuPage River Salt Creek Workgroup (CDM, 2007). Further evaluation of these practices would be included in Tier Two environmental studies. BMPs to reduce chloride loads could include:

- Public education and employee training
- Storage and handling operations (e.g., perform on impervious surfaces, completely cover salt piles, control stormwater runoff, etc.)
- Use of digitally-calibrated spreaders to minimize over application
- Consideration of alternative non-chloride products (e.g., acetate deicers or corn and beet derivatives)
- Implementation of pre-wetting and anti-icing programs throughout the watershed

IDOT implements some of these BMPs (e.g., having a written snow plan, utilizing digital spreaders, etc.). The use of alternative deicing agents could be considered in relation to cost, applicability, feasibility, and public safety. Costs for sodium chloride alternatives tend to be substantially higher, and those alternatives cannot be used in all conditions or locations. In addition, alternatives may present potential adverse water quality impacts that must be taken into consideration.

All the alternatives will result in increased pavement area. Studies show that 60 to 80 percent of the salt runs into surface water, 15 to 35 percent occur as splash, and up to three percent occurs as spray (Frost et al., 1981; Diment et al., 1973; Lipka and Aulenbach, 1976; Sucoff, 1975). In the winter, deicing salt moves primarily through the environment adjacent to the preferred alternative as surface runoff. It also percolates into the soil profile. The highest salt concentrations generally are found near the roadway shoulders because of plowing and splash and can have detrimental environmental effects. Salt deposition and concentrations adjacent to roadways decrease as the distance from a treated roadway increases (Kelsey and Hootman, 1992; Williams et al., 2000). Sodium chloride can decrease soil permeability and raise soil pH, which could adversely affect soil fertility and plant growth (Transportation Research Board, 1991).

High salinity levels may adversely affect sensitive floral communities, particularly wetland plants. Road salt runoff can stress wetland plant communities and may result in reduction of native plant diversity and replacement by more salt-tolerant plant species, such as narrow-leaved cattail (*Typha angustifolia*) and common reed (*Phragmites australis*). Both cattail and common reed are common wetland plant species that can be observed in roadside ditches, stormwater management facilities, and wetlands within and adjacent to the build alternatives.

Surface Runoff. Surface runoff is the primary means of road salt transport following application. Runoff would be directed into roadside ditches and other stormwater management structures/facilities before discharge into receiving waters. Studies of the effects of sodium chloride on fish, aquatic invertebrates, and aquatic plants—including acute and chronic toxicity—indicate that salt does not have significant harmful effects on aquatic biota in large or flowing bodies of water, where dilution takes place quickly (Jones and Jeffrey, 1992). Peak concentrations in waterways could be reduced by using detention basins.

Splash and Spray. Plants, soils, and to a limited extent aquatic biota, could be affected by salt brine splash and spray from the build alternatives. The greatest affect from splash would generally be expected within 45 to 60 feet of the edge of the road in the splash deposition zone (Transportation Research Board, 1991; Public Sector Consultants, Inc., 1993; Williams and Stensland, 2006). Splash could increase soil erosion because of soil impact and subsequent flow concentration on embankments and other slopes. Spray consists of smaller sized droplets than splash and may be deposited further from the roadside. Roadside vegetation (trees, shrubs, ground cover, grasses) may suffer salt injury with drought-like symptoms, such as inhibited growth, leaf discoloration, and defoliation. Some plant species are more susceptible than others (e.g., grasses are generally more tolerant of salt than trees). Vegetative damage generally increases with greater salt usage, traffic speed and volume, and steeper side slopes; vegetative damage generally diminishes as the distance from the road increases (Transportation Research Board, 1991; Public Sector Consultants, Inc., 1993; Xianming et al., 2009).

4.3 Wetlands

This section describes wetland resources potentially affected by the build alternatives. Wetland impacts associated with the transportation improvements include vegetation removal, discharge of clean fill material, and changes to hydrology. Impacts could be either direct or indirect. Direct wetland impacts would result from construction and the placement of fill material to construct the roadways, ramps, and grading for drainage/stormwater management facilities. Indirect impacts could result from changes in hydrologic regime, quality of stormwater runoff, or habitat continuity.

The impacts herein are based on approximate wetland boundaries that were identified through review of available GIS wetland data sources, including the NWI and the DCWI, supplemented by preliminary field reconnaissance.[22] Potential direct wetland impacts were determined by calculating the approximate wetland acreage located within the footprint of each proposed alternative using GIS aerial photographic interpretation. Wetlands not directly affected by the footprint are not counted as affected. In addition to the potential loss of wetland acreage associated with the alternatives, wetland functions and values may also be affected.

Based upon coordination, the USACE, USFWS, and USEPA concurred with the Tier One wetland methodology, wherein the level of detail and field verification was sufficient to support reasonably representative levels of impact for this type of study. The agencies concurred that only direct wetland impacts need be calculated as part of the Tier One study. Indirect wetland impacts will be assessed individually during Tier Two environmental studies.

[22] Wetland data from the OMP was used for parts of the study area that overlapped with the OMP project limits.

A comprehensive wetland delineation and assessment will be completed in Tier Two environmental studies for the preferred alternative to determine exact wetland sizes and locations with respect to the proposed limits of the project improvements. The assessment would provide a qualitative analysis of wetland functions and values, including floristic composition and wildlife habitat presence.

4.3.1 Affected Wetlands

4.3.1.1 Alternatives 203 and 402

Based on preliminary field reconnaissance, up to 79 wetlands would be affected by the build alternatives (see Exhibit 4-6; Appendix G, Exhibit G-1; and Table 4-15). The alternatives have similar alignments that result in impacts at 75 mutual wetland sites. Overall, Alternative 203 would directly affect 38.7 acres of wetland at 79 sites, and Alternative 402 would directly affect 36.1 acres of wetland at 75 wetland sites, or 2.6 acres less than Alternative 203. Relatively small impacts to isolated emergent wetlands (average impact approximately 0.2 acre), isolated wet old fields (average impact about 0.1 acre), and wetland bottom stormwater management facilities (average impact about 0.7 acre) make up most of the individual wetland sites affected by both alternatives.

From an acreage perspective, USACE jurisdictional emergent wetlands have the most impact (average impact roughly 1.5 acres). Under both alternatives, most of the wetland impacts occur in the Salt Creek Watershed followed by the Willow Creek Watershed. See Tables 4-15 and 4-16, and Appendix G for a summary of the wetland impacts.

TABLE 4-15
Wetland Summary by Build Alternative and Watershed

	Impact (acre)[a]			Number of Wetlands		
Watershed[b]	**Alt. 203**	**Alt. 402**	**Difference**	**Alt. 203**	**Alt. 402**	**Difference**
Des Plaines River	0	0	—	2	2	—
Salt Creek	22.4	22.4	—	38	38	—
West Branch DuPage River	0.8	0.8	—	8	8	—
Willow Creek	15.5	12.9	2.6	31	27	4
Total[c]	**38.7**	**36.1**	**2.6**	**79**	**75**	**4**

[a] Impact acreage is rounded; therefore, impact acreages may vary slightly between tables. 0 acre represents impacts of less than 0.05 acre.
[b] Of the watersheds located proximate to proposed EO-WB improvements, direct wetland impacts associated with Alternatives 203 and 402 are not anticipated in the Addison Creek and Weller Creek Watersheds.
[c] Total acreage represents impacts to wetlands, wetland bottom stormwater management facilities, and wetland mitigation sites.

Federally jurisdictional waters of the U.S. (including wetlands) are regulated by the USACE under Section 404 of the CWA. Federally jurisdictional wetlands include wetlands that are adjacent to navigable waters of the U.S. and/or have a direct hydrologic/ecologic connection (i.e., significant nexus) to navigable waters of the U.S. The U.S. Supreme Court Rapanos

Decision[23] established that not all wetland areas are federally regulated by the USACE under the CWA. Consequently a Jurisdictional Determination is required for each wetland to determine its jurisdictional status for permitting purposes. Wetlands found to be isolated because they are not adjacent to navigable waters of the U.S. or do not have a direct hydrologic/ecologic connection to navigable waters of the U.S. are not regulated by the USACE.

TABLE 4-16
Summary of Wetland Community Type Impacts and Regulatory Status by Build Alternative

	Alternative 203			Alternative 402		
Wetland Type[a]	USACE Jurisdictional	Isolated	Exempt[b]	USACE Jurisdictional	Isolated	Exempt[b]
Emergent wetland	12.1 (8)	3.9 (16)	— (0)	11.0 (7)	3.9 (16)	— (0)
Scrub-shrub wetland	0.1 (1)	2.2 (6)	— (0)	0.1 (1)	2.2 (6)	— (0)
Wet old field	4.4 (2)	1.4 (10)	— (0)	4.4 (2)	1.4 (9)	— (0)
Wooded wetland	0 (1)	2.2 (5)	— (0)	0 (1)	2.2 (5)	— (0)
Vegetated drainage ditch/channel	2.4 (8)	0.1 (1)	— (0)	1.4 (7)	0.1 (1)	— (0)
OMP wetlands	0 (2)	0.4 (1)	— (0)	0 (2)	— (0)	— (0)
Wetland mitigation sites	0.3 (4)	N/A	— (0)	0.3 (4)	N/A	— (0)
Wetland bottom stormwater management facility	N/A	N/A	9.1 (14)	N/A	N/A	9.1 (14)
Total	**19.3 (26)**	**10.2 (39)**	**9.1 (14)**	**17.2 (24)**	**9.8 (37)**	**9.1 (14)**

Note: Approximate acreage of wetland impact is provided, with total number of affected wetlands in parentheses. Acreage is based on preliminary field reconnaissance and available GIS wetland resource data. Approximate wetland impact acreage is rounded; therefore, impact acreages may vary slightly between tables. 0 acre represents impacts of less than 0.05 acre.
Jurisdictional status is based on preliminary assessment and is subject to change pending more detailed studies to be completed as part of the Tier Two environmental studies and following a USACE jurisdictional determination. Mitigation sites were assumed to be USACE jurisdictional.

[a] Some wetlands include more than one community type or contained areas of open water. The dominant community type is listed.

[b] Exempt areas include man-made wetland bottom stormwater management facilities where wetland impacts may not be regulated by the USACE and/or IDNR. Subject to regulatory concurrence.

All wetlands, including isolated wetlands, are regulated by the IDNR under the Interagency Wetland Policy Act (IWPA).[24] Within the study area, several wetland bottom stormwater management facilities would be affected by the build alternatives. The manmade wetland bottom basins should be exempt from Section 404 of the CWA and the IWPA requirements, subject to USACE and IDNR approval. See subsection 4.14, Mitigation Concepts and Commitments and subsection 4.15, Permits/Certifications.

Based on a preliminary assessment of adjacency and/or potential significant nexus to navigable waters of the U.S., 10.2 acres of isolated wetland and 19.3 acres of USACE jurisdictional wetland would be affected by the Alternative 203 alignment. Alternative 402

[23] Rapanos et ux., et al. v. United States, 2006.

[24] In addition to federal and state regulations, DuPage County also regulates wetland impacts through the DuPage County Countywide Stormwater and Flood Plain Ordinance (revisions effective August 1, 2008). Any component of the alternatives that may be local non-IDOT roads may be subject to the DuPage County Countywide Stormwater and Flood Plain Ordinance or the pending Cook County Watershed Management Ordinance.

would have similar impacts, resulting in 9.8 acres of isolated wetland impact and 17.2 acres of USACE jurisdictional wetland impact. Thus, Alternative 203 would affect 2.1 acres more USACE jurisdictional wetland than Alternative 402. Both Alternative 203 and Alternative 402 would affect 9.1 acres of wetland bottom stormwater management facilities.

Alternative 203 would affect roughly 2.6 acres more of regulatory wetland (2.1 acres are USACE jurisdictional wetland) than Alternative 402. The 2.6 acres of wetland impact is within the Willow Creek Watershed and attributed primarily to three sites. One site (slightly larger than one acre) is a vegetated drainage ditch that drains to Higgins Creek located on north side of I-90 adjacent to the ISTHA's O'Hare Oasis and Majewski Athletic Complex (Mt. Prospect Park District). A second site (slightly larger than one acre) is an emergent wetland that also drains to Higgins Creek located adjacent to the south side of I-90 at the Arlington Heights Road interchange. The third site (0.4 acre of isolated wetland impact) is within OMP limits adjacent to York Road and north of Thorndale Avenue.

The largest wetland impacts (more than 2.8 acres each) associated with both build alternatives would occur at three locations: northwest of the intersection of Thorndale Avenue and York Road (5.0 acres), at Salt Creek and Thorndale Avenue (3.7 acres), and southwest of the Elgin O'Hare Expressway/Medinah Road interchange (2.8 acres). All three impacts affect wetlands that appear to be USACE jurisdictional. At 5.0 acres, the wetland impact near the intersection of Thorndale Avenue and York Road would be the largest. The wetland would be affected in its entirety. Based on preliminary field reconnaissance, the predominately emergent wetland appears to be of moderate quality, most likely because of its size and functional value: primarily wildlife habitat and flood storage. Given that the surrounding area includes commercial/industrial land uses and O'Hare Airport, wildlife that use the wetland would have to find new habitat within the developed areas or migrate outside the immediate area. Although developed portions of the adjacent O'Hare Airport are unlikely to provide desirable wildlife habitat, potential increased wildlife usage at the airport due to increased wildlife populations or movement of species may be addressed with wildlife deterrent methods. The depressional storage may be lost unless compensated nearby. The wetland is dominated by cattail (*Typha* sp.) and common reed (*Phragmites australis*), but it includes other wetland community types, such as wet old field and wooded wetland. Parts of this wetland are contiguous with Willow Creek South Tributary.

The next largest wetland impact (about 3.7 acres) would take place at Salt Creek and Thorndale Avenue. Approximately 1.6 acres of a wetland bottom stormwater management facility would also be impacted at this location. The potential wetland impacts at Salt Creek include part of a wetland mitigation site at the Wood Dale - Itasca Reservoir (0.2 acre) and part of Salt Creek Marsh Forest Preserve (FPDDC) (0.4 acre). Based on preliminary field reconnaissance, the wetland adjacent to Salt Creek appears to be of moderate quality most likely due to its size, location, and functional value. The wetland is primarily wet old field dominated by reed canary grass (*Phalaris arundinacea*) with eastern cottonwood (*Populus deltoides*). Based on field reconnaissance and available wetland mapping, about two percent of the mapped wetland would be affected. The wetland extends north and south adjacent to Salt Creek beyond the alternative footprints. Thorndale Avenue transversely crosses the wetland. The proposed alternatives would widen the transportation corridor and relocate the roadway edge closer to Salt Creek Marsh Forest Preserve. Coordination with the FPDDC would take place as necessary during Tier Two environmental studies or the Section 404 permit process to minimize potential forest preserve impacts. With the implementation of stormwater quantity and quality control BMPs and the bridge at Salt Creek, impacts to the functions provided by this wetland and the overall aquatic environment/Salt Creek are anticipated to be minimal.

The third of the larger impacts is located southwest of the Elgin O'Hare Expressway and Medinah Road. The wetland is discussed in subsection 4.3.1.3.

4.3.1.2 South Bypass Connection Options A and D

Based on preliminary field reconnaissance, up to four wetlands and two wetland bottom stormwater management facilities would be impacted by Options A and D (see Exhibit 4-6 and Appendix G, Exhibit G-1). Option A would impact three sites, including 0.1 acre wet old field wetland in the Des Plaines River Watershed and 0.1 acre wetland bottom stormwater management facility in the Addison Creek Watershed. Option D would affect five sites in the Des Plaines River Watershed including 0.2 acre wet old field wetland, 0.1 acre emergent wetland, and 0.1 acre wetland bottom stormwater management facility. Both options would affect one isolated wetland within OMP project limits. Relatively small impacts to isolated wetlands and wetland bottom stormwater management facilities make up the individual wetland sites affected under the two south bypass connection options. Based on preliminary field reconnaissance, there would be no impacts to USACE regulated wetlands or to wetlands that would be considered moderate or higher quality. Proposed impacts would occur in lower quality wetland areas dominated by relatively common species or those tolerant of disturbance, including reed canary grass, common reed, cattail, eastern cottonwood, red-rooted spike rush (*Eleocharis erythropoda*), squirrel-tail grass (*Hordeum jubatum*), and sandbar willow (*Salix interior*). Table 4-17 summarizes the potential wetland impacts by south bypass connection option.

TABLE 4-17
Potential Wetland Impacts by South Bypass Connection Options A and D

Wetland ID	Wetland Type[a]	Jurisdictional Status[b]	Watershed	Impact[c] (ac) Opt. A	Impact[c] (ac) Opt. D	Size[c] (ac)	% Impact[c] Opt. A	% Impact[c] Opt. D
WL24.3	OMP wetland	Isolated	Des Plaines River	0	0	0.4	2.7	2.7
WL28.1	Wet old field	Isolated	Des Plaines River	0.1	0.2	0.2	82.4	100
WL29.2	Wet old field	Isolated	Des Plaines River	—	0	0	—	100
WL29.5	Emergent	Isolated	Des Plaines River	—	0.1	0.1	—	100
WLB29.2	Wetland bottom stormwater management facility	Exempt	Des Plaines River	—	0.1	0.1	—	72.7
WLB34.1	Wetland bottom stormwater management facility	Exempt	Addison Creek	0.1	—	0.1	100	—
Total				**0.2**	**0.4**	**0.9**	**—**	**—**

[a] The dominant community type is listed.
[b] Jurisdictional status is based on preliminary assessment and is subject to change pending more detailed studies to be completed as part of the Tier Two environmental studies and following a USACE jurisdictional determination.
[c] Wetland acreages, impacts and percentages are approximate and rounded; "0" represents a value of less than 0.05 acre. Percentages and impact totals for each alternative were calculated before rounding. "—" represents no impact. Acreage is based on preliminary field reconnaissance and available wetland resources as discussed in Section 2, Affected Environment. Wetland boundaries may vary from those that are mapped.

4.3.1.3 Impacts to Mapped Critical Wetland and Mitigation Sites

Based on preliminary field reconnaissance and available wetland resources, Alternatives 203 and 402 both could affect higher quality wetland areas, such as mapped critical wetland and wetland mitigation sites, but Options A and D would not. The DuPage County Countywide Stormwater and Flood Plain Ordinance describes critical wetlands as high quality wetlands that "play crucial roles in storing or conveying flood waters, controlling erosion, maintaining or enhancing water quality, and providing habitat for threatened or endangered species."[25] Based on the DCWI, 142 acres of mapped critical wetlands are within the study area, most of which are avoided by the build alternatives.

Both Alternatives 203 and 402 would affect 2.0 acres of a mapped critical wetland located southwest of the Elgin O'Hare Expressway/Medinah Road interchange. The entire wetland is not mapped as critical. Roughly 2.8 acres (four percent) of the 67.2-acre wetland complex (including both the mapped critical wetland and adjacent wetland area) would be affected by the build alternatives. The wetland complex appears to be USACE jurisdictional and has a direct hydrologic connection to Meacham Creek, which flows through the complex. The direct impacts to the wetland complex would be partially within the Medinah Wetlands Forest Preserve and partially within a parcel proposed for acquisition by the FPDDC. Based on preliminary field reconnaissance, this is a primarily emergent wetland dominated by cattail, common reed, and reed canary grass. Impacts to the wetland are expected to be associated with lower quality edge habitat adjacent to the Elgin O'Hare Expressway, and no impacts are proposed within potentially higher quality interior wetland habitat. No fragmentation of the critical wetland habitat would occur. Recreational or educational amenities would not be affected as a result of either alternative.

Studies to be conducted as part of the Tier Two environmental studies would include detailed wetland plant inventories and habitat assessments to evaluate if there are other critical wetland resources that would be affected by the build alternatives. Under the local DuPage County Countywide Stormwater and Flood Plain Ordinance, critical wetland impacts require compensatory wetland mitigation at a 3.0:1.0 mitigation ratio.

Alternatives 203 and 402 would affect 0.3 acre of wetland mitigation at four sites adjacent to the Elgin O'Hare Expressway or Thorndale Avenue. Impacts would occur at the perimeter of the mitigation areas. Based on preliminary field reconnaissance, the mitigation sites consist primarily of emergent wetland dominated by cattail or common reed, or by open water. From a regulatory standpoint, impacts to mitigation sites may require higher compensation ratios. Provision of compensatory wetland mitigation for the selected build alternative can be expected to replace wetland functions and values lost through filling activities.

4.3.2 Wetland Functions and Values

During the preliminary field reconnaissance, dominant wetland plant species were identified, general notes pertaining to wetland functions and values were recorded, and the general quality of the identified wetlands was established. Detailed plant inventories were

[25] Several criteria are used to determine if a wetland is critical. Wetlands, in addition to those mapped as critical on the DCWI, may be considered critical following site investigation and data analysis.

not completed, and a Floristic Quality Index and native mean C-value were not calculated (Swink and Wilhelm, 1994).

The largest wetland community type impacts associated with Alternatives 203 and 402 would be to emergent wetlands, wetland bottom stormwater management facilities, and wet old fields. Options A and D would affect wet old fields, emergent wetland, an OMP wetland, and wetland bottom stormwater management facilities. Emergent wetlands generally are characterized by the presence of standing water throughout the growing season. They consist of vegetation that prefers standing water for prolonged periods, such as cattails. Wet old fields generally are characterized by moist to saturated soils with standing water for only brief to moderate periods of the growing season. In general, the dominant plant species in wet old fields in the study area was reed canary grass.

Past human disturbances and runoff from the urban environment appear to have adversely affected most of the wetlands near the proposed improvements. In general, most of the field identified wetland sites are dominated by invasive plant species and exhibit low diversity and richness of native plant species. The principal functions performed by most of the wetland sites are stormwater storage, conveyance, and water quality benefits. The wetlands may provide habitat for common and adaptable wildlife. In general, wetlands that would be affected by the alternatives provide limited functional value on an individual basis, but when combined, the wetlands provide overall water quality benefits.

Overall, wetland functions, such as stormwater storage and pollution control, that would be affected as a result of the alternatives are expected to be minimal. Functions lost as a result of wetland fill could be offset by proposed stormwater management facilities, compensatory wetland mitigation, and other BMPs. Stormwater detention facilities would be required to compensate for increased impervious area associated with the alternatives. Improvements would be designed so that stormwater runoff would be infiltrated, detained, or treated before discharge to surface waters. BMPs that control the volume and treat stormwater runoff would be considered in Tier Two environmental studies to reduce pollutant loads to wetlands and other receiving waters, while maintaining the hydrology of the watershed, to the extent possible.

Development within the study area restricts sensitive wildlife species to protected lands, which are primarily located outside and beyond the proposed build alternatives. Wildlife species in urban and suburban areas tend to be tolerant of disturbance and human activities and generally are common, adaptable species. Wetlands that would be affected as a result of the alternatives are located primarily in developed areas adjacent to transportation corridors that provide limited wildlife use potential. Most wetland impacts would affect relatively small percentages of larger wetland complexes (mainly edge takes adjacent to roadways) or small isolated wetlands; thus, wildlife habitat impacts associated with the proposed wetland impacts would be minimal. See subsection 2.6.2, Wildlife, and subsection 4.5, Biological Resources.

As part of the planning process for the proposed transportation improvements, direct impacts to wetlands in special lands (e.g., forest preserves) and ecologically sensitive habitats (including natural areas, nature preserves, known threatened and endangered species sites, etc.) have been avoided or minimized. Wetland impacts will be reviewed in accordance with state and federal regulatory procedures to ensure that they are avoided, minimized, or compensated appropriately, and that there is no overall net loss of the state's wetland acres or functional value because of the project. Appropriate wetland mitigation will be provided, and water quality and quantity BMPs will be implemented as necessary to meet regulatory requirements and to protect the downstream aquatic environment from potential construction, operation, and maintenance impacts associated with the proposed transportation improvements. Therefore, the wetland displacement associated with the alternatives is not expected to have a net negative effect on the larger Des Plaines River Watershed or the region. See subsections 4.2 and 4.13 for discussions on water quality BMPs and mitigation measures, respectively.

4.3.3 Threatened and Endangered Species within Wetland Areas

Wetlands supporting federal- or state-listed threatened or endangered species are considered high quality aquatic resources by the USACE and critical wetlands by DuPage County. The higher quality wetland areas typically are unsuitable for fill activities or require higher wetland compensation ratios at the federal, state, or local levels.

Based on information from the IDNR and the Illinois Natural Heritage Database (dated December 12, 2008) and correspondence from the USFWS (dated January 29, 2009), no known threatened or endangered species sites would be directly affected by the proposed build alternatives (see Appendix C). However, USFWS has stated that a moderate to high quality wetland habitat within the study area could support a federal-threatened and state-endangered plant species, the eastern prairie fringed orchid (*Platanthera leucophaea*).

Based on preliminary field reconnaissance, 13 of the identified wetland areas[26] that would be affected by the alternatives could be classified as moderate to high quality based on vegetation or functional values, when compared to the low quality wetlands along the project corridor. Four of the wetland areas are mitigation sites. All but one of the 13 wetland areas are located adjacent to the Elgin O'Hare Expressway or Thorndale Avenue. The remaining wetland is located along the south side of I-90 near Arlington Heights Road (see Appendix G, Exhibit G-1). Quality determinations were not based on detailed plant lists and are subject to change. Additional studies, including a qualitative analysis of wetland functions and values (e.g., floristic composition, wildlife habitat presence, etc.) and the required consultation with IDNR or USFWS would be conducted as part of the Tier Two environmental studies.

4.4 Floodplains

The floodplain encroachment evaluation was conducted in accordance with EO 11988 "Floodplain Management," "Assessment and Documentation of Floodplain Encroachment" as contained in the IDOT *Bureau of Design and Environment Manual*, "Floodplain Encroachments" in the *Drainage Manual,* and Illinois Administrative Code 3708 "Floodway Construction in Northeastern Illinois." Guidance from the DuPage County Countywide Stormwater and Floodplain Ordinance was applied in determining compensatory storage requirements, because the County ordinance is more restrictive than IDOT requirements.

[26] This total includes one wetland bottom stormwater management facility that appears to have been planted with native vegetation, based on preliminary field reconnaissance. Mitigation areas were assumed to be high quality.

Potential floodplain encroachments were identified by overlaying proposed roadway locations onto FIRMs published by the FEMA. Proposed roadways were separated by county—Cook or DuPage—and compensatory storage requirements due to fill in floodplains were analyzed in accordance with the respective local stormwater management ordinance since they are more strenuous or demanding. Because of the absence of a proposed roadway profile, all floodplains were assumed to be affected to the 100-year flood elevation. The width of encroachment area was based on proposed roadway width (roadway footprint) from proposed typical cross sections. Affected floodplain and floodway areas were calculated using GIS software and overlaying proposed roadways onto the FIRMs.

Floodplain encroachments and mitigation measures are discussed below. Tables 4-18, 4-19, and 4-20 include itemized descriptions of encroachment type, encroachment area, compensatory storage volume required to mitigate encroachment, and assessment category for each floodplain. Exhibits 4-1A through 4-1E and Exhibit 4-5 depict floodplain impacts. Transverse (crossing) and longitudinal (edge) floodplain encroachments are differentiated. Longitudinal encroachments often result in significant floodplain impacts and greater reduction in conveyance.

TABLE 4-18
Summary of Floodplain/Floodway Encroachment by Build Alternative and South Bypass Connection Option in Cook County

Encroachment	Alternative 203	Alternative 402	Option A	Option D
Potential Transverse Encroachments	2	2	1	1
Potential Longitudinal Encroachments	2	3	1	1
Floodway Encroachment (acre)	1.5	1.1	0.3	0.3
Floodplain Encroachment (acre)	2.1	4.6	0.6	0.6
Estimated Compensatory Storage for Filling Floodway (acre)/(acre-foot)[a]	3.0/14.8	1.6/8.2	1.6/7.8	1.6/7.8

Note: Shoulder-to-shoulder roadway widths were used to determine the amount of fill in the floodplain or floodway. Methodology will be redefined during Tier Two environmental studies, when proposed profiles are available.

[a] Compensatory storage locations are assumed to have a five-foot depth. Compensatory storage is provided at a ratio of 1:1 for encroached floodways in Cook County. Mitigation ratios refer to acre-foot values.

TABLE 4-19
Summary of Floodplain/Floodway Encroachment by Build Alternative and South Bypass Connection Option in DuPage County

Encroachment	Alternative 203	Alternative 402	Option A	Option D
Potential Transverse Encroachments	5	7	0	0
Potential Longitudinal Encroachments	0	1	0	0
Floodway Encroachment (acre)	1.6	1.6	0	0
Floodplain Encroachment (acre)	22.0	22.0	0	0
Estimated Compensatory Storage for Filling Floodplain (acre)/(acre-foot)[a]	29.7/148.6	29.7/148.6	0/0	0/0

Note: Shoulder-to-shoulder roadway widths were used to determine the amount of fill in the floodplain or floodway. Methodology will be redefined during Tier Two environmental studies, when proposed profiles are available.

[a] Compensatory storage locations are assumed to have a five-foot depth. Compensatory storage is provided at a ratio of 1.5:1 for encroached floodplains in DuPage County. Mitigation ratios refer to acre-foot values.

TABLE 4-20
Summary of Floodplain Encroachment by Waterway and Assessment Category

Floodplain	Transverse	Longitudinal	Assessment Category[a,b,c]
Meacham Creek	X		3
Salt Creek	X		4
Higgins Creek	X		3, 6
Higgins Creek Tributary A	X	X	4, 6
Higgins Creek Tributary B		X	6
Willow Creek	X		4
Willow Creek North Tributary	X	X	4, 6
Willow Creek South Tributary	X	X	4, 6
Bensenville Ditch	X		4
Addison Creek	X		3

[a] Assessment categories are from IDOT's *BDE Manual*, 2002: Chapter 26, Section 26-7, *Floodplain Finding* and *IDOT Drainage Manual*: Chapter 3, Section 3-005 Categories. Assessment categories range from 1 to 6. Category 1 represents projects that will not involve any work below the 100-year flood elevation. Category 6 represents significant floodplain encroachment.
[b] Category 3 represents projects involving modification to existing drainage structures.
[c] Category 4 represents projects involving replacement of existing drainage structures on existing alignment.

Design alternatives to avoid or minimize significant impacts would need to be investigated in subsequent detailed design, Tier Two. It is expected that all Category 6 (i.e., significant) encroachments (see Table 4-20) would be avoided or mitigated during the future phase of work. Category 6 encroachments are either transverse or longitudinal, and are predicted to result in a significant adverse impact on natural and beneficial floodplain values, a significant increase in flood risk, or a significant increase in potential for interruption or termination of emergency service or emergency evacuation routes. In subsequent phases of design, notices published in the news media would indicate that such floodplain encroachments are being considered. All potential floodplain encroachments would be identified during the presentation hearings or meetings.

Alternative 203 may encroach upon seven base floodplains—Meacham Creek, Salt Creek, Willow Creek, Willow Creek South Tributary, Higgins Creek, Higgins Creek Tributary A, and Bensenville Ditch—both transversely and longitudinally (see Tables 4-18, 4-19, and 4-20). The area of floodplain encroachment is roughly 24.1 acres. The total potential floodway encroachment is 3.1 acres. As a result, Alternative 203 would require a compensatory storage area of 32.7 acres to comply with the local stormwater management requirements. The compensatory storage would be provided at an area hydraulically connecting to the floodplain (see Tables 4-18 and 4-19).

The encroachments at the Higgins Creek floodplain and the Higgins Creek Tributary A floodplain would be longitudinal along I-90. Retaining walls would be used to eliminate potential longitudinal impacts and possible creek relocation or realignment.

Alternative 402 may encroach on nine base floodplains—Meacham Creek, Salt Creek, Higgins Creek, Higgins Creek Tributary A, Higgins Creek Tributary B, Willow Creek, Willow Creek North Tributary, Willow Creek South Tributary, and Bensenville Ditch—both transversely and longitudinally (see Tables 4-18, 4-19, and 4-20). The areas of floodplain encroachment are 26.6 acres of floodplain and 2.7 acres of floodway. The compensatory storage area is estimated to be 31.3 acres to comply with the local stormwater management requirements. Compensatory storage would be provided at an area hydraulically connecting to the floodplain (see Tables 4-18 and 4-19).

York Road is supported by a dry-land bridge over the Willow Creek floodplain. The dry-land bridge extends 1,200 feet northward from a location 2,400 feet north of the intersection of York and Thorndale Roads. Under this dry-land bridge, there are three irregular trapezoidal structures: 30 feet (top width) by six feet (height) by six feet (bottom width); 40 feet (top width) by 8.4 feet (height) by six feet (bottom width); and 31 feet (top width) by 5.2 feet (height) by 10 feet (bottom width). This condition would be maintained to avoid affecting the effective waterway opening. Retaining walls would be used at Higgins Creek, Higgins Creek Tributary A, and Higgins Creek Tributary B to eliminate longitudinal floodplain encroachment.

Options A and D would have the same floodplain impact: a longitudinal encroachment on the Addison Creek floodplain, on the west side of I-294 near Grand Avenue. The Addison Creek 100-year floodplain impact is located in Cook County, and either connection option could encroach on 0.6 acre of the floodplain and 0.3 acre of the floodway. Roughly 1.6 acres of compensatory storage would be required (see Table 4-18 and Table 4-20).

4.5 Biological Resources

This section discusses impacts on biological resources, including loss of vegetative cover, impacts to wildlife and their habitats, and effects on threatened and endangered species.

4.5.1 Vegetation and Cover Types

Most vegetative cover types in the study area have been altered by urbanization. Thus, few areas contain a dominance of native vegetation. Most of the vegetated areas are dominated by nonnative or invasive species. The biological resources within the study area primarily consist of common/adaptable plant and wildlife species that are relatively tolerant of disturbance and human activities. The dominant cover type within the study area is urban and built-up land comprising buildings, roads, parking lots, and driveways, intermixed with urban landscaping, open space (including old fields), or limited forested cover.

Overall, impacts to cover types would be minimal. The alternatives would displace vegetation by expanding the pavement area. Vegetative cover beyond the edge of pavement to the right-of-way line would be converted to grass with intermittent landscape plantings of trees and shrubs, or vegetated swales. The new vegetated areas could be stabilized with native plant species that would reduce maintenance costs, provide water quality benefits, and provide a more natural cover type than turf grasses. The number of invasive/noxious species present and the degree of infestation within the project limits are not expected to increase notably as a result of the proposed improvements.

The proposed alternatives are primarily associated with roadways or include urban and built-up land as the dominant cover type. The alternatives avoid most of the study area's special lands and valuable habitat areas located in forest preserves, nature preserves, INAI sites, and large forested tracts. Impacts to special lands would be minimized and generally be located at the perimeter of the property. As a result, most of the cover type conversions and the fragmentation of large forested tracts or other ecologically valuable cover types would be minimal.

Table 4-21 summarizes impacts associated with Alternatives 203 and 402 based on mapped land cover types.

TABLE 4-21
Land Cover Impacts by Build Alternative

Cover Type[a]	Alternative 203		Alternative 402	
	Acres[b, c]	Percent[d]	Acres[b, c]	Percent[d]
Forested Land				
Upland	63.4	3.8	56.7	4.2
Partial canopy / savannah upland	30.7	1.9	25.6	1.9
Floodplain forest	6.3	0.4	6.3	0.5
Total	100.4	6.1	88.6	6.6
Urban and Built-up Land				
High density	483.6	29.3	384.5	28.7
Low / medium density	646.1	39.1	525.3	39.2
Urban open space[e]	400.2	24.2	331.1	24.7
Total	1,529.9	92.6	1,240.9	92.6
Footprint Total[d]	**1,650.4**	**—**	**1,340.8**	**—**

Source: USDA National Agriculture Statistics Service, IDOA, and IDNR, 2002.

[a] Only land cover types included in the *Land Cover of Illinois 1999–2000* that would be affected by the alternatives are included in the table. See subsection 2.2 for agriculture, subsection 4.2 for surface waters, and subsection 4.3 for wetlands.

[b] Land cover impact acreages for this table were calculated for the alternatives based on data from the *Land Cover of Illinois 1999–2000*; the data may vary from data provided by other sources found in other tables within this document.

[c] Acreage includes land cover mapped within proposed OMP limits. OMP construction has commenced, and most of the vegetated land cover at the west end of the OMP limits has been cleared; therefore, actual land cover within OMP limits may vary from that which is mapped.

[d] Percent of "footprint total" acreage. Footprint total represents the total acreage within the footprint.

[e] Urban open space includes parks, golf courses, cemeteries, and other grassland cover within urban and built-up areas.

Although Alternatives 203 and 402 differ in total acreage by about 310 acres, the impacts to individual cover types would be relatively similar in terms of the percent of each cover type taken. The dominant cover type affected would be urban and built-up land. Impacts to this cover type would account for almost 93 percent of the total acreage within both alternative footprints, and the majority of the 310 acre difference between the alternatives. Mapped forested land losses would account for between six and seven percent of the total footprint area for Alternatives 203 and 402, including roughly 12 acres more forested impact associated with Alternative 203 than for Alternative 402. Impacts to surface waters and wetlands are discussed in subsections 4.2 and 4.3, respectively.

Preliminary field reconnaissance showed most of the undeveloped land near the proposed improvements is surrounded by development and primarily consists of urban open space (e.g., mowed lawn and old field successional areas) and to a lesser extent degraded woodlands. In general, large contiguous mapped urban open space or forested land would not be divided. Stands of native oak/hickory forests would not be impacted by either build alternative. Exhibit 4-7 shows mapped forest land and urban open space in relation to the build alternative footprints. Most impacts would be at habitat edges, associated with widening existing transportation corridors, or take place in areas reserved for transportation improvements.[27] For example, the urban open space/forested land impact within Alternatives 203 (33 percent) and 402 (39 percent) would take place within the Elgin O'Hare Expressway and Thorndale Avenue rights-of-way. Nonnative or aggressive plant species, such as cut-leaved teasel (*Dipsacus laciniatus*) and common buckthorn (*Rhamnus cathartica*), dominate many of the old field and woodland open spaces, respectively. The old field successional areas are entirely herbaceous or are scattered with trees that are beginning to colonize idle, open space.

Both build alternatives would affect roughly 0.8 acre at the edge of a 124-acre mapped forested area located adjacent to Medinah Road, south of the Elgin O'Hare Expressway.[28] Based on preliminary field reconnaissance, this mapped forested area includes woodland, wetland (including wet old field and emergent communities), part of Meacham Creek, and a residential development. The wooded area is dominated by box elder (*Acer negundo*), common buckthorn, and ash trees (*Fraxinus* sp.). Based on plant species composition and habitat characteristics, the areas to be impacted include lower quality woodland, degraded wetland communities and lower quality riparian habitat associated with Meacham Creek.

The largest of the mapped forested impacts would take place near Salt Creek adjacent to Thorndale Avenue and near the northwest corner of Thorndale Avenue and York Road. Near Salt Creek, 9.8 acres of mapped forested cover would be affected by both Alternatives 203 and 402. Based on preliminary field reconnaissance, a woodland near Salt Creek included common buckthorn, Siberian elm (*Ulmus pumila*), and tall goldenrod (*Solidago altissima*). Roughly 1.5 acres of the mapped forested impacts near Salt Creek include a stormwater management facility dominated by common reed. The mapped forested impact near the corner of Thorndale Avenue and York Road consists of a 10.5-acre degraded woodland dominated by box elder, common buckthorn, eastern cottonwood, Siberian elm, and sandbar willow (*Salix interior*) at the woodland edge. Alternative 402 would affect the entire woodland; Alternative 203 would affect about 0.9 acre less.

Alternative 203 would affect 69.1 acres more of mapped urban open space than Alternative 402 and 11.8 acres more of mapped forested area. Of these impacts, Alternative 203 would include about 34 acres of mapped urban open space and 6.6 acres of forested land near the Touhy Avenue Reservoir[29] and mapped vegetative cover near the OMP limits. The additional land cover impacts are the result of a wider footprint attributable to a freeway component that parallels the west limits of the OMP.

---

[27] Both Alternatives 203 and 402 would impact mapped urban open space and forested areas located within OMP limits. Mapped forested area/urban open space impacts within OMP account for about 25 percent of the land cover impacts associated with Alternative 203 and 19 percent for Alternative 402. OMP construction has commenced and the majority of the vegetated land cover in the vicinity of the alternatives within OMP limits has been removed; therefore, areas within OMP limits are not discussed further in this section.

[28] This area also includes roughly 22 acres of mapped urban open space, of which 0.5 acre of its edge would be affected along the east side of Medinah Road.

[29] The Touhy Avenue Reservoir is located near the northwest corner of OMP. Over 83 percent of the mapped forested impact at this location is within OMP limits and does not appear forested based on a review of aerial photography.

Table 4-22 summarizes impacts associated with Options A and D based on mapped land cover types. Impacts to urban and built-up land account for close to 100 percent of the total area within the south bypass connection footprints. Most of the impacts for both south bypass connection options would be high density urban/built-up land followed by impacts to low/medium density urban/built-up and urban open space cover types. Exhibit 4-7 shows mapped forest land and urban open space in relation to the south bypass connection footprints. Option A would impact a slightly lower percentage of high density urban/built-up land than Option D, and would affect a slightly higher percentage of low/medium density, urban open space, and forested land. Option A contains a greater number of smaller sized commercial/industrial buildings and parcels than Option D. Option D would impact fewer, but larger industrial buildings. The 6.1 acres of additional mapped urban open space and forested land impacts associated with Option A would primarily affect scattered open lots and lawns along County Line Road. As a result, most of the cover type conversions would be minimal and fragmentation of valuable wildlife habitats would not occur with either south bypass connection option.

TABLE 4-22
Land Cover Impacts Associated with the South Bypass Connection Options

Cover Type[a]	Option A		Option D	
	Acres[b]	Percent[c]	Acres[b]	Percent[c]
Forested Land				
Upland	0.9	0.3	0.3	0.1
Total	0.9	0.3	0.3	0.1
Urban and Built-up Land				
High density	173.7	66.7	175.2	71.4
Low/medium density	73.2	28.1	62.9	25.6
Urban open space[d]	12.4	4.8	6.9	2.8
Total	259.3	99.6	245.0	99.8
Footprint Total[c]	**260.4**	**—**	**245.5**	**—**

Source: USDA National Agriculture Statistics Service, IDOA, and IDNR, 2002.

[a] Only land cover types included in the *Land Cover of Illinois 1999-2000* that would be impacted by the alternatives are included in the table. See subsection 4.2 for surface waters and subsection 4.3 for wetlands.

[b] Land cover impact acreages for this table were calculated for the alternatives based on data from the *Land Cover of Illinois 1999-2000*; this data may vary from data provided by other sources found in other tables within this document.

[c] Percent of “footprint total” acreage. Footprint total represents the total acreage within the footprint.

[d] Urban open space includes parks, golf courses, cemeteries, and other grassland-like cover within urban and built-up areas.

4.5.2 Wildlife

The proposed alternatives are located predominantly in developed areas associated with existing roadways that provide poor wildlife habitat. Wildlife that uses the available habitat tends to be tolerant of disturbance and human activities. Urban tolerant wildlife species are generally common, adaptable species and include limited numbers of birds, mammals, reptiles, and amphibians.

Wildlife can be affected by transportation projects constructed on new or existing alignment that results in a loss of habitat/cover type, disruption of habitat continuity, and creation of barriers to wildlife movement. Transportation improvement projects can lead to direct and indirect wildlife impacts, such as wildlife-vehicle collisions (direct impact) and increased predation because of loss of habitat (indirect impact). Clearing, grading, and equipment operation could also result in wildlife impacts. Many mobile wildlife species will avoid harm due to construction operations, but some mortality is expected, especially to small mammals, amphibians, and reptiles that may be present in construction areas.

Old fields are the most common wildlife habitat type near the alternatives. They are important to woodland edge and grassland bird and mammal species when large and unfragmented. Near the build alternatives, most of the old field areas are highly fragmented and have less stable wildlife populations. The smaller open areas and linear rights-of-way tend to be most valuable for common urban bird species, such as the American robin (*Turdus migratorius*), common grackle (*Quiscalus quiscula*), European starling (*Sturnus vulgaris*), and small mammals (voles, mice).

Construction will result in wildlife impacts through loss of vegetation and habitat. Overall, project-related impacts to wildlife would be minimal and relatively similar between Alternatives 203 and 402 and between Options A and D. Potential wildlife impacts are discussed in the following subsections.

4.5.2.1 Habitat Loss and Fragmentation

Direct conversion from vegetative cover to paved areas would result in the loss of wildlife habitat for breeding, foraging, and resting. Impacts to wildlife could involve limited population reductions of species or displacement associated with the habitat within the project footprint. Species that rely upon higher quality habitat such as wetlands could be adversely affected. However, the study area contains limited areas of prime wildlife habitat, and it is expected that the overall effect on wildlife would be minimal**.** Of the land cover types listed in Tables 4-21 and 4-22, the most important in the study area for wildlife are forested lands and urban open space. Surface waters and wetlands are also important to wildlife. Subsections 2.3, Water Resources and Quality, and 2.4, Wetlands, discuss the general distribution of aquatic/wetland habitats. The alternatives avoid most of the study area's valuable habitat that is located within forest preserves, the nature preserve (Busse Forest Nature Preserve), INAI sites, and large forested tracts.

Habitat fragmentation involves dividing larger continuous habitat (such as woodlands and old fields) into smaller habitat patches. Transportation projects can cause fragmentation, thus creating additional edge habitat. Edge habitat is the boundary between habitat types, such as between woodlands and fields. Some species within the study area, such as the American robin and the brown-headed cowbird (*Molothrus ater*), prefer edge habitat. Edge habitat is usually created at the expense of large continuous habitat—the smaller the habitat patch, the larger the edge effect. Edge effects may result in differences in predation, interspecific competition, and prey availability that may vary near the edge of a habitat when compared to the interior of a larger patch. Habitat fragmentation will favor species that are more adaptive to edge environments thereby affecting non-edge species to a greater extent.

Edges often are associated with transportation rights-of-way or urbanized sections of the landscape. Most cover type impacts within the alternative footprints (between 93 and 100 percent) include urban and built-up land (including urban open space), which are already disrupted by residential, commercial, and industrial areas, roads, rail, utilities, and other types of development. Most of the forested area and open space impacts that would occur as a result of the build alternative include edge habitat. Widening the transportation corridors, as proposed, generally would relocate the habitat edge. Many of the improvements that upgrade existing transportation systems would have a minimal effect upon wildlife species that have already adapted to edge habitat.

Neotropical migrant birds are a primary wildlife group that could be affected by the displacement and fragmentation of forest habitat. There would be some loss of bird nesting and foraging areas because of conversion of undeveloped land within the proposed right-of-way to highway uses. Some neotropical migrant birds require forested stands of a minimum size and are not found in smaller wooded areas, even if suitable habitat is present. The largest mapped forested stands within the overall EO-WB study area include forest preserve properties that would not be affected by the proposed transportation improvements, such as the Ned Brown Preserve (see Exhibit 4-7). The largest mapped forested impact associated with the proposed transportation improvements is about 10.5 acres in size and is located near the west side of O'Hare Airport in a developed area near the northwest corner of Thorndale Avenue and York Road. An additional five mapped forested areas (excluding areas within OMP limits) impacted by the proposed transportation improvements are over 10.5 acres in size. Adverse effects to these forested areas, however, would consist primarily of edge takes adjacent to existing roadways and impacts are less than 9.8 acres in size (see Exhibit 4-7). Impacts to forested areas are discussed in subsection 4.5. Based on edge effect, nest predation could increase in fragmented wooded patches.

Edge habitat may be widely used by several of the relatively urban-tolerant mammals within the study area, such as raccoon (*Procyon lotor*) and Virginia opossum (*Didelphis virginiana*). Both raccoons and opossum, which are opportunistic feeders and nest predators, use this type of habitat. Impacts to neotropical migrant birds, however, are expected to be minimal. Impacts to edge areas will reduce the size of available wildlife habitat, thus forcing relocation of remaining wildlife to interior locations. Forced relocation of wildlife can be expected to increase population densities and increase competition within the remaining interior habitat areas. Given the relatively small impacts to edge habitat compared with remaining cover and the adaptability of the urban-tolerant wildlife known to use these areas, adverse impacts as a result of the project are expected to be negligible.

4.5.2.2 Barriers to Wildlife Movement

Even in the most urban areas, certain corridors allow wildlife to travel between habitat patches. Wildlife use linear corridors, such as rights-of-way, fence rows, and riparian environments for movement, dispersal, and to access habitat divided by roads, rail, or other types of development. Newly constructed barriers, such as roads or rail, can reduce wildlife movement between two adjacent habitats by interrupting established travel routes. Barriers may pose a significant threat to wildlife because of traffic volumes, speeds, and width of roadway/rail corridor. Road and rail do not pose barriers to all forms of wildlife equally. Birds and most mammals are relatively mobile; therefore, the direct loss of habitat to any alternative would not be as critical as it would be to other species of wildlife. Birds and mammals typically seek other areas in which to forage, breed, and rest. Their mobility exposes them to collisions with vehicles as they attempt to cross roadways that have been widened or new roadways to areas not previously served. Deer/vehicle collisions would be a safety concern, but no negative impact to the overall deer population is expected. Minimal to no loss of species groups is anticipated.

Small, terrestrial wildlife species are more affected by barriers than birds and larger mammals. Most reptiles and amphibians in the study area are less mobile and rely on their immediate habitat. Transportation improvements could pose a higher road kill hazard potential to reptiles and amphibians than to larger mammals, although mammal/vehicle collisions are known to occur. Reptiles and amphibians most likely would be affected by road and rail crossings during breeding, nesting, and seasonal movements. Even though impacts may occur, negative impacts to the overall reptile or amphibian population within the study area are not anticipated as a result of the proposed transportation improvements.

The study area contains limited areas of prime wildlife habitat. Roughly 87 percent of the study area is urban and developed land (see Table 2-19). The large percentage of urban development, habitat fragmentation, and existing transportation infrastructure throughout the study area limits wildlife movement. The largest contiguous open space habitat types within the study area are the Ned Brown Preserve, a system of forest preserve properties along the Des Plaines River in Cook County, and a cluster of forest preserves and other special lands in DuPage County along Salt Creek/adjacent to I-290. The preserved open space and Salt Creek provide connectivity among the DuPage County Forest Preserves and may allow animal movement between those areas. Both build alternatives would affect part of the riparian corridor adjacent to Salt Creek. However, Salt Creek and many potential wildlife corridors in the study area, including other streams and railroad rights-of-way, would be bridged by a build alternative that may facilitate wildlife movement. New adverse impacts to wildlife movement are not expected.

4.5.3 Threatened and Endangered Species

Based on correspondence from the USFWS (dated January 29, 2009), the study area includes two known locations of the federal-threatened eastern prairie fringed orchid (*Platanthera leucophaea*). The eastern prairie fringed orchid is also a state-endangered species. Neither known location is in or near the proposed alternatives. Possible habitat for the orchid includes mesic prairie, sedge meadows, marsh edges, and bogs. Any moderate to high quality wetland habitat within the study area could support the species. There is no known critical habitat for the species within the study area (Rogner, 2009).

According to information provided by the IDNR and the Illinois Natural Heritage Database (dated December 12, 2008), the build alternatives and south bypass connection options do not directly affect any recorded state-listed threatened or endangered species sites. The nearest recorded sites are more than 3,500 feet from Alternatives 203 and 402 and are associated with a state-endangered bird at a privately owned natural area located near the southwest corner of the Ned Brown Preserve, and a state-threatened plant species at the Ned Brown Preserve. The Ned Brown Preserve and the privately owned natural area will not be directly affected by the proposed improvements.

The accuracy of available data does not allow a conclusive determination of specific impact to the state- and federal-listed species. As part of Tier Two, additional studies will be conducted to determine potential presence and potential impacts to threatened and endangered species. Future work associated with the preferred alternative would include detailed threatened and endangered species field surveys (if necessary) and the required consultation with IDNR and USFWS.

4.6 Special Lands, Section 4(f), Section 6(f), and OSLAD Considerations

Special lands, including significant publicly owned parks, recreation areas, wildlife and waterfowl refuges, and historic sites of national, state, or local significance, are afforded protection under Section 4(f) of the USDOT Act of 1966 and Section 6(f) of the Land and Water Conservation Fund Act (LWCFA). Additional protection is provided for properties purchased with OSLAD Act funds, a program overseen by IDNR.

Readily available information was used to identify special lands in the study area that may require unique treatment according to the above-mentioned regulations and programs. The object of the Tier One analysis of protected lands has been to determine the potential for Section 4(f), Section 6(f), or OSLAD involvement and alert resource agencies of these potential involvements. The formal Section 4(f) consultation with officials with jurisdiction over the property and FHWA, and ultimately an official determination of Section 4(f) applicability, will be completed during Tier Two. At that time any Section 4(f) involvement will be documented in the appropriate format using either the individual, programmatic, or *de minimis* impact Section 4(f) evaluation process. The documentation will describe impacts to Section 4(f) resources; measures evaluated to avoid or minimize impacts to Section 4(f) resources and whether they are feasible or prudent; mitigation activities agreed upon by IDOT, the officials with jurisdiction over the property, and FHWA; and agency consultation activities. A review of relevant data showed that one property purchased with OSLAD funds (Medinah Wetlands Forest Preserve) could be affected by the proposed improvements (Nation, 2009a, personal communication; Nation, 2009b, personal communication).

No properties affected by the proposed improvements were purchased with funds allocated by the LWCFA (Nation, 2009a; 2009b); therefore, no Section 6(f) involvement exists on this project. Two county forest preserve and five municipal parks could be within the footprint of a build alternative (see Table 4-23 and Exhibits 4-1A through 4-1E and Exhibit 4-8). FHWA considers forest preserves to be Section 4(f) properties because of their designation as public recreational areas. Three of the five municipal parks would likely be classified as Section 4(f) properties because they are presumed significant, publicly owned, open to the public during normal business hours, and primarily used for recreation. The Elk Grove Detention Pond, while publicly owned and open to the public, has marginal recreational value and may not meet the “significance” criteria needed to be classified a Section 4(f) resource. The Legends of Bensenville Golf Course continues to be in public ownership, but the property is not actively used as a golf course and the Village of Bensenville is considering selling the property. Therefore it, too, may not meet the classification requirements as a Section 4(f) resource. Two properties within the proposed build alternative footprints are Bretman Park (owned by the Village of Bensenville) and Silver Creek Forest Preserve (owned by FPDDC and maintained by the Village of Bensenville). Both properties are within the OMP acquisition area, so their affects have been accounted for under the Section 4(f) process undertaken for the federally-approved OMP EIS and will not be considered further in this document (FAA, 2005).

The North Central DuPage Regional Trail and the Salt Creek Greenway Trail cross the Elgin O'Hare Expressway and Thorndale Avenue, respectively, and could be temporarily disrupted during the proposed improvements. Reasonable effort will be made to minimize disruption to the trails during construction or to provide alternate trail routes in the event closure during construction is required. The Salt Creek Greenway Trail would need to be shifted slightly to the south to allow for the construction of the frontage road proposed between Prospect Avenue and Wood Dale Road. Available information indicates that the Salt Creek Greenway Trail is located on private property, where it may be affected by the proposed improvements. If it is confirmed that the property is privately owned, Section 4(f) would apply only if the property has a public easement permitting public to access the property for recreational purposes. Regardless, it is FHWA's policy to minimize disruption to the continuity of existing and designated trails. After further review of the preliminary engineering, it is likely that four of the properties listed in Table 4-23—Alexian Field, Shenandoah Park, Salt Creek Marsh Forest Preserve, and Legends of Bensenville Golf Course—would not be affected directly by the proposed improvements. The proposed improvements along roadways abutting the four properties are the same for both alternatives and likely can be constructed within existing right-of-way. Therefore, the improvements could require no property from any of these resources. If involvement with the four properties becomes necessary, it likely would to be limited to temporary easements required to construct the roadway improvements. The properties most likely to be affected by the build alternatives and south bypass connection options are described below. It is important to note that at this stage, the build alternatives represent working concepts that have the ability to be modified during subsequent stages.

4.6.1 Medinah Wetlands Forest Preserve

Both alternatives would affect the forest preserve in the same way. The property's primary use is preserving wetland habitat. A strip from the east side of Medinah Wetlands Forest Preserve would be required for the widening of Medinah Road from two to three lanes in each direction as it approaches the Elgin O'Hare Expressway. The northern part of the strip being taken is wetland; the southern part is upland. Similarly, the proposed improvements would require a strip in the northeast corner of the property for the improved eastbound to southbound turning lane at the eastbound exit ramp terminal. The part of the property being taken is wetland. The size of the potential impacts is 0.75 acre.

TABLE 4-23
Potential Impacts to Special Lands per Build Alternative and South Bypass Connection Option

Property Name	Location	Size/Length	Description	Alternatives that Potentially Impact the Property	Size of Potential Impact (area or length/% of entire property)	Proposed Improvements in the Vicinity
County Forest Preserves						
Salt Creek Marsh Forest Preserve (FPDDC)	South of Thorndale Avenue between Prospect Avenue and Wood Dale Road	106 acres	Lake/pond/waterway and wetland habitat; no amenities or parking; fishing and trail access available	203, 402	0.79 acre/0.7%	New frontage road between Prospect Avenue and Wood Dale Road.
Medinah Wetlands (FPDDC)	Southwest quadrant of Elgin O'Hare Expressway and Meacham Road	57 acres (23 acres of which were purchased with OSLAD funds)	Wetland habitat; no amenities or parking	203, 402	0.75 acre (all on the portion of the property purchased with OSLAD funds)/1.3% of entire Forest Preserve; 3.3% of area purchased with OSLAD funds	Southbound shift of eastbound Elgin O'Hare Expressway exit ramp; widening from two to three lanes in each direction along Medinah Road approaching Elgin O'Hare Expressway on east side of property.
Municipal Parks						
Elk Grove Detention Pond (Elk Grove Village)	Southeast of Coyle and Carmen	3 acres	Elk Grove detention pond with park bench for area employees to use	203	2.0 acres/66.7%	New mainline alignment.
Majewski Athletic Complex (Mount Prospect Park District)	East side of Elmhurst Road north of I-90	34 acres	Community park with a fieldhouse, softball fields, and soccer fields	203	0.78 acre/2.3%	New collector-distributor road linking freeway movements between proposed O'Hare West Bypass system interchange and Elmhurst Road along I-90.
Shenandoah Park (Elk Grove Park District)	On east side of Meacham Road north of Elgin O'Hare Expressway	5 acres	Neighborhood park with a playground, picnic table, and softball field	203, 402	0.02 acre/0.4%	Resurfacing on east side of property.

TABLE 4-23
Potential Impacts to Special Lands per Build Alternative and South Bypass Connection Option

Property Name	Location	Size/Length	Description	Alternatives that Potentially Impact the Property	Size of Potential Impact (area or length/% of entire property)	Proposed Improvements in the Vicinity
Alexian Field (Schaumburg Park District)	East side of Gary Road south of	39 acres	Primarily used as the home field for the Schaumburg Flyers, a minor league baseball team	203, 402	1.23 acre/3.2%	Reserving footprint on west side of property to potentially widen Springinsguth Road for additional intersection capacity at entrance ramp.
Legends of Bensenville Golf Course (Village of Bensenville)	Northwest quadrant of Grand Avenue and County Line Road	49 acres	Inactive public golf course	South Bypass Connection Options A and D	1.2 acre; 0.3 acre/2.4%; 0.6%	Resurfacing on south side of property.
Trails						
Salt Creek Greenway Trail (within the study area)	Across Thorndale Avenue and on the north and west sides of Salt Creek Marsh Forest Preserve	6 miles	Recreational trail for bikers and pedestrians	203, 402	600 feet/1.7%	New frontage road between Prospect Avenue and Wood Dale Road.
North Central DuPage Regional Trail	Across Elgin O'Hare Expressway along Medinah Road/Meacham Road	35 miles	Recreational trail for bikers and pedestrians	203, 402	Temporary disruption during construction	Add three lanes in each direction to Elgin O'Hare Expressway, reconstruct Medinah Road to add turn lanes at interchange, and add lane to Meacham Road.

4.6.2 Elk Grove Detention Pond

The property is within the mainline alignment of Alternative 203 (O'Hare West Bypass, north section); it is avoided by Alternative 402. Alternative 203 is located diagonally across much of the southeastern part of the detention pond, with part of the northwest corner of the pond remaining. Placement of the 203 alignment is limited by both horizontal and vertical restrictions. Its proposed location minimizes impacts to the industrial area on the west side of Elmhurst Road and avoids impact to O'Hare Airport's fuel storage tank farm and runway protection zone on the east side of the of the alignment. If the alignment were shifted to the west, additional structures (buildings/industrial properties) likely would be displaced, and access to some remaining structures would be compromised or eliminated. Placement of the alignment to the east would displace fuel storage tanks and encroach further into the runway protection zone. The size of the potential impact is 2.0 acres.

4.6.3 Majewski Athletic Complex

Majewski Athletic Complex would be affected by Alternative 203 but avoided by Alternative 402. The south side of the property (0.78 acre) would be affected because of the installation of a collector-distributor facility to link freeway movements between the proposed O'Hare West Bypass/ I-90 system interchange and the proposed full Elmhurst Road/ I-90 service interchange. The alignment of the collector-distributor cannot be shifted south without compromising roadway design standards. The provision of three lanes maintains acceptable LOS along the roadway; reducing the cross section to one or two lanes would result in a lower LOS. No amenities would be affected; the land that would be transferred to transportation use is grassland along the edge of the property.

Considerable effort was made in the alternatives development and evaluation process to avoid or minimize impact to special lands. Though the build alternatives are in the conceptual stage, measures were incorporated into the design to minimize impacts without compromising roadway design standards. The proposed improvements at the Medinah Wetlands Forest Preserve and Majewski Athletic Complex would not adversely affect the activities, features, or attributes and therefore, may be considered to have the Section 4(f) processed as a *de minimis* impact. Another Section 4(f) assessment method may be used for analyzing the Elk Grove Detention Pond provided it is designated as a Section 4(f) resource.

4.7 Noise

4.7.1 Traffic Noise Impact Analysis

As noted in subsection 2.10.1, noise modeling to determine existing and design-year dBA at noise sensitive receivers was not undertaken during Tier One but will be during Tier Two. Rather, residential areas that could approach, meet, or exceed the NAC were identified using available information on the property types along the corridor. Noise-sensitive non-residential noise receptors within 500 feet of the proposed improvements, such as churches, schools, or parks, were also identified (see Exhibits 4-1A through 4-1E, Exhibit 4-9, and Table 4-24). Of the 48 noise-sensitive residential areas and 30 noise-sensitive non-residential receptors identified in the study area, 43 noise-sensitive residential areas and 27 noise-sensitive non-residential receptors were identified along Alternative 203. Alternative 402 has relatively fewer noise–sensitive residential areas (39) and noise-sensitive non-residential receptors (24) adjacent to the proposed footprint. These areas include both single- and multi-

TABLE 4-24
Noise-Sensitive Residential Areas and Non-residential Receptors per Build Alternative

	Noise-Sensitive Residential Areas		Noise-Sensitive Non-residential Receptors[a]	
Community	**Alternative 203**	**Alternative 402**	**Alternative 203**	**Alternative 402**
Arlington Heights	1	0	1	1
Bensenville	0	0	1	1
Des Plaines	7	5	2	1
Elk Grove Village	5	5	5	4
Hanover Park	2	2	0	0
Itasca	3	3	6	6
Medinah	5	5	3	3
Mount Prospect	5	3	1	0
Roselle	11	11	3	3
Schaumburg	5	5	4	4
Wood Dale	2	2	1	1
Total	**43[b]**	**39[c]**	**27**	**24**

[a] Non-residential sensitive receptors include parks, schools, and churches.
[b] The number is fewer than the total number of noise-sensitive residential areas per community because three noise-sensitive residential areas are within multiple communities.
[c] The number is fewer than the total number of noise-sensitive residential areas per community because two noise-sensitive residential areas are within multiple communities.

family residences, churches, and parks. Roselle, Des Plaines, Elk Grove Village, Medinah, Schaumburg, and Mount Prospect have the highest number of noise-sensitive residential areas for Alternatives 203 and 402. Schaumburg, Itasca, and Elk Grove Village have the greatest number of noise-sensitive non-residential receptors along both proposed corridors.

Most of the noise-sensitive residential areas and non-residential receptors along Alternatives 203 and 402 are located along the Elgin O'Hare Expressway/Thorndale Avenue corridor. Additional noise-sensitive areas and non-residential sensitive receptors are located along the Elmhurst Road connection to I-90 included in Alternative 203 and along I-90 improvements included in Alternatives 203 and 402.

Five noise–sensitive residential areas and four non-residential sensitive receptors were identified along Option A (see Table 4-25). These include two concentrations of single-family residences on the west side of County Line Road, three concentrations of single-family residences south of I-294, and four parks (Redmond Recreation Complex, Creekside Park, Legends of Bensenville Golf Course, and Maywood Sportsman's Club) on the west side of County Line Road. The three concentrations of single-family residences south of I-294 would also be considered noise-sensitive residential areas under Option D and two of the same parks on the west side of County Line Road (Legends of Bensenville Golf Course and Maywood Sportsman's Club) would also be considered non-residential sensitive receptors under Option D.

TABLE 4-25
Noise-Sensitive Residential Areas and Non-residential Receptors per South Bypass Connection Option

South Bypass Connection Option	Noise-Sensitive Residential Areas	Noise-Sensitive Non-residential Receptors
Option A	5	4
Option D	3	2

4.7.2 Traffic Noise Abatement Strategies

This subsection discusses traffic noise abatement strategies commonly applied to roadway projects. A comprehensive traffic noise impact analysis will occur in Tier Two, which will identify traffic noise impacts and evaluate the feasibility and reasonableness of mitigation measures using the FHWA Traffic Noise Model. Several proven traffic noise abatement strategies, both structural and nonstructural, could be used in combination to reduce the impacts of traffic noise. Traffic noise abatement strategies are discussed below, and traffic noise mitigation techniques are described in subsection 4.14.11. The construction of noise walls is a common method for mitigating traffic noise impacts in urban and suburban areas. Noise walls can absorb or reflect noise. Walls tall enough to break the line of sight from the noise source to the receptor usually are generally capable of achieving a five-dBA reduction in traffic noise levels.

Earth berms are effective for traffic noise mitigation, but they often require much larger areas of land (additional right-of-way) for construction than noise walls. Berms covered with grass, shrubs or small plants are more affective at attenuating traffic noise than harder surfaces.

Traffic noise abatement options must be feasible and economically reasonable. To be considered feasible, IDOT's noise policy requires that traffic noise abatement measures achieve at least an eight-dBA traffic noise reduction. Certain environmental conditions, such as frequent openings for driveways, access roads, recreational trails, or stream crossings, can limit the effectiveness and feasibility of a noise abatement structure. The traffic noise abatement measures must also be cost-effective to be considered economically reasonable. IDOT considers a cost of $24,000 per benefitted receptor a reasonable cost. A benefitted receptor is any sensitive receptor that receives at least a five-dBA traffic noise reduction from the traffic noise abatement option.

Nonstructural traffic noise abatement methods include traffic management plans and comprehensive land use planning. Traffic management plans can limit travel speeds, traffic volumes, types of motor vehicles in use, and time of operation. Traffic noise abatement is not often the primary concern of a traffic management plan, but it is a common ancillary benefit. An efficient and effective traffic noise abatement strategy is to implement an integrated and comprehensive land use plan through local communities and jurisdictions. Land use plans should include noise compatible concepts so that noise sensitive land uses are not located adjacent to highways or are developed so as to minimize traffic noise impacts.

4.8 Visual Resources

4.8.1 Visual Resource Analysis

The analysis of potential impacts to visual resources caused by construction or operation of the proposed improvements was completed based on FHWA's Visual Impact Assessment for Highway Projects (1981). The following criteria were used to assess the visual impact of the build alternatives:

- What are the visual characteristics of the site and the proposed project site/alternative?
- How would implementation of the project affect the visual character of the study area?
- Would the project substantially damage scenic resources, such as trees, wetlands, woodlands, or other landscape features?
- Would the project substantially degrade the visual character or quality of the surrounding areas?
- Would the project create a new source or substantial light or glare that would adversely affect day or nighttime views in the area?
- What major groups (e.g., neighborhoods, vehicle passengers) are likely to see the project? How would the major groups be affected by the various alternatives?

Visual resources are aspects of the environment that determine the physical character of an area and the manner in which it is viewed. Visual resources include scenery viewed at various distances, as well as cultural manmade modifications, vegetation, and other landforms.

4.8.2 Visual Impact Assessment

The study area is generally developed with the exception of protected lands (e.g., forest preserves, parks, etc.). The original landscape has been fully altered and contains suburban/urban development (primarily industrial uses) accompanied by supporting infrastructure (roads, parking lots and driveways), intermixed with urban landscaping, open space (including old fields), or limited forested cover. Much of Thorndale corridor and the western edge of the O'Hare Airport is industrial in nature and characterized by large-scale industrial buildings and warehouses. Similarly, most of the O'Hare West Bypass corridor (both north and south sections, and for both Alternatives 203 and 402) is either industrial or airport-related. One exception is on the north section of Alternative 203, which contains a residential area (east of York Road/Elmhurst Road near IL 72/Touhy Avenue). Most undeveloped lands in the area are surrounded by development and consist primarily of urban open space (e.g., mowed lawn and old field successional areas) and to a lesser extent degraded woodlands. The area is exposed to the scale of transportation development represented by the proposed build alternatives. Thus, its character is somewhat resilient to more hardened manmade features, such as major highway and transit corridors.

The proposed build alternatives generally would maintain the character of the area without creating unusual contrast in landscape, land use, or developed features. Roadway and transit improvements in the Thorndale corridor or on the western edge of O'Hare Airport would be seemingly appropriate and do not give rise to something that does not fit the scene of the study area.

Key locations where the roadway structures will be elevated and visible from nearby areas include I-90 and the north section of the O'Hare West Bypass (both alternatives); the Elgin O'Hare Expressway and the O'Hare West Terminal Interchange (both alternatives); and south bypass connection options and I-294 (both Options A and D). Generally, the viewsheds in the study area are short, with truncated sightlines. The viewsheds would not differ under either alternative, the typical view being largely industrial and commercial development to the other side of the roadway. The exception would be the O'Hare West Bypass (for Alternative 203, both the north and south sections; for Alternative 402, the south section), where vehicle passengers (not necessarily drivers) would have a closer view of airport operations, which tend to fascinate some people.

Overall, the proposed transportation improvements bring more of the same to the study area without causing a major visual disruption to community centers, neighborhoods, or recreational areas. There are some locales for which design treatment are warranted to lessen visual or other human disturbance. For those areas, specific mitigation may be evaluated and addressed in Tier Two of the process.

4.9 Cultural Resources

Cultural resources include historical items, places, or events and archaeological resources considered important to a culture, community, tradition, religion, or science. Recorded information on cultural resources in the study area was collected and analyzed to determine the build alternatives' potential impact on such resources. Surveys will be conducted in Tier Two to identify cultural resources that may not be apparent with available data. See subsection 4.14.12, Cultural Resources, for a description of likely actions that would be taken in Tier Two to avoid, minimize, and mitigate impacts to cultural resources, as well as coordination activities, to ensure compliance with Section 4(f) of the USDOT Act of 1966 and Section 106 of the National Historic Preservation Act (NHPA).

TABLE 4-26
Impacts to Recorded Archaeological Resources per Build Alternative

	Alt. 203	Alt. 402
Previously studied archaeological sites potentially affected	20	13
Known archaeological sites potentially affected	6	6
Potential impacts to locations with high probability for archaeological resources	4	4

A review of recorded information on historic resources resulted in the finding that no known historic structures would be affected by the build alternatives. A photo log of all structures affected by the build alternatives that are at least 50 years old was submitted to the Illinois SHPO with a finding of No Architectural Resources Affected. The Illinois SHPO concurred with this finding on July 22, 2009. Examination of catalogued archaeological information on historic cemeteries, mound sites, archaeological sites, sites previously surveyed for their archaeological potential, and locations with a high probability for finding archaeological resources resulted in the finding that some archaeological resources are within the build alternatives' footprints. The build alternatives would affect known archaeological sites and sites previously surveyed for their archaeological potential, but they do not affect historic cemeteries or mound sites. The build alternatives traverse locations with a high probability for archaeological resources. Table 4-26 summarizes the impacts to recorded archaeological resources in the study area.

Alternatives 203 and 402 would affect 13 common archaeological sites that were previously studied. They are mostly along Thorndale Avenue/Elgin O'Hare Expressway, near O'Hare Airport and the proposed I-90 interchange with Elmhurst Road. Seven other previously studied archaeological sites are located with the footprint of Alternative 203, mostly along I-90 where additional improvements are proposed.

All six known archaeological sites are within the section common to Alternatives 203 and 402 along the Elgin O'Hare Expressway. Two sites are along the Elgin O'Hare Expressway. The other four are within the footprint along Thorndale Avenue, where it would be expanded as an extension of the Elgin O'Hare Expressway, and where interchanges would be built at Prospect Avenue and Wood Dale Road.

Alternatives 203 and 402 also have common crossings of locations where there is a high potential for archaeological resources. Those high probability zones generally coincide with bodies of water and are crossed by the proposed improvements, where the build alternatives traverse or are near rivers and tributaries.

Alternative 203 has a slightly greater likelihood of affecting potential archaeological sites. Although Alternatives 203 and 402 would both affect the same known archaeological sites, including locations with a high probability of finding archaeological resources, Alternative 203 traverses more of the previously studied archaeological sites.

The potential effect the south bypass connection options may have on known archaeological resources is limited to one previously studied archaeological site.

4.10 Special Waste

Various databases were examined to locate known or potential contamination from regulated substances near the build alternatives. Information used for this analysis was obtained from known federal, state and local environmental databases, which are described below. The databases represent historical records of known special waste sites, spills, or enforcement actions. A Special Waste Assessment (SWA) will be completed in Tier Two to better characterize the likelihood of involvement with special waste sites and determine whether a Preliminary Environmental Site Assessment (PESA) is required. Because right-of-way may be acquired and building demolition and utility relocation would be required, a PESA most likely would be required in Tier Two.

A broad risk assessment was applied to the types of sites encountered. Risks to human and environmental health and estimated cleanup costs were considered. Special waste sites were placed in the following categories:

- **High Risk.** Active Comprehensive Environmental Response, Compensation, Liability Act (CERCLA) sites and Toxics Release Inventory (TRI) sites using volatile organic compounds (VOCs) and engaged in enforcement action or that formerly had hazardous waste processing activity onsite.
- **Moderate Risk**. Archived CERCLIS sites (except those with a No Further Remediation Action Planned designation); RCRA large-quantity generators; leaking UST (LUST) sites not reclassified as non-LUST; Site Remediation Program (SRP) sites; TRI sites using VOCs with no known violations; UST sites; and landfills.
- **Low Risk.** CERCLIS sites with No Further Remediation Action Planned designation; RCRA small-quantity or conditionally exempt generators; LUST sites redesignated as Non-LUST sites; and other TRI sites with no enforcement action.

The database search revealed that each alternative could potentially encounter special waste sites during construction. The potential impacts each build alternative and south bypass connection option would have on such sites are described in the following subsections and shown in Exhibit 4-10.

4.10.1 Hazardous Waste Sites

One active CERCLIS site within the footprint of Alternatives 203 and 402 is considered a high risk site. Two archived CERCLIS sites are within the footprints of Alternatives 203 and 402. They have received a “No Further Remediation Action Planned” status and are characterized as low risk. An archived CERCLIS site is within the footprint of both Options A and D. The site has a “No Further Remediation Action Planned” designation and is characterized as low risk. Nine additional active CERCLIS sites are located within one mile of Alternative 203, and eight are within one mile of Alternative 402. Nineteen additional archived CERCLIS sites are within one mile of Alternatives 203 and 402. One additional Active CERLIS site is within one mile of Options A and D. Nine more archived CERCLIS sites are within one mile of Options A and D.

4.10.2 Nonhazardous Sites

Alternatives 203 and 402 could affect nonhazardous waste sites in each of the categories listed in Table 4-27, many of which are common to both alternatives. Table 4-27 lists the number of nonhazardous waste sites within the footprints of both alternatives. Alternatives 203 and 402 would involve the same number of high risk sites. Alternative 203 would affect one more

TABLE 4-27
Nonhazardous Waste Sites within the Build Alternative and South Bypass Connection Option Footprints

	Alternative 203	Alternative 402	Option A	Option D
High Risk Sites				
TRI sites using VOCs and undergoing enforcement action or formerly had hazardous waste processing activity on site	2	2	0	0
Moderate Risk Sites				
RCRA large-quantity generators	2	1	0	0
LUST sites not reclassified as non-LUST	19	19	12	9
TRI sites using VOCs but not engaged in enforcement action	5	5	0	2
USTs	100	96	22	30
Landfills	1	1	0	0
SRP sites	1	1	0	1
Low Risk Sites				
RCRA small quantity or conditionally exempt generators	49	48	15	16
LUST sites reclassified as non-LUST	1	2	0	1
Other TRI sites not engaged in enforcement action	1	1	2	2

RCRA large-quantity generator and four more USTs than Alternative 402. Alternatives 203 and 402 would affect the same number of LUST, TRI, and SRP sites and landfills categorized as moderate risk. Both alternatives would affect the same number of low-risk sites. Although Alternative 203 would affect one more RCRA small quantity or conditionally exempt generator than Alternative 402, Alternative 402 would affect one more LUST site reclassified as non-LUST than Alternative 203. Another 177 LUST sites are within 1,000 feet of Alternative 203; 123 LUST sites are within 1,000 feet of Alternative 402. The preliminary review of readily available special waste information for the alternatives found that Alternative 203 would have slightly greater involvement of special waste sites than Alternative 402.

Options A and D would also potentially involve non-hazardous waste sites, many of which are common to both options. The number of non-hazardous waste sites within the footprints of Options A and D are identified in Table 4-27. Neither option impacts a high risk site. Option A would affect three more moderate risk LUST sites than Option D. Option D would affect eight more USTs than Option A. Option D impacts two TRI sites categorized as moderate risk and one SRP site, whereas Option A does not impact any. Option D would impact two more low risk sites than Option A, specifically one more low risk RCRA site and one more low risk LUST site. Forty-two additional LUST sites are within 1,000 feet of Option A; 42 additional LUST sites are within 1,000 feet of Option D. The preliminary review of the available special waste data for the area found that Option D potentially impacts more special waste sites than Option A (i.e., eight more moderate risk sites, two more low risk sites). Regardless of the option selected, further evaluation will take place in Tier Two.

4.11 Construction Impacts

Construction impacts generally would be of short duration and end shortly after project completion. The expected short-term construction impacts associated with the build alternatives are identified below.

4.11.1 Transportation

Access to all properties would be maintained by staged construction, temporary access roads, or other appropriate means. Traffic may be stopped for short periods, temporarily inconveniencing motorists and businesses while construction equipment is moved on or across the highway. Emergency service routes and access for emergency vehicles would be maintained.

Road construction activities would involve lane closures and detours. These activities interrupt normal traffic flow and generally impede travel nearby. Construction on existing roadways would cause greater traffic delay than construction on new alignments. Motorists may experience noise and fugitive dust associated with construction/demolition related activities. These impacts would be temporary and of relatively short duration (i.e., most likely two to three years). Refer to subsections 4.12.3 and 4.12.4.

4.11.2 Water Resources

Construction typically associated with bridges, culverts, and roadway approaches would involve grading, filling, and excavation. These activities increase the erosion potential by the reduction in vegetative cover resulting from soil disturbance by heavy equipment. Placement of structures in streams may increase turbidity (suspended solids) and sedimentation and temporarily alter downstream hydraulics and substrate conditions.

Increased sedimentation during construction could cover natural substrate, thereby affecting habitat for some species of fish, mussels, and macroinvertebrates. The degree of impact would vary based on site-specific conditions, such as the type of crossing structure, stream substrate, stream depth, and stream velocity. To help reduce the release of sediment into the study area streams during construction, the IDOT *BDE Manual,* Chapter 59, Landscape Design and Erosion Control, would be implemented. Compliance with Section 280 of the IDOT *Standard Specification for Road and Bridge Construction*, adopted January 1, 2007, would also be met. Soil erosion and sediment control measures would be installed in areas of active construction, in particular, near stream crossings, wetlands/waters of the U.S., and drainageways. Disturbance of streamside vegetation would be kept to a minimum. To minimize soil loss and subsequent sedimentation, an erosion and sediment control plan would be prepared as part of the contract documents. Areas of special concern, where erosion and sediment control would be needed, would be identified during subsequent studies.

The project would be subject to the requirements of IEPA's NPDES permit for construction site stormwater discharges. NPDES permit coverage is required when a construction project disturbs one acre or more of total land area, or is part of a larger common plan of development that ultimately disturbs one or more acres of total land area. See subsection 4.15, Permits/Certifications.

As required by the NPDES permit, a SWPPP would be prepared that identifies soil erosion and sediment control practices to be used throughout the construction process to reduce the discharge of pollutants to receiving waters. Appropriate soil erosion and sediment controls would be implemented onsite and be modified to reflect the current phase of construction. All temporary erosion and sediment control measures would be inspected, maintained, and repaired/replaced, as necessary, to maintain NPDES compliance. The following is a list of BMPs that could be used to improve water quality, reduce soil erosion, and limit the amount of dust created in association with construction activities for the project:

- Storm drain inlet protection
- Stone aprons at flared end sections
- Stabilized construction entrances
- Temporary stabilization (mulching, seeding)
- Rolled erosion control products (erosion control blankets or mats)
- Permanent seeding
- Silt fence barrier
- Temporary ditch checks
- Sedimentation basins
- Diversion dikes/channels
- Preservation of existing vegetation

4.11.3 Air Quality

Demolition and construction can result in short-term increases in fugitive dust and equipment-related particulate emissions in and around the study area. Air quality impacts will be short-term, occurring only while demolition and construction are in progress and local conditions are appropriate. Fugitive dust emissions typically are associated with building demolition, ground clearing, site preparation, grading, stockpiling of materials, onsite movement of equipment, and transport of materials. The potential is greatest during dry periods, periods of intense construction activity, and high wind conditions.

IDOT's *Standard Specifications for Road and Bridge Construction*, Article 107.36, includes provisions on dust control. Under these provisions, dust and airborne dirt generated by construction work would be controlled through dust control procedures or a specific dust control plan, when warranted. The contractor and IDOT would meet to review the nature and extent of dust-generating activities and would cooperatively develop specific types of control techniques appropriate to the specific situation. Techniques that may warrant consideration include minimizing track-out of soil onto nearby publicly traveled roads, reducing speed on unpaved roads, and covering haul vehicles.

During construction, blowing dust from areas cleared or excavated for access or construction purposes can be minimized by applying water to unpaved areas. The effectiveness of watering for fugitive dust control depends on the frequency of application. Street cleaning would also be used to control dust, as necessary. Paved areas that have soil on them from the construction site would be cleaned as needed, using a street sweeper or some alternative method.

Other construction-related air quality control practices that could be used during construction include diesel emission reduction strategies, such as idling restrictions, diesel engine retrofits for construction equipment, and using clean fuels (ultra-low sulfur diesel, emulsified diesel, compressed natural gas). Equipment-related particulate emissions could also be reduced if construction equipment is well-maintained. With the application of appropriate measures to limit emissions during construction, the project would not cause significant, short-term particulate matter air quality impacts.

4.11.4 Construction Noise

Trucks and machinery used for construction produce noise that may affect some land uses and activities during the construction period. Individuals inhabiting the homes along the proposed improvements would, at some time, experience perceptible construction noise from implementation of the project. To minimize or eliminate the effect of construction noise on receptors, mitigation measures have been incorporated into IDOT's *Standard Specifications for Road and Bridge Construction*, Article 107.35.[30]

The construction of the proposed project could result in temporary noise and vibration increases within and adjacent to the study area. The noise and vibration would be generated primarily from trucks and heavy machinery used during construction and demolition. Any anticipated noise and vibration impacts likely would be confined to normal working hours, periods generally considered to be tolerant of noise and vibration. No adverse noise and vibration impacts are expected during construction.

4.11.5 Solid Waste

The contractor would dispose of grass, shrubs, trees, old pavement, miscellaneous debris, and other solid wastes generated during demolition and construction in accordance with state and federal regulations, as necessary. Waste disposal would follow IDOT's *Standard Specifications for Road and Bridge Construction*, Article 202.03. Nonhazardous and uncontaminated construction and demolition debris would be salvaged to the extent practical.

Solid waste including trash, construction debris, and other items would be collected and disposed of offsite by the contractor. The contractor would be responsible for acquiring the permit required for such disposal. Onsite burning would not be permitted. No solid materials, including building materials, would be discharged to surface waters or wetlands, except as authorized (e.g., Section 404 CWA permit, IWPA, etc.). All waste would be collected and stored in approved receptacles. Liquid wastes would not be deposited into dumpsters or other containers that may leak. Receptacles with deficiencies would be replaced as soon as possible, and appropriate cleanup would take place if necessary. Construction debris would not be buried onsite. Waste disposal would comply with all local, state, and federal regulations. Proposed borrow areas, use areas (e.g., temporary access roads, staging/storage areas), and waste areas would follow IDOT's *Standard Specifications for Road and Bridge Construction*, Article 107.22.

Onsite special waste storage, including hazardous waste, would be minimized and would employ labeled, separate special/hazardous waste containers. Nonhazardous waste would

[30] For example, engines and engine-driven equipment used for hauling/construction are to be equipped with mufflers. Construction within 1,000 feet of an occupied residence, motel, hospital, or similar receptor is restricted to the hours of 7 A.M. until 10 P.M. for most work (excluding operation/maintenance of safety and traffic control devices, construction of an emergency nature, etc.).

be segregated and handled separately. Special and hazardous wastes would be disposed of in the manner specified by local, state, and federal regulations.

Concrete waste or washout would not be allowed to reach a stormwater drainage system or watercourse. Concrete washout would be contained and completed in a designated location. Washout containment facilities would be of sufficient volume to contain all liquid and concrete waste materials, including enough capacity for anticipated levels of rainwater.

4.11.6 Utility Services

Construction work would be coordinated with public utilities to avoid conflicts and minimize planned interruptions of service. When service interruptions are unavoidable, every effort would be made to limit their duration, and every effort would be made to give the public lengthy fair warning of any planned occurrence of service interruption.

4.11.7 Energy

Construction of the proposed improvement would require indirect consumption of energy for processing materials, construction activities and maintenance for the lane miles to be added within the project limits. Energy consumption by vehicles in the area may increase during construction due to possible traffic delays. The number of improvements and the time required to complete them would have a corresponding affect on the fossil fuels consumed. However, in the long term, post-construction operational energy requirements will offset construction and maintenance energy requirements and result in a net savings in energy usage.

4.12 Indirect and Cumulative Impacts

4.12.1 Approach

Potential indirect and cumulative impacts are defined as follows:

> *Indirect effects* are "caused by an action and are later in time or further removed in distance but are still reasonably foreseeable" (40 CFR 1508.8).
>
> *Cumulative effects* "result from the incremental consequences of an action when added to other past and reasonably foreseeable future actions" (40 CFR 1508.7).

The basis for this analysis is the recognition that while a project has various direct impacts on social and environmental resources, it may also have indirect and cumulative impacts attributable to the proposed improvements. Regarding the analysis of cumulative impacts, it is recognized that while the impacts of many actions may be individually small, the cumulative effects of past, present, and reasonably foreseeable actions on population or resources can be considerable.

A review of the project-related impacts concluded that the resource analyses for indirect and cumulative impacts are similar to one another. The period for both analyses extends through 2030. The same resources will be discussed for both indirect and cumulative impacts, including effects on regional growth, development patterns and spinoff job creation as well as water quality, wetlands, and biological resources (Table 4-28). The geographic extent of these analyses varies with the resource: socioeconomic effects will be both local (study area) and regional; water resources are evaluated in the context of the study area and relevant watersheds; and wetlands and biological resources are analyzed in terms of local and regional value.

The analysis of indirect impacts considers the effects of the proposed build alternatives, whereas, the analysis of cumulative impacts considers the affects of other past, present, and reasonably foreseeable future actions. Two major projects in the study area are either nearing completion or have been fully disclosed in a recent federal EIS. The projects are discussed briefly here, but no further evaluation of them will be conducted. One major project in the study area is ISTHA's multi-billion dollar Open Road Tolling and Congestion-Relief Program. The project has been under construction for four years and is nearing completion. The program has constructed a system of open road tolling lanes throughout the system that use electronic tolling to minimize the travel delay caused by coin-operated toll plazas. Other improvements include mainline rehabilitation and widening. The remaining elements will be completed in late 2009 and early 2010.

In 2001, the City of Chicago announced the multi-billion dollar modernization of O'Hare Airport. The OMP includes placing six runways in an east-west orientation consisting of four new runways and the extension of two existing runways. Supporting the new runway configuration would be numerous enabling projects consisting of relocating roads, railroads, cargo buildings and utilities, and constructing new navigation aids, utilities, electrical vaults, stormwater detention, air traffic control towers, and others. The program includes a new terminal on the west side of the airfield that would include connecting transportation improvements, such as extension of the people mover, CTA Blue Line, and access to local roads and the proposed O'Hare West Bypass and Elgin O'Hare Expressway. Construction of the OMP EIS began in 2005. Thus far, most of the Phase I projects have been completed, including two new runways, a runway extension, a new air traffic control tower, relocation of a road and guard post, relocation of a railroad and two waterways, three new stormwater detention basins, new electrical vaults, and numerous utility and navigation aid improvements. Design work has begun for the second half of the program (Completion Phase), and the overall program is expected to be completed within five years.

Whereas ISTHA's Open Road Tolling Program is close to completion, and the indirect and cumulative impacts of the OMP are fully disclosed in that project's Final EIS (*O'Hare Modernization Final Environmental Impact Statement,* November 2005), those projects will not be evaluated further. The following major actions are planned to occur in the study area during the same period as or immediately following the EO-WB EIS:

- ISTHA's Congestion Relief Program (2012–2015)
  - Widening I-90 from its intersection with I-294 to Elgin Toll Plaza (just west of IL 31), with accommodation for the proposed Metra commuter rail STAR Line proposal. Roughly 12 miles of the project is within the study area; the remainder extends to the west.
  - Reconstructing the I-90/IL 53 system interchange with improved geometry and directional ramps to reduce congestion. The project is entirely within the study area.
  - Implementing the green lane concept on area tollways (devoting lanes to certain vehicles to encourage carpooling, using more environmentally responsible vehicles,

and reducing emissions). Existing tollways within the study area are candidates for green lane implementation.

- The Metra STAR Line (2015-2018)—A new commuter rail project proposed in the I-90 corridor from Rosemont to Hoffman Estates with station locations throughout the route. About 12 miles of the route is within the northern part of the study area.

These actions are reasonably foreseeable, given their stage of planning and development. The cumulative effects of these actions are considered in this analysis.

In the analysis of indirect and cumulative effects, key resources are characterized in terms of their response to change; stresses imposed on them; their capacity to withstand these stresses; the pertinent regulations that may protect them, and their current status (baseline condition). This information is summarized in Tables 4-28, 4-29, and 4-30.

TABLE 4-28
Potential Cumulative/Indirect Effects

	Resources, Ecosystems, Human Communities	Potentially Important from Perspective of Cumulative or Indirect Effects
Land Use	a. Relationship between land use and transportation – consistency with local plans b. Socioeconomic c. Impacts to racial, ethnic, and special groups	a. Facilitate already established growth trends, consistency with plans of local communities and development patterns b. Population and employment growth, changing community cohesion, building displacements c. Environmental justice effects – Assess whether there would be disproportionate impact to minority and low income groups
Wetland resources	a. Wetlands	a. Degradation or loss (erosion/sedimentation, filling), fragmentation, increased volumes of water due to increased impervious areas, increased pollutant loads, and potential loss of biological resources
Water resources	a. Water quality	a. Sedimentation; pollutant loading (e.g., salt from deicing; oil, grease, heavy metals, suspended solids, and debris from demolition/construction activities, traffic operations, and maintenance); altered hydrology; potential impact to designated water uses
Biological resources	a. Flora and fauna diversity b. Habitat fragmentation c. Potential threatened and endangered species d. Intrusion into special lands (e.g., nature preserves, forest preserves) e. Tree loss during construction	a.–e. Habitat loss, degradation of habitats, and impacts to plant and animal populations from construction and/or ongoing operation/maintenance activities

4.12.2 Indirect Effects

This section evaluates the potential for indirect effects in the study area.

TABLE 4-29
Affected Environment

Resource	Response to Change	Stresses	Capacity to Withstand Stress	Regulatory Thresholds	Baseline Condition
Land use / socio-economic	Increase in development or redevelopment. Changes to population and employment.	Water resources, air quality, noise pollution. Employment changes due to business displacements or relocations.	Regulations and standards are used to minimize adverse effects. Municipal planners encouraging infill growth and redevelopment, and growth near transportation.	County and municipal zoning and land planning ordinances. Long-range infrastructure planning provided by IDOT, ISTHA, county, and others, to improve transportation service.	Area is 90+ percent developed, so most change would result from redevelopment of older commercial or industrial areas. Municipalities have plans to take advantage of improved transportation access resulting from improvements. Most forecast population, household, and employment growth will occur regardless of major transportation improvements.
Wetlands	Direct impacts: loss of wetlands and habitat fragmentation. Indirect impacts: altered hydrology and degradation of plant communities.	Additional development and redevelopment may cause increased impervious area.	Mitigation for wetlands compensates for lost wetland acreage.	IDNR and USACE enforce wetland mitigation requirements for projects subject to federal and state jurisdiction.	3,828 acres of mapped wetlands in the study area. Wetland impacts have been compensated through mitigation (e.g., adjacent to the Elgin O'Hare Expressway, etc.).
Water resources	Increased hydrocarbon, chloride, and heavy metal concentrations in streams. Increased erosion and sedimentation from construction and operation, and from installation of associated infrastructure and utilities.	Increased impervious area results in increased salt use and stormwater runoff during construction and operation/ maintenance of proposed improvements.	The use of BMPs for all aspects of project development would minimize pollutant and sediment concentration in runoff. Project engineering plans must incorporate natural drainage measures and BMPs designed to reduce erosion, runoff, and pollutant loads.	All streams fall under the General Use Water Quality Standards. IEPA provides water quality certification under Section 401 of the CWA, which is mandatory for all projects requiring Section 404 CWA permits. Safe Drinking Water Act protects municipal water sources from contamination.	Stream quality has been steadily improving since implementation of the CWA, and enforcement by the USACE, USEPA, IEPA, and other local programs.
Biological resources	Impacts to vegetation, wildlife, and their habitats.	Development, redevelopment, and transportation improvements.	Design considerations that would modify the transportation system, thereby minimizing or avoiding resource impact. Streams/rivers would not be impeded and riparian corridors would not be fragmented, thereby allowing wildlife movement along waterway corridors.	Endangered Species Act; Migratory Bird Treaty Act (USFWS/IDNR).	Species are concentrated in protected areas.

TABLE 4-30
Cause and Effect for Resources, Ecosystems and Human Communities

Resource	Cause of Change	Potential Effect of Change
Land use/ socioeconomic	Growth, accompanied by new transportation, residential, commercial, industrial, and service-oriented development.	Within the study area, existing land use patterns are retained with updated features (i.e., aging development gives way to new industrial and commercial business model). Outside the study area, the economic vitality of the study area promotes infill or expansion of development into open land. This potential outward movement of development brings with it infrastructure demands necessary to support a growing population base.
Water resources and wetlands	New development, with increased impervious surface area. Stormwater runoff during construction and operation. Stream channel erosion. Salt spray and other nonpoint source pollution.	Degradation of surface and groundwater. Higher discharge of runoff. Stream channel erosion. Reduced groundwater recharge rates. Increased demand on water supply. Wetland degradation, fragmentation, and loss. Altered hydrology. Sediment transport and pollutant loading. Deterioration of recreational water bodies. Litter and refuse.
Biological resources	Highway and transit construction. Urban development.	Loss of open space and potential habitat. Wildlife mortality. Reduced biological diversity. Habitat degradation.

4.12.2.1 Socioeconomic Effects

Subsection 4.1.1 presents the changes in population, household, and employment forecast for each alternative. Subsections 4.1.2, Displacements, and 4.1.5.5, Tax Revenues, present the direct impacts associated with the relocation of residents and businesses, and the corresponding loss in tax base associated with the alternatives under consideration. Subsection 4.1.4, Environmental Justice, evaluates if any of the impacts disproportionately impact minority or low-income communities. Both build alternatives would induce additional growth in employment beyond what is forecast under the No-Action Alternative. Both build alternatives would also lead to slight increases in population and households, over the No-Action Alternative. As indicated in Table 4-1, in 2006, the study area population was 509,900, and there were an estimated 569,500 jobs in the study area (CMAP, 2006). This area within the metropolitan Chicago region has a vibrant economy containing established residential areas and a solid employment base. It is expected that the study area will continue to maintain its competitive position and serve an important role in the larger Chicago economy, in terms of both housing and jobs.

The employment forecasts for the study area reinforce the notion that the study area will continue to attract new businesses. Most growth in employment is forecast to occur regardless of the proposed project: the 2030 forecast under the No-Action Alternative expects an increase of 80,100 jobs (or a 14.1 percent increase over 2006 jobs). Under Alternative 203, there would be an additional 62,500 jobs (over baseline) in the study area, while under Alternative 402, there would be an additional 48,500 jobs (over baseline) in the study area.

Steady population and household increases are forecast over the 20-year period. The percentage increase in population and households is not expected to be as high as employment over the same period. This could be because as the area's industrial base is enhanced by improved transportation, residential use may no longer be the highest and best use for some properties in some areas, and conversion to other land uses may occur. Population between 2006 and 2030 under baseline conditions (i.e., regardless of this proposed transportation improvement) is forecast to increase in the study area by 27,720 people and 3,650 households. This translates to a 5.4 percent population increase and 1.8 percent increase in households. If Alternative 203 were to be constructed, an additional 3,170 people and 4,900 households are forecast to live in the study area, as compared to an additional 1,420 people and 4,300 households under Alternative 402.

Section 4.1.5.2 explains the direct economic effects from construction of the proposed alternatives. In addition to the direct effects, the transportation investment will indirectly benefit the economy and increase economic output throughout various economic sectors. Construction of the project will effect the roadway construction sector by increasing demand for locally produced materials needed for construction, such as concrete, wholesale and retail trade items, rebar, and other construction materials. This will affect suppliers of those products. Other sectors of the economy would be benefited by employees hired in the highway construction industry who may increase their expenditures in restaurants, grocery stores, and shops.

In addition to the direct creation of jobs in the highway construction industry (an average of 9,200 per year for the three years of construction), Alternative 203 would indirectly lead to the creation of a total of 21,600 jobs per year for the three years of construction in other industries in the region. Alternative 402 would result in creation of 7,000 jobs per year in the highway construction industry, and would indirectly lead to a total of 16,600 jobs annually in the region.

The indirect effects of the proposed road improvements, and resulting improved transportation access, are anticipated to lead to increased population, households, and employment in the study area. While residential and business displacements would occur as a result of the project, the proposed roadway will spur development of remaining vacant parcels as well as redevelopment of underused parcels. Roadway construction itself will lead to indirect, or spinoff, jobs, and spending in the region.

4.12.2.2 Water Quality

The EO-WB study area is within the Des Plaines River Watershed, which is divided into seven smaller watersheds. Five streams that would be crossed by the build alternatives —Addison Creek, Higgins Creek, Salt Creek, Spring Brook, and Willow Creek—are 303(d) impaired streams (IEPA, 2008a). Impairment may be the result of chloride, fecal coliform, phosphorus, DO, or other signature highway runoff pollutants, such as heavy metals and TSS. The six core communities in the EO-WB study area comprise predominantly urban and built-up land with a high concentration of industrial and commercial use (Table 2-6). The built-up nature and use of the area has contributed to the degradation of its streams through various sources such as urban runoff, storm sewers, MPSDs, upstream impoundments, or channelization/streambank modification.

Increased traffic and impervious surfaces will result from recently completed transportation infrastructure improvements and from those proposed within the EO-WB study area over the next 20-year period. The increased traffic and impervious surfaces could result in additional pollutants being deposited on the roadways. Through normal operations, such as tire wear, vehicles contribute constituents to roadway surfaces. During storms, these constituents could be transported to receiving waters and cause an indirect effect on the aquatic ecosystem or designated uses of the creeks in the study area. Potential impacts from pollutants in roadway stormwater runoff include the following:

- Nutrient enrichment/eutrophication: High nutrient levels (nitrogen and phosphorous from atmospheric deposition and fertilizers) in lakes and slow moving creeks can cause excessive algal blooms, which can affect water quality, recreation, and aesthetics.
- Toxicity to aquatic life: Toxicants such as heavy metals, pesticides, and other organic compounds may affect aquatic organisms. Adverse impacts may result from chronic exposure and bioaccumulation of pollutants. Dissolved oxygen may be reduced to dangerous levels in the aquatic environment as a result of organic matter decomposition.
- Sediment contamination: Bottom substrates in the aquatic environment accumulate contaminated sediment that could interfere with the reproduction and feeding mechanisms of aquatic organisms, such as fish. Contaminated sediments may be toxic to some organisms because of elevated pollutant concentrations. Sediments can have a relatively high organic content, that when "broken down," exert an oxygen demand.
- Bacterial contamination: Following storms, water quality standards for fecal coliform bacteria frequently are exceeded in urban waters, including the streams in the EO-WB study area (see Table 2-15). This generally reflects the presence of a significant amount of animal or human waste in the water.
- Salt contamination: The use of salts for deicing may raise salt concentrations in receiving waters. High salinity levels may adversely affect sensitive floral communities, particularly wetland plants. Road salt runoff can stress wetland plant communities and may result in a reduction of native plant diversity and replacement by more salt tolerant plant species. Runoff-related salt concentrations in receiving waters usually are not high enough to kill fish and other aquatic organisms.
- Impaired aesthetics: Turbid water, trash, debris, and an oily sheen may reduce the visual appeal of waterways, affect recreational potential, and harm wildlife.
- Elevated water temperatures: Several factors can increase summertime water temperatures, such as the removal of overhanging vegetation, reduction of base flows, and runoff from impervious surfaces that have been heated by the sun. Higher temperatures can stress aquatic life and raise water quality issues.

- Impairment of water supplies: Pollutants have the potential to adversely affect surface and groundwater sources of water supply. See subsection 4.2.1 for a discussion on potential impacts to groundwater resources (USDA NRCS and IEPA, 2002).

Induced secondary development could take place in the same watersheds as the build alternatives, including adjacent to the creeks that would be affected by the collective transportation infrastructure improvements within the EO-WB study area. Additional development could indirectly add to potential impacts resulting from the construction, operation, and maintenance of the build alternatives.

Stormwater quality control would be accomplished through the NPDES Phase II General Permit No. ILR40, including incorporation of TMDLs to address impairments in affected watersheds, such as the Salt Creek Watershed. Parts of the build alternatives are within the Salt Creek, Addison Creek, or West Branch DuPage River watersheds, which have TMDLs for chloride or DO. In addition, a Stage 1 TMDL Report addressing chloride, DO, and fecal coliform has been prepared for Higgins Creek. A TMDL is in the first stage of development to address fecal coliform in Addison Creek, Salt Creek, and the West Branch DuPage River. Water quality would be managed through a combination of stormwater runoff and drainage collection facilities and the implementation of other post-construction BMPs in accordance with state and federal water quality goals of restoring water quality of the impaired/degraded streams. Refer to subsection 4.2.2.2 for discussion pertaining to water quality BMPs. As discussed in subsection 4.2.2.3, chlorides can stress wetland plant communities and may reduce native plant diversity. BMPs to reduce chloride loads could include storage and handling operations and consideration of alternative nonchloride products.

4.12.2.3 Wetlands

Most of the study area is developed land, and most of the wetlands in the study area are within special lands. There are more than 3,828 acres of mapped wetlands within the study area. Of that total, 71 percent are within special lands, such as forest preserves. Wetlands are protected by federal, state, and local (e.g., DuPage County) regulations. In the study area, loss of wetlands can generally be attributed to urban development. Wetlands filled for development purposes will be mitigated for as required under Section 404 of the CWA and other state and local regulations. Therefore, induced development is not expected to affect the total number of wetlands within the study area, since projects prompted by the proposed EO-WB improvements would tend to avoid or minimize wetland impacts to meet regulatory requirements and to keep from incurring compensatory wetland mitigation costs.

Indirect impacts could also include potential wetland degradation, as a result of point source and nonpoint source pollution. Pollution could adversely impact sensitive floral communities, particularly wetland plants. Polluted runoff may result in a reduction of wetland native plant diversity and establishment of adventive (nonnative) plant species.

4.12.2.4 Biological Resources

Land development usually displaces biological resources. Except for special lands, such as forest preserves and parks, the remaining biological resources in the study area generally are confined to isolated areas and would continue to be isolated from other habitat areas. Habitat fragmentation involves dividing larger continuous habitat (such as woodlands and old fields) into smaller habitat patches. Transportation projects and other development induced by the EO-WB improvements could cause additional fragmentation, loss of habitat and, increased competition in remaining natural areas. Fragmentation can reduce habitat function and value and may result in differences in predation, interspecific competition, and prey availability. Preservation of special lands can reduce fragmentation by protecting habitat resources.

While these indirect effects are likely with the EO-WB improvements, unlike wetlands, there is little regulatory protection for habitat types, such as wooded areas and old fields, unless they are jurisdictional wetlands, are located in special lands, or provide critical habitat for threatened or endangered species.

4.12.3 Cumulative Effects

4.12.3.1 Socioeconomic Effects

The potential for induced economic effects from construction of the proposed build alternatives is substantial for the region and is even more prominent when considering the combined, or cumulative, effects of the other reasonably foreseeable actions in the area. Cumulative economic effects were estimated using IMPLAN PRO and considered roadway improvements to be constructed between 2012 and 2015, transit improvements planned between 2012 and 2027, the Tollway Congestion Relief Program to be constructed between 2012 and 2015, and the STAR Line Project to be constructed after the EO-WB and Tollway Program between 2015 and 2018. Table 4-31 details the results of the analysis. Alternative 203, with its higher investment in construction than Alternative 402, results in more value added, jobs created, and total output and taxes than Alternative 402.

TABLE 4-31
Cumulative Economic Impacts from Build Alternatives Construction per Year

	EO-WB, Tollway Program, and Transit Improvements Associated with a Build Alternative (2012–2015)		STAR Line Project and Transit Improvements Associated with a Build Alternative (2015–2018)		Transit Improvements Associated with a Build Alternative (2018–2027)	
	203	**402**	**203**	**402**	**203**	**402**
Construction costs per year	1.8B	1.5B	$170 M	$161 M	$29 M	$17 M
Total construction costs	$5.3 B	$4.5 B	$520 M	$480 M	$260 M	$150 M
Value added per year	$2.3 B	$2.0 B	$230 M	$210 M	$39 M	$22 M
Total value added	$7.1 B	$6.0 B	$670	$630 M	$340 M	$200 M
Direct jobs[a] created per year	13,300	11,000	1,300	1,200	200	130
Total jobs[b] created per year	31,400	26,200	3,000	2,800	500	300
Total output	$12.9 B	$10.7 B	$1.2 B	$1.1 B	$660 M	$370M
Total taxes per year	$560 M	$470 M	$53 M	$49 M	$9 M	$5 M

[a] These are jobs related to construction of the transportation improvement.
[b] These include jobs in all sectors of the economy that are created as a result of the initial investment.

Cumulative economic impact from construction of Alternative 203 combined with the Tollway Program and transit improvements would result in $1.8 billion per year in construction costs (or $5.3 billion over the three-year period 2012 to 2015). This would lead to a creation of 13,300 jobs per year in the highway construction industry directly and a total of 31,400 jobs per year in the region. These projects would cumulatively increase jobs in the region for the highway industry by 22 percent per year.

Total value added (the net measure of the economic contribution of an industry to the regional economy less the intermediate goods and services used) would be an estimated $2.3 billion annually and $7.1 billion over the three-year period. Estimated total sales volume, as measured by total output, would be $12.9 billion over three years.

Federal and non-education state and local taxes generated in the region from these projects are estimated to be $560 million per year or $1.7 billion over three years.

Alternative 402, combined with the Tollway Program and transit improvements, would result in $1.5 billion per year in construction costs (or $4.5 billion over the three-year period). This would lead to creation of 11,000 jobs per year in the highway construction industry and a total of 26,200 jobs per year in the region. These projects would cumulatively increase jobs in the region for the highway industry by 18.4 percent per year.

Total value added would be estimated at $2.0 billion per year, and $6.0 billion over the three-year period. Total sales volume as measured by total output would be $10.7 billion over three years. Federal and non-education state and local taxes generated in the region from the project are estimated to be $470 million per year or $1.4 billion over the three-year period.

It is expected that the STAR Line Project would commence immediately following construction of either Alternative 203 with the Tollway project or Alternative 402 with the Tollway project. The combination of the STAR Line Project with transit improvements associated with Alternative 203 would have total construction costs of $520 million over the three-year period 2015 to 2018. This results in expenditures of $170 million per year and creates 1,300 jobs per year in the highway construction industry and 3,000 jobs per year in the region.

Total value added is estimated at $230 million per year and over $670 million over the three-year period. Total sales volume as measured by total output is $1.2 billion over the three-year period. Federal and non-education state and local taxes generated in the region from the project are estimated to be $53 million per year or $159 million over the three-year period.

The combination of the STAR Line Project with transit improvements associated with Alternative 402 would have total construction costs of $480 million over the three-year period 2015 to 2018). This results in expenditures of $161 million per year and creates 1,200 jobs per year in the highway construction industry and 2,800 jobs per year in the region.

Total value added is estimated at $210 million per year and over $630 million over the three-year period. Total sales volume as measured by total output is $1.1 billion over the three-year period. Federal and non-education state and local taxes generated in the region from the project are estimated to be $49 million per year or $147 million over the three-year period.

Transit Improvement Construction costs between 2018 and 2027 are estimated to total $260 million for Alternative 203 and $150 million for Alternative 402. This results in an expenditure of $29 million per year for Alternative 203 and $17 million for Alternative 402.

The Transit Improvement Costs for Alternative 203 are predicted to generate 200 jobs in the highway construction industry each year and 500 total jobs per year in the region between 2018 and 2027. Total value added is estimated to be $39 million per year for a total of $340 over the nine-year period 2018 to 2027. Total sales volume as measured by total output is $73 million per year or $660 million over the nine-year period. Federal and non-education state and local taxes generated in the region from the project are estimated to be $9 million per year or $81 million over the nine-year period.

The Transit Improvement Costs for Alternative 402 are predicted to generate 130 jobs in the highway construction industry each year and 300 total jobs per year in the region. Total value added is estimated to be $22 million per year for a total of $200 over the nine-year period 2018 to 2027. Total sales volume as measured by total output is $41 million per year or $370 million over the nine-year period. Federal and non-education state and local taxes generated in the region from the project are estimated to be $5 million per year or $45 million over the nine-year period.

The total construction costs for Alternative 203 including the Tollway Project, the transit improvements and the STAR Line Project are estimated to be $6.1 billion in 2009 dollars. Total Value Added for the life of the construction project (2012–2027) is estimated to be $8.1 billion in 2009 dollars. Total sales volume as measured by total output is $14.8 billion. The maximum number of jobs created will be in the initial years with 13,300 in the highway construction industry and 31,400 within the regional economy and then taper off during the following two construction periods.

The total construction costs for Alternative 402 including the Tollway Projects, the transit improvements and the STAR Line Project are estimated to be $5.1 billion in 2009 dollars. Total Value Added for the life of the construction project is estimated to be $6.8 billion in 2009 dollars. Total sales volume as measured by total output is $12.2 billion. The maximum number of jobs created will be in the initial years with 11,000 in the highway construction industry and 26,200 within the regional economy and then taper off during the following two construction periods.

Potential cumulative effects to land use relate to the location of the proposed corridors relative to the development patterns within each community and consistency with the various communities' long-range land use plans. Other potential cumulative effects include creation of a physical barrier (real or perceived) through communities. Carefully planned roadway improvements can foster beneficial results, such as making the community more cohesive, and serving future growth and planning policies. Lack of careful planning, however, can have undesirable effects, and may even create barriers that would cause adverse travel and disadvantage the business connections within a community.

Extension of the Elgin O'Hare Expressway and construction of a West Bypass are consistent with local, county, and regional plans (see discussion of consistency with land use plans, Section 4.1.3.1). Combined, these plans sustain existing uses throughout the analysis area with a responsible level of open space preservation, as evidenced by the fact that nearly 20 percent of the land in the study area is preserved in forest preserve, park, and other open space uses. Further, the proposed alternatives have been located to avoid impact to those lands. The community plans have recognized and incorporated an upgraded facility type along Thorndale Avenue as well as a new high-type facility on the west side of O'Hare Airport that would connect between I-294 and I-90, and have planned for land uses that each community deemed would be compatible with a higher-type roadway in these corridors. These communities recognize the importance of industrial and warehousing uses as an essential component of their economic base, and their goals are to preserve these uses as well as enhance their competitive position through continued updates and upgrades. For example, the villages of Bensenville and Wood Dale have recently commissioned planning studies to further take advantage of the new roadway facility as it relates to their redevelopment opportunities. These studies have targeted areas within the communities that are ripe for redevelopment, the object being for those areas to take full advantage of improved access and the changing conditions.

Generally, higher type roadways can lead to higher type uses. A freeway can provide an improved entrance/image throughout a corridor compared to a non-freeway facility. Development seeking high visibility and superior access tends to be located adjacent to freeways to improve competitive position. Industrial facilities rely on good truck access with easy movement to and from freeways. Generally, industrial developments do not require a first tier location (i.e., directly adjacent to a freeway), but one that may be a property or two removed. Thus, a hierarchy of land use type occurs with development that requires the highest visibility to be adjacent to a freeway type facility, and industrial uses located beyond. Thus, the new proposed freeway type facilities throughout the study area under either Alternative 203 or Alternative 402 would likely create a higher investment potential for properties adjacent to the freeway, and may lead to the conversion from industrial/warehousing uses to other business uses that benefit from good access and high visibility (such as office and commercial uses).

The potential for the proposed improvements to create the undesirable effect of a community barrier was examined for both alternatives and the south connection options. Under both alternatives, the westernmost part of the Elgin O'Hare Expressway (between Gary Avenue and I-290) is a freeway. Some of these lands were developed before the roadway was built, but for the most part, land uses have evolved to take into consideration the benefits of the freeway, including access and high visibility. The proposed improvements through this segment of the roadway would not lead to any further community barrier effects.

Under both alternatives, the Thorndale Avenue corridor (from I-290 to the O'Hare West Bypass) would be upgraded from an arterial to a freeway. Thorndale Avenue has always been a major east-west travel route and a heavily traveled roadway. Any barrier—actual or perceived—that the roadway presents will remain when the arterial is upgraded to a freeway. However, when upgraded, frontage roads and grade-separated crossings will provide for local access along and across the corridor. Thorndale Avenue is already a major transportation corridor, but development as a freeway will further define it as a transportation corridor. The potential barrier effects of the facility would be mitigated with local access along and across the facility to satisfy north-south travel and access to adjacent land uses, thus minimizing its effect as a barrier to existing conditions.

For the O'Hare West Bypass segment, the location of Alternative 203 is in the best possible location to avoid community barrier effects. Its location on the western edge of O'Hare Airport property avoids conflict with the proposed O'Hare Modernization Program improvements, and minimizes displacement of valued industrial and commercial properties in Elk Grove Village, Des Plaines, Bensenville and Franklin Park. Further, it is geographically on the edge of the airport and respective communities, and forms a logical boundary between the airport and communities. The location of the bypass also avoids alterations to community travel patterns that would impair emergency response, school bus routes or community travel to town and activity centers. In the case of Alternative 402 (an arterial improvement along York Road/ Elmhurst Road), the boundary would be less defined. The north leg of the West Bypass as an arterial potentially leads to community uncertainty about further advances of airport development and potential incompatibility with community land uses.

Options A and D have distinct differences related to creating barrier effects. Option D would be less disruptive than Option A. Option D parallels a rail line through an industrial area that already imposes a north-south barrier. In some ways, Option D would actually reduce the barrier effects in the area, with improved local access to and from freeway facilities. Option A, which parallels County Line Road, would bisect industrial and residential developments that span both sides of the roadway. Whereas a barrier between less compatible uses (e.g., residential and commercial) may have some advantages, the proximity to residential development raises concern about noise and air quality impacts.

The cumulative effects of these projects are expected to affect land use change in the study area. The effects would be most prominent near the improvements where maximum travel benefit is derived. Whereas the combined development of projects would displace residences and businesses, they would also spur investment in private development. Industrial and commercial land uses alike recognize the intrinsic value and competitive advantage of better transportation and access. Therefore, underused or underdeveloped properties in the area would be candidates for reinvestment, with greater employment opportunities and tax base to the affected communities. Continued increases in employment in the study area are the most likely scenario, and population growth stimulated by these foreseeable actions would most likely occur elsewhere in the region. Because the area is the location of extensive commercial and industrial development, it is expected that existing land use patterns will remain the same with the development of more modern facilities, replacing aging structures.

4.12.3.2 Water Quality

The transportation infrastructure improvements that have recently been completed or are proposed within the EO-WB study area over the next 20 years may affect land uses in the study area and could potentially result in cumulative water quality impacts. Most of the six core communities in the EO-WB study area have predominantly urban and built-up land uses. Exceptions include preserved open space associated with forest preserves and municipal parks. Additional development through infilling and selective redevelopment of vacant land is expected to occur. Areas that are unprotected open, underdeveloped, or underused space may be developed to take advantage of better transportation and access. These effects would be most noticeable in close proximity to the improvements. Additional impervious surfaces may be constructed as part of the anticipated development. When undeveloped land is converted to impervious surfaces, the stormwater runoff typically increases and infiltration decreases. Operation and maintenance of additional impervious surfaces would result in the deposition of additional pollutants. Pollutant concentrations are highly variable and can be affected by numerous factors, such as construction, operation, maintenance, weather, and adjacent land uses. Pollutants that accumulate on impervious surfaces could be transported to receiving waters in runoff.

Increased development patterns affect water quality of streams by contributing increased stormwater runoff and wastewater discharges. Most of the assessed surface waters in the study area are impaired or degraded, are inhabited by relatively pollution tolerant species, have been channelized or modified, and are surrounded by developed or mowed overbanks, with forest preserve areas generally being an exception.

If the trends of the past continue, water quality in the study area watersheds (and the region) may continue to degrade, and as more streams are assessed for water quality impairments, the 303(d) list of impaired waters likely will grow. The biological integrity and diversity of streams in the larger Des Plaines River Watershed would continue to decline. For example, Salt Creek, in both Cook and DuPage counties near the center of the EO-WB study area and comprises roughly 44 percent its total acreage. Rapid urbanization of the Salt Creek Watershed started around the 1950s. In the years that followed, human activities (land development/construction, land use, etc.) placed an overwhelming strain on the watershed. Several factors, such as increased impervious area, floodplain encroachment, loss of natural storage area, channel modification, and pollutant discharges resulted in increased stormwater runoff, flooding, and stream degradation.

Since the 1970s, various environmental regulations (at the federal, state, and local levels), flood control projects, and public awareness/activism have played a role in improving water quality and flooding. Various federal, state, and local regulations, such as the federal CWA and the DuPage County Countywide Stormwater and Flood Plain Ordinance, are controlling the effects of development upon water resources.[31] For waterways located proximate to the EO-WB build alternatives, a TMDL has been prepared for the Salt Creek Watershed[32] and for the West Branch DuPage River (CH2M HILL, 2004b). TMDLs by themselves will not lessen future degradation, but with regulatory oversight and implementation of BMPs, water quality in subwatersheds and the larger Des Plaines River Watershed should improve.

For example, in response to the Salt Creek and West Branch DuPage River TMDLs, an active watershed group was formed. The watershed group continues to develop recommendations and actions to improve water quality in Salt Creek and the West Branch DuPage River. In addition, segments of four waterways in the study area—Addison Creek, Salt Creek, West Branch DuPage River, and Higgins Creek—are in the first of three stages of TMDL development to address additional impairments, such as fecal coliform (IEPA, 2008a). If appropriate BMPs are implemented and properly applied, water quality throughout the influence area may improve, even with more development.

[31] The Metropolitan Water Reclamation District of Greater Chicago is preparing a countywide watershed management ordinance for Cook County.

[32] The Salt Creek TMDLs addresses segments of the following waterways within the study area: Salt Creek, Addison Creek, Spring Brook, Meacham Creek, Busse Woods Lake (CH2M HILL, 2004a).

Development can also result in an increase in the rate and volume of stormwater runoff and a reduction in groundwater recharge. Stormwater typically is managed on a project-by-project basis. Stormwater controls function independently and primarily reduce peak storm flow rates for larger storms (some allowable release rates account for smaller, more frequent storms), or potential impacts associated with the total storm volume may not be accounted for. If not managed appropriately, this could result in increased flooding, streambank erosion, and higher, more frequent storm-related flows, and lower and longer duration low flows in streams as a result of cumulative urban development. The increased runoff rates and high channel velocities may result in excessive bank erosion or channel downcutting. Stream substrates and bottom-dwelling/benthic organisms can be scoured away by frequent high flows/velocities. Pollutants may concentrate during periods of lower flow. Extended periods of low flow may also result in higher in-stream temperatures during the summer that could affect fish or other aquatic wildlife (USDA-NRCS and IEPA, 2002).

Detention would be provided to compensate for the increase in impervious area associated with the EO-WB build alternatives and other planned infrastructure projects in the study area, as necessary. To minimize cumulative impacts, BMPs to consider in the Tier Two environmental studies would allow for a watershed approach to stormwater management that integrates both water quantity and quality control, as practicable. BMPs would be designed to reduce the occurrence of flow control problems or minimize the chances of problems becoming worse. BMPs would be designed to incorporate TMDLs or to treat other pollutants that have been identified as stressors of concern to reduce effects of water quality impairment sources, such as chlorides, in the respective watersheds (National Research Council, 2008).

Several forest preserves within the study area are located in the floodplain or were purchased by forest preserve districts for flood control/stormwater quantity and quality improvements. This was accomplished through floodplain acquisition, construction of reservoirs and stormwater facilities, preservation of wetlands and riparian habitat, and public education and awareness opportunities. BMPs could also minimize the cumulative impacts of development.

Of the major transportation projects proposed in the next 20 years within the study area, the EO-WB project is expected to break ground first. As such, it could be used as a model to develop stormwater quantity and quality BMPs that could be applied to other infrastructure projects in the larger Des Plaines Watershed or northeastern Illinois. As part of the EO-WB improvements, a BMP manual that incorporates the stormwater BMPs could be developed. The BMP manual would be applied to the Tier Two design and construction phases of the EO-WB improvements and could serve as a prototype for other transportation projects to minimize cumulative water quality impacts in the EO-WB study area and to the downstream environment. Mitigation measures would be provided to compensate for acknowledged unavoidable impacts and to minimize cumulative effect (see subsection 4.14).

4.12.3.3 Wetlands

Suloway and Hubbell (1994) estimated that more than 90 percent of Illinois' original eight-million acres of wetlands have been destroyed by human modification. Wetlands once covered more than 23 percent of Illinois. Wetlands and deepwater habitats now make up less than five percent of Illinois land. Wetland degradation in Illinois and the study area historically was associated with agriculture, but recent degradation is attributed to urban development.

From a broader perspective, it is expected that the cumulative loss of wetland acreage to development in Cook and DuPage counties will slow in the future. Past wetland loss due to urban and agricultural development has lead to a reduction in the overall acreage of remaining wetland areas. The few remaining wetland areas are subject to strict wetland regulations at the federal, county, and municipal levels, thus promoting the continued preservation of localized wetland areas and thus a reduction in future wetland losses. In addition, more aggressive wetland regulations require higher mitigation ratios. Under the protection granted to wetlands (Section 404 of the CWA), mitigation guidelines require that wetland losses greater than 0.10 acre be replaced at a ratio of 1.5 to one or greater (depending on the type and quality of wetland affected, the mitigation ratios may be higher). Thus, in many cases more wetlands are being created than destroyed by individual projects. In-kind replacement has been elevated as an objective, lessening the potential for changing wetland composition in the area. These mitigation requirements are applicable to both private and public projects.

The Illinois Interagency Wetland Policy Act of 1989 (applicable to state/state pass-through funded projects) also provides protection to wetlands and requires mitigation for all wetland impacts regardless of size. Overall, this legislation has been effective for mitigating the loss of wetlands from public projects that receive state/state pass-through funding, which has helped to slow total wetland loss across the state. DuPage County has developed a wetland protection ordinance to fill potential gaps in state and federal regulations. DuPage County is a leader in the state regarding wetland protection with the adoption of the Countywide Stormwater and Flood Plain Ordinance.

Land management is another mechanism that can minimize the potential conversion of special resources. Examples are park districts, forest preserves, state parks and natural areas that provide long-term protection to special resources within their boundaries.

These practices minimize wetland losses from the build alternatives, as well as to direct the effects of urban development, and slow or stop the rate of wetland loss in the study area and consequently, the overall cumulative effect. The percent of wetland loss for each of the build alternatives represents a small fraction of the total wetland acreage found in the study area and local region. The long-term viability of wetland resources will likely be sustained through mitigation and an increase in larger wetland complexes (via wetland mitigation banks), which are preferred by regulators.

4.12.3.4 Biological Resources

Most of the study area is urban and built-up land, and contains limited areas of prime wildlife habitat. Higher quality vegetation and wildlife species in the study area tend to be concentrated within the special lands. Important vegetative cover types for wildlife in the study area are the forested lands, old fields and wetlands. Wetland habitats include emergent, wet old field, sedge meadow, scrub-shrub, and wooded wetland.

The large percentage of urban development, habitat fragmentation, and transportation infrastructure throughout the study area limits wildlife movement. Large contiguous areas of open space are generally located within special lands or are adjacent to waterways. Wildlife use linear corridors, such as riparian environments, greenways, rights-of-way, and fence rows, for movement, dispersal, and to access habitat that has been divided by roads, rail, or other types of development. The largest contiguous open space habitat types within the study area are the Ned Brown Preserve, a system of forest preserve properties along the Des Plaines River in Cook County, and a cluster of forest preserves and other special lands in DuPage County along Salt Creek/adjacent to I-290. The preserved open space and Salt Creek provide connectivity among the DuPage County Forest Preserves and may allow wildlife movement between those areas.

In general, the large contiguous open space habitats within the study area correspond with the "recommended resource protection areas" depicted in the Chicago Wilderness Green Infrastructure Vision for Northeastern Illinois (Northeastern Illinois Planning Commission, 2004). The green infrastructure represents interconnected upland and aquatic habitats (e.g., large complexes of remnant woodlands, prairies, wetlands, lakes, riparian corridors) that support biodiversity and allow diverse native plant and animal communities on a regional scale. Green infrastructure may also include adjacent buffer areas. The recommended resource protection areas and green infrastructure provide the location for regional biodiversity protection and ecosystem restoration opportunities. These areas are not intended to be precise protection or restoration areas; instead, their purpose is to create awareness and opportunity for protection and restoration. Impacts to these areas have been avoided or minimized by the build alternatives.

The build alternatives and future development have the potential to create additional edge effect at the perimeter of larger preserved open space and to displace isolated habitat areas (old fields or small wooded lots) that are not within special lands. In time, as animals move away from affected areas to undeveloped areas, urban tolerant species could create additional competition for less tolerant species residing in protected areas or for other urban tolerant species inhabiting scattered, remnant open space.

4.12.4 Conclusion

A substantial investment in transportation infrastructure is required to address severe congestion in one of the Chicago metropolitan area's major transportation and employment areas. Investment of this type often spurs related land use growth, but in an already developed area such as in the study area, the basic patterns of land use would be expected to be maintained. It is expected that change in land use would instead occur in the form of rehabilitation or redevelopment for those commercial and industrial areas needing modernization (e.g., those with aging or obsolete buildings, numerous access drives, and awkward access for today's larger semi-trucks). The boundaries of industrial and commercial areas are reasonably set and encroachment upon established residential areas is unlikely. Thus, land use response to transportation investment would be expected to be in the form of private sector investment in the commercial and industrial areas that would benefit from an improved transportation system through improved competitive position in the marketplace. As stated earlier, the regional economic effects of the proposed improvements combined with other major projects planned in the study area are sizable. Most of the growth in population spurred by the investment would be expected to occur outside of the study area. Growth will result in several possible population change scenarios, including a shift or redistribution of population in the metro area, infill development, or new development. Depending on the type of employment resulting from industrial or commercial redevelopment, all these scenarios could occur. For some, affordable housing and access to public transportation is important. Most likely those requiring such amenities already live in areas that have them. Expansion of housing into the fringes of the metro area will occur as long as there is a need for additional affordable housing. This pattern of expansion tends to impose new stresses on natural and societal resources (e.g., development of open space, water quality effects, displacement of natural habitat, and requirements for costly new infrastructure).

Regarding natural resources, wetlands and other biological resources (flora/fauna, habitat fragmentation, threatened and endangered species, tree loss, and special lands) in the study area remain relatively stable. Water quality has the greatest potential for impact because of development. Most of the remaining wetlands and biological resources within the study area are in publicly managed/protected lands. Biological and wetland/water resources within the study area but outside the managed lands have been affected by an urbanized development pattern. The highest quality resources in the study area are also located in protected lands (e.g., forest preserves). Biological resources outside protected lands have limited diversity and have shifted toward species tolerant of urban development. Surface waters within the study area are largely impaired or degraded, but their water quality will improve because of watershed studies or actions and regulatory action. Notably, the implementation of regulatory controls and increasing consideration of sustainable policies has shown benefits to water quality and biological resources. With the implementation of these management tools, the deteriorating quality of these resources has subsided and has shown signs of improving.

Overall, the cumulative effects of the proposed improvement and other major projects in the area would be manageable with diligent adherence to managed growth and regulatory controls protecting and preserving natural resources in the area. Communities and resources agencies affected by the proposed transportation improvements have been substantially involved in the planning process for these planned facilities. They have helped to guide the proposed improvements in ways that are compatible with community goals and objectives, and with the policies of resource agencies. Thus, the planning process has measurably addressed and planned for improvements that reflect the values of the affected communities and agencies. As the process advances toward implementation, these same values could be incorporated into the project specific mitigation, interagency agreements, ordinances, and regulations pertaining to the area.

4.13 Mitigation Concepts and Commitments

Mitigation measures are provided to compensate for unavoidable impacts. The following are proposals and concepts for mitigating resource losses or managing short- and long-term social effects. Detailed mitigation strategies will be developed during Tier Two environmental studies.

4.13.1 Traffic

A traffic management plan will be required during the construction period. The purpose of the plan is to maintain traffic flow and reliable access to residences, businesses, community facilities and services, and local roads during construction. There would be coordination with fire, police, and emergency services to minimize delays and response times during construction.

4.13.2 Land Use

Land use mitigation will consist of maintaining or enhancing connectivity, and incorporating roadway design considerations for developed areas. Continued coordination with communities at each successive design level would be conducted on issues such as: identifying opportunities to expand transit, bicycle, and pedestrian movement across or along planned roadway improvements; reviewing alignment details and resultant community impacts; and incorporating roadway design considerations, such as landscaping, buffer areas, and roadway lighting sensitive to adjacent land uses in order to minimize community impacts.

4.13.3 Relocations

IDOT will offer relocation assistance, in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970*, as amended, and IDOT's *Land Acquisition Procedures Manual*, to all occupants of buildings they would purchase and remove. Those policies provide for relocation assistance services to homeowners, renters, and businesses. Participation under the state and federal policies is without discrimination. IDOT will pay property owners the fair market value for all private property purchased, and relocation assistance.

4.13.4 Water Quality and Hydrology

Measures to mitigate water quality impacts are described conceptually here. They will be detailed in Tier Two environmental studies as to type, extent, and location of mitigation.

BMPs would be implemented that minimize the volume of stormwater runoff discharge and result in physical, chemical, or biological pollutant load reduction, increased infiltration, and evapotranspiration. Proper soil erosion and sediment control measures would be used to minimize erosion and sedimentation for any build alternative. These measures are a condition of Section 404 CWA permits, prescribed in design and construction guidance by IDOT, and would be coordinated with the local Soil & Water Conservation District (SWCD). Erosion control measures consist of applying mulch, straw, soil tackifiers, polymers, erosion control blankets, and vegetative soil stabilization. Vegetative soil stabilization includes temporary and permanent seeding, sodding, ground cover, and dormant seeding. Disturbance of streamside and riparian vegetation would be kept to a minimum. If in-stream construction and soil disturbing activities near streams would be conducted during low or normal flow periods. Discharge points would be protected with rock (or an alternative measure) to minimize scour and erosion.

Perimeter sediment control devices would be installed before commencing soil disturbing activities, as necessary. Perimeter silt fence, stabilized construction entrances, drainage inlet protection, ditch checks, diversions, sediment traps, and other appropriate BMPs would be used to control sediment and runoff, and to protect receiving waters during construction.

Stream crossings and structure sizing would be performed in accordance with state and federal guidelines regarding floodplain encroachment and hydraulic capacity. All new structures would comply with these guidelines. Waterway crossings would be bridged, enclosed in a culvert, or otherwise designed to accommodate expected high water flows, to allow movement of aquatic biota, and not to impede low water flows. Drainage systems, including ditches, would be maintained and restored so as not to impound water (unless designed to do so for a water quality benefit). Compensatory storage and stormwater detention facilities will be analyzed in the design phase of Tier Two and would be considered in accordance with local stormwater ordinances. The requirements for compensatory storage are discussed in subsection 4.4, Floodplains, and for detention in subsection 4.2, Water Resources and Quality. Stormwater facilities and discharges will be monitored and managed during and following construction in accordance with the requirements of the General NPDES Permit No. ILR40.

Other stormwater control practices may be needed to mitigate water quality impacts. In addition to detention facilities, other practices, such as vegetated basins/buffers, infiltration basins, and bioswales, would be evaluated to minimize transport of sediment, heavy metals, and other pollutants. Deicing management practices, such as anti-icing chemicals and additives, can minimize salt application quantities. These practices will be evaluated further in Tier Two environmental studies.

Accidental spills of hazardous materials and wastes during construction or operation of the transportation system require special response measures. Occurrences would be handled in accordance with local government response procedures. The first response typically is through the fire department and emergency service personnel to ensure public safety and to prevent harm to the environment. Depending on the nature of the spill, the Illinois Emergency Management Agency (IEMA), and as necessary, IDNR or IEPA, would be notified to provide additional instruction regarding cleanup. Refueling or maintenance of construction equipment would not be allowed within 100 feet of wetlands or water bodies to avoid other accidental spills.

4.13.5 Wetland Mitigation

Measures to mitigate wetland impacts,[33] conceptually defined here, will be detailed in Tier Two. As required by USACE and IDNR regulations, final design of the preferred alternative will incorporate wetland avoidance and minimization objectives prior to the development of the project mitigation plan. Much has been done in the Tier One study to coordinate with the USACE and IDNR to avoid and minimize impact on wetlands. Unavoidable wetland impacts will require compensatory wetland mitigation. The compensatory wetland mitigation design will establish and implement wetland compensation objectives, apply established ratios for compensation commensurate with required impacted wetlands, identify locations for wetland compensation sites, site engineering and development, and plans for long-term monitoring and maintenance of the mitigation wetlands.

4.13.5.1 Wetland Impact Avoidance and Minimization

Recognizing the conceptual engineering detail of the build alternatives, further efforts will be made in future phases of work for the preferred alternative to avoid and minimize additional wetland impacts beyond the efforts in Tier One. Avoidance and minimization can be accomplished in the following ways:

- Alignment shifts of roadways
- Narrower roadway cross-section with the use of:
  - Narrower center median
  - Narrower shoulder
  - Retaining walls
  - Steeper roadway embankments
  - Enclosed drainage systems

[33] Jurisdictional wetland and other waters of the U.S. impacts will require compensatory mitigation under Section 404 of the CWA.

  – Bridging critical wetland resources

Avoiding and minimizing impacts to wetland resources may be constrained by other critical resources or local issues. When a choice must be made between wetlands and other critical resources, some resources or project issues may be afforded priority over wetland loss. For example:

- Avoidance of public recreational lands protected under Section 4(f)
- A disproportionate amount of residential and business relocations
- Maintenance of minimum safety requirements

TABLE 4-32
IDNR Wetland Compensation Ratios

Degree of Adverse Impact	Onsite	Offsite	Out-of-Basin
Minimal alteration	1.0:1[a] / 1.5:1[b]	1.5:1	2.0:1
Significant alteration	1.5:1	2.0:1	3.0:1
Destruction	2.5:1	4.0:1	5.5:1

[a] This ratio applies to all other types of wetland vegetation, substrate, or wetland type except those wetlands that have woody vegetation, subject to USACE approval.
[b] This ratio applies if the vegetation of the affected wetland is woody.

4.13.5.2 Compensatory Wetland Mitigation

Objectives for mitigation will be established in consultation with regulatory and resource agencies on the following major issues:

- Purchase of mitigation credits from a commercial wetland bank
- Type of compensatory wetland mitigation
- In-kind replacement
- Functional replacement
- Ratio of wetland mitigation replacement
- Location of wetland mitigation replacement

The State of Illinois, in the IWPA, has established compensatory wetland mitigation ratios for all state-funded projects. The established ratios generally are more stringent than those established by the USACE. The highest mitigation ratio of 5.5:1 will apply for wetland impacts in the following cases:

- Alteration of wetlands that contain state- or federal-listed threatened or endangered species
- Wetlands that contain essential habitat for state- or federal-listed species
- Presence of an INAI site
- A mean C-value of 4.0 or more (Swink and Wilhelm, 1994)
- Individual wetlands with a Floristic Quality Index (Swink and Wilhelm, 1994) of 20 or more

The compensation ratios shown in Table 4-32 represent the current compensation guidelines required for wetland impacts in Illinois by the IWPA; however, DuPage County and the USACE have identified certain wetland resources (e.g., critical wetlands in DuPage County; High Quality Aquatic Resources, etc.) requiring elevated compensatory wetland mitigation as well. Compensation ratios for impacts to High Quality Aquatic Resources will be developed with the regulatory agencies on a case-by-case basis during Tier Two.

Location of the compensatory wetland mitigation sites would be determined following agreement on the wetland replacement ratio and other mitigation objectives. Appropriate environmental studies would be conducted for the selected mitigation sites, including an evaluation of the environmental features of the site, existing resources, suitability for wetland resource creation and restoration and potential effects of mitigation creation at the selected location. The environmental studies would include historic/archaeological surveys, biological surveys, and potential for threatened and endangered species.

Preferences for mitigation are as follows:

1. Wetland mitigation banking within a USACE-approved bank.[34]
2. Onsite—within the same hydrologic unit and less than one mile from the project site.[35]
3. Offsite, within basin—the same hydrologic unit but more than one mile from the project site.
4. Offsite, out of basin—compensation not provided within the watershed of affected wetlands.

The following compensatory wetland mitigation strategies may be used with the above preferences:

- One overall compensation site
- Larger sites (as opposed to scattered smaller sites), to facilitate long-term management for a composite of desired wetland functions, values, and biodiversity
- Sites with no impediments to immediate design, permitting, and construction
- Sites that provide a high plant ground cover and diversity, contain minimal invasive species, provide wetland functions, and improve the quality of the resource
- Sites providing in-kind replacement of impacted wetlands and streambank ecosystems
- Sites supporting a diverse ecosystem with hydrologic/ecologic connections to other ecosystems and associated riparian areas
- Sites that have a high likelihood of success
- Restoration and enhancement of existing wetlands
- Participation in wetland creation programs (e.g., FPDCC)
- Acquisition/land protection

[34] The option most preferred is mitigation bank credits. See the *Compensatory Mitigation for Losses of Aquatic Resources; Final Rule* (April 10, 2008).

[35] Mitigation site selection will consider the potential to attract waterfowl and other bird species that might pose a threat to aircraft. FAA Advisory Circular, *Hazardous Wildlife Attractants On or Near Airports*, (Advisory Circular No: 150/5200-33B) recommends that wetland mitigation projects that may attract hazardous wildlife be sited at least 10,000 feet from the air operations area of an airport serving turbine-powered aircraft, 5,000 feet from the air operations of an airport serving piston-powered aircraft, and five statute miles if the attractant may cause hazardous wildlife movement into or across the approach or departure airspace.

4.13.6 Floodplain Mitigation

Floodplain impact mitigation will be based on IDOT guidelines in conjunction with the Illinois Department of Natural Resources-Office of Water Resources (IDNR-OWR), as well as local ordinances for floodplain management and mitigation.

Examples of mitigation measures to be considered during Tier Two of the study include:

- At locations where a longitudinal floodplain encroachment would occur, practicable alternatives such as shifting alignment, lowering profile, constructing structures, etc. would be explored to avoid or minimize encroachments on the floodplain.
- At locations where a transverse floodplain encroachment would occur, the proposed roadway should span over the floodplain to greatly reduce encroachments.
- Designs of embankment slopes and roadway profiles would be considered to reduce filling of the floodplain.
- Retaining walls would be considered in an effort to reduce potential floodplain impacts.
- Compensatory storage would be provided to comply with regulation requirements. Table 4-18 provides an estimated compensatory storage volume for each alternative.

Effort would be made to minimize open water surfaces within 10,000 feet from the end of runways at O'Hare Airport. Measures to mitigate floodplain impacts will be further identified and refined during the Tier Two environmental studies.

4.13.7 Biological Resources

Mitigation of upland forested areas will comply with guidelines established by the IDOT for habitat replacement. Tree replacement will be in accordance with IDOT's Tree Removal and Replacement Policy. Guidelines for tree and vegetation replacement include:

- Replacing losses of forest habitat associated with large wooded tracts (10 acres or more):
  - Replacing existing native hardwoods
  - Replacing adventive species with native hardwoods
  - Replacing indigenous understory
- Replacing losses for other tree and vegetation material:
  - Replacing scattered landscape material per IDOT's *Guidelines for Use of* Landscape Items
  - Replacing trees and vegetation on Section 4(f) lands to be coordinated with the agency having jurisdiction over the subject property

An attempt will be made to minimize and mitigate impacts to wildlife. The alternatives primarily include improvements to existing roadways. These roadways are, for the most part, barriers to wildlife movement.

As streams provide avenues of wildlife movement, bridges or culverts can be installed where practical to provide additional corridors of movement.

Roadside barriers, such as fences and jersey walls, may restrict wildlife from entering roadways. They can also trap wildlife on the roadway, allowing no means of escape. In areas where large numbers of wildlife are present, such as forest preserves, fencing and other barriers would be limited to areas necessary for public safety. For project sections that are new roadways or alignments, features to facilitate wildlife movement and reduce vehicle/wildlife collisions would be incorporated into the plans where possible.

For sensitive wildlife areas, such as forest preserves and critical wetlands, large box culverts can be installed where practical to serve as avenues for wildlife movement. Culverts combined with low barrier walls along the roadway would provide a safer means of crossing the roadway. Short barrier walls in sensitive areas would be designed mainly to restrict the movement of small animals, including reptiles, amphibians, and smaller mammals. The walls would not limit the movement of larger mammals in order to prevent them from being trapped within the roadway.

Detailed plant and wildlife surveys would be conducted during Tier Two. If threatened or endangered species are encountered that have not yet been recorded, a plan would be developed to avoid affecting that species. If avoidance is impractical, a mitigation plan would be developed and coordinated with the USFWS or IDNR through the formal consultation process.

Plans for staged construction may be incorporated into the final plans for the selected alternative to minimize disruption of breeding seasons for sensitive species.

4.13.8 Special Lands

Formal Section 4(f) or Section 6(f) determinations and necessary assessments will be made in Tier Two. Based on the determinations, the appropriate level of assessment will be conducted. IDOT would coordinate with FHWA and the 4(f) entity affected or the IDNR to determine appropriate mitigation measures where avoidance and minimization measures are not feasible or prudent to ensure compliance with Section 4(f) of the USDOT Act of 1966. IDNR requires the substitution of replacement property having equal fair market value and comparable outdoor recreational usefulness, quality, and location in order to convert property purchased with OSLAD funds to transportation uses. These mitigation measures would be documented in a Memorandum of Agreement signed by IDOT and IDNR.

4.13.9 Visual Resources

The following general principles will be considered during Tier Two project design to mitigate for visual impacts:

- Provide a smooth transition to existing topography at grading limits
- Consult with stakeholders on noise barrier and retaining wall design to soften the contrast with the adjacent land uses/environment
- Design stormwater management facilities to be functional and aesthetically pleasing
- Consider directional street lighting to minimize light pollution
- Preserve vegetation or stabilize disturbed parts of the right-of-way with vegetation using native plant species, where appropriate

- Reduce median widths at creek crossings to minimize disturbance of vegetation and terrain, providing motorists with the opportunity to become aware of these resources

Construction of the build alternatives would result in the loss of wooded areas. Replacement trees would be required as mitigation measures in accordance with the IDOT's Policy D&E-18, *Preservation and Replacement of Trees*. Replacing trees on Section 4(f) lands will be coordinated with the agency having jurisdiction over the subject property, and may require more restrictive tree replacement requirements. Planting a variety of native trees rather than a single species would mitigate, to some degree, the tree impacts, while helping to offset the contrast of fill slopes or cuts. The installation of native trees, shrubs, grasses, and forbs could minimize right-of-way maintenance. Visual discontinuity associated with approach slopes to bridges could be softened by installing groups of trees and shrubs, helping to blend these features into the surrounding environment.

Given the relatively flat terrain in the study area, the most visually apparent features of the project would generally be bridges and interchanges. The appearance of typical overpass structures with steep approach slopes could be enhanced through structures, earthwork, and landscape design. Bridges would be designed to appear unified and to present a cohesive image for motorists passing through the area, and for others within the viewshed.

These principles would be considered and specific design elements developed and refined during Tier Two environmental studies or the final design. Stakeholder input could continue as part of the context sensitive design.

4.13.10 Air Quality

Construction will occur during Tier Two. Construction will be required to comply with applicable state and local air quality regulations.

4.13.11 Noise

All construction equipment would be required to have mufflers constructed in accordance with the manufacturers' specifications. Mufflers and exhausts must be maintained in good working order. Daily operating hours for construction would coincide with the construction schedule needs, unless otherwise specified.

Tier Two noise abatement measures for reducing traffic noise levels to residential and other properties will be evaluated for reasonableness and feasibility, and follow the guidance provided by the FHWA policies and procedures, 23 CFR 772; IDOT's *BDE Manual Section 26-6* (2002a); and IDOT's *Highway Traffic Noise Assessment Manual* (2007a).

Measures to reduce traffic noise, including traffic management measures, comprehensive land use planning, shifting the roadway location, and noise barriers will be examined during the Tier Two environmental studies.

4.13.12 Cultural Resources

Data for known cultural resources are not definitive in identification of sites or properties of significance. Further study under Tier Two is required to determine if there is any impact and, if so, what further avoidance or minimization is possible or what mitigation is required. IDOT would coordinate with FHWA, SHPO, Indian tribes, and other applicable entities to develop appropriate mitigation measures. Mitigation measures may include relocating a resource or documenting and photographing resources before removal. Agreed-upon mitigation measures would be documented in a Memorandum of Agreement signed by SHPO, IDOT, and FHWA. Mitigation activities would ensure compliance with Section 4(f) of the USDOT Act of 1966 and Section 106 of the NHPA.

4.13.13 Special Waste

Each build alternatives and south bypass connection option might encounter special waste sites. The extent and nature of materials requiring special handling will be the focus of further studies in Tier Two. A PESA will be completed to determine areas with recognized environmental conditions. A response to the PESA will be required to determine sites that require a Preliminary Site Investigation (PSI). The PSI will determine soil and environmental impacts, special waste handling requirements, and construction worker safety considerations. The areas of contamination would be managed in accordance with federal and state laws and regulations and in a manner that would protect human health and the environment.

4.13.14 Borrow and Disposal

The requirements for borrow and disposal of unused excavated material have not been determined in Tier One. The borrow and disposal requirements for the project will be determined as part of Tier Two. The amount and location of borrow cannot be ascertained until preliminary engineering design has been fully developed and refined in final design. Borrow sites would be identified and a site plan prepared, including an excavation plan, haul route plan, and end use plan. Appropriate environmental studies would be conducted for the borrow areas, including an evaluation of the environmental features of the sites and their potential environmental effects.

To the extent possible, materials cut from the project corridor with the proper engineering properties would be used for fill. The contractor would dispose of unusable excavated material in accordance with state and local regulations and other special provisions to ensure protection of wetlands and other waters. All waste and demolition material from the project would also be disposed of in accordance with applicable regulations.

4.14 Permits / Certifications

Regulatory permits would be required for any build alternative. Regulatory agencies, such as the USACE, are not being requested to consider issuing permits at this time; however, a general coordination approach is taking place. Detailed studies would be required as part of formal permit applications and consultations, which will be completed in Tier Two. Such studies would include formal wetland delineations, biological surveys, or searches for threatened and endangered species for the selected alternative. Issuance of regulatory permits would require detailed engineering plans for the preferred alternative.

This study does not include developing detailed engineering plans for any alternatives. Submittal of permit applications to pertinent regulatory agencies would not take place until after selection of a preferred alternative and development of final engineering plans in Tier Two. Avoidance and minimization strategies required to obtain permits would be developed at that time.

Permits could include at least the following:

- Section 404 of the CWA from the USACE
- Section 401 of the CWA Water Quality Certification from the IEPA
- NPDES permit from the IEPA
- IDNR-OWR permits for impacts to regulatory floodways and stream crossings
- Coordination with the North Cook County and/or Kane/DuPage County SWCD for soil erosion and sediment control review

The build alternative will have impacts on surface waters and wetlands. The discharge of dredge or fill materials into jurisdictional waters of the U.S., including wetlands, is subject to the requirements of Section 404 of the CWA. The permitting process for the preferred alternative would vary, depending upon implementation as a single project or a phased project. If the preferred alternative is implemented as a single project, an individual permit most likely would be required from the USACE–Chicago District for all jurisdictional wetland impacts associated with the project. If the preferred alternative is phased or implemented over time as several projects, the likely regulatory scenario would be Section 404 Permits for each stand-alone improvement. For some projects, however, wetland impacts may be minimal, and qualify for the Regional Permit Program.

The Section 404 permit is contingent upon receipt of 401 Water Quality Certification from the IEPA. IEPA provides water quality certification pursuant to Section 401 of the CWA. The preferred alternative would be subject to the requirements of Section 401 Water Quality Certification. IEPA has granted Section 401 Water Quality Certification for projects that qualify for the USACE Regional Permit Program.

A cooperative agreement between the USACE and the local SWCDs requires a detailed review of erosion and sediment control in conjunction with Section 404 permitting. In North Cook County, review would be conducted by the North Cook County SWCD, whereas in DuPage County, the review would be conducted by the Kane/DuPage County SWCD. During Section 404 permitting, a soil erosion and sediment control plan for the build alternative would be prepared and submitted to the appropriate SWCD office for confirmation that the plan meets technical standards. The soil erosion and sediment control plan would require installation, maintenance, repair, and inspection of soil erosion and sediment control BMPs throughout the construction process.

The preferred alternative will be subject to the requirements of an NPDES permit for stormwater discharges from the construction site in Tier Two. NPDES coverage is required when a construction project disturbs one acre or more of total land area, or is part of a larger common plan of development that ultimately disturbs one or more acres of total land area. Permit coverage will be obtained either under the IEPA general permit for stormwater discharges from construction site activities, or under an individual NPDES permit. Permit requirements would include preparation of an SWPPP. The SWPPP would identify potential sources of pollution and would describe or identify practices to be used to reduce the discharge of pollutants associated with construction site activity. The permit would require the installation, maintenance, repair, and inspection of BMPs and reporting.

The IDNR-OWR issues floodway construction permits for work within regulatory floodways and for the crossing of streams with more than 640 acres of drainage area. Each preferred alternative would require issuance of this permit. The involvement of stream floodways and floodplains for each alternative are described under subsection 4.2, Water Resources and Quality, and subsection 4.4, Floodplains.

4.15 Relationship of Short-Term Uses versus Long-Term Productivity

This subsection examines short-term costs and long-term gains for the build alternatives. The short-term use refers to immediate consequences of the project; long-term use refers to direct or indirect effects on future generations.

Short-term consequences of the build alternatives include the following:

- Relocation of residences and impacts on businesses
- Removal of private properties from tax rolls, thereby reducing the property tax base
- Losses of employment
- Conversion of floodplain and wetland to transportation use
- Inconvenience to residents, business owners, suppliers, and employees during construction

Long-term benefits to be realized from the either build alternative include the following:

- Improved access throughout the study area
- Improved travel on local and regional roads
- Better connectivity between automobile and transit modes of transportation
- Improved transit opportunities for area residents and employees of businesses in the area
- Economic benefits that would result in the creation of additional jobs and spending:
  - Construction of Alternative 203 would create an estimated 9,200 jobs per year in the highway construction industry, and 21,600 jobs per year in all sectors in the region. Total value-added (the additional value of a commodity produced over the cost of commodities used to produce it) per year would be an estimated $1.6 billion and $4.8 billion over the three-year construction period.
  - Construction of Alternative 402 would create an estimated 7,000 jobs per year in the highway construction industry, and 16,600 jobs per year in all sectors of the region. Total value added per year would be an estimated $1.3 billion and $3.9 billion over the three-year construction period.

- Improvement of the competitive position of the area by promoting private investment in the redevelopment of underused properties, thus growing employment opportunities in the area to new levels
- Substantial economic benefits when considering the cumulative effects of other reasonably foreseeable actions such as the following:
  - The total construction costs for Alternative 203 including the Tollway Projects, the transit improvements and the STAR Line Project are estimated to be $6.1 billion in 2009 dollars. Total value added for the life of the construction project (2012–2027) is estimated to be $8.1 billion in 2009 dollars. Total sales volume as measured by total output is $14.8 billion. The maximum number of jobs created will be in the initial years with 13,300 in the highway construction industry and 31,400 within the regional economy and then taper off during the following two construction periods.
  - The total construction costs for Alternative 402 including the Tollway Projects, the transit improvements and the STAR Line Project are estimated to be $5.1 billion in 2009 dollars. Total value added for the life of the construction project (2012–2027) is estimated to be $6.8 billion in 2009 dollars. Total sales volume as measured by total output is $12.2 billion. The maximum number of jobs created will be in the initial years with 11,000 in the highway construction industry and 26,200 within the regional economy and then taper off during the following two construction periods.

The build alternatives are based on comprehensive transportation planning that considers the need for present and future traffic movement within the context of existing and future land use development and the environment. Therefore, the local short-term impacts and use of resources by the proposed action is consistent with the maintenance and enhancement of long-term productivity.

4.16 Irreversible and Irretrievable Commitments of Resources

The build alternatives would involve committing a range of natural, physical, human, and fiscal resources. Land acquired for constructing the proposed project is considered an irreversible commitment during the period the land is used for highway purposes. Right-of-way requirements would convert land from residential, commercial, and natural environmental resource uses. Both alternatives generally are compatible with land use patterns within the study area, and adjacent land uses will remain consistent.

Fossil fuel, labor, and highway construction materials, such as steel, cement, aggregate, and asphalt, would be required during construction. Considerable labor and natural resources would be used in construction. Those resources generally are irretrievable (although they can be recycled somewhat), but their use overall would not adversely affect continued availability.

The build alternatives would require irretrievable federal, state, and local funding. Land converted from private to public uses would displace local tax revenues.

Resources are committed based on the concept that residents in the study area, region, and state would benefit from the improvements brought about by the proposed project. Improved access to commercial and industrial areas, reduced travel times, and increased economic development are expected to outweigh the commitment of resources in the long term.

4.17 Summary of Environmental Consequences

Table 4-33 summarizes the environmental effects of the No-Action Alternative and the build alternatives in combination with South Bypass Connection Options A and D. The effects would be minimized to the extent possible by using appropriate design techniques and considerations, construction methods, and mitigation measures as discussed in this document and companion technical reports.

TABLE 4-33
Summary of Environmental Consequences

	Alternative 203		Alternative 402	
	Option A	**Option D**	**Option A**	**Option D**
Length (miles)[a]	25.0	23.3	24.6	22.9
Right-of-way (acres)	1,910	1,895	1,600	1,585
Roadway construction costs	$3,061M	$2,987M	$2,405M	$2,331M
Roadway right-of-way costs	$563M	$648 M	$388 M	$473 M
Total roadway costs	$3,624M	$3,635M	$2,793M	$2,804M
Transit cost[b]	$430M	$430M	$250M	$250M
Socioeconomics				
Population (2030)	540,790	540,790	539,040	539,040
Households (2030)	207,400	207,400	206,800	206,800
Employment (2030)	712,100	712,100	698,100	698,100
Residential displacements	18	11	18	11
Commercial structure displacements	4	12	3	11
Industrial structure displacements	38	27	35	24
Employees displaced	892	1,203	729	1,040
Tax revenue loss	$3.08M	$4.45M	$2.17M	$3.54M
Natural Resources				
Wetlands (acre)[c]	38.9	39.1	36.3	36.5
Stream crossings (total number)	22	22	20	20
Surface waters (acre)[c]	18.2	18.1	15.2	15.1
Floodplain encroachments (acre)	24.7	24.7	27.2	27.2
Threatened and endangered species	0	0	0	0
Noise				
Noise-sensitive residential areas	48	46	44	42
Noise-sensitive, non-residential receptors (churches, schools,	31	29	28	26

TABLE 4-33
Summary of Environmental Consequences

	Alternative 203		**Alternative 402**	
	Option A	**Option D**	**Option A**	**Option D**
parks)				
Cultural Resources and Potential Section 4(f) Resources				
Historic structures	0	0	0	0
Archaeological sites[d]	31	31	24	24
Potential forest preserve and local park 4(f) impacts (acres)	6.8	5.9	4.0	3.1
Potential forest preserve, local park, and trail 4(f) impacts (number of properties)[e]	8	8	6	6
Special Waste				
High-risk sites	2	2	2	2
Medium-risk sites	162	170	157	165
Low-risk sites	68	70	68	70

[a] Includes new freeway/tollway as well as arterial widening where one or more lanes are added. Does not include turn lanes around existing interchanges.
[b] Transit cost represents only transit infrastructure improvements co-located in proposed roadway improvement corridors (e.g., Elgin O'Hare Expressway, north leg of O'Hare West Bypass).
[c] Totals include impacts to potentially jurisdictional areas, such as stormwater facilities. Subject to regulatory review, several manmade stormwater facilities may be exempt from regulation.
[d] Includes known archaeological sites, sites with potential for archaeological resources, and previously studied sites.
[e] One property purchased with OSLAD funds may be affected.

TABLE 4-33
Summary of Environmental Consequences

	Alternative 203		**Alternative 402**	
	Option A	**Option D**	**Option A**	**Option D**
Cultural Resources and Potential Section 4(f) Resources				
Historic structures	0	0	0	0
Archaeological sites[d]	31	31	24	24
Potential forest preserve and local park 4(f) impacts (acres)	6.8	5.9	4.0	3.1
Potential forest preserve, local park, and trail 4(f) impacts (number of properties)[e]	8	8	6	6
Special Waste				
High-risk sites	2	2	2	2
Medium-risk sites	162	170	157	165
Low-risk sites	68	70	68	70

[a] Includes new freeway/tollway as well as arterial widening where one or more lanes are added. Does not include turn lanes around existing interchanges.
[b] Transit cost represents only transit infrastructure improvements co-located in proposed roadway improvement corridors (e.g., Elgin O'Hare Expressway, north leg of O'Hare West Bypass).
[c] Totals include impacts to potentially jurisdictional areas, such as stormwater facilities. Subject to regulatory review, several manmade stormwater facilities may be exempt from regulation.
[d] Includes known archaeological sites, sites with potential for archaeological resources, and previously studied sites.
[e] One property purchased with OSLAD funds may be affected.

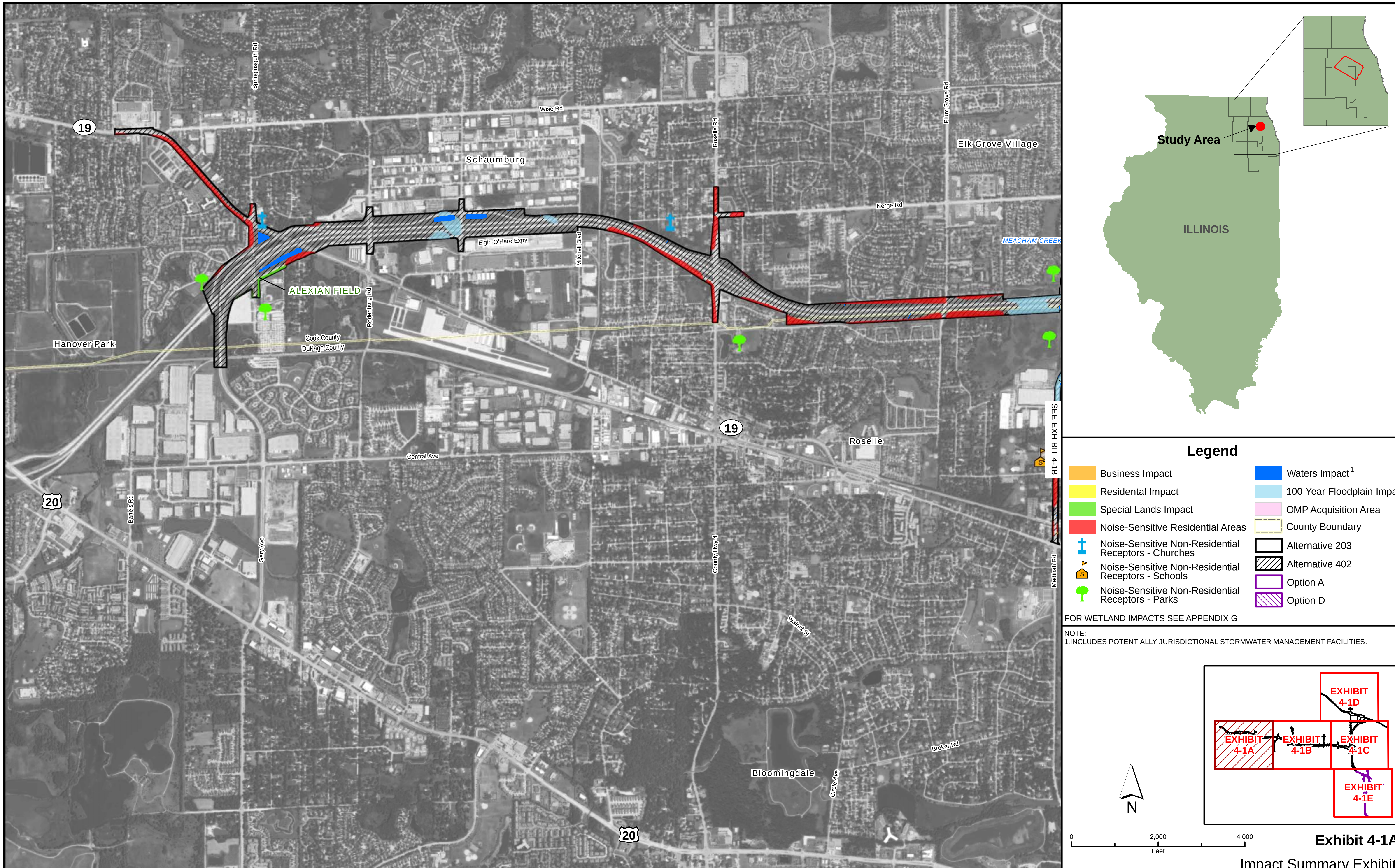


Exhibit 4-1A

Impact Summary Exhibit

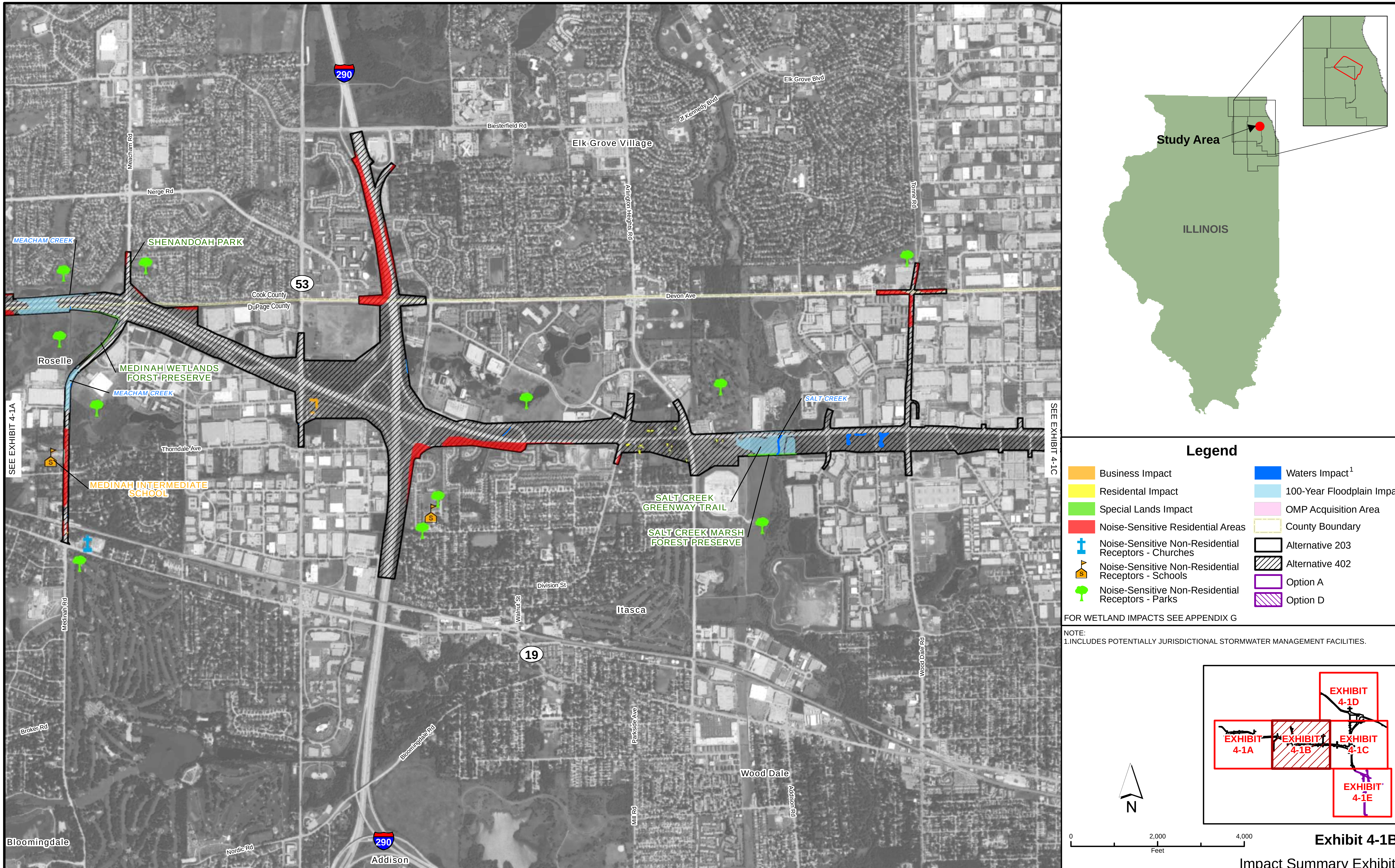
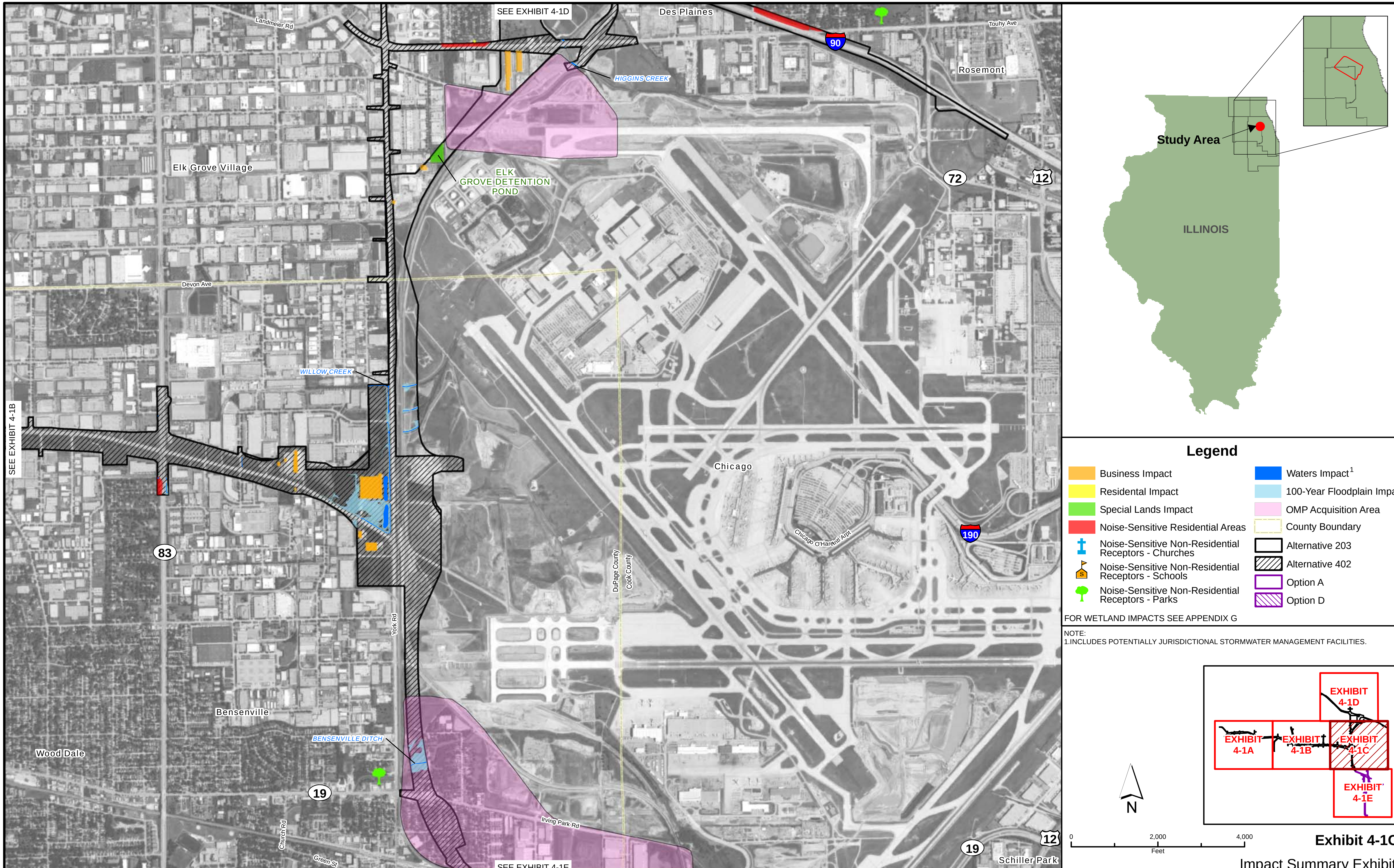


Exhibit 4-1B

Impact Summary Exhibit



Legend

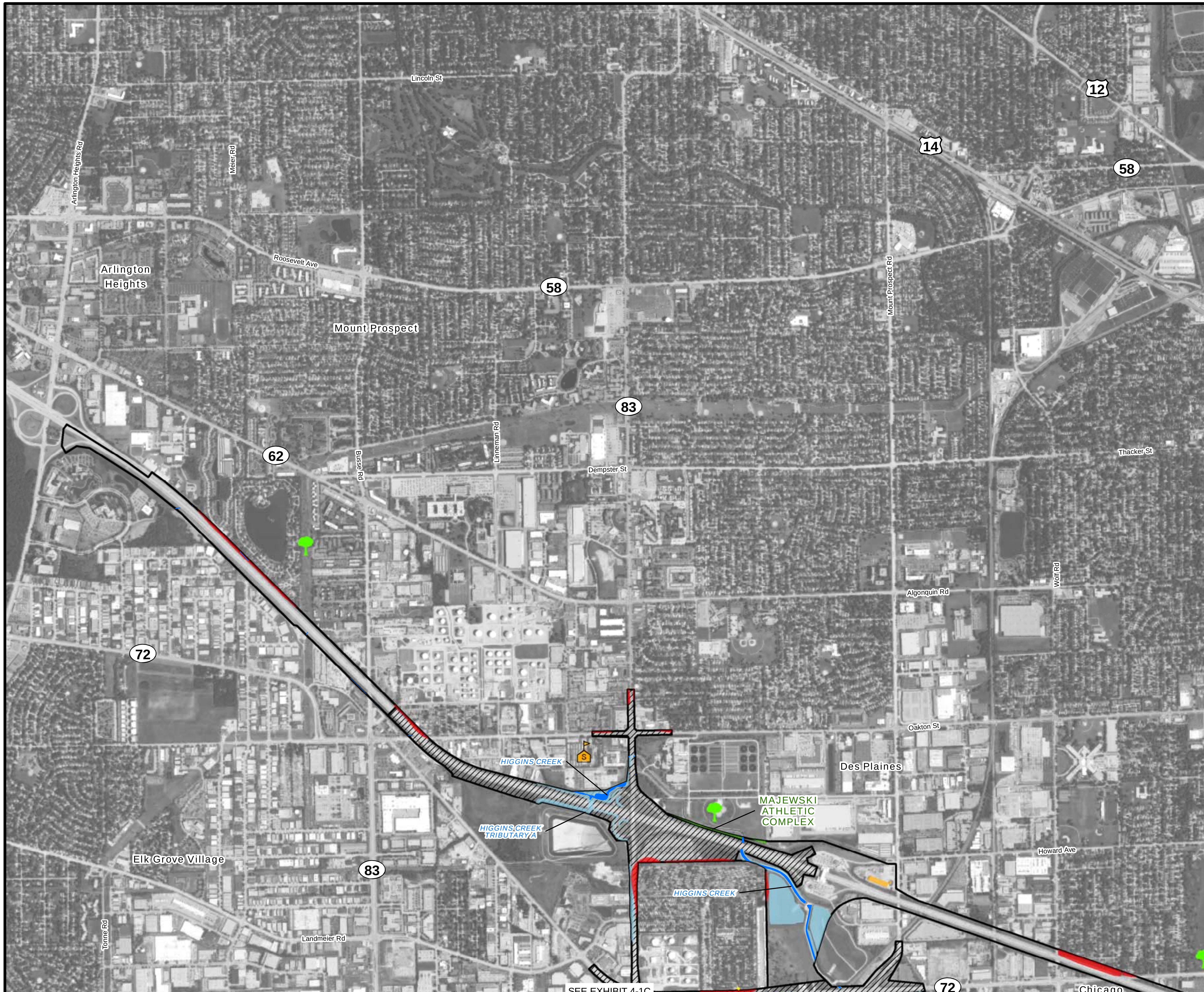
- Business Impact
- Residential Impact
- Special Lands Impact
- Noise-Sensitive Residential Areas
- Noise-Sensitive Non-Residential Receptors - Churches
- Noise-Sensitive Non-Residential Receptors - Schools
- Noise-Sensitive Non-Residential Receptors - Parks
- Waters Impact[1]
- 100-Year Floodplain Impact
- OMP Acquisition Area
- County Boundary
- Alternative 203
- Alternative 402
- Option A
- Option D

FOR WETLAND IMPACTS SEE APPENDIX G

NOTE:
1.INCLUDES POTENTIALLY JURISDICTIONAL STORMWATER MANAGEMENT FACILITIES.

Exhibit 4-1C

Impact Summary Exhibit

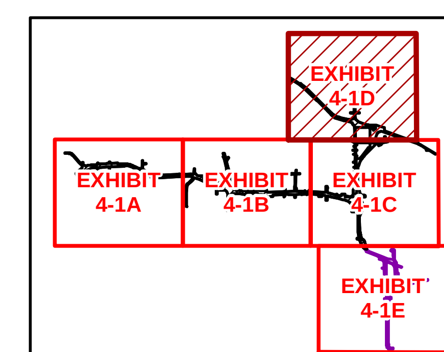


Legend

- Business Impact
- Residential Impact
- Special Lands Impact
- Noise-Sensitive Residential Areas
- Noise-Sensitive Non-Residential Receptors - Churches
- Noise-Sensitive Non-Residential Receptors - Schools
- Noise-Sensitive Non-Residential Receptors - Parks
- Waters Impact[1]
- 100-Year Floodplain Impact
- OMP Acquisition Area
- County Boundary
- Alternative 203
- Alternative 402
- Option A
- Option D

FOR WETLAND IMPACTS SEE APPENDIX G

NOTE:
1.INCLUDES POTENTIALLY JURISDICTIONAL STORMWATER MANAGEMENT FACILITIES.

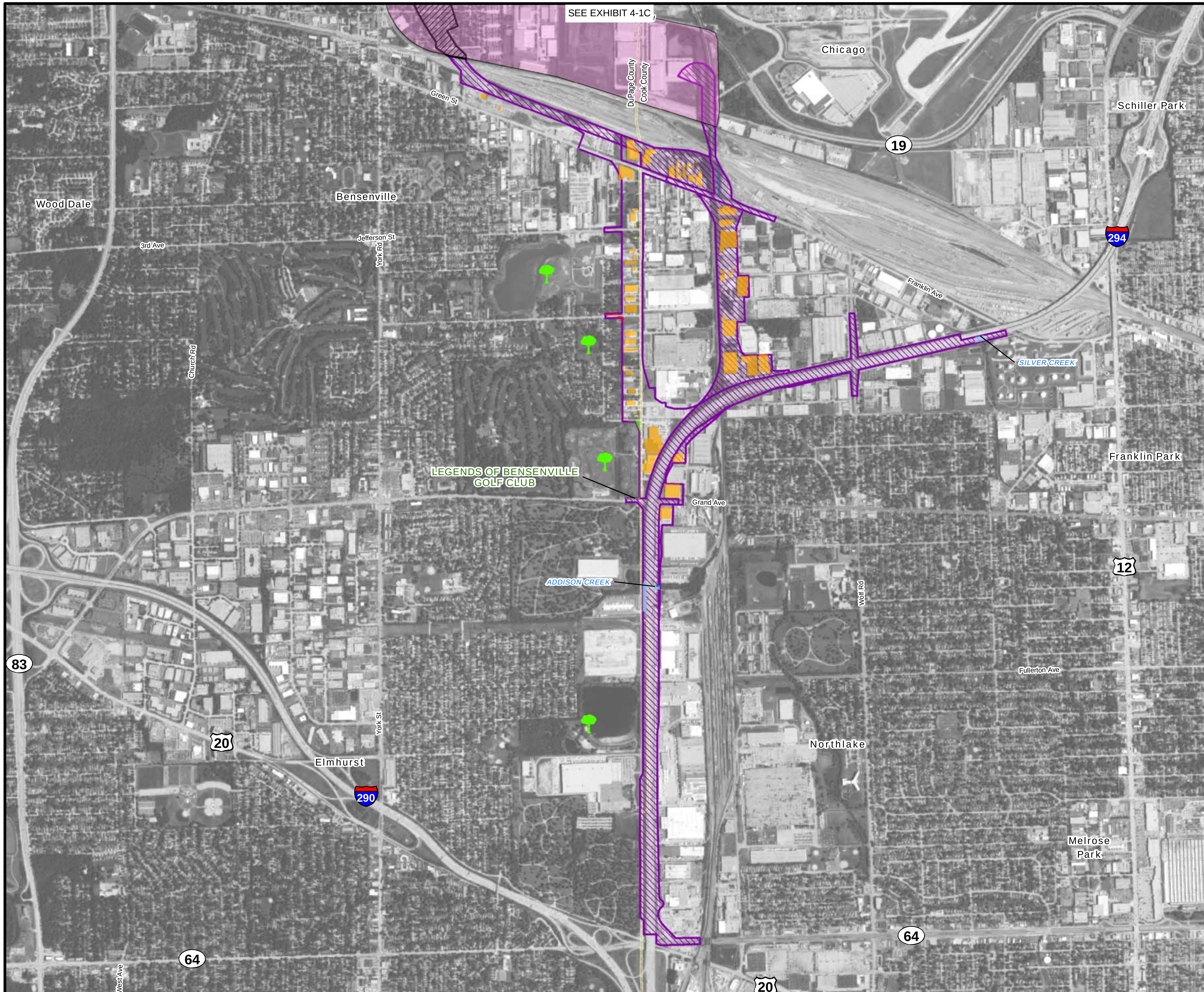


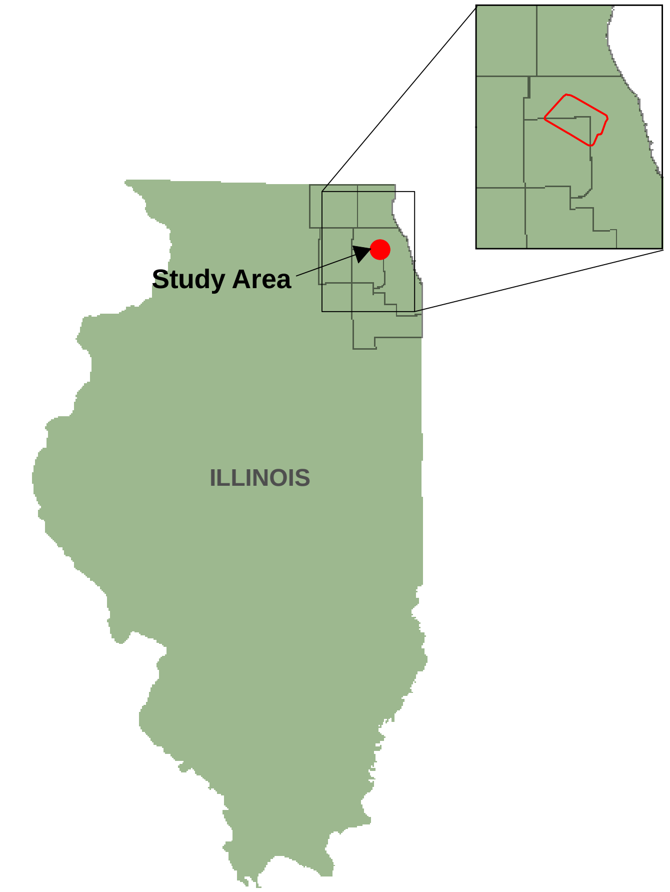
N

0 2,000 4,000
Feet

Exhibit 4-1D

Impact Summary Exhibit



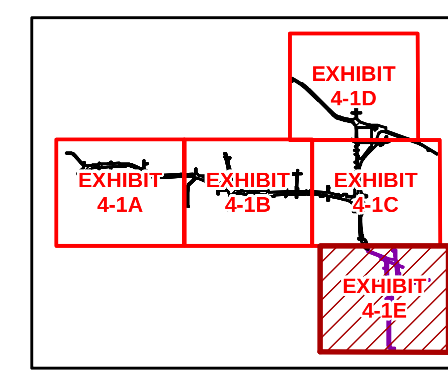


Legend

Business Impact	Waters Impact[1]
Residential Impact	100-Year Floodplain Impact
Special Lands Impact	OMP Acquisition Area
Noise-Sensitive Residential Areas	County Boundary
Noise-Sensitive Non-Residential Receptors - Churches	Alternative 203
Noise-Sensitive Non-Residential Receptors - Schools	Alternative 402
Noise-Sensitive Non-Residential Receptors - Parks	Option A
	Option D

FOR WETLAND IMPACTS SEE APPENDIX G

NOTE:
1.INCLUDES POTENTIALLY JURISDICTIONAL STORMWATER MANAGEMENT FACILITIES.



N

0 2,000 4,000
Feet

Exhibit 4-1E

Impact Summary Exhibit

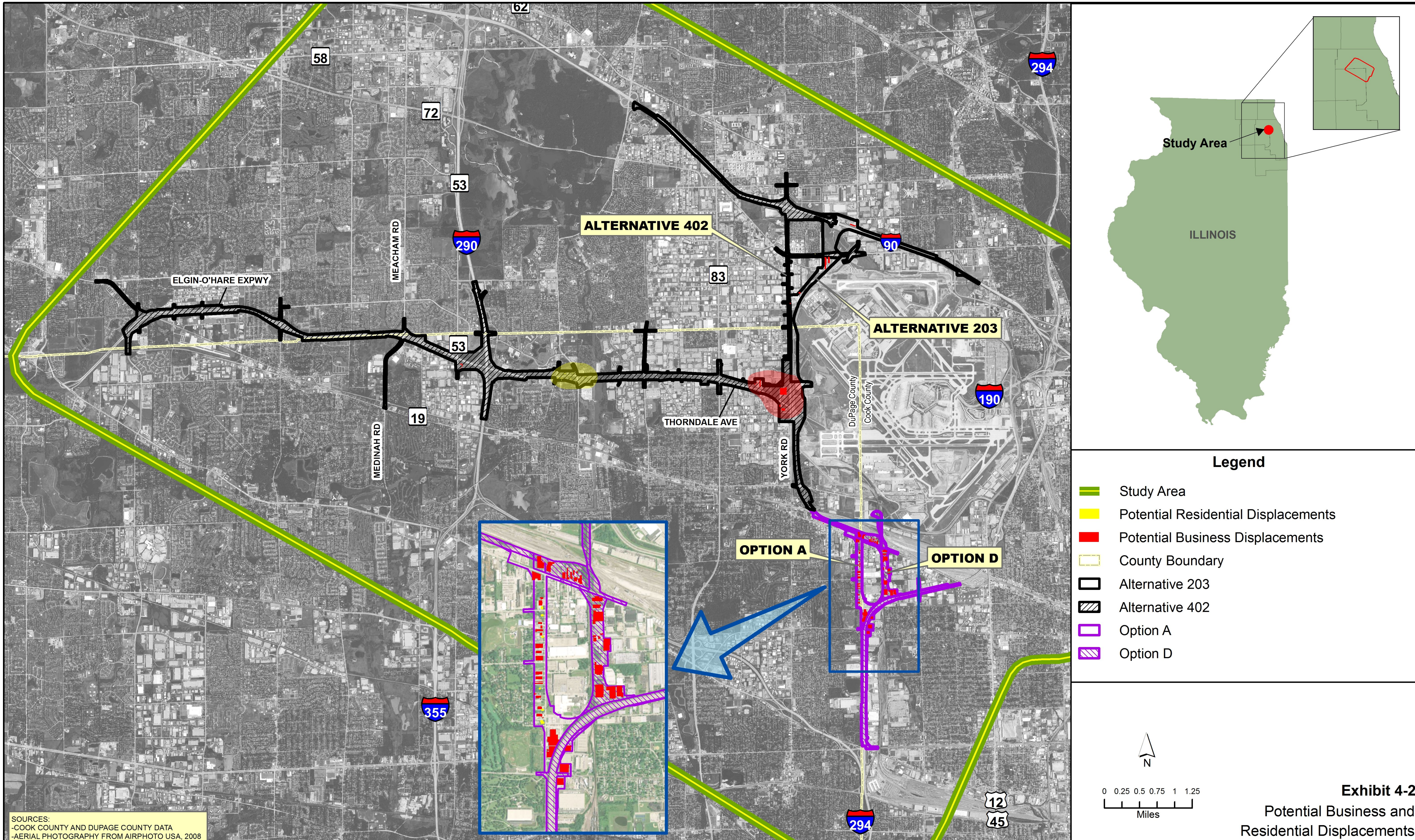


Exhibit 4-2
Potential Business and
Residential Displacements

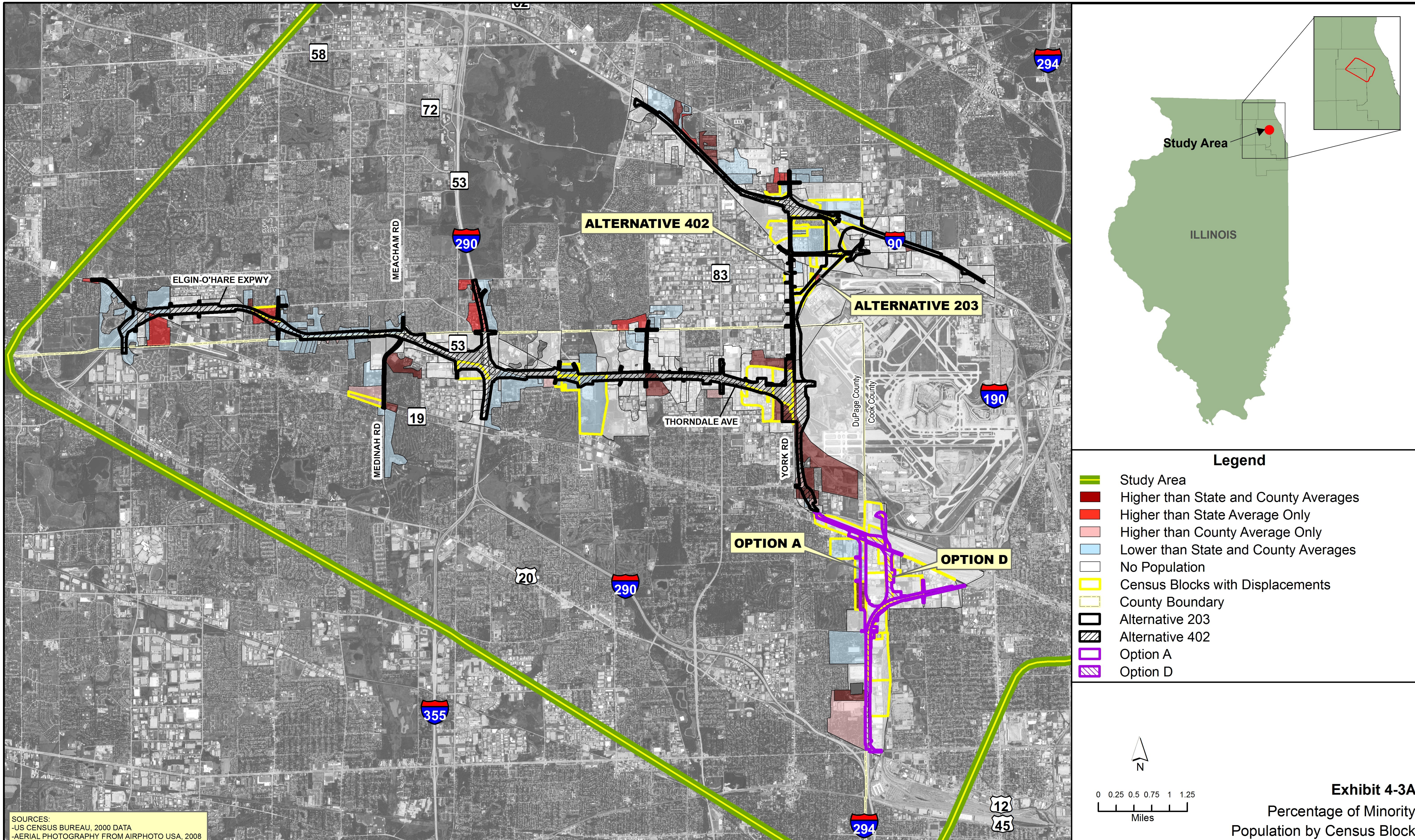


Exhibit 4-3A

Percentage of Minority Population by Census Block

ELGIN O'HARE WEST BYPASS

communities. opportunities. solutions.

Illinois Department of Transportation

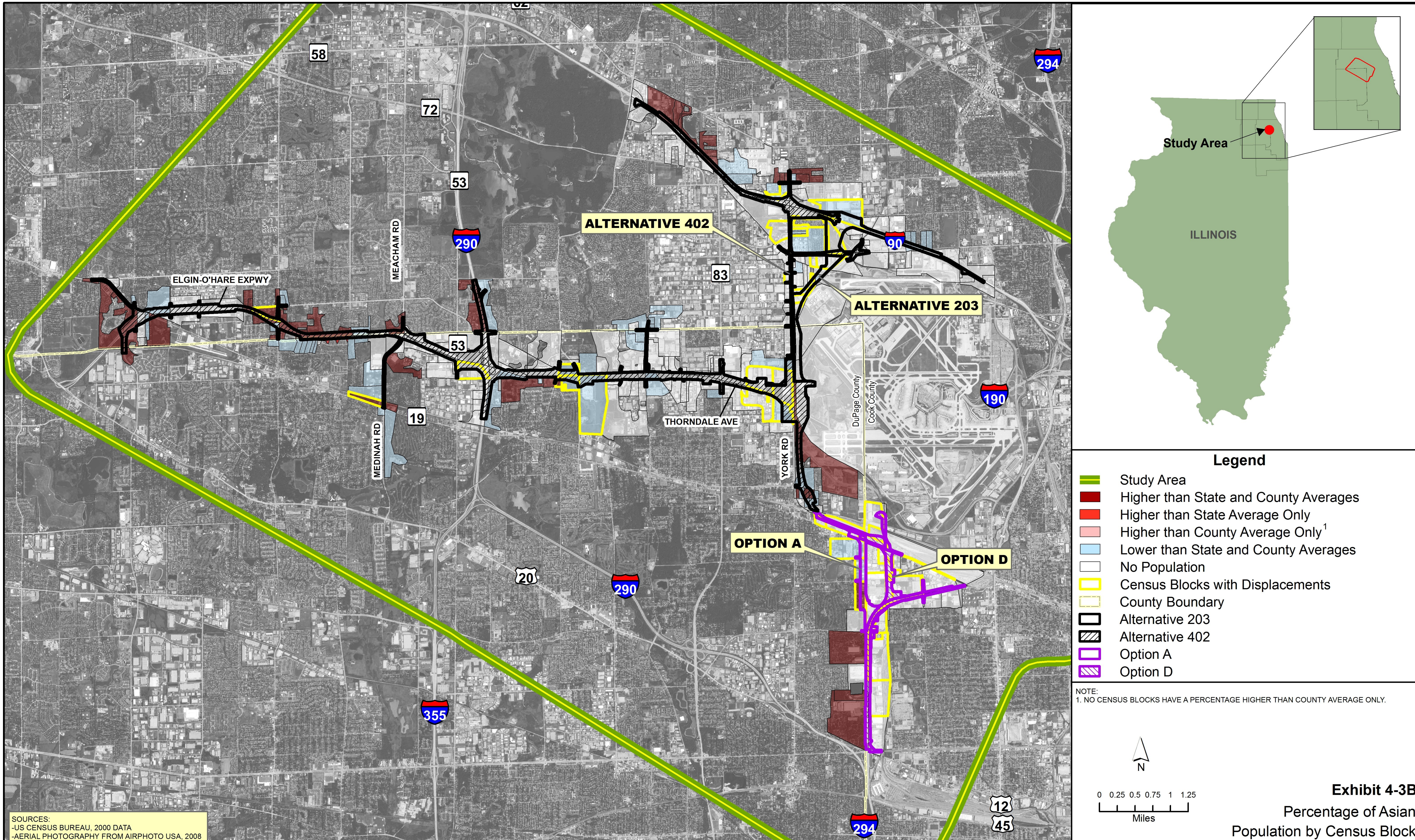


Exhibit 4-3B

Percentage of Asian Population by Census Block

ELGIN O'HARE WEST BYPASS
communities. opportunities. solutions.

Illinois Department of Transportation

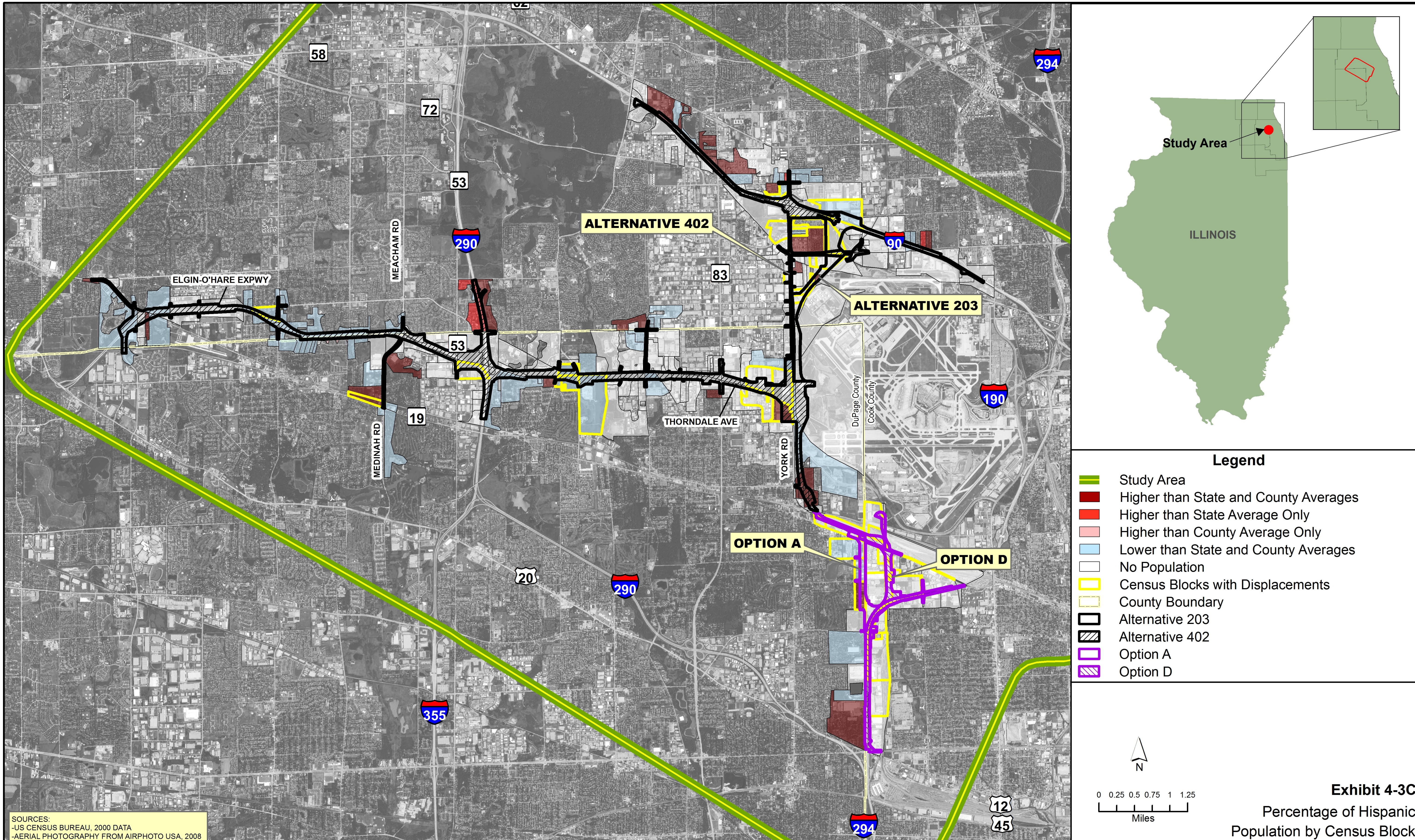


Exhibit 4-3C

Percentage of Hispanic Population by Census Block

ELGIN O'HARE WEST BYPASS

communities. opportunities. solutions.

Illinois Department of Transportation

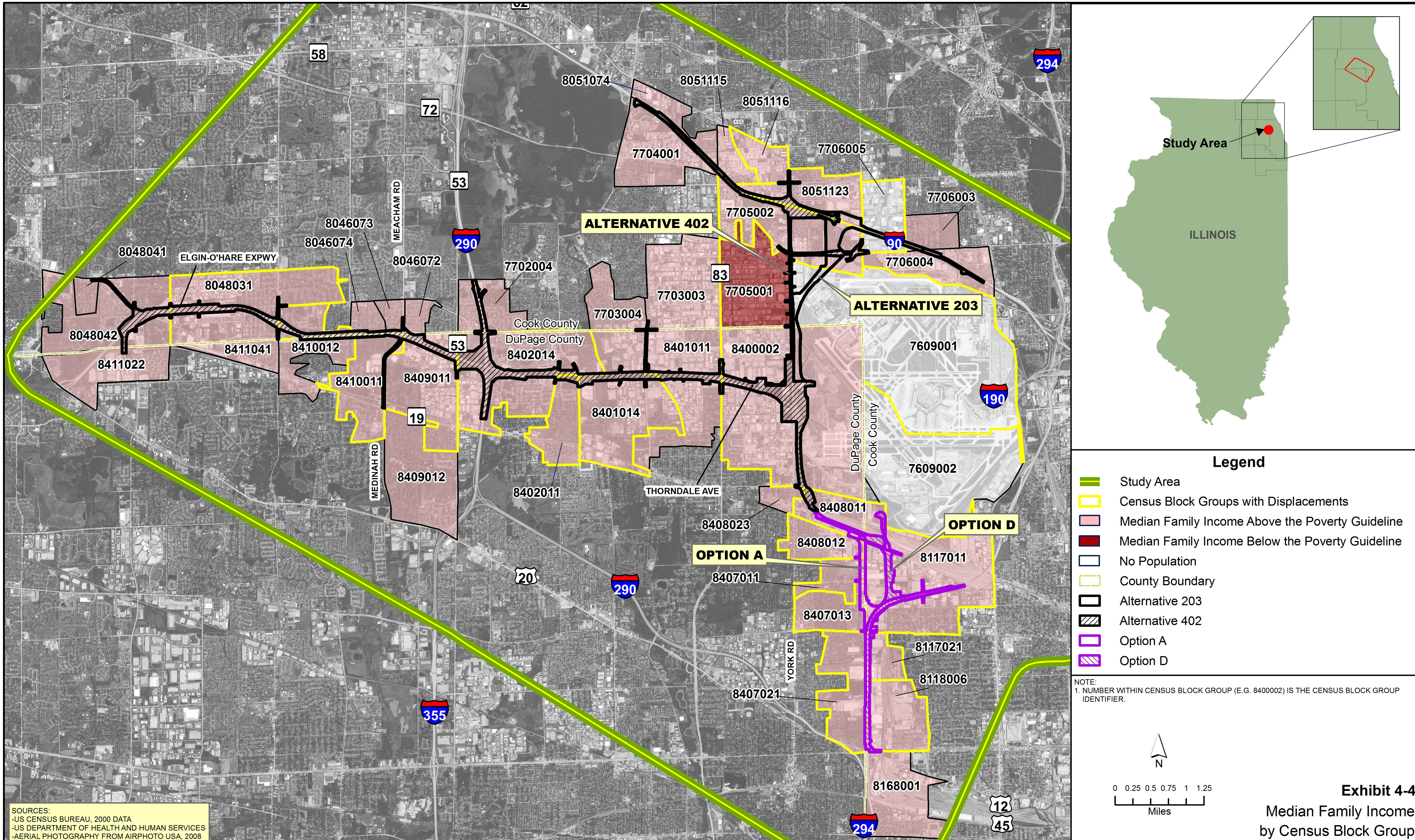
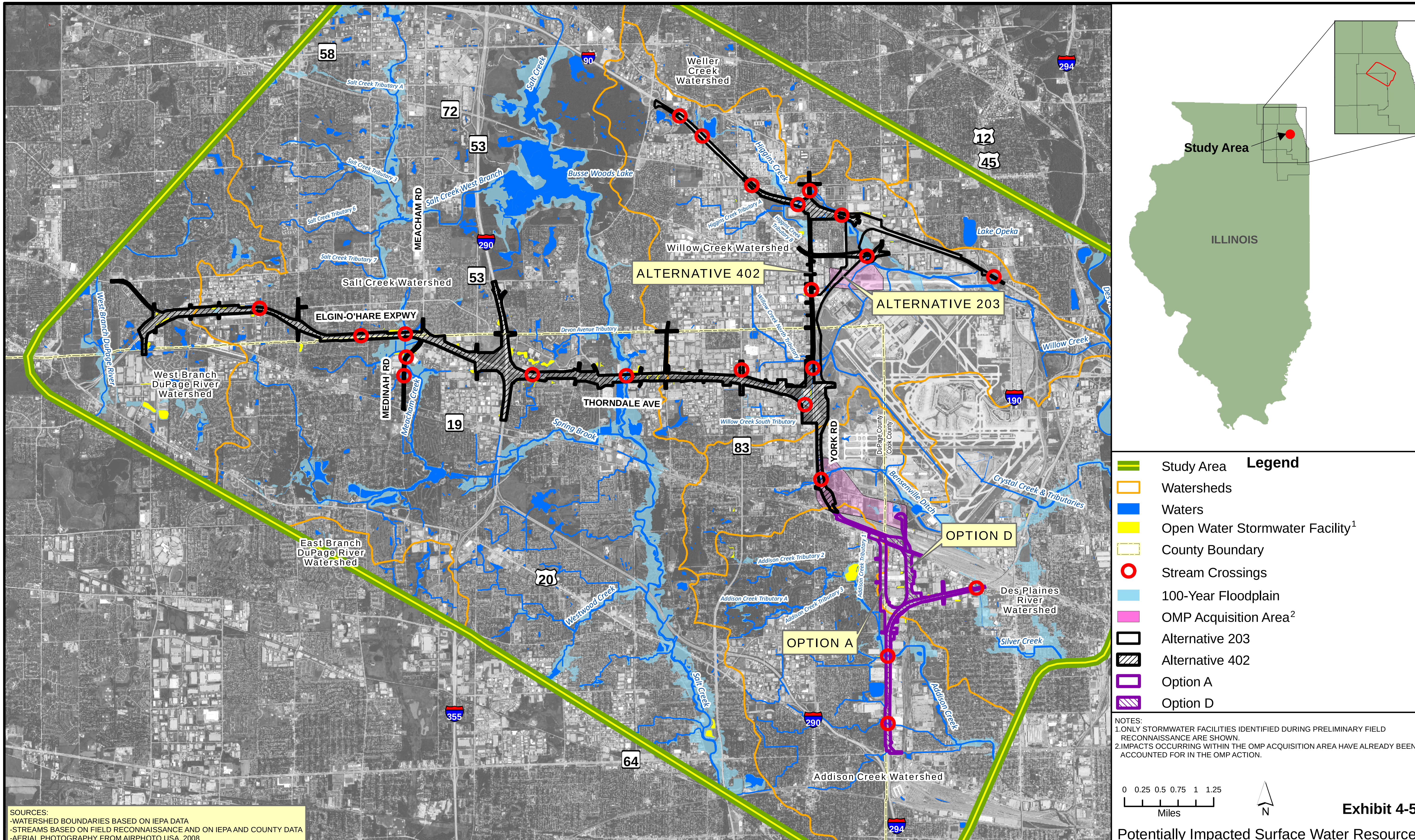


Exhibit 4-4
Median Family Income by Census Block Group

ELGIN O'HARE WEST BYPASS
communities. opportunities. solutions.

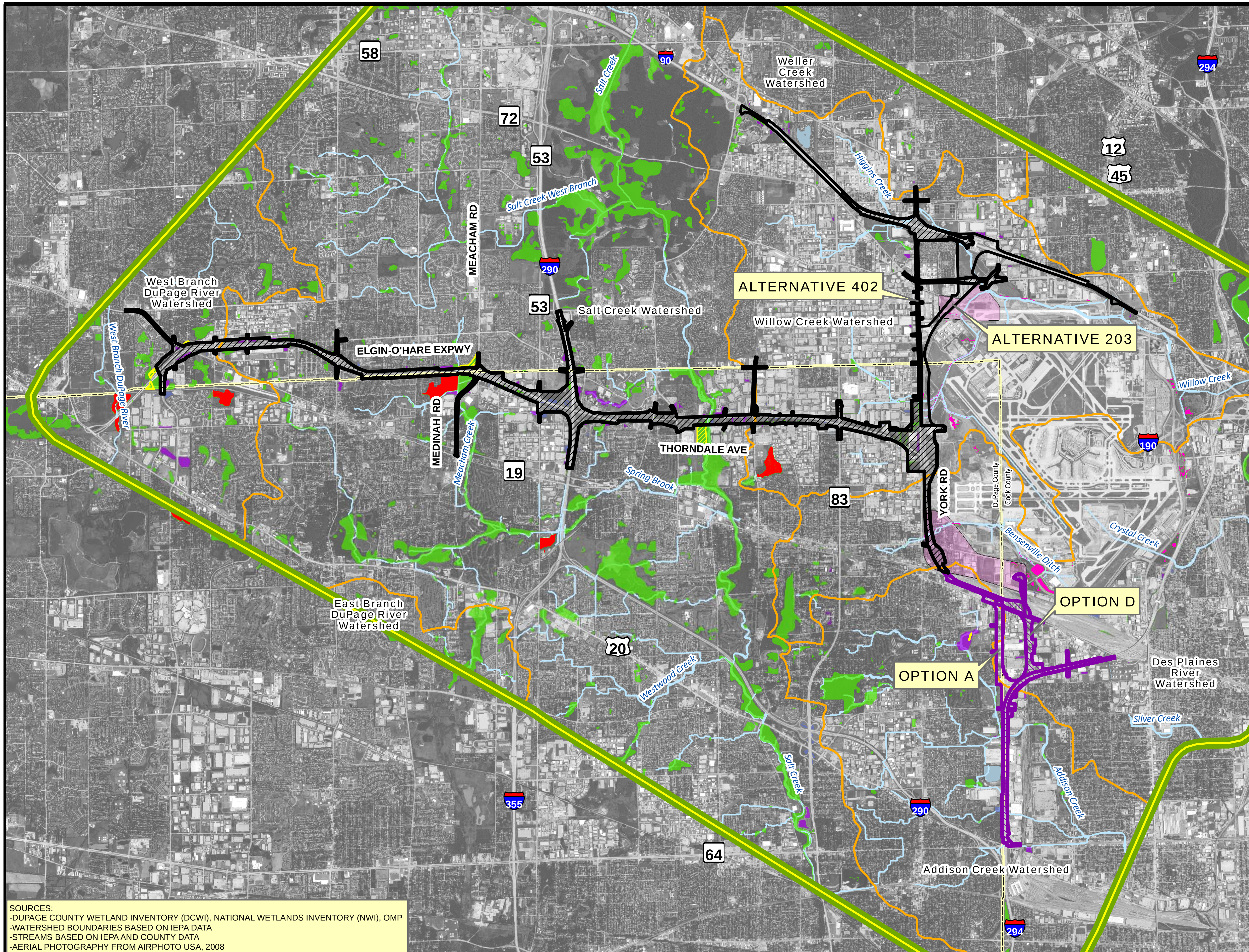
Illinois Department of Transportation



NOTES:
1. ONLY STORMWATER FACILITIES IDENTIFIED DURING PRELIMINARY FIELD RECONNAISSANCE ARE SHOWN.
2. IMPACTS OCCURRING WITHIN THE OMP ACQUISITION AREA HAVE ALREADY BEEN ACCOUNTED FOR IN THE OMP ACTION.

Exhibit 4-5

Potentially Impacted Surface Water Resources



Legend

- Study Area
- Mapped Critical Wetlands[1]
- Mitigation Sites[1, 2]
- Wetlands[1]
- Wetland Stormwater Facility[1, 3]
- Waters
- Open Water Stormwater Facility[3]
- OMP Wetlands[4]
- Watersheds
- County Boundary
- OMP Acquisition Area[5]
- Alternative 203
- Alternative 402
- Option A
- Option D

SEE EXHIBIT G-1 FOR DETAILED VIEW

NOTES:
1. ALL AREAS IDENTIFIED ON THE NWI & DCWI ARE SHOWN AS WETLAND ON THIS EXHIBIT. WETLANDS LOCATED NEAR PROPOSED PROJECT IMPROVEMENTS WERE REFINED FROM EXISTING NWI AND DCWI MAPPING BASED ON PRELIMINARY FIELD RECONNAISSANCE.
2. ONLY MITIGATION SITES NEAR PROPOSED IMPROVEMENTS ARE SHOWN.
3. ONLY STORMWATER FACILITIES IDENTIFIED DURING PRELIMINARY FIELD RECONNAISSANCE ARE SHOWN.
4. WETLANDS WITHIN OMP LIMITS ARE SHOWN SEPARATELY. A SECTION 404 CLEAN WATER ACT PERMIT WAS OBTAINED TO FILL ALL OMP WETLANDS.
5. IMPACTS OCCURRING WITHIN OMP ACQUISITION AREA HAVE ALREADY BEEN ACCOUNTED FOR IN THE OMP ACTION.

N

0 0.25 0.5 0.75 1 1.25
Miles

SOURCES:
-DUPAGE COUNTY WETLAND INVENTORY (DCWI), NATIONAL WETLANDS INVENTORY (NWI), OMP
-WATERSHED BOUNDARIES BASED ON IEPA DATA
-STREAMS BASED ON IEPA AND COUNTY DATA
-AERIAL PHOTOGRAPHY FROM AIRPHOTO USA, 2008

Exhibit 4-6

Potentially Impacted Wetlands

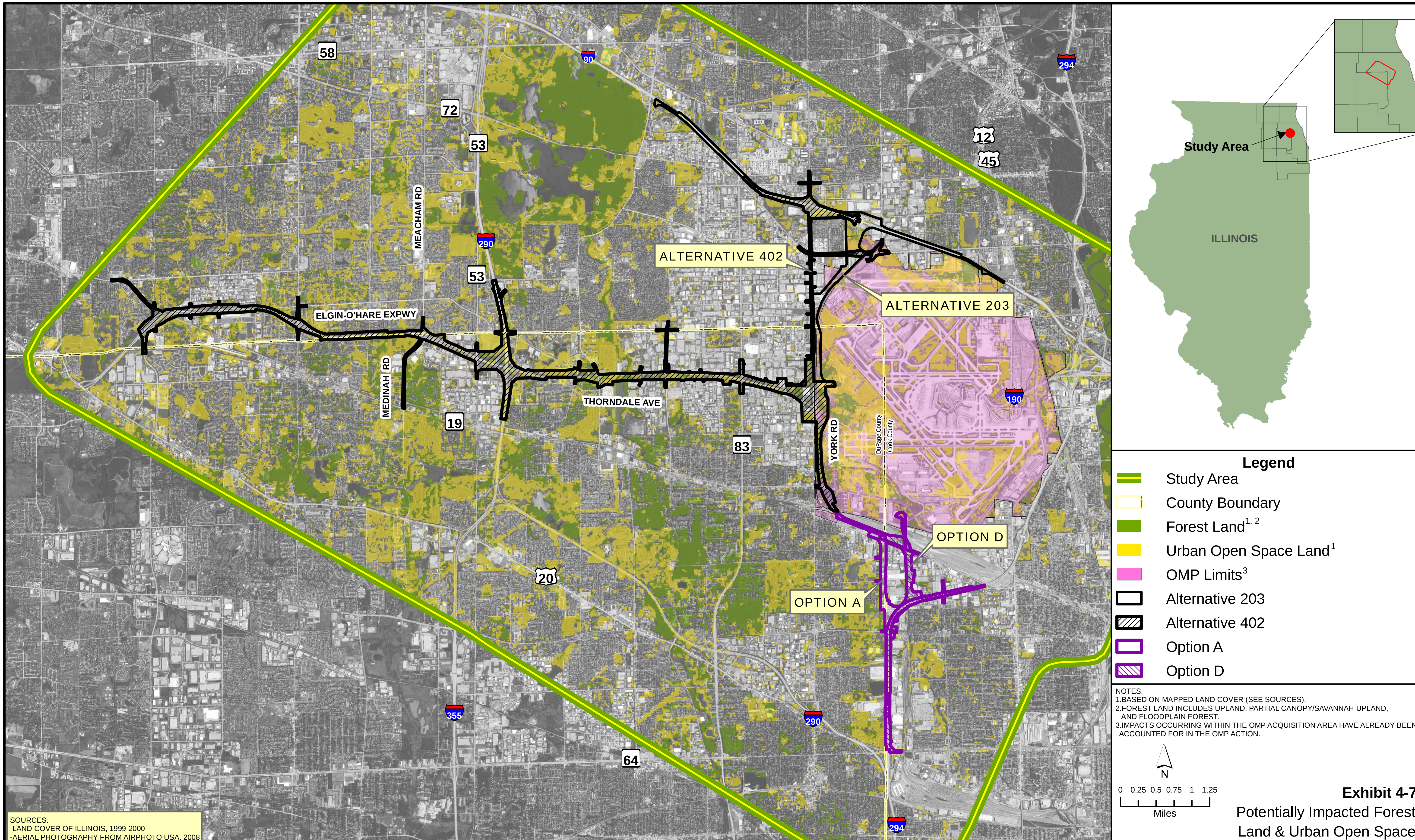


Exhibit 4-7
Potentially Impacted Forest Land & Urban Open Space

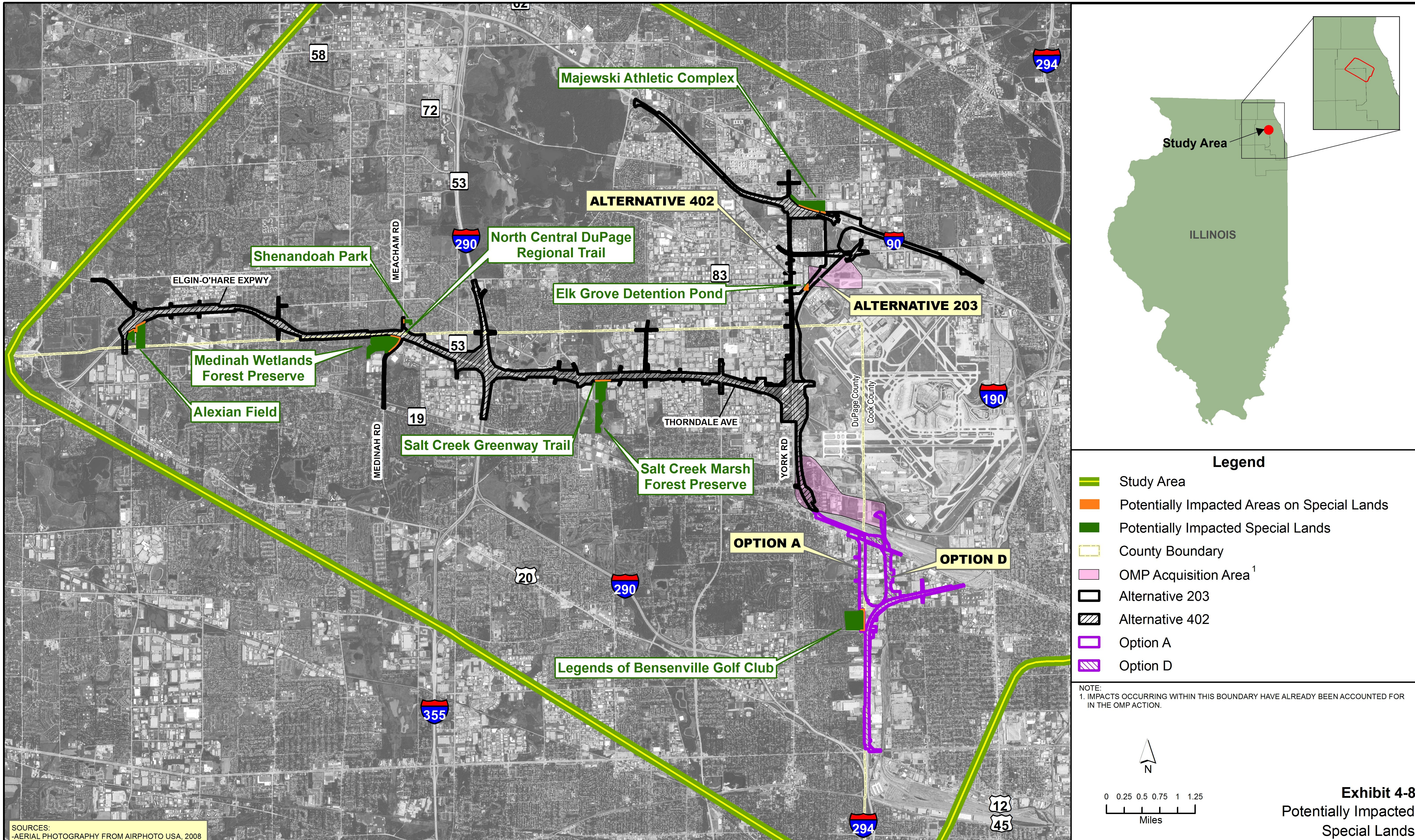


Exhibit 4-8
Potentially Impacted Special Lands

ELGIN O'HARE WEST BYPASS
communities. opportunities. solutions.

Illinois Department of Transportation

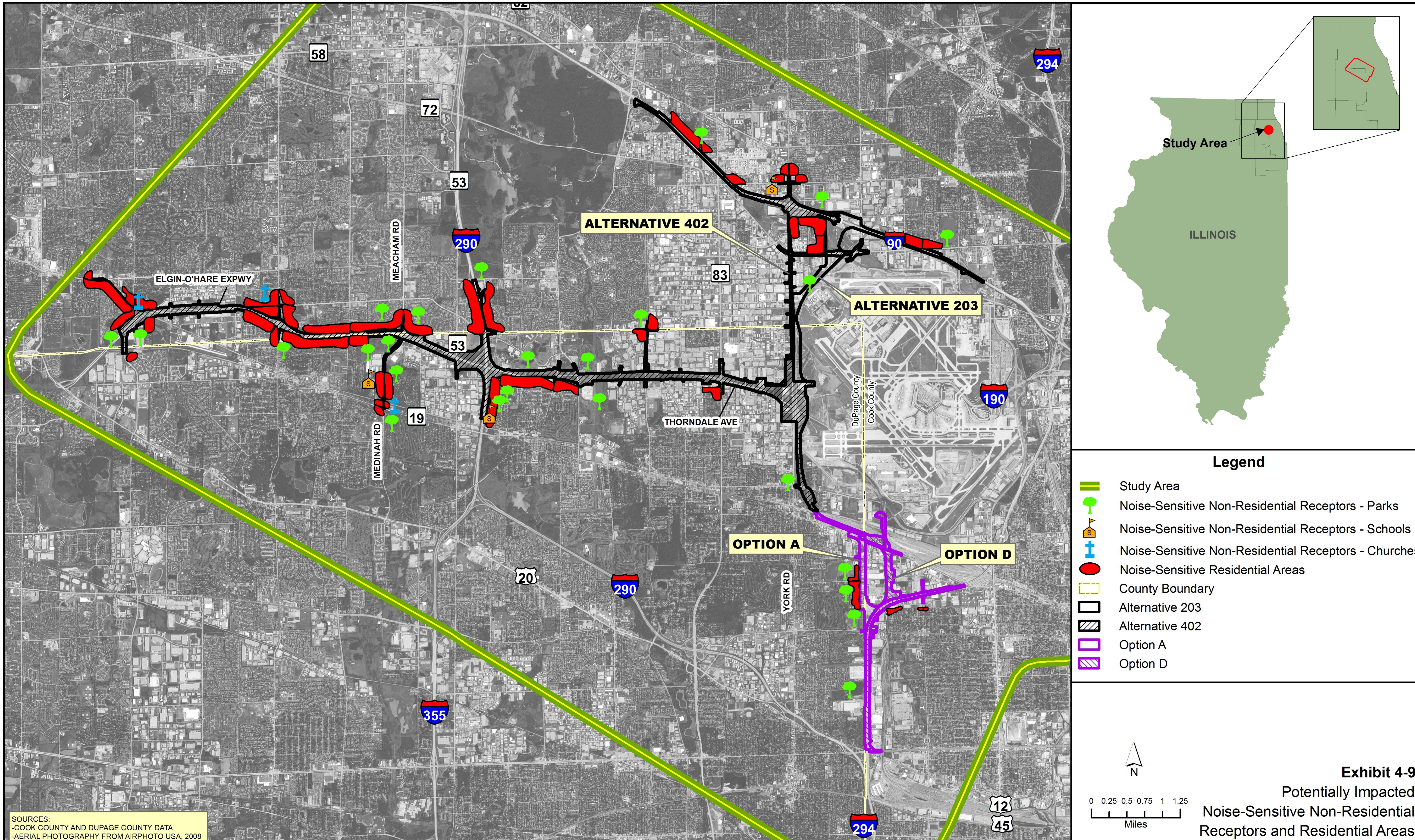
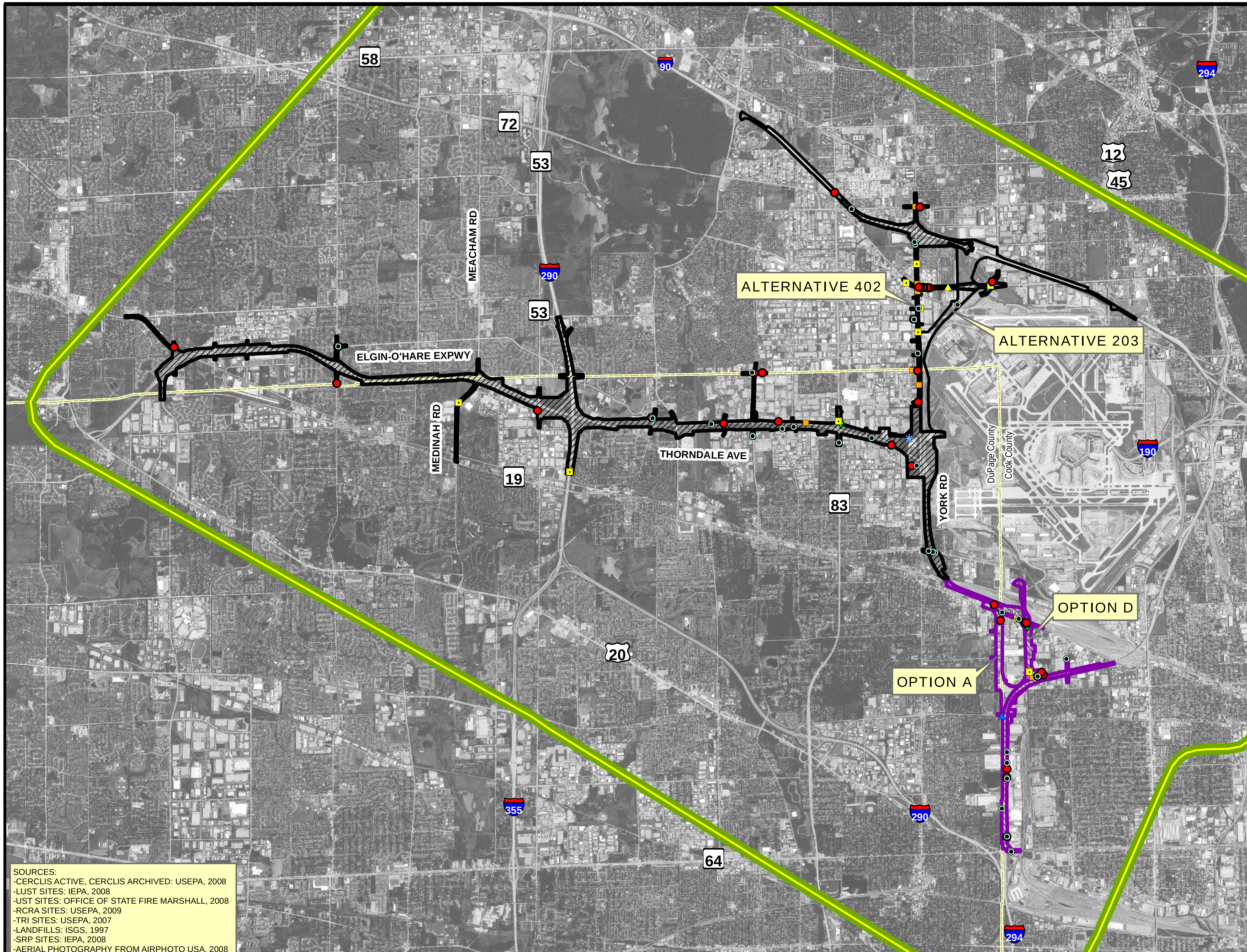
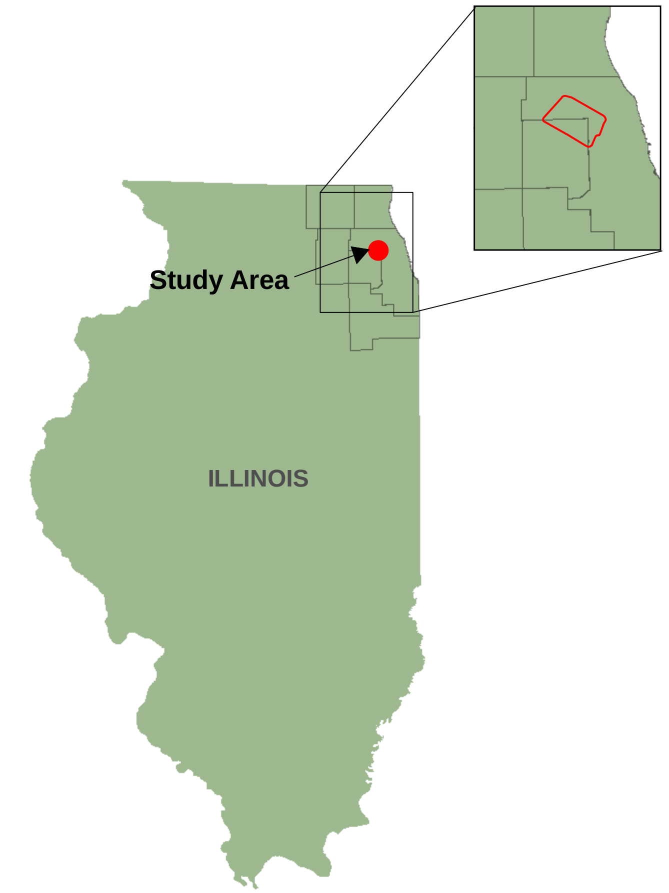


Exhibit 4-9
Potentially Impacted Noise-Sensitive Non-Residential Receptors and Residential Areas





Legend

- Study Area
- CERCLIS Active Sites[1]
- CERCLIS Archived Sites[1]
- Lust Sites[1]
- RCRA Sites[1, 2]
- UST Sites[1, 3]
- TRI Sites[1]
- Landfills[1]
- SRP Sites
- County Boundary
- Alternative 203
- Alternative 402
- Option A
- Option D

NOTES:
1. ALL IDENTIFIED LOCATIONS ARE APPROXIMATE AND ARE BASED ON AVAILABLE DATA.
2. RCRA SITES INCLUDE LARGE QUANTITY GENERATORS, SMALL QUANTITY GENERATORS, AND CONDITIONALLY EXEMPT GENERATORS.
3. UST SITES INCLUDE "ALL" FACILITY STATUS.

N

0 0.25 0.5 0.75 1 1.25
Miles

Exhibit 4-10

Potentially Impacted Special Waste Sites

ELGIN O'HARE WEST BYPASS
communities. opportunities. solutions.

Illinois Department of Transportation

SECTION 5

Coordination

IDOT has provided early, frequent, and meaningful opportunities for residents, business owners, municipalities, resource agencies, and other stakeholders to participate in the study process. NEPA, SAFETEA-LU, and IDOT's CSS policy require the integration of public and agency interaction into the process for developing transportation improvements. As such, the SIP developed for the project was designed to provide a structured program for agency coordination and public involvement that complies with state and federal regulations and addresses the unique coordination and communication needs of the project. Because the project requires consideration of multiple modes of transportation and affects many different communities, the plan was designed to foster communication among the general public, resource agencies, and local governmental officials on project issues and types of improvements needed, and to build consensus for a preferred transportation solution. This section summarizes the agency coordination and public involvement activities that occurred during the EO-WB study, and the involvement of residents, community groups, and other stakeholders.

5.1 Compliance with Federal Coordination Regulation

The SAFETEA-LU legislation, specifically Section 6002, requires additional involvement opportunities for federal, state, and local agencies and the public for projects requiring an EIS. The legislation created a new category of participation in the consultation and input process for studies like the EO-WB with the goal of enhancing agency and public participation. The participating agency category was created to ensure that all interested agencies have an opportunity to be involved in the study and environmental review process. Table 5-1 lists the coordination activities undertaken during the project to comply with Section 6002 requirements. Minutes prepared for those activities are included in the official project record.

5.1.1 Cooperating Agencies

Cooperating agency status is invited by the lead agencies or sponsors of an EIS (see Appendix C for invitation letters). The joint lead agencies for preparing this Tier One EIS are IDOT and FHWA. In accordance with NEPA, a cooperating agency is any federal agency that has jurisdiction by law or special expertise with respect to any environmental impact of a proposed project. When the effects are on lands of interest to a Native American tribe, a state or local agency of similar qualifications may by agreement with FHWA and IDOT be a cooperating agency. Cooperating agencies are permitted, by request of the lead agency, to assume responsibility for developing information and preparing environmental analyses for topics about which they have special expertise. Furthermore, they may adopt a lead agency's NEPA document when, after an independent review of the document, they conclude that their comments and suggestions have been satisfied.

TABLE 5-1
Section 6002

Section 6002 Requirement	Location of Description of Activity
Identify participating and cooperating agencies, and place notification letters on participating and cooperating agency status in project file.	Subsection 5.1 of the Draft EIS, and the Stakeholder involvement plan / coordination plan
Determine and document lead/joint lead agency status.	Subsection 5.1.1 of the Draft EIS, and the Stakeholder involvement plan / coordination plan
Develop coordination plan in consultation with participating agencies and file.	Stakeholder involvement plan / coordination plan
Identify schedule for environmental review process with participating agencies and file.	Time duration agreement in stakeholder involvement plan / coordination plan (updated regularly)
Give opportunity for participating agencies and the public to provide input during development of purpose and need and document involvement.	Subsections 1.2 and 5.1.2 of the Draft EIS
Give opportunity for participating agencies and the public to provide input during development of range of alternatives and document involvement.	Section 3 and subsection 5.1.2 of the Draft EIS
Coordinate with participating agencies to identify appropriate methodology to be used and level of detail required in analysis and document.	Sections 2, 3, and 5 of the Draft EIS

Agencies invited to serve as cooperating agencies for the project are included in Table 3-2 of the SIP (FHWA and IDOT, 2009). The IDNR and TSA accepted the lead agencies' requests to be cooperating agencies. The responsibilities listed below are in addition to those typical of cooperating agencies:

- Identify issues of concern regarding the project's potential environmental and socioeconomic impact as early as possible;
- Communicate issues of concern formally in the EIS scoping process;
- Provide input and comment on the purpose of and need for the project;
- Provide input and comment on the procedures used to develop alternatives and to analyze impacts;
- Provide input on the range of alternatives to be considered; and
- Provide input and comment on the sufficiency of environmental impact analyses.

5.1.2 Participating Agencies

According to SAFETEA-LU Section 6002, a participating agency is a federal, state, tribal, regional, or local government agency with interest in the project. By definition, all cooperating agencies are participating agencies, but not all participating agencies are cooperating agencies. Invitation letters soliciting participating agency participation are included in Appendix C. Twenty-eight federal, state, and county agencies, communities, and other interested parties are considered participating agencies. The agencies and their responsibilities are listed in Table 3-3 in the SIP. The responsibilities listed are in addition to providing comments on purpose and need, study methodologies, range of alternatives, environmental impact analyses, and the preferred alternative.

5.1.3 Agencies Declining Invitation to Participate

Pursuant to SAFETEA-LU Section 6002, a federal agency that declines to be a participating agency must specifically state the following in its response:

- It has no jurisdiction or authority with respect to the project.
- It has no expertise or information relevant to the project.
- It does not intend to submit comments on the project.

A nonfederal agency must formally accept the invitation in order to be considered a participating agency. If an agency declines, its response should state the reason for doing so. If it chooses not to participate, the agency may still comment on the process at public/ stakeholder involvement venues (coordination planning group, task forces, public meetings, etc.). A nonfederal agency that does not respond to the invitation will not be considered a participating agency. In this project, 62 agencies were requested to be participating agencies, 23 of which accepted. Eight agencies declined, and 31 that did not respond are considered to have declined. Those agencies are listed in Table 5-2.

TABLE 5-2
Agencies that Declined Participating Agency Status or Did Not Respond to the Invitation

IDOA	Cook County	City of Wood Dale
IEPA	Kane-DuPage Soil & Water Conservation District	Village of Bensenville
Illinois NRCS	North Cook County Soil & Water Conservation District	Village of Berkeley
ISTHA	Addison Township	Village of Bloomingdale
Hannahville Indian Community	Elk Grove Township	Village of Franklin Park
Ho-Chunk Nation of Wisconsin	Hanover Township	Village of Melrose Park
Peoria Tribe of Indians of Oklahoma	Leyden Township	Village of Norridge
Pokagon Band of Potawatomi Indians	Maine Township	Village of Roselle
Prairie Band of Potawatomi	Norwood Park Township	Village of Rosemont
Sac and Fox Nation of Missouri	Proviso Township	Village of Schiller Park
Sac and Fox Tribe of the Mississippi in Iowa	Schaumburg Township	Village of Villa Park
Winnebago Tribe of Nebraska	York Township	RTA
City of Park Ridge	CTA	

During the study process, cooperating and participating agencies participated at several venues, such as project working group meetings, the NEPA/Section 404 concurrence process (for federal/resource agencies), one-on-one meetings, small group gatherings, and stakeholder workshops.

5.2 Federal, State, and Local Agency Coordination

From the beginning of the study, two groups were established to provide a forum for discussing the project and for engaging various federal, state and local agencies. One consisted of regular NEPA/404 Merger agency meetings to discuss the transportation issues in the study area, the purpose and need for the improvements, the methodology for developing and screening alternatives, methods for evaluating environmental impacts, and the rationale for dismissing alternatives. These discussions were accomplished in individual meetings, as well as the formal NEPA/404 concurrence meetings. The other group (meetings of the Project Management Team, consisting of IDOT and FHWA representatives and their consultants) comprised the study leadership and focus on the overall technical and process aspects of the project, ensuring that the planning requirements of IDOT and the Federal Government are satisfied.

5.2.1 NEPA / 404 Merger Process

The project was coordinated under the Statewide Implementation Agreement for Concurrent NEPA/404 Process, which was designed to ensure appropriate consideration of the concerns of the USACE, the USEPA, the USFWS, and others as early as practicable in the highway project development process. It is intended to involve these agencies at key decision points in project development to ensure environmental clearances for the project are secured. Project team members attended regularly scheduled meetings held by regulatory/resource agencies to discuss the project. The NEPA/404 process seeks to obtain concurrence from the signatory agencies at three key decision points: Project Purpose and Need, Alternatives to be Carried Forward, and Preferred Alternative.

5.2.1.1 Scoping Meeting

Early in the process, an Agency Scoping Meeting was held (December 12, 2007) with the regulatory and resources agencies to identify the important environmental issues and concerns to be considered in the EIS. The meeting included an overview of the process, a description of the Tiered EIS process, and a review of the analytical tools. The GIS was a specific focus, and details were presented concerning data layers, sources of data, level of detail and gaps in the data. The agencies agreed that the level of detail in the GIS database was appropriate for comparing impacts of alternatives and for making decisions about transportation system solutions.

The principal purpose of the meeting was to solicit the agencies' input on key resource issues and topics to be addressed in the EIS. Topics that were suggested included the need to avoid and minimize impacts to environmental and socioeconomic resources, consideration of sustainable design measures, multimodal transportation solutions, and the need to ensure the project is compatible with concurrent transportation improvement projects. (See the Scoping Document in Appendix H for a detailed description of the issues the agencies discussed.)

5.2.1.2 Supplementary Scoping Meeting

A second scoping meeting was held January 11, 2008, to obtain input from the USACE and IDNR, who were not present at the first scoping meeting. The agenda for the meeting mirrored the first meeting and included an overview of the project organization, process, and analytical tools and methods. Both agencies agreed that the process and methods of analysis were acceptable for this type of study and sufficient for making decisions about transportation solutions.

The USACE and IDNR reviewed the list of resource issues generated from the first meeting. The agencies added several topics to the list including the source and extent of the Cook County soils information and consideration of BMPs to manage water quality in the area. (See the Scoping Document in Appendix H for a detailed description of the issues the agencies discussed.)

5.2.1.3 NEPA / 404 Meeting Number One

A meeting was held June 23, 2008, to seek concurrence on the purpose and need statement. The purpose and need statement was founded on technical analysis and stakeholder information and input. As such, information from the TSPR (FHWA and IDOT, 2009), the report documenting the detailed technical analysis of travel performance for existing and future travel in the study area, and stakeholder involvement activities, which provided an insightful local perspective of the transportation issues in the study area, were presented. Highlighted was the finding that when the results of the technical analysis were compared with the stakeholder issues there was a remarkable similarity. At the conclusion of the meeting, concurrence on the Purpose and Need was obtained.

5.2.1.4 NEPA / 404 Merger Meeting Number Two

The EO-WB project team met with the NEPA/404 Merger group on September 4, 2008, to provide a project update. The status report focused on the tiered process and advances in alternative development and evaluation. Whereas the EO-WB project is the first in Illinois for which tiering is being applied, the meeting represented another opportunity to state the fundamentals of the process. Tier One was explained as a planning step used to identify the location and type of preferred improvements at a conceptual level of detail, and Tier Two would be used to advance project development for priority elements of the plan.

The group responded favorably to the use of tiering. In particular, it recognized that there was no preconceived solution for the area given the complexities of the transportation issues in the study area. The development of an overall master plan for the area was viewed as a benefit, more so as a framework from which projects with independent utility could advance in Tier Two. The agencies expressed satisfaction with the process because their early involvement gave them a context within which resource impacts were assessed on a broader scale.

The second part of the meeting was an update regarding the development and evaluation of alternatives. The analytical methods and evaluation criteria used to screen alternatives was described. The first evaluation step compared the travel performance of the initial 15 roadway alternatives. Five alternatives were dropped because they failed to satisfy purpose and need. The remaining 10 were evaluated against environment and socioeconomic factors, and three more were dropped because of high socioeconomic impacts. The agencies concurred with the analysis, agreeing that the socioeconomic evaluation criteria were the most discerning. They also agreed with the approach that further detail would be incorporated into the process as it advances.

The meeting updated the merger group and sought their input on progress to date, and on methods that may be applied in future steps. Several members of the NEPA/404 group were not present, and it was suggested that the agencies have a joint agency meeting on

October 8, 2008 in Schaumburg, thus giving the team the opportunity to give another status report. The EO-WB team agreed to be present at that meeting. See Table 5-3 for a description of topics discussed at the meeting.

TABLE 5-3
Meetings and Coordination with Resource Agencies and Other Organizations

Date	Participants	Topics Discussed
October 30 and November 30, 2007, and June 11, 2009	IDNR	Ecological Compliance Assessment Tool (EcoCAT) submitted and results received. Consultation initiated.
November 7, 2007	IDNR, IEPA	Meeting to discuss/obtain available information from state databases.
November 29, 2007	IDNR	Refinement of state-listed plant species data (e-mail).
December 21, 2007	DuPage County	Received available DuPage County GIS data.
January 18, 2008	JAWA, MWRDGC	Received utility atlases.
February 5, 2008	USFWS	Letter with information pertaining to potential federal-listed threatened and endangered species within the study area.
February 7 and March 14, 2008	FEMA	Letters with requirements pertaining to floodplain impacts and the Tiered EIS.
April 10, 2008	USFWS	Letter stating that the Indiana bat likely is not present in northeastern Illinois.
August 2008	FPDDC, INHS	Received and refined wildlife information.
August 6, 2008	Bensenville	Received additional information pertaining to potential historic sites. (Original information was obtained through the Context Audit.)
October 8, 2008	USACE, USFWS	Tiered approach for the EIS (the process, how critical decisions are made, level of detail in each tier, expected results and documents for each tier); alternatives development and evaluation process (screening from 15 system alternatives to 10, then to 7, future screening of 4 transit alternatives); current travel modeling efforts (redistribution of traffic onto other roadways, potential capacity improvements beyond major improvements) that led to proposal to expand the study area (agencies concurred).
October 13, 2008	USEPA	Received list of CERCLIS sites in Cook and DuPage counties.
October 17, 2008	Baxter & Woodman, Village of Bensenville, Cook County Highway Dept., City of Des Plaines, DuPage County Public Works Department, Elk Grove Village, Village of Hanover Park, Village of Roselle, Village of Schaumburg, Village of Schiller Park, City of Wood Dale	Letter documenting telephone conversation requesting the appropriate drainage information for incorporation into the drainage study. The following material was requested: storm sewer plans, combined sewer atlas, utility plans, contour mapping, proposed and current drainage improvements, identification of flooding experience associated with the highway or adjacent properties, and local ordinance.

TABLE 5-3
Meetings and Coordination with Resource Agencies and Other Organizations

Date	Participants	Topics Discussed
November 12, 2008	USACE, USEPS, USFWS	Meeting to discuss wetland data collection and data refinement methodology; quantification of potential wetland impacts; the use of available data to identify wildlife resources in the study area. Field visit to view environmental resources, specifically wetlands.
November 19, 2008	DuPage County Dept. of Economic Development and Planning	Request for a copy of *Upper Des Plaines River Tributaries Watershed for Willow-Higgins Creek, Bensenville Ditch, Crystal Creek and Addison Creek Tributaries.*
December 2008 and February 2009	FPDCC, FPDDC, INHS	Received and refined wildlife information for original and expanded study area.
December 12, 2008	IDNR	Updated information pertaining to state-listed threatened and endangered species and natural areas, including the expanded study area.
December 22, 2008	FPDDC	Received exhibit showing proposed forest preserve acquisition area located southwest of the Elgin O'Hare Expressway and Medinah Road (adjacent to the west side of Medinah Wetlands Forest Preserve).
December 30, 2008	IDNR	Received maps with biological integrity and diversity stream ratings.
January 20, 2009	Cook County Assessor's Office	Received available Cook County GIS data.
January 21, 2009	USEPA	Received list of RCRA-regulated facilities in Cook and DuPage counties,
January 22, 2009	USACE, USEPA, USFWS	Project status update, expanded study area and supporting improvements, updates to the purpose and need document, the TSPR, and the finalist system alternatives update.
January 29, 2009	USFWS	Letter with revised information pertaining to potential federal-listed threatened and endangered species for the study area, including the expanded study area.
February 18, 2009	IDNR	Written permission to use the information provided by the state in the Tier One EIS.
March 9, 2009	DuPage County Dept. of Economic Development and Planning	Phone conversation regarding DuPage County trail lengths.
April 3 and June 4, 2009	IDNR	Received information pertaining to public lands that were purchased and/or developed using LWCFA or OSLAD funds.
July 22, 2009	SHPO	Finding of No Architectural Resources Affected.
July 27 and July 30, 2009	USEPA, USFWS	Conference call to discuss the treatment of air quality in the Tier One EIS, schedule to complete the Tier One EIS, and accelerated schedule for Tier Two.

5.2.1.5 NEPA / 404 Merger Meeting Number Three

On February 3, 2009, the EO-WB team met with the NEPA/404 Merger group to provide a project status update. The topics included a revised study area, updated purpose and need statement, and an update of the alternatives evaluation and screening.

Traffic data and analysis caused the project team to reconsider the project limits in the later half of 2008. Traffic analysis of the roadway alternatives examined the affects of the improvements on traffic for the adjacent roadway network. The Elgin O'Hare Expressway was consistently affected by all alternatives and showed increases in traffic levels that warranted capacity improvements. Therefore, the study area was expanded to the west to include the Elgin O'Hare Expressway. The decision to expand the study area required that the purpose and need statement (concurred upon in June 2008) be reconsidered to determine if the larger area changed the fundamental need statement. The basic transportation performance metrics that supported the purpose and need findings were presented. Each measure was evaluated, comparing the old study area metrics with the new study area. It was concluded that the basic message in the original purpose and need statement did not change with the expanded study area. The NEPA/404 Merger group acknowledged the findings but agreed to wait until the next meeting for formal concurrence.

The environmental and social impacts of the seven roadway alternatives were presented to the group. It was noted that the accuracy of the database had improved since the last impact assessment. The environmental resource impacts are remarkably similar for all alternatives, including wetlands, waters and floodplains. Three alternatives have potential impacts to threatened and endangered species, but the others have none. The greatest differentiators were building displacements and tax revenue losses.

The presentation concluded with a preview of the February 2009 stakeholder meeting and March 2009 public meeting, at which the remaining roadway and transit alternatives would be presented and meeting participants would be asked to comment on them. Following the public meeting, information supporting the selection of the alternatives to be carried forward in the Draft EIS would be compiled, reviewed by FHWA, IDOT, stakeholders, and the NEPA/404 Merger group, and presented at the next NEPA/404 Merger meeting in June 2009 for concurrence.

5.2.1.6 NEPA / 404 Merger Meeting Number Four

The EO-WB project team met with the NEPA/404 Merger group on June 24, 2009, to seek concurrence on the project purpose and need, and the alternatives to be carried forward in the Draft EIS. The group originally concurred on the project purpose and need in June 2008; however, since that time the study area boundary was expanded and the purpose and need was revised to conform to the new boundary. In February 2009, the group was briefed as to the expanded boundary and changes to the purpose and need. The revised version of the purpose and need was submitted to the group for review and summarized at the June 24, 2009 meeting. Although the study area was expanded, the original purpose and need statements remained valid, with metrics showing that congestion remained as high for the larger study area, the area with travel times of greater than 10 minutes to a freeway connection remained the same, the longest travel times in the study area continued to be those to the west, and transit ridership remained the same. After answering a few questions for the project team, the NEPA/404 Merger group unanimously concurred with the project purpose and need.

The second concurrence point involved a detailed presentation of the alternatives development and screening process that led to the alternatives retained for further study in the Draft EIS. The project team explained that the roadway alternatives were narrowed from 15 to 10 to seven by means of travel performance, environmental, and social measures. The seven remaining alternatives were subject to a more complex screening approach including a quantitative analysis, qualitative analysis, and consideration of stakeholder input. Each aspect of the screening approach evaluated a number of factors including travel performance, design viability, and environmental and socioeconomic factors. This led to the conclusion that transportation system Alternatives 203 and 402 be carried forward as build alternatives. The alternatives development process yielded several options for connecting the south leg of the O'Hare West Bypass with I-294. The process started with seven options that were later reduced to four options. The four remaining alternatives were subjected to detailed comparative evaluations. However, the reasons that two of the four options were dismissed were unworkable railroad conflicts, large loss of tax base, and large displacement of commercial and industrial business. The remaining options (Options A and D) were recommended to the group to be retained for further evaluation in the Draft EIS. Again, after answering a few questions, the NEPA/404 Merger group unanimously concurred that Alternatives 203 and 402 and Options A and D be carried forward into the Draft EIS.

5.2.1.7 Other Resource Agency Meetings and Coordination

Extensive coordination was undertaken with resource agencies and other agencies outside the formal NEPA/404 process. The coordination focused on the exchange of resource information (such as status and general location of endangered or threatened species, acquisition of the latest resource data to populate the project's GIS database, input to the process, and the level of detail needed in a Tier One evaluation) and on field visits to gain perspective of the resources in the area and their quality. Table 5-3 lists the coordination activities. Letters are included in Appendix C.

5.2.2 Project Working Groups

Three working groups were developed to guide the development of the process to a successful conclusion. The groups have different functions, but all are designed to provide timely input to the process so as to satisfy both federal transportation planning requirements and to provide a solution that meets the needs of the study area. The individual project working groups are described in the following sections.

5.2.2.1 Project Management Team

The Project Management Team comprises FHWA, IDOT (District and Central office), and consultant staff. The group provides guidance on the process and technical requirements. Its role is to establish the overall process, methodologies for alternative development and evaluation, detailed procedures for evaluating travel performance, environmental and socioeconomic impacts, and other technical evaluations, stakeholder involvement, and compliance with federal requirements. The group meets monthly to report on project status and to discuss project activities, actions, and required decisions to advance the project upon an agreed schedule.

5.2.2.2 Corridor Planning Group

The Corridor Planning Group (CPG) consists of community leaders from the affected communities and from DuPage and Cook counties (see Table 4-2 in the SIP for a list of members). The role of the CPG is to reflect the views and interests of the individual municipalities while considering the broader transportation needs of the study area, to review and comment upon the interim products from the process, to provide input to the study process for consideration and analysis, and to champion unity within the study area that would lead to the support of a preferred transportation solution. CPG activities are described in subsection 5.3.2.

5.2.2.3 Environmental, Land Use, and Transportation Task Forces

Three task forces were created to focus on technical aspects of the project development process and to provide external subject-matter information and input with respect to environmental, land use, and transportation issues. Task force members have expertise or a particular interest in these areas (see Table 4-3 in the SIP for a list of members). They represent communities and counties in the study area, interest groups, resource agencies, transportation agencies, and individuals. Task force activities are described in subsection 5.3.2.

- **Environmental Task Force** is charged with identifying, evaluating, and making recommendations with respect to various environmental issues and concerns within the study area. This includes providing advisory input to the development of environmental impact evaluation criteria and the evaluation of environmental impacts.
- **Land Use Task Force** is charged with identifying, evaluating, and making recommendations with respect to land use and economic issues within the study area. This includes advisory input regarding land use patterns, the effects of various alternatives on land use and economic centers, and the compatibility of alternatives with the overall land use and economic development goals within the study area.
- **Transportation Task Force** provides advisory input to help identify, evaluate, and make recommendations with respect to various transportation issues within the study area. This includes advisory input for the transportation system performance evaluation, transportation system performance measures to be used to evaluate alternatives considered, and evaluation of the performance of system alternatives.

5.3 The Public and Interested Groups

The EO-WB implemented an extensive public involvement program that included every stakeholder that has interest in or is affected by the proposed transportation improvements. Many venues were provided, with the goal of establishing opportunities for stakeholders to participate, be heard, and influence the outcome of the process, for example the project's purpose and need and build alternatives to be carried forward. The EO-WB hosted or participated in meetings with the core communities most affected by the proposed improvements; stakeholder workshops comprised of community officials, staff, agency representatives, and others; meetings with transportation providers and other operating infrastructure entities in the study area; speakers bureau events with civic groups, professional societies, business groups, and communities; and information meetings with the general public.

5.3.1 Core Community Meetings

Continuous communication with the core communities—Elk Grove Village, Bensenville, Itasca, Wood Dale, Schaumburg, and Roselle—has been rigorously maintained throughout the project's development. Community officials were apprised early on of the project's intended goals. As the south bypass connection option development process matured, Franklin Park was added to the list of communities who were regularly engaged. Meetings with communities were held every couple months to update officials on current and upcoming activities and to obtain input on the development of alternatives. Officials were asked to inform the project team of how alternatives could benefit or otherwise affect the community, or if there were aspects to the alternatives that had not yet been considered. Meetings were held with community officials in advance of stakeholder events, including public meetings. The object was to provide community representatives with a preview of what was going to be presented, to answer questions, and obtain their feedback. Table 5-4 summarizes the meetings with core community officials.

TABLE 5-4
Core Agency Meetings

Community	Date	Topic Discussed
Bensenville, Elk Grove Village, Itasca, Wood Dale	August 2007	Overview of the study process and goals; public and stake-holder involvement; and elicit input regarding local issues.
	November 2007	Public Information Meeting; project working group coordination plan; preview Joint Task Force Meeting and Stakeholder Workshop Number One.
	February 2008	Alternatives development and evaluation process; preview objectives of upcoming project working group meetings.
	April 2008	Summary of Stakeholder Workshop Number Two; project purpose and need; initial roadway system strategies.
	May 2008	Comments related to project purpose and need; initial roadway and transit system strategies; preliminary transportation performance analysis.
Bensenville, Elk Grove Village, Itasca, Wood Dale, Franklin Park	June 2008	Travel performance for initial roadway system strategies; preview objectives of upcoming project working group meetings.
Itasca	June and July 2008	Elgin O'Hare Expressway access options in Itasca.
Bensenville, Elk Grove Village, Itasca, Wood Dale, Franklin Park	July 2008	Dismissal of five roadway strategies that did not satisfy purpose and need; evaluation of environmental and socioeconomic impacts; north and south legs of the O'Hare Bypass or IL 83 Freeway.
Franklin Park	August 2008	Discussions of initial south bypass connection options noting their advantages; sought opinions of the options and compatibility with land use patterns.
Bensenville, Elk Grove Village, Itasca, Wood Dale	October 2008	Expanded study area; recent alternatives development and evaluation efforts; analyses of projected travel patterns.
Roselle, Schaumburg	October 2008	Expanded study area; introduction and overview of study;

TABLE 5-4
Core Agency Meetings

Community	Date	Topic Discussed
		recent alternatives development and evaluation efforts; analyses of projected travel patterns.
Wood Dale	November 2008	Land use and economic development consultants (The Lakota Group and TranSystems) scope of transportation improvements; improvements planned for the Thorndale corridor; coordination of projects.
Bensenville, Elk Grove Village, Itasca, Franklin Park	December 2008	North and South West Bypass Connection Options; analysis findings for the potential Elgin O'Hare Expressway westerly extension past terminus at US 20.
Bensenville, Franklin Park	January 2009	Discussions of the south bypass connection options, including revised layout and cross-sectional views of elevated sections; review of latest impact data and discussion of evaluation criteria.
Bensenville, Elk Grove Village, Itasca, Wood Dale	February 2009	Briefing of systemwide travel performance, estimated costs, environmental impacts, and social impacts for roadway alternatives.
Elk Grove Village	March 2009	Discussion of the Village's issues concerning several roadway alternatives that affect the community.
Bensenville, Elk Grove Village, Itasca, Wood Dale, Roselle, Schaumburg, Franklin Park	April 2009	Post public meeting briefing of the build alternatives to be carried forward in the Draft EIS (i.e., Alternatives 203 and 402, and Options A and D).
Franklin Park, Bensenville	June 2009	Change of administration; introduction of study process, goals and milestones; public and stakeholder involvement.
Franklin Park	June 2009	Discussion with elected officials, staff and representatives from industrial properties potentially affected by south connection improvements; timing of right-of-way acquisition process afforded to property owners potentially displaced by highway projects.
Bensenville, Elk Grove Village, Itasca, Roselle, Schaumburg, Wood Dale, Franklin Park	June and July 2009	Overview of multimodal improvement plan; build alternatives population and employment, and travel performance; potential advance projects.
Franklin Park	August 5, 2009	Potential roadway improvements to offset traffic increases as a result of the proposed improvements; potential mitigation techniques for additional stormwater runoff.

5.3.2 Stakeholder Workshops

The CPG and task forces were brought together regularly in a workshop format and assisted with the definition of transportation issues and problems, identification of road and transit facilities that needed improvement, criteria and methods to be used to evaluate alternatives, development of specific alternatives to be considered, and assessment of the alternative evaluation output. See Table 5-5 for the details of their involvement. The stakeholder workshops have been a valuable forum that has helped to advance the process and build consensus amongst those affected. The workshops also served to identify local community issues that were best addressed in one-on-one meetings. The meetings focused on specific locational issues, access requirements, accommodation of transit and bike/pedestrian needs, and accommodation of changing land uses. Although not specifically invited, the public was welcome to observe.

TABLE 5-5
Stakeholder Activities

Meeting Date	Meeting Activities
October 3, 2007	***CPG Meeting Number One.*** The meeting was attended by members of the CPG. Attendees were provided with an overview of the project and the stakeholder involvement plan, including the expected role of the CPG. A breakout session was held during which participants were divided into four groups and tasked with providing input on transportation issues and identifying concerns important to the communities. The meeting closed with a preview of upcoming events, the distribution of transportation issues questionnaire, and a request for nominees to the environmental, transportation, and land use task forces.
December 13, 2007	***Task Force Kickoff Meeting and Stakeholder Workshop.*** Task force members were provided with an overview of the project and the roles of the task forces. The transportation system performance analysis process and information regarding early analysis findings was also presented. Then, the attendees broke into six groups for the first workshop activity. A moderator and scribe were assigned to each group. Stakeholders reviewed a list of transportation and social issues that had been developed at previous corridor planning group meetings and public and agency coordination events. The stakeholders were asked to identify additional issues within the following categories: Freeway and Tollway System, Major Arterials and Local Roads, Transit, Freight and Bicycle/Pedestrian System, and Quality of Life/Economic Development. Once the groups had stated their transportation issues, attendees were given $100 of “transportation bucks” to spend on the issues. Issues receiving the most money, and therefore the highest priority, were the need for expanded public transportation, the need for lasting solution that minimizes community impact and maximizes economic development potential, poor connectivity from I-290 to I-294 (including North Avenue), lack of access to O’Hare Airport, and travel delays along roadways with at-grade railroad crossings (e.g., Irving Park and York roads). The second exercise was conducted to identify potential project goals based on the issue defined in the first exercise. The groups developed 35 specific goals addressing the provision of multimodal solutions, consideration of cost-saving measures, minimizing environmental and socioeconomic impacts, and providing a comprehensive and long-lasting strategy for improving the transportation system.
February 13, 2008	***CPG Meeting Number Two***. Stakeholders were provided with a project update and a summary of the stakeholder involvement plan, issues identified thus far, transportation system performance analysis and process, and upcoming milestones and events.
February 21, 2008	***Task Force Meeting Number Two.*** A general session was held followed by individual breakout sessions. During the general session, attendees were provided an update on the project status and a summary of stakeholder involvement activities, transportation system information and alternative performance evaluation process, stakeholder problem definition, planning framework and alternatives development and evaluation process, GIS database, and upcoming milestones and events. *Transportation Task Force Session:* Modal strategies (or “Transportation Tool Box”) to be considered in Module One of the alternatives development process were described. Task force members were asked to determine whether and how strategies should be considered, and which transportation topics should be addressed during alternatives evaluation.

TABLE 5-5
Stakeholder Activities

Meeting Date	Meeting Activities
	Land Use Task Force Session: Members were provided with a description of the GIS database, land use patterns, the No-Action Alternative, transit and airport network, the results of the redistribution of 2030 population and employment without the Elgin O'Hare Expressway extension and O'Hare West Bypass. Members were asked to provide input on land use constraints and opportunities in the study area, including planned land use changes and opportunities for transportation improvements to enhance such changes and comment on evaluation criteria and performance measures to compare alternatives. *Environmental Task Force Session:* The GIS database was presented, and its mapping and analytical capabilities were described. GIS data presented include land use, water resources, designated lands, wetlands, threatened and endangered species, bike trails, historical and archaeological sites, and regulated features. It was noted that traditional field studies would not be completed for the Tier One EIS; rather, data were obtained from available resources and resource agencies. Field studies would take place in Tier Two. Subsequently, the Task Force split into two groups to identify environmental constraints on aerial base maps. The project team would use the environmental constraints identified by group members during the alternatives development process. Finally, the entire Task Force collaboratively developed environmental topics for consideration as evaluation criteria to compare in Module 3.
March 13, 2008	***Stakeholder Workshop Number Two.*** The purpose of the meeting was to conduct a workshop to have stakeholders help decide which strategies should be considered to address transportation issues in the area and where they should be used. After an update on the status of the project was provided, the planning charrette was introduced. The "transportation toolbox" was presented as the basis from which stakeholders could develop strategies and includes physical, operating and demand management elements. Information regarding existing and future transportation system performance and environmental and land use constraints were presented. Workshop participants were encouraged to consider this information as they identified potential improvement locations. Participants were divided into six teams and tasked with developing a map depicting existing system strategies and system expansion strategies to be considered, as well as demand management and operating strategies to be evaluated. The goal was to record as much information and as many ideas as possible, not to reach consensus or to develop a single recommendation. Each group moderator summarized the discussion in his or her group. The workshop closed with a summary of the next steps in the process and upcoming activities. The ideas collected at the meeting were used to develop the initial system strategies and potential travel performance evaluation procedures.
April 16 and 17, 2008	***CPG Meeting Number Three and Joint Task Force Meeting Number Three.*** The project team met with the CPG on April 16 and with the joint task force members on April 17 to apprise the group of public involvement and stakeholder activities that have occurred and of analysis findings presented in the draft TSPR, to summarize the draft purpose and need statement, to review the results of the March 2008 stakeholder workshop, and to present initial roadway system strategies. A question and answer session was held and the meetings were adjourned.
May 22, 2008	***Stakeholder Workshop Number Three.*** The purpose of the meeting was to hold a workshop to have stakeholders review the initial system strategies and provide input on the appropriateness of proposed improvement measures and identify environmental and social issues that may constrain improvements. The project team used stakeholder input to evaluate and screen the initial system strategies.
June 25, 2008	***Joint CPG/Task Force Meeting Number Four.*** The project team assembled stakeholders to update them on the status of technical work and stakeholder involvement activities, and to describe the initial roadway system strategies, the process of evaluating the strategies, and the results of the analysis that has been performed. The project team informed the stakeholders that connections to I-90 and I-294, discussed at the previous stakeholder workshop, were screened and that design would continue on the remaining alternatives. A question and answer session was held, next steps were announced, and the meeting was adjourned.

TABLE 5-5
Stakeholder Activities

Meeting Date	Meeting Activities
July 31, 2008	***Joint CPG/Task Force Meeting Number Five.*** The purpose of the meeting was to provide stakeholders with an update on project activities and the results of the purpose and need and environmental impact screenings of roadway system strategies. The system alternatives development process was described and next steps were announced. The project team broke the stakeholders into four groups to review and discuss the accuracy of the locations of the north and south leg connections, alternative evaluation criteria, and preliminary impact evaluation results for the north and south leg connections. The teams were encouraged to consider and provide input on the evaluation factors for the finalist alternatives.
November 13, 2008	***Joint CPG/Task Force Meeting Number Six.*** A meeting was held to update members on the refinement of alternatives, revision of the project study area, and the results of the first stage of transit alternatives screening. The public meeting held September 3 was also summarized. The group was apprised of upcoming events and then divided into four groups charged with identifying environmental and transportation issues in the expanded study area as well as potential supporting roadway improvements.
December 16, 2008	***Joint CPG/Task Force Meeting Number Seven.*** A meeting was held to provide members with an update on public involvement and technical activities that have occurred, to apprise the group that the study area has been further expanded based on stakeholder input and logical termini evaluation and that the Purpose and Need and TSPR would be amended to reflect the expanded study area, and present the finalist roadway alternatives evaluation, including tie-ins to I-90 and I-294.
February 19, 2009	***Joint CPG/Task Force Meeting Number Eight.*** A meeting was held to provide members an update on technical activities, including reevaluation of purpose and need to assess whether it changed based on the expanded study area. The finalist roadway alternatives were described. Members were given a preview of upcoming technical work and the public information meeting to be held in March.
April 23, 2009	***Stakeholder Workshop Number Four.*** The project team assembled stakeholders to update them on the status of technical work and stakeholder involvement activities. This included a summary of the March 2009 Public Information Meeting. The project team described the two remaining roadway alternatives (Alternatives 203 and 402), transit elements, and Options A and D that have been carried forward for consideration in the Draft EIS. A question and answer session was held, next steps were announced, and a brief group exercise was held to discuss innovative financing options and to identify “advance projects.” Pieces of the overall build alternative that have independent utility and could potentially be accelerated.
July 8, 2009	***Joint CPG/Task Force Meeting Number Nine.*** A meeting was held to update members on refinements to multimodal improvements, including community, bicycle/pedestrian, transit, and roadway improvements. The build alternatives evaluation of population and employment forecasts and travel performance, and potential advance projects under consideration were presented.

5.3.3 Meetings with Other Agencies

Thirty meetings were held with other agencies important to the development of alternatives and the analysis used to evaluate them (see Table 5-6). The RTA and its family of transit providers met regularly with the project team to assist in developing and screening transit improvements for the study area. The MWRDGC considered the effects of alternative transportation strategies upon facilities that it owns and operates, and provided guidance to the team to address those matters. The proximity of the project improvements to O’Hare Airport requires the consideration of airspace constraints. The team consulted the FAA regarding airspace issues, and prepared documentation that evaluated every potential airspace envelope for existing and proposed aircraft operating areas that might be affected by a proposal from the EO-WB. The project team has coordinated regularly with the OMP and freight rail operators in the study area to ensure that project alternatives are compatible with existing and planned facilities.

TABLE 5-6
Meetings with Other Agencies

Date	Participants	Topics Discussed
July 19, 2007	CMAP	Introduction of project team; traffic model development and travel demand forecasts; data needed from CMAP; next steps.
August 23, 2007	CMAP	Travel modeling methodology; model development process; requests for CMAP, IDOT, and ISTHA traffic data.
October 18, 2007	Pace, RTA, CTA, Metra, CMAP	Introduction of the project and study process; transit-related issues; obtain information regarding facilities/services and transit-related planning documents; identification of planned development activities to be considered in the No-Action Alternative; identification of improvements to include in the build alternatives.
October 24, 2007	ISTHA	Introduction of project and study process; acquisition of information regarding existing facilities and planned improvements for consideration as No-Action Alternative; coordination with ISTHA's congestion pricing study; stakeholder and public involvement activities; and ISTHA's involvement in the project.
December 7, 2007	Chicago DOA	Summary of Public Information Meeting Number One; agency invitation letters (CPG membership, Task Force membership nominations, upcoming Joint Task Force Meeting Number One, participating agency invitations); interim projects.
December 19, 2007	FAA	Overview of EO-WB travel demand modeling; stakeholder concerns as project team conducts travel forecasts for the study area; CMAP's airport trip generation process document, including 2018 forecast assumptions and 2030 forecast assumptions; EO-WB baseline travel forecasts and assumptions, including study area socioeconomic data redistribution and airport socioeconomic assumptions.
December 20, 2007	DuPage County, CMAP	Socioeconomic data input from DuPage County and CMAP used to develop a population and employment scenario for the 2030 No-Action Alternative.
January 15, 2008	CMAP	Details of the 2030 preliminary baseline CMAP model run; development of the final 2030 baseline (No-Action Alternative) traffic forecasts.
January 28, 2008	Pace, RTA, CTA, Metra, CMAP	Transit alternatives to be included in the No-Action Alternative; overall alternatives development and evaluation process; request for Pace capacity data; upcoming meetings.
February 1, 2008	OMP	Status of ongoing work (TSPR, purpose and need, scoping); preview of alternatives development and evaluation process (modules, preferred alternative selection process); objectives of upcoming project working group meetings; updates to stakeholder involvement plan; questions and answers.
February 5, 2008	ISTHA	Project status; alternatives development and evaluation process; objective of upcoming project working group meetings; status and objective of the congestion pricing study.
April 16, 2008	OMP	Status of ongoing work; preview and schedule of draft purpose and need statement; summary of Stakeholder Workshop Number Two (presentation of 13 roadway strategies developed in response to roadway, transit, bicycle/pedestrian and TDM strategies suggested by stakeholders; identification of measures to be used to evaluate alternatives); traffic associated with O'Hare Airport; adequacy of initial system strategies and process for screening alternatives; potential locations of the STAR Line.

TABLE 5-6
Meetings with Other Agencies

Date	Participants	Topics Discussed
May 6, 2008	Pace, RTA, CTA, Metra, CMAP	Obtain feedback regarding initial transit system strategies before upcoming stakeholder meeting.
May 20, 2008	OMP	Status of ongoing work; comments on purpose and need and next steps; initial roadway and transit system strategies to be presented at upcoming CPG and task force meetings; results from transportation performance analysis of initial roadway strategies; status of OMP work; projected air traffic numbers; next steps and upcoming meetings.
May 21, 2008	ISTHA	Comments on purpose and need statement and next development steps; initial system strategies, including a preview of the initial transit system strategies and the initial roadway system strategy transportation performance, evaluation and screening procedures, and a preview of corridor typical sections; topics and objectives of upcoming Project Working Group meetings, including Stakeholder Workshop Number Three, Joint CPG/Task Force Meeting, and Public Information Meeting Number Two.
June 16, 2008	OMP	Status of ongoing work; screening of initial roadway system strategies based on travel performance findings and ability to satisfy purpose and need; next steps in alternatives development and evaluation; objectives of upcoming Joint CPG/Task Force and Stakeholder Meetings.
July 29, 2008	OMP	Status of ongoing work; preview of recent alternatives development and evaluation activities and findings (dismissal of five roadway strategies because they did not satisfy purpose and need; evaluation of environmental and socioeconomic impacts to identify alternatives with disproportionate adverse effects); review of south and north connection options and effect on OMP property and air space; update on status of OMP property acquisition; objectives of upcoming stakeholder meetings (recommendation to dismiss three roadway alternatives with disproportionately higher socioeconomic impacts).
August 5, 2008	Canadian Pacific Railroad	Introduction of the project, study area, proposed multimodal transportation solution, and regional significance of the project; impacts of south alignment improvements on the use of Bensenville Yard and potential mitigation measures; suggested alignment locations for south alignment option to limit impact to existing and future uses of the property; agreements between OMP and CPRR; utilities on the property.
August 13, 2008	Pace, RTA, CTA, Metra, CMAP, DuPage County	Alternatives screening process and resulting finalist roadway alternatives; proposed transit alternatives analysis process; current transit alternatives.
September 22, 2008	FAA, TSA	Alternatives development and screening process; key features of the roadway alternatives; proposed improvements' relationship to the Airport Outer Area, the new 9L-27R runway, aviation fuel line easements, and other airspace issues; requirements for the FAA 7460 submittal and review process.
October 17, 2008	Metropolitan Water Reclamation District of Greater Chicago	Potential conflict of improvements with storage reservoirs; potential detention storage regulations.
October 21, 2008	Pace, RTA, CTA, Metra, CMAP	Screen transit alternatives analysis measures and results; expanded study area and proposed transit improvements in the new study area; next steps in screening process; upcoming meetings.

TABLE 5-6
Meetings with Other Agencies

Date	Participants	Topics Discussed
December 4, 2008	OMP	Drainage improvements related to OMP; Bensenville flood control project; adequacy of drainage facilities for proposed improvements; future evaluation of drainage options to minimize base floodplain influence spreading into the proposed interchange at York Road/O'Hare West Bypass/Elgin O'Hare Expressway.
December 10, 2008	Canadian Pacific Railroad	Impacts of the south alignment options on freight rail operations and regional freight movement; options for constructing the improvements in the yard.
January 21, 2009	Pace, RTA, CTA, Metra, CMAP	Presented transit screen two analysis and results. Transit corridors having regional significance were retained in plan. Participants dismissed light-rail from Thorndale corridor in favor of diesel motor limits. Ultimately, BRT was chosen to be the initial improvement in the corridor.
February 12, 2009	OMP	Letter to request copies of the *Proposed Conditions Willow Creek Relocation Plan.*
February 17, 2009	OMP	Brief of roadway and transit alternatives to be presented at the public meeting in March 2009.
March 23, 2009	Pace, RTA, CTA, Metra, CMAP	Brief of the finalist transit corridors. Additional detail provided for station, park 'n' ride, and transit center locations. Transit providers suggested a few adjustments to proposal. Discussion also included cost factors to be considered in development of transit cost estimate.
April 20, 2009	ISTHA	Briefing of the build alternatives to be carried forward in the Draft EIS (i.e., Alternatives 203 and 402 and Options A and D).
April 22, 2009	OMP	Briefing of the build alternatives to be carried forward in the Draft EIS (i.e., Alternatives 203 and 402 and Options A and D).
July 14, 2009	OMP	Interchange form at Taft Road and Irving Park Road; widening of Franklin Avenue/Green Street UPRR bridge for purposes of EO-WB (OMP design provisions to expand the bridge without need for shoofly); Cargo Access Road and Irving Park Road intersection; possible locations for compensatory storage in the vicinity of southwest corner of O'Hare Airport.
July 20, 2009	OMP	Irving Park Road/Taft Road and access to nearby properties; discussions of eliminating Cargo Access Road intersection with Irving Park Road.
August 4, 2009	Pace, RTA, CTA, Metra, CMAP	Summarized elements of the build alternatives, including transit. Additional analysis resulted in refinements of the transit plan was shared with the group to secure their consensus. Input suggested that details in the location of the western terminal be deferred until the vision for the west terminal has been advanced. Next steps in the process were outlined stating the dates for the release of the Draft EIS and Public Hearing.

Direct connection of proposed improvements to tollway facilities owned and operated by ISTHA required regular contact with staff to determine solutions that would be compatible with its existing facility operations and future improvement plans.

DuPage County's interest in the study area precedes the EO-WB study with a vision study of transportation and economic development proposals for the area. DuPage County has assisted in the process by participating in the development of the No-Action Alternative, assisting in configuring specific transit proposals and providing technical assistance in the development of the population and employment forecasts related to the No-Action Alternative.

5.3.4 Speakers Bureau

The speakers bureau was developed as a venue for putting the project message and information before the public. Twelve speaking events occurred, many of which were an extension of the project working groups, with group members requesting that the project team speak to other community organizations, such as community councils, business organizations, civic organizations, and others. Requests for speakers also came directly to the project Web page. This venue has been important to the project team in gaining a broader perspective on local issues, and it has given participants an opportunity to delve into the proposed project improvements and how they affect them. Similar information was presented at each event and included project history and regulatory framework, status of the alternatives development and evaluation process, and past and upcoming public and agency involvement activities. See Table 5-7 for a list of the speaker bureau events.

TABLE 5-7
Speakers Bureau Meetings

Date	Event
October 23, 2007	DuPage Mayors and Managers Council Meeting
May 22, 2008	Northwest Municipal Conference
July 24, 2008	American Public Works Association
October 10, 2008	O’Hare Noise Compatibility Commission
October 23, 2008	Franklin Park Economic Development Committee Meeting
November 10, 2008	Schaumburg Economic and Business Development Group Meeting
November 18, 2008	Illinois Association of Highway Engineers Monthly Dinner
November 19, 2008	DuPage Mayors and Managers Council Meeting
January 5, 2009	Village of Roselle Board Meeting
March 19, 2009	Institute of Transportation Engineers, Illinois Division Meeting
March 26, 2009	American Society of Civil Engineers Meeting
April 9, 2009	Chicagoland Chamber of Commerce Air Cargo Logistics
June 22, 2009	Village of Roselle Board Meeting
August 24, 2009	West O'Hare Corridor Implementation Team (WOCIT) Meeting
September 2, 2009	Illinois Road and Transportation Builders Association (IRTBA) Meeting

5.3.5 Public Information Meetings

Three public information meetings have been held to present project activities to interested citizens and solicit public input. The meetings were open-house format, beginning with a brief PowerPoint presentation summarizing project activities to date. Personnel from IDOT and its consultants were present to discuss comments from the public. Participants were given two options for submitting comments: (1) forms were available to write and submit comments, and (2) a court reporter was available to record oral comments for the project record. The meetings were publicized through advertisements in newspapers, on various municipality Web sites, and in a newsletter mailed to public officials, communities, organizations, and citizens. Accommodations at the meeting locations were provided to the media covering the events. Meeting summaries were prepared for each meeting and included a description of the meeting, publicity materials, handouts, exhibits, photographs of the meeting, sign-in sheets, and comment and response forms.

5.3.5.1 Public Information Meeting Number One

Public Information Meeting Number One was held November 14, 2007. The meeting was well attended, with almost 400 individuals present. The purpose of the meeting was to provide an introduction and overview of the study objectives, process, and schedule. The public was invited to review aerial exhibits of the study area and to identify transportation issues, sensitive community features, and sensitive environmental features on the exhibits.

Comments were accepted through December 5, 2007. Thirty-one written comments were received, and the court reporter transcribed several oral comments. Transportation issues, sensitive community features, sensitive environmental features and other notations recorded on the aerial exhibits were compiled and documented. Some recommended locations for transportation improvements; others expressed interest in improving non-roadway transportation facilities, or voiced concern regarding schedule and compatibility with the OMP. Many emphasized the importance of minimizing impacts to environmental and socioeconomic resources.

5.3.5.2 Public Information Meeting Number Two

Public Information Meeting Number Two was held September 3, 2008, and roughly 250 people attended. The meeting offered information, such as initial roadway and transit alternatives, the project purpose and need, mapped environmental and socioeconomic data, potential location options for connecting alternatives with an IL 83 improvement to I-90, and options for connecting the north bypass to I-90 and the south bypass to I-294. Other information pertaining to study objectives, process, and schedule was also displayed. Public comments were accepted through September 19, 2008. Forty-five written comments were received. Comments included suggestions or choices for transportation improvements, requests for transit improvements, support for environmentally friendly measures such as reducing traffic and paved area and including landscaping in the design, support for a comprehensive improvement program rather than a compromised alternative that does not address the purpose, concern regarding displacement of area businesses and residents, interest in cost and funding sources, concern regarding losses in community tax base, suggestions for sign changes, support for bicycle and pedestrian accommodations, request that the bypass be on airport property, concern regarding noise and community cohesion impacts, and concern regarding whether those entering O'Hare Airport on the west side will have access to the entire airport.

5.3.5.3 Public Information Meeting Number Three

Public Information Meeting Number Three was held March 11, 2009, and was attended by well over 650 people. The meeting presented the roadway and transit alternatives that remain under consideration, including the proposed extension of the Elgin O'Hare Expressway; the potential O'Hare West Bypass north connection to I-90 (by IL 83 Freeway or a new freeway east of Elmhurst Road/York Road); and the four potential O'Hare West Bypass south connection options to I-294. Nearly 37,000 comments were received. Over 36,500 comment cards were received as a result of Elk Grove Village's community outreach effort supporting Alternative 203 and opposing expansion of IL 83. Nearly 200 comment letters supporting Option D were received through Bensenville's community outreach effort. Fifteen comments (2 typewritten, 13 oral) were submitted through the court reporter, and more than 80 written comments were submitted supporting particular alternatives, and expressing concern about traffic operations, and other impacts to communities, including residential and commercial displacements and the resulting tax base losses.

5.3.6 Newsletters

Six newsletters have been distributed to area residents and interested parties throughout the study (see Table 5-8). They have reported study progress, major decisions, and milestones, and provided answers to frequently asked questions. A seventh newsletter will be distributed after the release of the Draft EIS.

TABLE 5-8
Newsletters

Issue	Date	Topics
1	Fall 2007	Project introduction; message from IDOT; introduction to project Web site; description of the tiering process for environmental studies; public participation opportunities; next steps; public meeting announcement.
2	Winter 2008	Request for public input; description of the stakeholder involvement plan; introduction to CPG; next steps; frequently asked questions; description of project's purpose and need; request for public input; project description.
3	Summer 2008	What's not working?; request for public input; next steps; presentation of roadway improvement alternatives; public meeting announcement; presentation of transit improvement strategies; frequently asked questions.
4	Fall 2008	Summary of comments on initial alternatives; background and description of expanded study area; update on roadway alternatives evaluation; finalist alternative evaluation criteria; frequently asked questions; transit alternatives update; next steps.
5	May 2009	Roadway alternatives recap; public meeting summary and comments heard; announcement and description of the alternatives to be carried forward for consideration; transit alternatives screening results; next steps.
6	June 2009	Surveys to begin on Elgin O'Hare – West Bypass Corridors.
7	September 2009	Draft EIS available for public comment; environmental and social benefits and impacts of the build alternatives; travel performance benefits; build alternatives considered in detail; next steps

5.3.7 Web Site

The project Web site (www.elginohare-westbypass.org) provides information that can be accessed at the convenience of the user. The site began service on September 7, 2007, and is updated regularly. General project information and topic-specific details are provided. Materials are available for viewing or downloading, including project documents and reports such as the project purpose and need, meeting materials and minutes, and public involvement materials, such as newsletters and press releases. The alternatives under the various stages of development and screening are posted for public review and comment, including the alternatives carried forward. A page is also provided for those who wish to submit comments. Responses to comments are provided and become part of the project record. The page has received over 700 hits since it began service.

5.3.8 Mailing List

A project mailing list was developed using available information including names and addresses of officials from other recent projects in the area, and Internet searches. The list is updated regularly with attendance lists from public meeting, speaker bureau events, and so on. The list is comprehensive including government and business leaders, area residents, and special interest groups. It is used as a distribution list for newsletters, meeting and workshop invitations, and project documents. The mailing list has about 2,000 entries.

5.4 Results of Coordination Activities

The project team developed an outreach program that includes every stakeholder who has interest in or is affected by the proposed transportation improvements. Many venues have been provided, with the goal of establishing a genuine opportunity for stakeholders to participate, be heard, and influence the outcome of the process. Stakeholder involvement has helped to develop the foundation upon which this study rests—the purpose of and need for the transportation project within the study area. Stakeholders have helped to identify the type and location of improvements, information that serves as a starting point for developing the initial roadway and transit alternatives. Later they helped to devise the criteria that would be used to evaluate and compare alternatives. Stakeholders have voiced opinions about what is compatible with their community and what is not. This communication has shaped the alternatives. The participation of Elk Grove Village in public involvement activities resulted in the elimination of alternatives that involved IL 83. The participation of Wood Dale officials resulted in a design that improves access to important properties along Thorndale Avenue between Prospect and Wood Dale roads. Input from Itasca facilitated a conceptual design for the I-290/Thorndale Avenue interchange that optimizes access to adjacent properties and movement through the interchange. Coordination with Bensenville resulted in locating improvements to minimize damage to community resources.

Transportation service providers (ISTHA, Pace, RTA, Metra, CTA, DuPage County, OMP, CPRR, UPRR, and others) have provided valuable input regarding the development and evaluation of roadway and transit proposals, including refinements that would avoid conflicts with their respective plans and operations. Planning and resource agencies also have been integral to the process. CMAP and DuPage County helped in several technical aspects of the study. Both agencies assisted in the identification of transportation projects to be included in the No-Action Alternative. Also, these agencies provided assistance in the methodology used to develop 2030 population and employment forecasts specific to the No-Action Alternative. The resources agencies—USACE, USFWS, IDNR, USEPA, and others—have partnered with the project sponsors from the beginning to guide the study through the three NEPA/404 concurrence points, and the analytical process used to measure natural and socioeconomic impacts. The overall result has been a successful, stakeholder-driven process.

SECTION 6

References

Executive Summary

Federal Highway Administration (FHWA) and Illinois Department of Transportation (IDOT). 2008. *Stakeholder Problem Definition*. CH2M HILL. April.

———. 2009. *Stakeholder Involvement Plan for Elgin O'Hare – West Bypass Project*. CH2M HILL. March.

———. 2009. *Transportation System Performance Report*. CH2M HILL. April.

Section 1

Chicago Metropolitan Agency for Planning (CMAP). 2006. *2030 Forecasts of Population, Households and Employment by County, Municipality and Traffic Analysis Zones*. October 12.

Federal Highway Administration (FHWA) and Illinois Department of Transportation (IDOT). 2008. *Stakeholder Problem Definition*. CH2M HILL. April.

———. 2009. *Transportation System Performance Report*. CH2M HILL. April.

Section 2

Adolphson, D. L., et al. 2002. Physical, Chemical, and Biological Methods and Data from the Urban Land Use–Gradient Study, Des Plaines and Fox River Basins, Illinois, 1999–2001. Urbana, Illinois. U.S. Geological Survey Open-File Report 01-459.

Anderson, R. V. 1995. *Evaluation of Aquatic Habitat, Chicago O'Hare International Airport.* Western Illinois University.

Barbour, M. T., et al. 1999. *Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates and Fish,* 2nd edition. Washington DC. U.S. Environmental Protection Agency, Office of Water. EPA 841-B-99-002.

Bertrand, W. A., et al. 1996. *Biological Stream Characterization (BSC): Biological Assessment of Illinois Stream Quality through 1993.* IEPA/BOW/96-058. November.

Bird Conservation Network. 2007. http://ebird.org/content/bcn/. Accessed on August 12, 2008 (supplemented with additional information from INHS, dated August 18, 2008).

CH2M HILL. 2004a. *Total Maximum Daily Loads for Salt Creek, Illinois*. St. Louis, MO. October.

———. 2004b. *Total Maximum Daily Loads for West Branch DuPage River, Illinois*. St. Louis, MO. October.

———. 2008. GIS Database.

Chicago Metropolitan Agency for Planning (CMAP). 2001. *Land Use Inventory for Cook, DuPage, Kane, Kendall, Lake, McHenry and Will Counties, Illinois.*

———. 2006a. *2030 Forecasts of Population, Households and Employment by County, Municipality and Traffic Analysis Zones*. Revised October 12, 2006.

———. 2006b. *Data Bulletin: Land-use Inventory for Northeastern Illinois*. September.

Christopher B. Burke Engineering, Ltd. (CBBEL). 2004. *Upper Des Plaines River Tributaries Hydrologic and Hydraulic Model Conversion of Willow-Higgins Creek Watershed*. Cook County Department of Highways. September.

———. 2006. DuPage County Countywide Stormwater and Flood Plain Ordinance Stormwater Management Report for the Willow Creek Tributaries Improvements, Bensenville, DuPage County, IL. Village of Bensenville. November.

———. 2007. *IDNR-OWR Floodway Construction Permit Interim Alignment Bensenville Ditch Relocation*. City of Chicago. December.

City of Chicago. 2008. Monthly Operations, Passengers, Cargo Summary by Class. http://www.flychicago.com/Statistics/stats/1207SUMMARY.pdf. Accessed June 24, 2009.

Civil Rights Act of 1964. 42 USC §2000d, et seq.

Cotton, K., et al. 2008. *Saving Migratory Birds for Future Generations: The Success of the Neotropical Migratory Bird Conservation Act.* Washington DC. 2008. American Bird Conservancy. July.

DuPage County, Illinois. 2008. *DuPage County Countywide Stormwater and Flood Plain Ordinance* (Adopted as Appendix F to the DuPage County Stormwater Management Plan). August 1, 2008 (revisions effective).

DuPage County Department of Development and Environmental Concerns. 1999. *DuPage County Wetland Inventory (DCWI) Maps.*

DuPage County Department of Economic Development and Planning and the DuPage Mayors and Managers Conference. 2008. DuPage County Regional Bikeway Plan. June.

Environmental Laboratory. 1987. *Corps of Engineers Wetland Delineation Manual.* Vicksburg, MS. U.S. Army Corps of Engineers Waterways Experiment Station. Report Y-87-1. January.

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

Executive Order 13112. 1999. *Invasive Species*. 64 FR 6183. February 8.

Federal Aviation Administration (FAA). 2008. Final Calendar Year 2007 Enplanements and Percent Change from CY06. http://www.faa.gov/airports_airtraffic/airports/planning_capacity/passenger_allcargo_stats/passenger/media/cy07_all_enplanements.pdf. Accessed June 24, 2009.

Federal Emergency Management Agency. 2004a. Flood Insurance Rate Map, DuPage County, Illinois and Incorporated Areas, Panels 0203C, 0301C, 0302C, 0303C, 0304C, 0305C, 0306C, 0307C, 0308C, 0309C, and 0603C of 1006. December 16.

———. 2004b. *Flood Insurance Study, DuPage County Illinois and Incorporated Areas.* December 16.

———. 2007. *Flood Insurance Study, A Report of Flood Hazards in DuPage County, Illinois and Incorporated Areas*. March.

———. 2008a. Flood Insurance Rate Map, Cook County, Illinois and Incorporated Areas, Panels 0183J, 0184J, 0191J, 0192J, 0211J, 0212J, 0193J, 0194J, 0213J, 0214J, 0218J, 0219J, 0238J, 0356J, 0357J, 0376J, 0358J, 0359J, 0378J, 0366J, 0367J, 0386J, 0368J, 0369J, and 0388J of 8362. August 19.

———. 2008b. *Flood Insurance Study, Cook County Illinois and Incorporated Areas*. August 19.

Federal Register. 1980. 40 CFR Part 230: Section 404(b)(1), *Guidelines for Specification of Disposal Sites for Dredged or Fill Material*. 45 (249): 85352–53. Washington DC. U.S. Government Printing Office.

Forest Preserve District of Cook County. 2001. *Fishing Guide, Forest Preserve District of Cook County*.

———. 2006a. Region 2 Map of Natural Areas and Activities. http://www.fpdcc.com/downloads/Region2FA.pdf. Accessed on August 19, 2008.

———. 2006b. Region 3 Map of Natural Areas and Activities. http://www.fpdcc.com/downloads/Region3FA.pdf. Accessed on August 19, 2008.

———. 2008a. Busse Woods Trail System. http://www.fpdcc.com/tier3.php?content_id=68&file=map_68b. Accessed on August 19, 2008.

———. 2008b. Forest Preserve District Fishing Areas. http://www.fpdcc.com/images/fisharea.gif. Accessed on September 30, 2008.

———. 2008c. Wildlife Lists for Des Plaines River Preserves and Ned Brown Preserve. December 31, 2008.

Forest Preserve District of DuPage County. 2008a DuPage County Forest Preserves. http://www.dupageforest.com/preserves/preserves.html. Accessed on December 11, 2008.

———. 2008b. Fischer Woods Forest Preserve. http://www.dupageforest.com/preserves/fischer.html. Accessed on August 11, 2008.

———. 2008c. Fishing in DuPage County. http://www.dupageforest.com/RECREATION/fishing.html. Accessed on September 29, 2008.

———. 2008d. Wildlife Lists for DuPage County Forest Preserves located within the EO-WB Study Area (excluding Salt Creek Greenway Forest Preserve). August 13 and 14, and December 10.

———. 2009. Salt Creek Greenway Master Plan. http://www.dupageco.org/emplibrary/SaltCreekPlanSummary.pdf. Accessed on April 24, 2009.

Headrick, M. 2002. *Aquatic Biological Resources, Chicago O'Hare International Airport*. Montgomery Watson Harza. October–November.

Illinois Administrative Code, Title 35: Environmental Protection Subtitle C: Water Pollution Chapter I: Pollution Control Board, Part 302, *Water Quality Standards*. September 8, 2008.

Illinois Department of Commerce and Economic Opportunity (IDCEO). 2008. http://www.commerce.state.il.us/dceo/Bureaus/Community_Development/CommProfiles / Default.htm. Accessed February 12, 2009.

Illinois Department of Natural Resources. 2009. Illinois Mussels. http://dnr.state.il.us/education/ mussels/intro.htm. Accessed on January 5, 2009.

Illinois Department of Natural Resources, Office of Resource Conservation (IDNR – ORC). 2008. *Integrating Multiple Taxa in a Biological Stream Rating System*. State of Illinois. August.

Illinois Department of Natural Resources and Illinois Natural Heritage Database. 2008a. *Endangered and Threatened Species and Illinois Natural Areas Inventory data in Geographic Information Systems format for the Elgin O'Hare – West Bypass Study Area*. December 12.

———. 2008b. Illinois Threatened and Endangered Species by County. http://dnr.state.il.us/conservation/naturalheritage/inhd.htm. Accessed on December 15, 2008.

Illinois Endangered Species Protection Board. 2009. *Additions, Deletions, and Changes to the Illinois List of Endangered and Threatened Species Approved as Final by the Illinois Endangered Species Protection Board at the 141st meeting.* February 20.

[*Illinois*] *Environmental Protection Act*. 1970. 415 ILCS 5/1 et seq.

Illinois Environmental Protection Agency (IEPA). 2008a. *2007 Illinois Annual Air Quality Report*. December.

———. 2008b. Geographic Information System (GIS) Data. http://www.epa.state.il.us/land/gis/. Accessed on December 17, 2008.

———. 2008c. *Illinois Integrated Water Quality Report and Section 303(d) List-2008. IEPA/BOW/08-016.* Springfield, Illinois. Bureau of Water. August.

———. 2008d. Source Water Assessment Program (SWAP) ArcIMS Mapping Tool. http://maps.epa.state.il.us/website/swap/intro.htm. Accessed on December 4, 2008.

Illinois Natural Areas Preservation Act. 1981. 525 ILCS 30.

Illinois Natural History Survey (INHS). 2003a. INHS Amphibian & Reptile Collection, Cook County Amphibians and Reptiles. http://www.inhs.uiuc.edu/cbd/collections/amprep/counties/cook.htm. Accessed on August 6, 2008.

———. 2003b. *INHS* Amphibian & Reptile Collection, DuPage County Amphibians and Reptiles. http://www.inhs.uiuc.edu/cbd/collections/amprep/counties/dupage.htm. Accessed on August 6, 2008.

———. 2003c. INHS Mammal Collection, Mammals of Illinois. http://www.inhs.illinois.edu/cbd/collections/mammal/ilmammals.html. Accessed on August 12, 2008.

———. 2005. Aquatic Mollusca of Illinois. http://www.inhs.uiuc.edu/cbd/collections/mollusk/ilmollusks.html. Accessed on January 5, 2009.

———. 2008a. INHS Amphibian & Reptile Collection Database Search Results. http://ellipse.inhs.uiuc.edu:591/INHSCollections/herpsearch.html. Accessed August 21, 2008.

———. 2008b. INHS Fish Collection Database Search Results. http://ellipse.inhs.uiuc.edu:591/INHSCollections/fishsearch.html. Accessed on August 12, December 5 and 12, 2008.

———. 2008c. INHS Mollusk Collection Database Search Results. http://ellipse.inhs.uiuc.edu:591/INHSCollections/mollsearch.html. Accessed August 12, 22, 25, and December 5, 2008 (refined with additional information from INHS, dated December 15, 2008).

———. 2009. INHS Crustacean Collection Database Search Results. http://ellipse.inhs.uiuc.edu:591/INHSCollections/crustsearch.html. Accessed on February 16, 2009.

Illinois State Geological Survey (ISGS). 2008. Water and Related Wells in Illinois. http://ablation.isgs.uiuc.edu/website/ilwater/viewer.htm. Accessed on December 4, 2008.

Illinois State Water Survey (ISWS). 2008a. Center for Groundwater Science, Northeastern Illinois—General Information. http://www.isws.illinois.edu/gws/neillinois.asp. Accessed on April 17, 2009.

———. 2008b. Illinois Water Supply Planning, Water Quality: Northeastern Illinois, Groundwater Quality. http://www.isws.illinois.edu/wsp/regneILwq.asp. Accessed on April 17, 2009.

Illinois Waste Management and Research Center. 1997. Landfill Sites of Illinois: WMRC GIS Database landfill. http://www.isgs.uiuc.edu/nsdihome/outmeta/landfill.f.html#getacopy.4. Accessed on January 8, 2009.

Injurious Species. 2002. 17 I.A.C. Part 805.

Injurious Wildlife. 1974. 50 CFR 16.

Interagency Wetland Policy Act of 1989. 20 ILCS 830.

Iverson, L. R., et al. 1999. Illinois Plant Information Network. Illinois Natural History Survey and USDA Forest Service. http://www.fs.fed.us/ne/delaware/ilpin.html. Accessed on August 8, 2008.

Keefer, D. A., and R. C. Berg. 1990. Potential for Aquifer Recharge in Illinois. Illinois State Geological Survey Map, scale 1:1,000,000.

Kelly, W. R., and S. D. Wilson. 2003. Temporal Changes in Shallow Groundwater Quality in the Chicago Metropolitan Area. Seattle, WA. Geological Society of America Annual Meeting.

Lacey Act. 1900. 18 USC 42.

Land and Water Conservation Fund Act of 1965 (LWCFA). 16 USC 460l.

McMillen, Daniel. 2003. "Employment Subcenters in Chicago: Past, Present and Future." *Economic Perspectives.* Q2. pp. 2–14.

National Historic Preservation Act of 1966. 16 USC 470 et seq.

Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990. 16 USC 4701 et seq.

Office of the State Fire Marshal. 2007. Petroleum and Chemical Safety—Underground Storage Tanks. http://webapps.sfm.illinois.gov/ustsearch/. Accessed on December 17, 2008.

Page, L. M., et al. 1992. *Biologically Significant Illinois Streams: An Evaluation of the Streams of Illinois based on Aquatic Biodiversity*. Illinois Natural History Survey: Champaign, IL. Center for Biodiversity Technical Report 1992(1).

PhotoMapper 6.1. Independent JPEG Group. 2007 aerial.

Procedures for Abatement of Highway Traffic Noise and Construction Noise. 1992. 23 CFR 772.

Rogner, J. D. 2008. Personal communication with Eric Harm/IDOT and Angela LaPorte/ISTHA. April 10.

———. 2009. Personal communication with Peter Knysz/CBBEL. January 29.

Swink, F. A., and G. Wilhelm. 1994. *Plants of the Chicago Region.* 4th edition. Indianapolis: Indiana Academy of Science: Indianapolis, IN.

U. S. Army Corps of Engineers (USACE). 2008. *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region.* U.S. Army Engineer Research and Development Center: Vicksburg, MS. ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-08-27. September.

U.S. Bureau of the Census. 2000. *Characteristics of Population, Households, and Employment.*

———. 2009. *Annual Estimates of the Resident Population for Counties of Illinois: April 1, 2000 to July 1, 2008 (CO-EST2008-01-17)*. March 19.

U.S. Department of Agriculture National Agriculture Statistics Service, Illinois Department of Agriculture, and Illinois Department of Natural Resources. 2002. *Land Cover of Illinois 1999–2000*. Springfield, Illinois. http://www.agr.state.il.us/gis/ landcover99-00.html. Accessed on December 15, 2008.

U.S. Department of Agriculture – Natural Resources Conservation Service. 2009. Illinois State-listed Noxious Weeds. http://plants.usda.gov/java/noxious?rptType=State&statefips=17. Accessed on February 10, 2009.

U.S. Department of Health and Human Services. 2009. 2009 Poverty Guidelines. http://aspe.hhs.gov/ POVERTY/09poverty.shtml. Accessed June 23, 2009.

U.S. Department of Interior, National Park Service. 2008. Nationwide Rivers Inventory—Illinois Segments. http://www.nps.gov/ncrc/programs/rtca/nri/states/il.html. Accessed on January 15, 2009.

U.S. Department of Transportation Act of 1966. Section 4(f), 49 USC 303.

U.S. Environmental Protection Agency. 2007. Toxics Release Inventory (TRI) Program. http://www.epa.gov/TRI/. Accessed on November 4, 2008.

———. 2008a. Active and Archived CERCLIS sites in Cook and DuPage Counties, Illinois. October 7.

———.2008b. Designated Sole Source Aquifers in EPA Region V. http://www.epa.gov/safewater/sourcewater/pubs/qrg_ssamap_reg5.pdf. Accessed on August 18, 2008.

———. 2008c. National Priorities List Sites in Illinois. http://www.epa.gov/superfund/sites/npl/il.htm. Accessed on October 1, 2008.

———. 2009a. National Ambient Air Quality Standards (NAAQS). http://www.epa.gov/air/criteria.html. Accessed on April 21, 2009.

———. 2009b. RCRA-regulated facilities in Cook and DuPage Counties, Illinois. January 21.

U.S. Fish and Wildlife Service. 2005. National Wetland Inventory Maps. Office of Biological Services for the National Wetlands Inventory.

U.S. Fish and Wildlife Service – Division of Bird Habitat Conservation. 2008. Neacrtic and Neotropical Migrant Bird List. http://www.fws.gov/birdhabitat/grants/nmbca/BirdList.shtm. Accessed on April 6, 2009.

University of Illinois Museum of Natural History (UIMNH) Scientific Collections. 2008. UIMNH Mammal Collection Database Search Results. http://ellipse.inhs.uiuc.edu:591/INHSCollections/mammsearch.html. Accessed on August 12, 2008.

Section 3

Federal Highway Administration (FHWA) and Illinois Department of Transportation (IDOT). 2009. *Alternatives Development Report*. CH2M HILL. October.

———. 2009. *Transportation System Performance Report*. CH2M HILL. April.

Toll Roads, Bridges, Tunnels, and Ferries. 2003. 23 USC 129.

Transportation Infrastructure Finance and Innovation Act of 1998. 23 USC 601-609.

Section 4

AECOM, Inc. 2009. *Des Plaines River/Higgins Creek Watershed Stage 1 TMDL Report.* Document Number 100042-03-401. March.

Baeb, E. 2009. "Industrial Vacancy Hits 15 Year High." *Chicago Real Estate Daily*. January 26.

CDM, Inc. 2007. *DuPage River Salt Creek Workgroup, Chloride Usage Education and Reduction Program Study.* August 16.

CH2M HILL. 2004a. *Total Maximum Daily Loads for Salt Creek, Illinois*. St. Louis, MO. October.

———. 2004b. *Total Maximum Daily Loads for West Branch DuPage River, Illinois*. St. Louis, MO. October.

Chicago Metropolitan Agency for Planning (CMAP). 2006. *2030 Forecasts of Population, Households and Employment by County, Municipality and Traffic Analysis Zones*. October 12.

———. 2008. Stormwater Management Strategy Paper. November.

Christopher B. Burke Engineering, Ltd. (CBBEL). 2006. *DuPage County Countywide Stormwater and Flood Plain Ordinance Stormwater Management Report for the Willow Creek Tributaries Improvements, Bensenville, DuPage County, IL.* Village of Bensenville. November.

City of Wood Dale. 2009. *Draft Thorndale Corridor Master Plan.* March.

Clean Water Act of 1972. 33 USC 1251, et seq.

Department of Defense. 1986. 33 CFR Parts 320 through 330, *Final Rule for Regulatory Programs of the Corps of Engineers*. Federal Register Volume 51, No. 219. November 13.

Department of Defense and U.S. Environmental Protection Agency. 2008. 33 CFR Parts 325 and 332. *Compensatory Mitigation for Losses of Aquatic Resources*; Final Rule, dated April 10.

Diment, W. H., et al. 1973. *Some Effects of Deicing Salts in Irondequoit and Its Drainage Basin.* Highway Research Board #425.

DuPage County, Illinois. 2005. *DuPage County Comprehensive Plan.*

———. 2006. *West O'Hare Corridor Economic Development Study.* November.

———. 2008. *DuPage County Countywide Stormwater and Flood Plain Ordinance (Adopted as Appendix F to the DuPage County Stormwater Management Plan)*. August 1 (revisions effective).

DuPage County Department of Development and Environmental Concerns. 1999. *DuPage County Wetland Inventory (DCWI) Maps*.

Dupuis, T.V., et al. 1985. *Effects of Highway Runoff on Receiving Waters*. Washington DC. Federal Highway Administration, Vol. I - VI, FHWA/RD-84/062-66, Rexnord, Inc.

Resource Document for Environmental Assessments. FHA #FHWA/RD-84/064. June.

Endangered Species Act of 1973. 7 USC §136, 16 USC §1531 et seq.

Executive Order 11988. 1977. *Floodplain Management.* 42 FR 26951, 3 CFR May 24.

Federal Aviation Administration (FAA). 2007. *Hazardous Wildlife Attractants On or Near Airports. Advisory Circular No: 150/5200-33B.* August 28.

———. 2005. *Draft Environmental Impact Statement, O'Hare Modernization*. January.

Federal Emergency Management Agency (FEMA). 2004a. Flood Insurance Rate Map, DuPage County, Illinois and Incorporated Areas, Panels 0203H, 0301H, 0302H, 0303H, 0304H, 0305H, 0306H, 0307H, 0308H, 0309H, and 0603H of 1006. December 16.

———. 2004b. *Flood Insurance Study, DuPage County Illinois and Incorporated Areas.* December 16.

———. 2007. *Flood Insurance Study, A Report of Flood Hazards in DuPage County, Illinois and Incorporated Areas.* March.

———. 2008a. Flood Insurance Rate Map, Cook County, Illinois and Incorporated Areas, Panels 0183J, 0184J, 0191J, 0192J, 0211J, 0212J, 0193J, 0194J, 0213J, 0214J, 0218J, 0219J, 0238J, 0356J, 0357J, 0376J, 0358J, 0359J, 0378J, 0366J, 0367J, 0386J, 0368J, 0369J, and 0388J of 8362. August 19.

———. 2008b. *Flood Insurance Study, Cook County Illinois and Incorporated Areas.* August 19.

Federal Highway Administration (FHWA). 1981. *Visual Impact Assessment for HighwayProjects*. U.S. Department of Transportation, Office of Environmental Policy.

FHWA and Illinois Department of Transportation (IDOT). 2009. *EO-WB Finalist Build Alternatives and No Build Baseline Alternative 2030 Socioeconomic Data Forecasts: Estimation and Distribution Methodology*. CH2M HILL. April.

Frost, L. R., et al. 1981. *Hydrogeological Effects of Highway Deicing Chemicals in Massachusetts.* USGS #81 209.

Illinois Administrative Code 3708. 1989. *Floodway Construction in Northeastern Illinois.* May 13, 1989.

Illinois Administrative Code, Title 35: Environmental Protection Subtitle C: Water Pollution Chapter I: Pollution Control Board, Part 302, *Water Quality Standards.* September 8, 2008.

Illinois Department of Natural Resources and Illinois Natural Heritage Database. 2008. *Endangered and Threatened Species and Illinois Natural Areas Inventory data in Geographic Information Systems format for the Elgin O'Hare – West Bypass Study Area.* December 12.

Illinois Department of Transportation. 2002b. *Bureau of Design and Environment Manual, Policy D&E-18, Preservation and Replacement of Trees.* Springfield, IL. January.

———. 2004. *Illinois Drainage Manual*. June.

———. 2006. *Land Acquisition Procedures Manual.* "Guidelines for Use of Landscape Items." http://www.dot.state.il.us/landacq/lappm.html. Accessed on January 7, 2009.

———. 2007a. *Highway Traffic Noise Assessment Manual.* Springfield, IL. October 1.

———. 2007b. *Standard Specifications for Road and Bridge Construction.* Springfield, IL. January.

———. 2009. ADTs Getting Around Illinois. http://www.gettingaroundillinois.com/default.aspx?ql=aadt. Accessed on April 6, 2009.

[Illinois] Environmental Protection Act. 1970. 415 ILCS 5/1 et seq.

Illinois Environmental Protection Agency (IEPA). 2008a. *Illinois Integrated Water Quality Report and Section 303(d) List-2008*. IEPA/BOW/08-016. IEPA, Bureau of Water. Springfield, Illinois.

———. 2008b. Source Water Assessment Program (SWAP) ArcIMS Mapping Tool. http://maps.epa.state.il.us/website/swap/intro.htm. Accessed December 4, 2008.

———. 2009. *National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from Small Municipal Separate Storm Sewer Systems, General Permit No. ILR40*. Effective date: April 1.

Illinois Groundwater Protection Act. 1987. 415 ILCS 55/1 et seq.

Illinois State Geological Survey. 2008. Water and Related Wells in Illinois. http://ablation.isgs.uiuc.edu/website/ilwater/viewer.htm. Accessed December 4, 2008.

Interagency Wetland Policy Act of 1989. 20 ILCS 830.

Jones, P. H., and B. A. Jeffrey. 1992. "Environmental Impact of Road Salting," *Chemical Deicers and the Environment.* Chelsea, Michigan. Frank M. D'Itri. Lewis Publishers.

Kelly, W. R., and S. D. Wilson. 2004. "Temporal changes in shallow groundwater quality in northeastern Illinois." In: Proceedings, 13th annual Illinois Groundwater Conference, April 22, 2003. Carbondale, Illinois: Southern Illinois University.

Kelsey, P. D., and R. G. Hootman. 1992. "Deicing Salt Dispersion and Effects on Vegetation Along Highways. Case Study: Deicing Salt Deposition on the Morton Arboretum," *Chemical Deicers and the Environment.* Chelsea, Michigan. Frank M. D'Itri, ed. Lewis Publishers.

Land and Water Conservation Fund Act of 1965 (LWCFA). 16 USC 460l.

Lipka, G. S., and D. B. Aulenbach. 1976. "The Effect of Highway Deicing Salt on Chloride Budgets at Lake George, New York." Proceedings of the 31st Purdue University Industrial Waste Conference, Lafayette, Indiana.

Migratory Bird Treaty Act. 1918. 16 USC 703-712.

Nation, Jill/IDNR Division of Grant Management. 2009a. Personal communication with Vanessa Ruiz/IDOT. April 3.

———. 2009b. Personal communication with Vanessa Ruiz/IDOT. June 4.

National Historic Preservation Act of 1966. 16 USC 470.

National Research Council. 2008. *Urban Stormwater Management in the United States*. Washington DC. October 15.

Northeastern Illinois Planning Commission. 2004. Chicago Wilderness Green Infrastructure Vision for Northeastern Illinois. March. http://www.nipc.org/environment/sustainable/biodiversity/greeninfrastructure/. Accessed on June 15, 2009.

Public Sector Consultants, Inc. 1993. *The Use of Selected Deicing Materials on Michigan Roads: Environmental and Economic Impacts.* Lansing, Michigan. Michigan Department of Transportation. December.

Rapanos et ux., et al. v. United States. No. 04–1034. June 19, 2006.

Rogner, J. D. 2009. Personal communication with Peter Knysz/CBBEL. January 29.

Safe Drinking Water Act. 1996. 42 USC 300f-300j-18.

Shoemaker, L., et al. 2002. Stormwater Best Management Practices in an Ultra-Urban Setting: Selection and Monitoring. Prepared for the Federal Highway Administration. http://www.fhwa.dot.gov/environment/ultraurb/index.htm. Accessed on June 9, 2009.

Sucoff, E. 1975. *The Flow if Deicing Salt into the Atmosphere.* USEPA #600/2-76-105. Illinois State Water Survey. Urbana, Illinois.

Suloway, L., and M. Hubbell. 1994. *Wetland Resources of Illinois, An Analysis and Atlas.* Urbana, Illinois: Illinois Natural History Survey. Special Publication 15. July.

Swink, F. A., and G. Wilhelm. 1994. *Plants of the Chicago Region*. 4th edition. Indianapolis: Indiana Academy of Science.

Transportation Research Board. 1991. *Highway Deicing, Comparing Salt and Calcium Magnesium Acetate.* Washington DC. Special Report 235.

U.S. Bureau of the Census. 2000. *Characteristics of Population, Households, and Employment.*

U.S. Department of Agriculture (USDA) National Agriculture Statistics Service, Illinois Department of Agriculture, and Illinois Department of Natural Resources. 2002. Land Cover of Illinois 1999–2000. Springfield, Illinois. http://www.agr.state.il.us/gis/landcover99-00.html. Accessed on December 15, 2008.

USDA Natural Resource Conservation Service (NRCS). 1999. *Soil Survey of DuPage County, Illinois.*

USDA-NRCS and IEPA. 2002. *Illinois Urban Manual*.

USDA Soil Conservation Service. 1979. *Soil Survey of DuPage and Part of Cook Counties, Illinois.* May.

U.S. Department of Health and Human Services. 2009. 2009 Poverty Guidelines. http://aspe.hhs.gov/ POVERTY/09poverty.shtml. Accessed June 23, 2009.

U.S. Department of Transportation Act of 1966. Section 4(f), 49 USC 303.

U.S. Environmental Protection Agency. 2008. Designated Sole Source Aquifers in EPA Region V. http://www.epa.gov/safewater/sourcewater/pubs/qrg_ssamap_reg5.pdf. Accessed on August 18, 2008.

U.S. Fish and Wildlife Service. 2005. National Wetlands Inventory Maps. Office of Biological Services for the National Wetlands Inventory.

U.S. Geological Survey (USGS). 2007. Streamstats. September.

Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. 42 USC 61.

Village of Bensenville. 2004. *General Development Plan Update.* April.

———. 2009. *Alternative Redevelopment Strategies Final Report.* April.

Village of Itasca. 1994. *Comprehensive Plan.* October.

Village of Roselle. 1995. *Comprehensive Plan.* June.

Village of Schaumburg. 1996. *Comprehensive Plan.* February.

Williams, A., and G. Stensland. 2006. *Atmospheric Dispersion Study of Deicing Salt Applied to Roads: Part II Final Report for Period July, 2002 to June, 2004*. FHWA/IL/HRC.2006-1. Champaign, Illinois. Illinois State Water Survey. January.

Williams, A., et al. 2000. *Atmospheric Dispersion Study of Deicing Salt Applied to Roads: First Progress Report.* Champaign, Illinois. Illinois State Water Survey. April.

Xianming S., et al. 2009. *Evaluation of Alternative Anti-Icing and Deicing Compounds Using Sodium Chloride and Magnesium Chloride as Baseline Deicers - Phase I.* Report No. CDOT-2009-1. Denver, Colorado. Colorado Department of Transportation, DTD Applied Research and Innovation Branch. February.

Young, G. K., et al. 1996. *Evaluation and Management of Highway Runoff Water Quality.* Washington DC. Federal Highway Administration. June.

Section 5

FHWA and IDOT. 2009. *Stakeholder Involvement Plan for Elgin O'Hare – West Bypass Project*. CH2M HILL. March.

———. 2009. *Transportation System Performance Report (TSPR)*. CH2M HILL. April.

SECTION 7

List of Preparers

The following individuals were directly involved in the preparation of the Draft EIS. Their responsibilities included collecting and analyzing data, evaluating impacts, identifying mitigation, consulting with agencies, and writing or reviewing sections of the Draft EIS.

Name	Qualifications	Primary Responsibilities
Federal Highway Administration		
Matt Fuller	M.S., Civil Engineering; 11 years of experience.	Document Review; Federal Compliance
Arlene Kocher, P.E.	B.S., General Engineering; 8 years of experience.	Document Review; Federal Compliance
Federal Aviation Administration		
Jose DeLeon	M.B.A., in Marketing and Economics, B.S., Operations Management/Quality and Performance Management; 10 years of experience.	Participating Agency Reviewer
Amy Hanson	B.S., Environmental Science; 12 years of experience.	Participating Agency Reviewer
Rich Kula	M.P.A., Aviation Administration, B.S., Aerospace Administration, Professional Pilot Technology; 17 years of experience.	Participating Agency Reviewer
Illinois Department of Transportation		
IDOT Central Office, Bureau of Design and Environment		
Greg Feeny	B.S., Civil Engineering; 17 years of experience.	Engineering/Highway Geometric Review
Charles Perino	Ph.D, Botany; M.S., Botany; B.S., Geology; 27 years of experience.	Natural Resource Analysis and Review
Barbara Stevens	M.A., Economics; 30 years of experience.	Document Compliance; Socioeconomic Impact Analysis and Review; General Content Review
John Walthall	Ph.D., Archaeology; M.A., Anthropology/ Archaeology; B.A., Anthropology; 43 years of experience.	Archaeological/Historical Coordination, Analysis and Review
Walt Zyznieuski	M.A., Environmental Studies; B.S., Geography; 30 years of experience.	Air and Noise Impact Analysis and Review; General Content Review

Name	Qualifications	Primary Responsibilities
IDOT District 1, Bureau of Programming		
Pete Harmet, P.E.	B.S., Civil Engineering; 23 years of experience.	Project Manager; General Review
Sam Mead	12 years of experience.	Environmental Unit Head; Environmental Review and Coordination
Rick Wojcik, P.E.	B.S., Civil/Structural Engineering; M.B.A.; 26 years of experience.	Hydraulics Section Chief; Drainage Review
CH2M HILL (EIS Contractor)		
Libby Braband	B.S., Public Affairs; Graduate Studies Urban Planning and Public Policy; 15 years of experience.	Agency/Public Coordination
Sarah Buckhout	B.A., Interdisciplinary Studies; 4 years of experience.	Document Editing; Research
Ed Granzow	B.A., Social Ecology; Graduate Studies Public Administration; 33 years of experience.	Travel Demand Analysis
Debbie Flaws	B.A., English; 8 years of experience.	Document Editing; Socioeconomic Analysis; Alternatives Analysis
Aimee King	M.S., Interdisciplinary Ecology; 8 years of experience.	Agency/Public Coordination; Population and Employment; Special Lands and Waste Analysis
Larry Martin	B.A., Urban Planning; Graduate Studies Interdisciplinary Engineering; 40 years of experience.	Deputy Project Manager; Environmental Lead
Amarpal Matharu, P.E.	M.B.A., Management Information Systems; M.S., Civil Engineering; 15 years of experience.	Travel Demand Analysis
Jason Moller, P.E.	B.S., Civil Engineering; 7 years of experience.	Roadway Engineering and Alternatives Analysis
Christine Norrick, AICP	M.U.P., Urban Planning; 23 years of experience.	Socioeconomics; Land Use; Alternatives Analysis
Dante Perez-Bravo, P.E.	M.S., Civil Engineering; B.S., Civil Engineering; 5 years of experience.	Travel Demand Analysis
Lidia Pilecky, P.E.	B.S., Civil Engineering; 26 years of experience.	Project Manager
Lisa Sagami, P.E.	M.S., Civil Engineering; 23 years of experience.	Alternatives Development and Analysis
Cheng Soong, P.E.	M.S., Civil Engineering; 40 years of experience.	Roadway Engineering and Alternatives Analysis
Athreya Sreenivasan	M.S., Civil Engineering; 9 years of experience.	Travel Demand Analysis
Berna Sunman Sidal, P.E.	M.S., Civil Engineering; 9 years of experience.	Roadway/Air Space Analysis

Name	Qualifications	Primary Responsibilities
Christopher B. Burke Engineering, LTD		
Jedd Anderson, CWS, CPESC	B.A., Geology; 20 years of experience.	Technical Quality Control
Megan Connolly	B.S., Environmental Science; 5 years of experience.	Fieldwork and Data Collection
Marc Cottingham, MS, CPESC	M.S., Water Resource Management; 6 years of experience.	Fieldwork and Data Collection
Don Dressel, P.E., CFM	B.S., Civil Engineering; 31 years of experience.	Water Resources Review
Julie Gangloff, CWS	B.S., Biology; 12 years of experience.	Fieldwork and Data Collection
Elizabeth Gilson	M.S., Natural Resource Ecology; 7 years of experience.	Fieldwork and Data Collection
Tom Kehoe, CWS, CPESC	B.A., Biology; 15 years of experience.	Fieldwork and Data Collection
Pete Knysz, CPESC	M.S., Biology; 14 years of experience.	Natural and Water Resource Analysis
Mike Matkovic, P.E.	B.S., Civil Engineering; 25 years of experience.	Quality Review
Tom McArdle, CWS, CPESC	M.S., Forest Ecology; 23 years of experience.	Biological Resource Analysis
Peter Procaccio, EI	B.S., Civil Engineering; 2 years of experience.	Drainage Analysis
Robert Sliwinski, MS, CPESC	M.S., Zoology/Aquatic Ecology; 17 years of experience.	Fieldwork and Data Collection
Stephanie Stewart, P.E., CFM	B.S., Agricultural and Biological Engineering; 11 years of experience.	Water Resources Analysis
Dave Walters	B.A., Geography and Environmental Planning; 19 years of experience.	GIS Development; Impact Analysis; and Document Exhibits
Chinliang Wang, P.E.	B.S., Civil Engineering; M.A., Planning and Ecological Management; 41 years of experience.	Drainage Engineering and Analysis
Landrum & Brown		
Jeffery Jackson	B.S., Aviation Management; 11 years of experience.	Noise and Air Analysis
Erich Neumann	B.S., Social Sciences (Geography); 10 years of experience.	GIS Development; Impact Analysis; Document Exhibits
Vlecides-Schroeder Associates, Inc.		
Jessica Rinks	M.S., Public Administration; B.S.; 5 years of experience.	Transit Alternatives Development and Analysis
Ryan Ruehle	Graduate Studies in Urban Planning; B.S.; 3 years of experience.	Transit Alternatives Development and Analysis
Joanne Schroeder	Graduate Studies in Urban and Regional Planning; B.A.; 32 years of experience.	Transit Alternatives Development and Analysis

Name	Qualifications	Primary Responsibilities
STV, Inc.		
Paul Bobby, P.E.	B.S., Civil Engineering; 11 years of experience.	Freight Rail Coordination and Analysis
Patrick Bryant, P.E.	B.S., Civil Engineering; 15 years of experience.	Freight Rail Coordination and Analysis
Smith Engineering Consultants Group, Inc.		
Ronald Krall, P.E.	B.S., Civil Engineering; 18 years of experience.	Technical Oversight
Pat Pechnick, P.E.	B.S., Civil Engineering; 26 years of experience.	Technical Oversight
Huff & Huff		
Linda Huff	B.S., Chemical Engineering; M.B.A.; 30 years of experience.	Technical Review
Parsons Brinckerhoff		
Steve Ott	M.S., Resource Development (Environmental Policy and Law); B.S., Landscape Architecture; 30 years of experience.	Technical Review
Dean Englund	B.S., Engineering; 31 years of experience.	Technical Review
Allan Hodges	M.S., Urban Planning; B.S., Community Development; 40 years of experience.	Technical Review