

Promoting Cargo Oriented Development in Chicago South Suburban Communities

Presented at the Transport Chicago Conference
June 2008

Authors:
Stephanie Dock,
Albert Benedict,
David Chandler
At the Center for Neighborhood Technology

Corresponding author:
Albert Benedict
CNT
albert@cnt.org
773-269-4026
2125 W North Avenue
Chicago, IL 60647

Introduction

The South Suburban Mayors and Managers Association (SSMMA) through its not-for-profit development arm, the Chicago Southland Economic Development Corporation (CSEDC), is working in partnership with the Center for Neighborhood Technology (CNT) to carry out a novel type of site opportunity assessment. The partners are systematically analyzing industrially-zoned lands in Chicago's south suburbs that have enhanced value because of their potential for cargo oriented development (COD). Many of these sites are brownfields or underutilized land which could be brought back into more active use to the benefit of the community and region. Through quantitative and qualitative analysis we intend to bring high opportunity sites to the attention of interested public and private sector parties to help facilitate redevelopment.

Cargo Oriented Development (COD) and the future of the region

Cargo Oriented Development (COD) is the development of manufacturing and distribution businesses in select locations that benefit from access to multiple types of freight transportation, proximity to complimentary businesses, and a large local industrial workforce. This type of development is increasingly attractive given current international economic trends that are causing more freight to be shipped long distances and funneled through strategic locations. Just-in-time manufacturing and international supply chains have led to increased freight volumes. At the same time, manufacturing and distribution companies are locating near intermodal freight terminals, where they can combine shipping economies with reliability.

As the hub of the North American freight transportation system, the Chicago region and the south suburbs in particular are ideally situated to take advantage of these trends. Expressway, freight rail, and barge networks converge in the south suburbs, facilitating movements between modes. This historically industrial region contains large amounts of industrial land which is suitable for COD, as well as a significant concentration of manufacturing and distribution businesses which can help attract similar businesses. Moreover, a good percentage of the local workforce already works in related field or has the appropriate education levels for this type of work. By taking advantage of these assets in light of international trends, the Southland is poised for growth.

COD Site Identification and Analysis

CNT and SSMMA – the regional council of governments agency – are working together to help the region take advantage of the possibilities of COD. The end goal of this collaboration is to facilitate business development and job creation in the south suburbs in ways that will be good for the environment by making freight trips and worker commutes as efficient as possible and by reusing land already allocated for industrial use rather than converting greenfield land. To this end, we have performed a systematic analysis of current and potential industrial development sites in the south suburbs that have the characteristics necessary for COD: access to different types of freight transportation infrastructure, potential for streamlined land assembly, proximity to manufacturing or distribution companies, and access to an ample industrial workforce.

The analysis moves us toward this goal by making local communities, public agencies, developers/investors, and end-user companies aware of quality COD sites in the Southland. To this end the analysis has three objectives:

- To identify virtually all current and potential COD sites in the south suburbs

- To sort these sites into categories by the types of industrial/distribution activity they are most likely to support and to “rank” the sites according to their level of COD potential
- To create a rich base of information about all the sites, especially those with high development potential, with this information organized in a way that SSMMA can readily present it in a LOIS-compatible¹ summary format on its web site and in extensive files for communities and investors that are seriously interested in developing these sites.

The analysis is being performed in two steps. First, a quantitative “selector” analysis in which we use algorithms to sort data on all the land in the south suburbs and identify COD sites that merit more detailed investigation. Second, a qualitative analysis in which we use conventional methods to assess the potential of sites with promising characteristics. We have now completed the first step of this process and present our results in this report. A more detailed discussion of the pending qualitative analysis and our next steps concludes this report.

COD Selector Analysis

The quantitative methods used in this analysis relied heavily on Geographic Information Systems (GIS), specifically an application developed by CNT called the Development Opportunity Selector. The Selector application is a GIS-based algorithm that allows the user to input site specific criteria and select the sites that best meet the user defined outcome. In this case, the criteria and outcome centered on identifying opportunities for cargo oriented development (COD). The input variables or selection criteria were then chosen and optimized to find the sites that best met each of the respective COD typologies we identified; these typologies ranged from an overall ranking of all of the sites using all of the criteria to six specific variations designed to identify sites oriented toward multimodal, intermodal distribution, rail-served, infill, synergistic, and catalytic type development.

The Selector tool enabled us to overcome a number of challenges. From our prior work on COD in the south suburbs we intuitively knew that there were opportunities for industrial development. What we did not know were exactly how many sites there were, their precise (parcel-level) location, and what their specific COD assets were. The Selector allowed us to identify these sites and then look at their particular attributes and how those qualities related to each other within a site and across all the potential sites. Second, and even more important, while the Selector helped us describe these sites on a quantitative level, its real benefit is observed in how it allowed us to then sort and rank the sites based on their potential for development. This ranking allows us to focus our qualitative work on a manageable subset of potential sites that hold the most promise for development.

The Selector tool functions on a Chi-Square statistic and is designed to operate within a GIS system. The GIS allows us to collect and analyze the data spatially and look at the interrelationships of those data both for each specific input variable and across the entire set of input variables.

¹ LOIS stands for “LocationOne Information System”, a “real-time, on-line economic development/GIS-enhanced site selection engine” (www.locationone.com/about/). Member communities post detailed information about the community and available sites that can then be accessed by interested parties.

The COD site selection is then made by finding locations that have the optimal opportunities as defined by the user input criteria. This is accomplished by determining what conditions have to be in place and at what level and then finding the location that best meets those conditions. This analysis used 32 input variables (discussed below), which we wanted to optimize in different ways; for example we might be looking for locations with high industrial business density, land available for development, and an average volume of freight on the nearest rail line. In order to meet such a diverse set of criteria the Selector uses a common statistical method, namely the Chi Square Minimization. For any given location The Chi-Square (named after the Greek letter Chi χ) is defined as follows:

$$\chi^2 \equiv \sum_{i=1}^n \left(\frac{x_i - \bar{x}_i}{\sigma_i} \right)^2$$

In this case, where n is the total number of criteria (input variables), x_i is the measured value of each criterion for each location and \bar{x}_i is the desired value of each criterion. σ_i is the standard deviation for each of the criterion for the entire sample of locations. It is easy to see that criteria that vary greatly are weighted the same as those that vary only slightly (since the denominator takes into account this variation). The overall score for each location is simply the χ^2 , thus the location(s) that have the lowest value meet the criteria the best, and are therefore the optimal choices. The value of χ^2 will be zero if the desired value for each criteria is exactly met

Two things needed to occur before we could run the Selector tool. First, using property data for the whole south suburban area, we identified clusters of contiguous industrial, vacant, and publicly-owned land at the parcel level. This first step yielded over 2,500 potential COD sites. Second, we narrowed our set of sites based on two criteria: size and proximity to transportation assets. We considered only those sites with at least 5 acres of contiguous land that were also in close proximity to at least one of the five transportation assets we considered (expressway exits, truck routes, railroads, intermodal terminals, and transload facilities). This initial scan of the identified clusters narrowed the potential list of COD sites to 598. Having this information alone is valuable to developers. However, the Selector increases this value by incorporating a much broader range of site specific COD characteristics.

To run the Selector analysis and identify the most promising development sites the following list of 32 variables were aggregated to each of the 598 clusters using GIS. A number of the variables are discussed in sets, e.g.; the number of businesses on site and the surrounding area.

Land: Our land use data comes from the Will and Cook County Assessors

- Total acreage of the site
- Industrial acres: acres of the site currently classified as being in industrial use
- Vacant acres: acres of the site currently classified as being vacant (no improvement value)
- Publicly-held acres: acres of the site currently classified as exempt; excludes schools, churches, parks, city halls and other such uses which would be unavailable and otherwise incompatible with industrial development
- Undervalued acres: acres of the site which are ‘undervalued;’ this was defined as non-vacant land where the ratio of total value to land value was less than 1.5 (vacant land would have a ratio of 1)

- Developable acres: the sum of vacant, publicly-held, and undervalued acreage for each site; because not classified as industrial, we assume this land may be available for development
- Acres per parcel and Acres per owner: a measure of fragmentation of the land; the number of property parcels or owners that make up a site divided by the total site acreage

Transportation

- Expressway exit, Number nearby and Distance to closest: the number of expressway exits within 1½ miles of the site and the distance to the nearest expressway exit
- Freight railroad, Number nearby and Distance to closest: the number of different freight lines within ½-mile of the site and the distance to the nearest freight railroad
- Freight railroad volume: the volume of freight carried on the nearest freight line
- Intermodal terminal, Number nearby and Distance to closest: the number of intermodal terminals within 2 miles of the site and the distance to the nearest intermodal terminal
- Intermodal terminal lift volume: the number of annual lifts at the nearest intermodal terminal
- Transload facility, Number nearby and Distance to closest: the number of transload facilities within 2 miles of the site and the distance to the nearest transload facility; these facilities include private operators moving freight between modes – rail, truck, and barge – in their own facilities
- Truck route, Number nearby and Distance to closest: the number of IDOT truck routes within ½-mile of the site and the distance to the nearest truck route, not including expressways (Class I truck routes) which are considered above
- Road congestion: the average level of daily congestion on roads within 2 miles of the site.
- Number of nearby transportation assets: for each of the 5 assets listed above (expressway exit, freight railroad, intermodal terminal, transload facility, truck route), counted 1 if there was at least 1 asset within the distance listed above; total of 5 is the maximum possible

Business: Industrial, transportation, and construction businesses

- Number of businesses on Site and in Surrounding area: the number of such businesses on the site and within 2 miles of site
- Number of employees on Site and Surrounding area: the total employment at those businesses on the site and within 2 miles of site
- Business sales on Site and Surrounding area: the total business sales for those businesses on the site and within 2 miles of site

Demographics: All measured for the area within 2 miles of the site

- Workers in industrial and transportation fields: the percent of the local workforce in industrial and transportation fields
- Workers with appropriate education levels: the percent of the local workforce which has a level of education appropriate for most industrial work (high school degree but less than a bachelor's degree)
- Unemployment rate: the 2006 annual unemployment rate for the area around the site
- Transit Connectivity Index (TCI): a measure developed by CNT to indicate how accessible an area is by transit; transit service levels for the purposes of the TCI is based on access, intensity, and frequency of rail and bus transit service.

The Selector allows us to optimize the different input variables based on the desired outcome. From the above inputs we defined a set of ideal conditions for a series of different COD typologies and ran the Selector on the clusters of land we had identified.

We started by doing a base version of the Selector, which looked for sites that would be considered good for COD in general. This version used all the above inputs except the business sales data. We then ran the selector for a series of typologies to identify sites that would be suited to particular types of industrial/distribution activity. These typologies were:

1. sites with multimodal capacity,
2. sites good for intermodal distribution,
3. rail-served sites,
4. ‘infill’ opportunities in existing industrial parks/areas,
5. mostly vacant sites that could build off surrounding industrial uses (‘synergistic’), and
6. mostly vacant sites that could potentially catalyze industrial development in the surrounding area.

In all these variations we started with the initial set of 598 sites and then applied certain basic criteria to limit the pool to those sites that could reasonably support the type of development we were considering. We also altered the criteria by which the sites were judged but the basic criteria stayed the same as any type of COD will display the same characteristics: good transportation access, available land, other industrial businesses nearby (except in the last variation), and a large local industrial workforce.

The Selector results for the base run and each typology were then assigned a comparative “rank” reflecting their suitability for COD relative to the other sites in the analysis. It is important to note that the rankings generated by the Selector can only give us a sense of the relative desirability of a site. There is often limited differentiation between closely ranked sites, so that the site ranked 22nd may not be much less desirable than the sixth ranked site, for example. For this reason, when discussing the results we look at the ranked sites in groups: the top 10, top 25, top 100, etc. while keeping in mind the arbitrary nature of these divisions. Similarly, many lower-ranked sites that are near one another could potentially be combined to create a larger industrial park and so should not be discounted out of hand due to their lower ranking. Finally, we are still obtaining some data for Will County at this time and so some sites may be added in the future.

Results

Our analysis identified 598 sites of 5 acres or more in close proximity to at least one transportation asset. Altogether, these sites have a combined acreage of approximately 21,800 acres, of which 8,600 are in active industrial use and over 12,700 are potentially available for development but not currently in active industrial use. The map on page 8 shows these sites, color-coded by their potential for COD. The 25 highest ranked sites alone contain more than 6,700 acres, with over 3,200 of those acres potentially available for development.

In this base version of the Selector, we optimized for sites that were close to many different transportation assets and preferably had multiple of those assets nearby; had less road congestion but a moderate level of freight activity; were large and had land available for development; were

less fragmented (to expedite land assembly); had many industrial businesses with high employment on and around the site; and had a locally available workforce.

The table below describes the 25 sites with the best potential for COD identified by the Selector analysis. The site characteristics included below are not the full set of variables considered in the Selector but are meant to give an overview of the best sites.

Table 1. Best COD Sites

Name ² , Location	Land Acreage			Transportation Assets		Businesses		Workforce*	
	Total	Industrial	Developable	Nearest Asset	Total Assets (out of 5)	On Site	Nearby	% Industrial & Transp. Workers	% Unemployed
Alsip 2	334	298	176	Freight rail	5	28	826	26	6.3
Chicago Heights 1	406	150	305	Freight rail	3	4	495	31	8.4
Alsip 1	554	456	112	Freight rail	4	86	992	25	3.9
Lynwood 1	277	0	277	Truck route	1	0	279	23	4.4
Chicago Heights 2	295	78	249	Freight rail	2	8	494	29	8.2
Chicago Heights 4	219	36	184	Freight rail	3	8	348	26	6.3
Homewood 1	197	21	178	Freight rail	5	8	555	21	5.4
Markham 1	187	108	109	Truck route	4	12	506	24	8.0
Burnham 1	211	45	202	Freight rail	3	3	325	27	7.1
Sauk Village 1	180	144	36	Truck route	4	2	204	28	7.4
University Park 1	447	204	243	Freight rail	3	6	89	21	5.7
Crete 2	238	0	238	Freight rail	2	0	35	24	3.7
University Park 2	413	413	23	Truck route	3	0	93	21	5.3
Crete 1	610	0	0	Intermodal terminal	2	1	83	23	3.8
Matteson 1	349	244	104	Truck route	2	0	71	23	4.4
Chicago Heights 3	233	202	45	Freight rail	4	16	436	30	8.5
Monee 1	219	0	219	Truck route	2	1	59	22	4.1
Chicago Heights 6	106	89	43	Truck route	3	18	463	28	7.7
Harvey 2	121	57	70	Freight rail	5	10	572	24	7.6
University Park 3	256	110	151	Truck route	3	6	89	21	6.1
South Chicago Heights 1	149	76	76	Freight rail	2	59	469	29	7.6
Richton Park 2	71	71	71	Freight rail	2	4	85	22	4.7
Harvey 1	535	33	5	Freight rail	5	14	743	22	6.6
South Holland 2	87	61	28	Freight rail	5	38	544	24	7.1
Dixmoor 1	94	88	70	Freight rail	5	0	440	24	7.6

**For reference, in Illinois, about one quarter of the employed population is engaged in industrial and transportation-related work; for all sites in this analysis, the percentage of workers in those fields range from 18 to 32 percent. The 2006 annual average unemployment rate for Cook and Will Counties was 4.6 percent; sites in our analysis ranged from 2 to 10 percent.*

² The naming convention we have used here and throughout the rest of the report is to first identify the community in which the site is found, then to assign it a number according to its size compared to other sites in that community. Thus “Alsip 2” is the second largest site in Alsip though not necessarily the second largest in the entire analysis.

While good transportation access is essential for a successful COD, the factors most consistently contributing to high rankings in our analysis are size of the site and the existing industrial businesses in the surrounding area. Total acreage is perhaps the single largest determining factor in a site's ranking, though large amounts of any of the specific types of land we factored in (industrial, vacant, publicly-owned, undervalued, or developable) usually contributed to a higher ranking. This tendency is seen in the above chart where only 2 of the 25 sites have fewer than 100 acres despite the fact that less than ten percent of the sites in the analysis have over 100 acres.

For the industrial businesses, the general trend is to have fewer businesses in the surrounding area as rankings get lower. Any site with more than 450 industrial businesses in the surrounding area can be considered to be in a dense industrial area, though there are a number of highly-ranked sites well below this mark whose other qualities compensate for the lack of surrounding industrial activity. Industrial businesses on the site are a less consistent influence as fewer businesses can often mean more developable land, as in the cases of Lynwood 1 and Crete 2 (see chart).

In terms of transportation assets, the total number of different transportation assets in proximity to a site is the most influential factor. In the high potential sites listed above, the majority of sites have three or more different transportation assets nearby, and though not shown in the table, most sites also have multiple of at least one of those assets nearby (such as two rail lines or expressway exits). Intermodal terminal yards play the largest individual role in the relative potential of sites because they are the most scarce transportation asset in the region. However, as the chart suggests, freight rail lines and truck routes are generally the closest transportation assets.

Looking at workforce characteristics, sites would optimally have a large workforce already engaged in industrial and transportation-related activities, a high percent of the population appropriately educated for this type of work, and a high level of unemployment (meaning more available workers). High values for all three of these criteria would improve a site's potential for COD but only unemployment shows a consistent, if limited, influence on site rankings.

In addition to looking at the best sites identified by our analysis, it is useful to consider the more average sites that represent the majority of the industrial land in the south suburbs. We do this by considering the middle quintile of the ranked sites. These more average sites are often smaller but offer good possibilities for businesses which do not need hundreds of acres or have more specific criteria in terms of location, surrounding businesses, existing uses, etc.

There is considerable variation in these average sites as deficiencies in one area are often compensated by positive values in another. An 'average' site for this range is roughly 20 acres, close to two or three different transportation assets, with few to no industrial businesses using the land. The surrounding area has around 300 industrial businesses with a couple thousand employees or more. The workforce is still strong, with about a quarter of the local workers already engaged in manufacturing and transportation-related activities, nearly two-thirds of the population appropriately educated for industrial-type work, and a moderately elevated unemployment rate of 6% or so.

Basic Selector Analysis Results

Selector Analysis

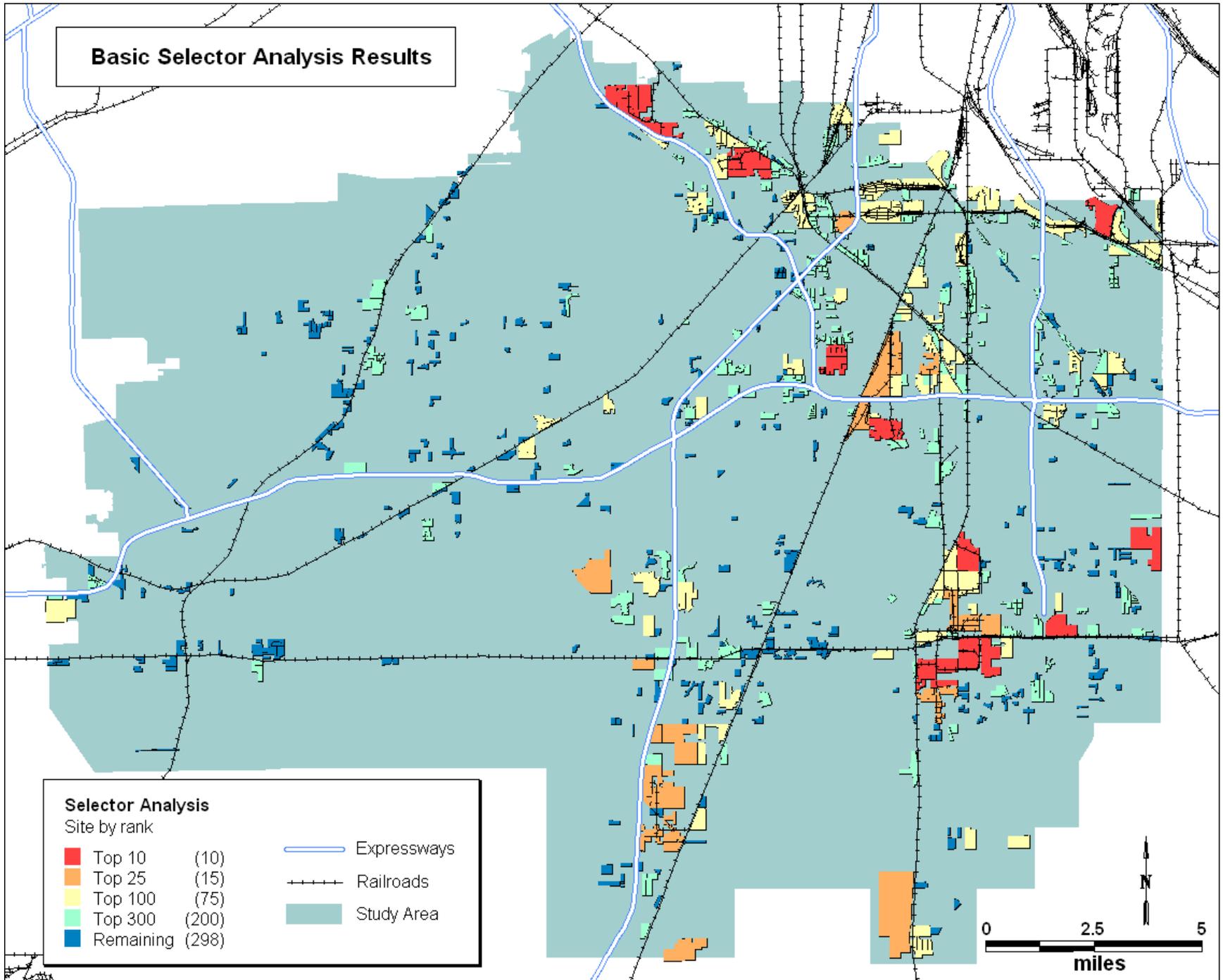
Site by rank

■ Top 10	(10)
■ Top 25	(15)
■ Top 100	(75)
■ Top 300	(200)
■ Remaining	(298)

— Expressways

— Railroads

■ Study Area



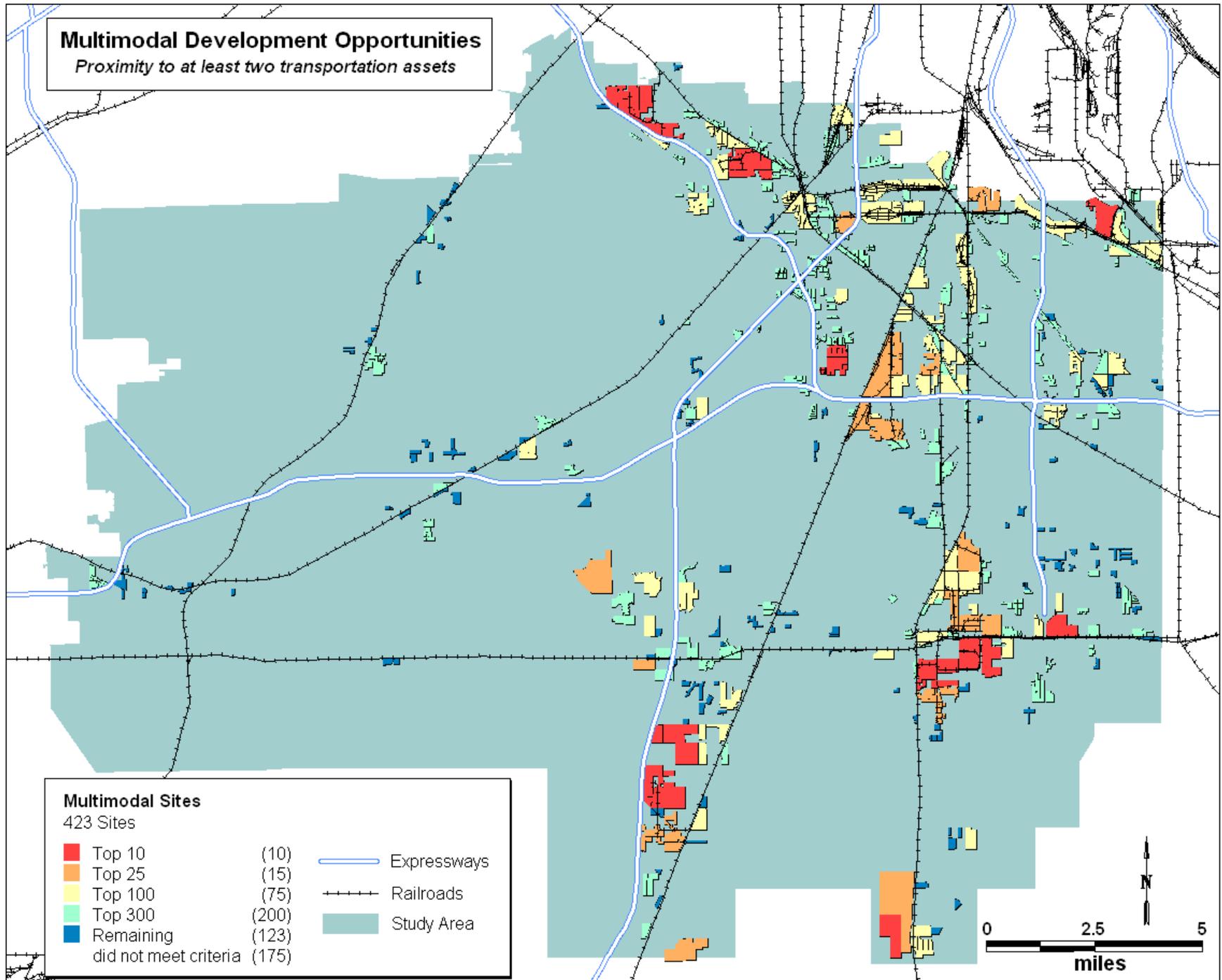
Multimodal

COD functions best when multiple modes of transportation are available in the nearby area and our first variation focused on those sites with true multimodal potential. This was a second version of the base Selector run only on those sites with proximity to at least two transportation assets (expressways, railroads, intermodal terminals, transload facilities, truck routes). Sites with good multimodal potential would benefit those businesses that receive and/or distribute goods via different modes. A transload facility would be a specific type of multimodal user, though any processing operation that receives materials from both rail and truck (whether on site or via an intermodal terminal/transload facility) would benefit from such locations. Furthermore, such sites would also generally offer greater development potential overall because they can appeal to a broader range of businesses who can utilize the different transportation options depending on their needs. For this reason, medium to large sites would likely do well as industrial parks.

While this further criterion eliminated over a quarter of the sites included in the first version, leaving only 423 qualifying sites, these still encompass some 17,800 acres. Of that land, 7,600 acres are in active industrial use and a further 9,800 acres are potentially available for development. Given that proximity to transportation assets is an important consideration for any COD site, it is not surprising that the sites that did well in the base version also compared well in this version. These 25 best multimodal COD sites have nearly 6,700 acres total, 3,100 of which are in industrial use and 3,000 of which are potentially available for development.

The middle quintile of sites in this variation average about 15 acres in size with three to four different transportation assets nearby. Though the sites themselves tend to have very few industrial businesses on them, the surrounding area tends to be a fairly active industrially with on average 350 industrial or transportation businesses nearby. Developable land is available on almost all of the sites, with the majority of these average sites having more than 3 acres available. The employment base is solid, with an elevated unemployment rate around 7%, a quarter of local workers currently in manufacturing and transportation-related fields, and nearly two-thirds of the adult population appropriately educated for industrial-type work.

Multimodal Development Opportunities
Proximity to at least two transportation assets



Intermodal Distribution

This variation looked for sites which would be favorable for the distribution and/or processing of goods that move through intermodal connections (usually in closed, truck-load sized containers that are lifted from trains to trucks or visa versa). Unlike the multimodal variation which looked at proximity to any variety of transportation modes, this type of site specifically requires good access to an intermodal terminal where containers are being loaded and unloaded from trains in preparation for the next stage of their trip. These intermodal terminals and the railroads that serve them are a central feature of the region's transportation industry and tend to be at the center of concentrations of industrial businesses. Four terminals – three active and one proposed – are located in our study area (see following map). These are good sites for value-added distribution and processing operations, or both, as in the case of third-party logistics providers which sometimes do processing as part of their distribution services.

The primary consideration for sites considered in this section of the study is proximity to an active intermodal terminal.³ We considered only those sites within five miles of an intermodal terminal, giving greater precedence to those within three miles and to those close to a more active terminal. Good truck route and expressway access would be essential for such operations at such locations and proximity to transload facilities could also be a boon. Direct rail access, however, is less vital for these sites and so was not considered here.

In total, 327 sites were within five miles of an intermodal terminal and together they encompass 12,700 acres of land. Of that land, 5,300 acres are in industrial use, 6,600 are currently unused or under-utilized, and 1,300 are part of an intermodal terminal. The highest ranking intermodal distribution sites have almost 2,400 acres available for development out of 5,200 acres total.

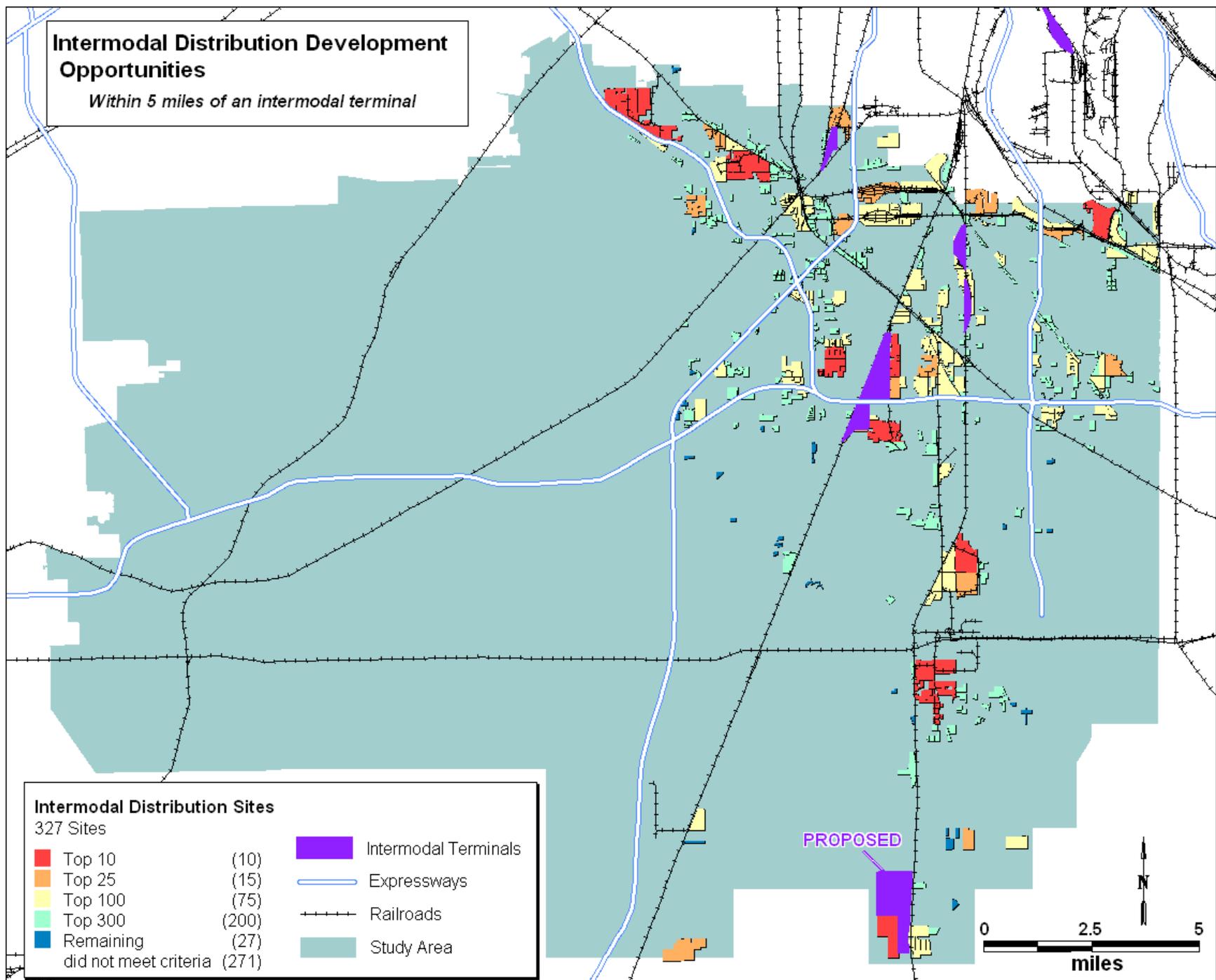
Larger sites surrounding intermodal terminals did well in this variation. Overall, two-thirds of the 25 highest ranked sites were within three miles of an intermodal terminal. As in the base version, most of the sites are quite large and those that are smaller are within three miles of an intermodal terminal and tend to have multiple transportation assets nearby. Ten of the 25 best sites in this typology were not in the top 25 for the base version and only three of these ten new sites are more than three miles of an intermodal terminal. The top sites reflect the concentration of industrial businesses often found around intermodal terminals: only those sites near the proposed Crete terminal have fewer than 300 industrial businesses in their vicinity and the majority of the sites have more than 400 nearby industrial businesses. Additionally, almost all the top sites are close to at least two transload facilities, which feed into the same industrial dynamic as the intermodal terminals.

The average site for this variation is 17 acres, about two miles from an intermodal terminal and near two other transportation assets, one of which is often a transload facility. As with most of the smaller sites in this analysis, there are only a couple industrial businesses on site, but these sites are closer to a larger number of industrial businesses than the middle quintile sites in the base version. Sites in this middle quintile include a number of sites near to two intermodal terminals because though close to two, their distance to both terminals is greater and so they do not tend to rank as highly as those sites very close to a single terminal.

³ We included the proposed CenterPoint intermodal terminal in Crete, basing the yard's outlines off a proposed layout published in P. Widholm, "South Suburbs' new industrial magnet," *Chicago Industrial Properties*, April 07.

Intermodal Distribution Development Opportunities

Within 5 miles of an intermodal terminal



Intermodal Distribution Sites

327 Sites

	Top 10	(10)		Intermodal Terminals
	Top 25	(15)		Expressways
	Top 100	(75)		Railroads
	Top 300	(200)		Study Area
	Remaining	(27)		
	did not meet criteria	(271)		

Rail-Served

Again focusing on the transportation aspects of the site, we looked for those sites best suited for industrial businesses that need rail car service. These are often classic manufacturing operations, usually businesses that process commodities such as grains, metals, plastics, chemicals, or construction materials. While a historic base for this region, these types of businesses have not seen high growth in the last few decades. However, given the rising costs of commodities and fuel, these efficient, urban places may become more significant than they have been in the last generation or two. Additionally, these sites would also appeal to wholesale distributors whose goods arrive via rail.

We looked only at those sites within a quarter mile of a freight railroad, which limited our pool to 289 sites though it spread them out over the region much more than the intermodal distribution variation. This set of sites has a combined total of 13,800 acres, 6,300 of which are in industrial use and 6,800 of which are developable. In comparing these sites, proximity to a freight railroad is the primary consideration while intermodal terminal proximity is not significant because those goods traveling by rail can generally be delivered directly to the site. Our other inputs were the same as in the base version. The map on page 14 shows these sites.

In total, the 25 best sites have 5,200 acres of land, with 2,500 potentially available for development. There is relatively little change in the best sites between this variation and the base version, with only 6 new sites in the list. The sites that compare well in this variation often have rail spurs or branches running through the property. In general these new sites are closer to a freight rail line than the other best sites and all are close to at least two transload facilities, which could provide access to certain materials or services that companies locating on these sites may not want to handle themselves. At the same time, the new sites tend to have less land available for development than the rest of the top-ranked sites because they are smaller and have less total land available.

The average site for this variation, as defined by the middle quintile of sites, is fairly small at about 16 acres but quite close to a rail line. In terms of acreage, about half the site is currently used for industrial purposes while the other half is vacant or otherwise available for development. Industrial business development on the average site is however quite limited with a moderate level of industrial activity in the surrounding area. All the middle quintile sites have at least two different transportation assets nearby – counting the rail line – and most have 3 or 4 assets with multiples of at least one of those types.

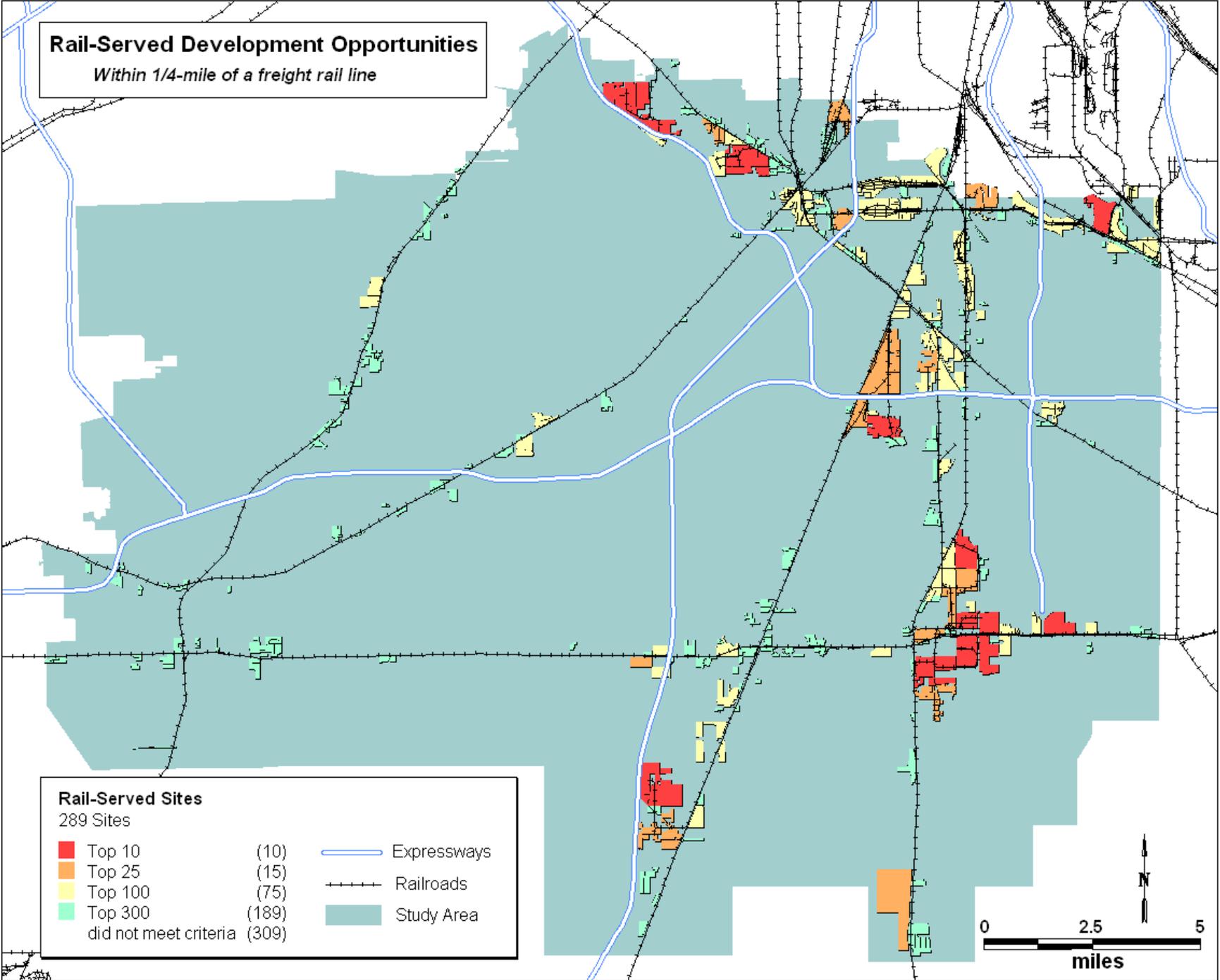
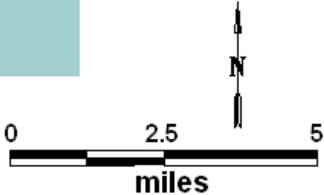
Rail-Served Development Opportunities

Within 1/4-mile of a freight rail line

Rail-Served Sites

289 Sites

- | | | | | |
|---|-----------------------|-------|---|-------------|
|  | Top 10 | (10) |  | Expressways |
|  | Top 25 | (15) |  | Railroads |
|  | Top 100 | (75) |  | Study Area |
|  | Top 300 | (189) | | |
| | did not meet criteria | (309) | | |



Infill Opportunities

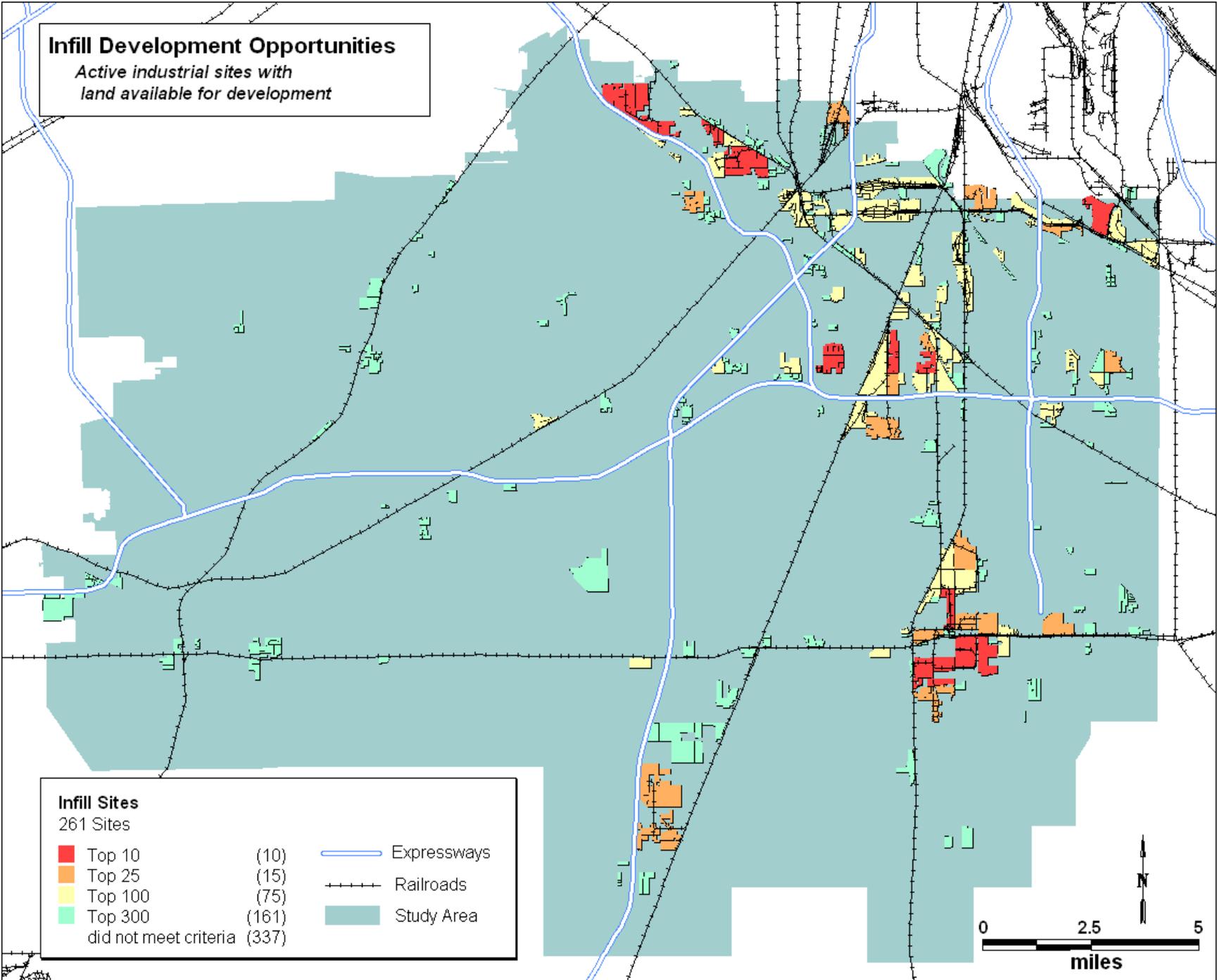
All of the sites considered in this analysis are “infill” opportunities in the broad sense that they are in areas already zoned for industrial use, and very likely contain some existing industrial businesses and some vacant land that was previously in industrial use. More specifically, the Southland has many existing healthy industrial areas which could support additional development. These areas are often close to population centers and the industrial or transportation businesses that serve those markets may want to be closer to their customers. These types of operations may be getting pushed out of Chicago due to the pressures of gentrification; relocating in the infill sites in the south suburbs would allow these businesses to stay close to their customer base (especially important given rising gas prices) and also benefit from existing industrial infrastructure.

This variation looked for ‘infill’ opportunities in the more narrow sense of sites where there was land already in industrial use but also land available for development. 261 sites with over 7,900 acres in active industrial use met these base criteria; these sites have an additional 6,500 acres for future development. Among these sites we then added business sales on and around the site to our industrial business variables (which already considered number of industrial businesses and employees) to increase the weight given to active industrial areas. We did not consider site fragmentation in this version because those sites with many users are often owned by multiple parties and we did not want to penalize such sites. We also did not consider total acreage – though the totals for each type of land were included – because the size of the site is less important than the presence of significant amounts of both industrial and developable land.

The best sites, considered together, have over half their land potentially available for development – 2,600 acres of 4,800 acres total. Many of the best sites in this variation are only moderately large, including six that are less than 100 acres – twice as many of that size than were in the top 25 in the base version of the Selector. Almost all of the best infill sites have undervalued acreage; this subset of land is an automatic indication of an infill site as all undervalued land is industrial land which could be brought into more active industrial use and is therefore considered developable in our analysis. By definition all the sites should have industrial businesses on them, but often the sites with limited developable acreage also have more businesses on them, particularly among the 9 sites which were not in the base version’s top 25. Of note as well is the fact that all the best sites are close to at least two different transportation assets, so the market has already selected out sites with qualities we are seeking to promote through this analysis.

While the average size of the top sites is somewhat smaller in this variation, the middle quintile is larger than in the other variations with an average size of 40 acres. This increased size is due in part to the presence of a number of larger sites that have limited development currently. The average site, as indicated by the middle quintile, has about 4 industrial businesses on it, a bit less than half the site available for development (some portion of which is probably undervalued land), and three different transportation assets nearby. These sites tend to have upwards of 250 industrial businesses in the nearby area, though the workforce demographics do not totally reflect this industrial business concentration as only the unemployment rate is higher than average.

Infill Development Opportunities
*Active industrial sites with
land available for development*



Infill Sites	
261 Sites	
■ Top 10	(10)
■ Top 25	(15)
■ Top 100	(75)
■ Top 300	(161)
did not meet criteria	(337)

—	Expressways
- - -	Railroads
■	Study Area



‘Synergistic’ Sites

The final two variations focused on those sites with limited existing development on site but good potential for future development. The first of these typologies looked for pockets of underutilized land in the industrial fabric, due perhaps to disinvestment in that area. These sites have few industrial businesses on site but are in areas with high concentrations of industrial activity. Those existing industrial businesses could provide the synergy to attract new businesses on the available land, attracting similar businesses and businesses that supply or are supplied by the surrounding operations. Such locations can also be valuable for industrial retention as they allow businesses that have outgrown their existing location or facility to relocate without leaving the community in which they are based.

We looked at the full set of 598 sites for this variation and used the same criteria as the base version except that we optimized for those sites with few industrial businesses on them but many in the surrounding area. Industrial acreage was also not considered in this version of the Selector because a large amount of land in industrial use would generally counter our optimization of sites with few existing industrial businesses on site, yet we also did not want to optimize for minimal industrial land.

The 25 best sites that emerged from this run have only 2,100 of 6,000 acres currently in industrial use, but a further 3,400 potentially available for development. While most of the sites that did well in this variation also did well in the base version (only 7 are different), a number of best sites from the base version are ranked quite poorly in this variation, as would be expected given the criteria used. On the other hand, the new additions to the top 25 sites did fairly well in the base version because what they lack in current development is made up for in their other characteristics. Many of the best sites in this variation have only a few transportation assets nearby, including most of the new sites. For all these sites, the level of industrial activity in the surrounding area is not as strong as in some other variations, which may explain in part why there is less development on the sites themselves.

The average site in this variation is very similar to the base version’s middle quintile. The middle quintile synergistic sites are on average 19 acres with 13.5 acres available for development, close to two or three transportation assets, and have about 300 industrial businesses in the surrounding area. The average number of industrial businesses on site – three – is actually slightly higher than in the base version because we optimized for fewer industrial businesses and this caused some sites with many industrial businesses on them to shift lower in the overall rankings.

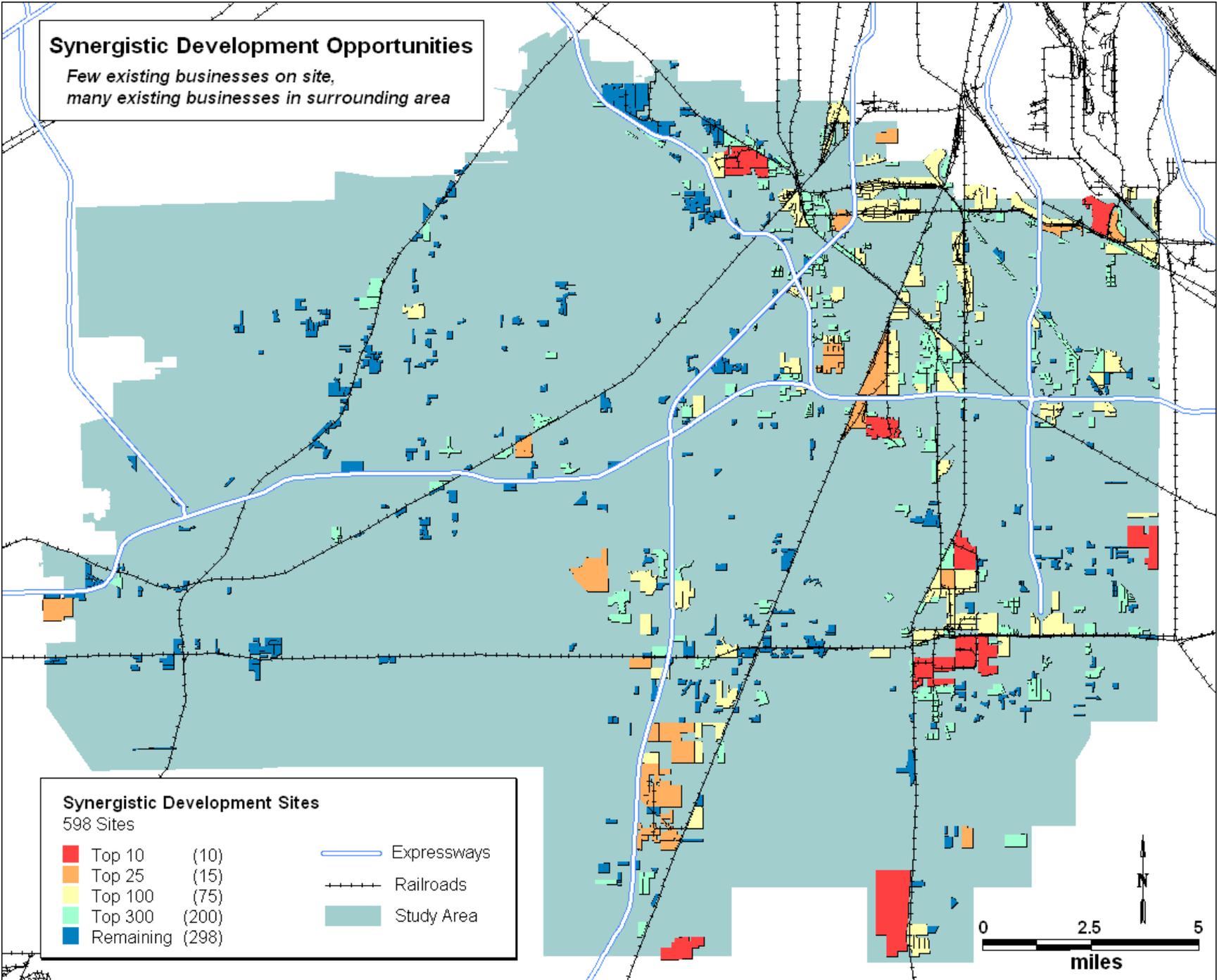
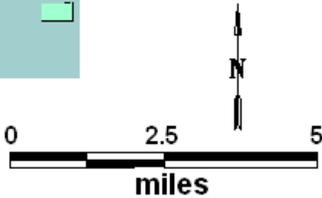
Synergistic Development Opportunities

*Few existing businesses on site,
many existing businesses in surrounding area*

Synergistic Development Sites

598 Sites

- | | |
|---|---|
|  Top 10 (10) |  Expressways |
|  Top 25 (15) |  Railroads |
|  Top 100 (75) |  Study Area |
|  Top 300 (200) | |
|  Remaining (298) | |



‘Catalytic’ Sites

Though none of the sites considered in this analysis had fewer than a couple dozen industrial businesses within two miles, there are areas with limited industrial development in the region. In the final variation, we looked for those sites with limited industrial activity whose development might be able to catalyze development in their area. Optimally, these sites would have few existing industrial businesses on or around them, but good connectivity and available land. Large, undeveloped tracts of land with good COD potential are rare in this historically industrial region. Large sites of this sort close to older population centers are likely to be brownfields while those further out may have been farm fields not long ago. Both types of sites may require more predevelopment work: brownfield sites require time and money to be cleaned up before new development can occur but are often otherwise prepared for industrial use; greenfield sites may not have utilities or other amenities but the land likely requires little preparation.

As in the previous variation, we looked at the full set of 598 sites included in the base version. The primary consideration in this variation was for sites to have few industrial businesses on or around them. Like with the synergistic variation, did not include industrial acreage in our inputs as we did not want to penalize sites for having industrial land but large amounts of such land is generally synonymous with active industrial use of the site.

The 25 best sites identified for catalytic development had almost two-thirds of their 5,600 acres potentially available for development – 3,500 acres altogether. The best sites in this variation are nearly identical to those in the synergistic variation. Development in the area around the best catalytic sites is not particularly low in many cases and those sites that do have fewer than 100 industrial businesses nearby are all further out from the historic core of the region. These top sites do tend to have fewer transportation assets nearby than the top 25 sites in the other typologies, which may be in part why there is less development on and around them.

The average sites in this variation are about 18 acres with two industrial businesses on site and 280 industrial businesses nearby (the lowest average of all our variations). Most sites are close to two or three transportation assets, most often a transload facility. These middle quintile sites are, on average, not very accessible by public transportation, perhaps because existing development tends to be clustered around population centers while these catalytic development sites are further out. The average unemployment rate is also lower than in the other variations which, with limited site accessibility, may reduce the available workforce.

Catalytic Development Opportunities

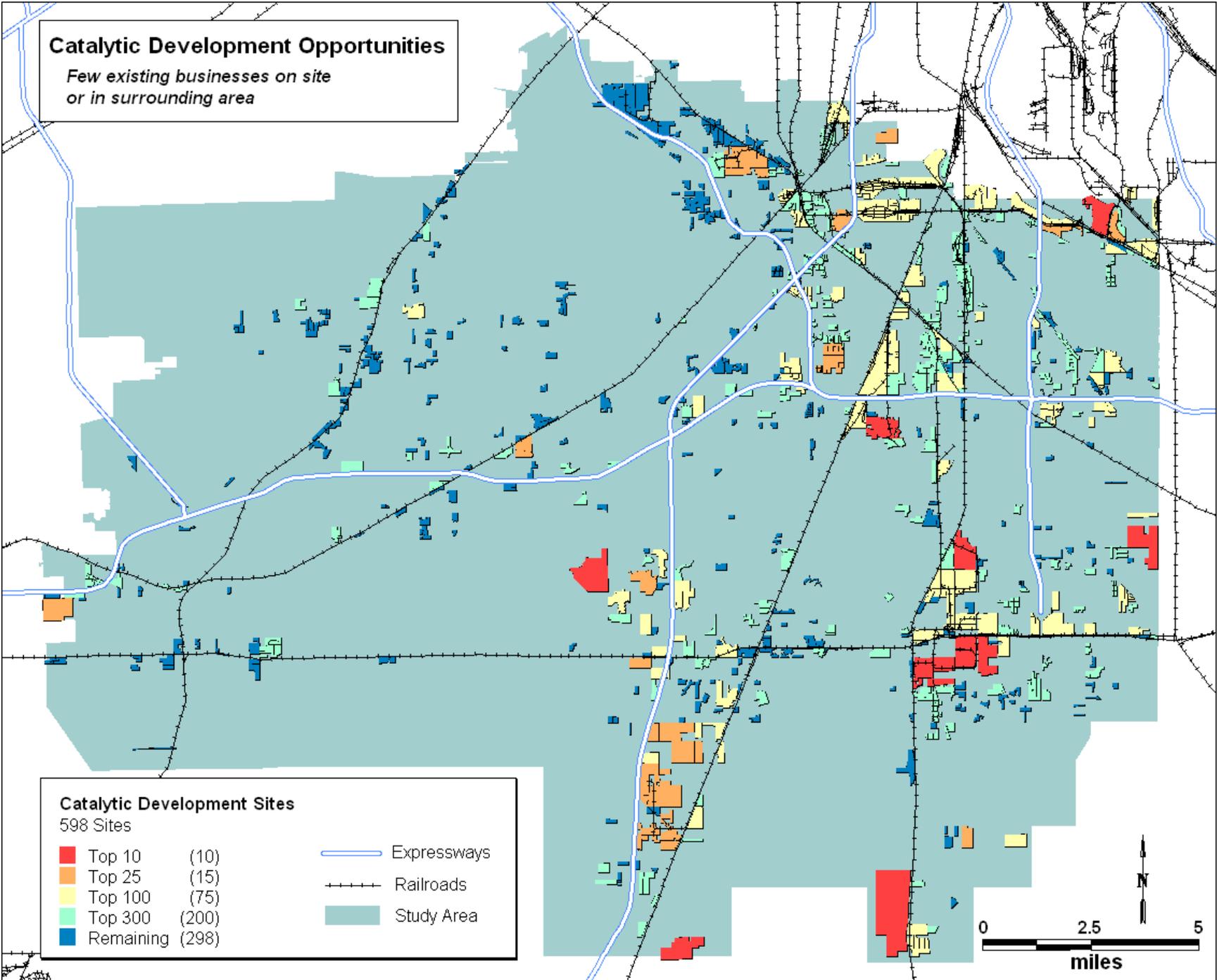
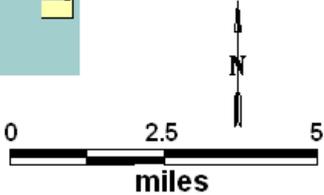
*Few existing businesses on site
or in surrounding area*

Catalytic Development Sites

598 Sites

- Top 10 (10)
- Top 25 (15)
- Top 100 (75)
- Top 300 (200)
- Remaining (298)

- Expressways
- Railroads
- Study Area



Next Steps

Having now identified sites that appear to have strong potential for COD, our next steps are to improve our understanding of those sites and begin moving them toward development. First, we need to complete the second half of our project, a qualitative analysis of the identified sites. We will be gathering more detailed information on each site, including site visits and more detailed property information, with an eye towards identifying those uses best suited to each site. This qualitative analysis will fill in the gaps in our current information, particularly with regard to the specifics of current ownership and use, environmental condition, and site history.

At the same time, we will work to develop partnerships with those municipalities with high opportunity sites in their community. Municipalities must play a leading role in the redevelopment of the opportunity sites in their jurisdiction. CSEDC can work in partnership with the municipalities by:

- Coordinating the help of regional civic organizations and public agencies to bring resources to the development process;
- Fully describing and marketing the sites through CSEDC's website and outreach to the development community;
- Working with local stakeholders to establish holistic plans for the redevelopment of industrial areas;
- Helping communities move through the steps of the predevelopment process that is usually necessary to make sites ready for private investment.