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**PLANNING & PROGRAMMING COMMITTEE
NOVEMBER 19, 2008**

**SUBJECT: RAIL DIVISION POTENTIAL STORAGE SITE ASSESSMENT
REPORT**

ACTION: RECEIVE AND FILE CONSOLIDATED RAIL YARD ANALYSIS

RECOMMENDATION

Receive and file the attached Consolidated Rail Yard Analysis (Attachment A) that identifies and assesses potential sites for developing light rail facilities and increasing the storage capacity for Light Rail Vehicles.

ISSUE

The ability to increase our Rail Service is dependent upon a larger fleet of Light Rail Vehicles and the availability of adequate facilities to store and maintain them. Existing storage and maintenance yards are reaching their capacity and cannot accommodate enough new vehicles to support any significant increase in service. We must consider securing additional maintenance and storage facility sites to support an increased number of Light Rail Vehicles. Given the amount of time needed to identify, acquire and develop suitable new storage and maintenance yards, there is a need to commit the resources now and start the site selection process so that the needed new facilities are operational as demand and service increase on our light rail system. The site selection process will begin with an analysis that will include a detailed site assessment and identification of community and environmental conditions; system operations costs; and an assessment of the time period that would be required to develop and make each potential site operational. We expect to use consultant services to conduct the study.

POLICY IMPLICATIONS

The recommended action is consistent with the Draft 2008 Long Range Plan which assumed additional light rail transit lines and increased service frequencies throughout the light rail system. Increasing service frequencies countywide will require additional light rail vehicles and yard space.

ALTERNATIVES CONSIDERED

Two alternatives were considered: (1) Using existing staff to conduct the study. This option is not viable because we do not have sufficient staff to dedicate solely to conduct a study of this magnitude and duration; (2) Not authorizing the CEO to move forward with the study. This option is not recommended because it would delay us from identifying site alternatives for development of needed additional LRT maintenance yard and storage facilities.

BACKGROUND

On June 19, 2008, the Operations Committee received the Rail Division Capacity Assessment Report (Report) that detailed the state of existing Light Rail storage and maintenance facilities and the need to expand existing capacity to support the increase in new Light Rail Vehicles. Several preliminary activities were identified that would help ensure development of the maintenance and storage capacity that is needed to support our Light Rail System. These activities included beginning a process to identify potential sites for these facilities, including establishing site development criteria and evaluation metrics to determine whether there are existing locations that are suitable for the required facilities. Once a number of suitable locations were identified, the next activity was to include detailed assessment of the most usable potential sites and a financial analysis of acquisition and facilities development alternatives. Several of the potential sites are being reviewed as part of the planning and environmental studies for the Exposition Light Rail Transit Phase II and Crenshaw corridor projects.

The Report identified the existence of several locations that have potential to provide the needed maintenance and storage capacity to support the Light Rail System. The initial assessment screened potential locations according to the following list of general criteria.

- Proximity to the current LRT and future lines and branches;
- Level topography;
- Appropriate geometry;
- Multiple access points serving the facility;
- Compatibility with local land use and existing zoning;
- Good street access; and,
- Minimal capital investment and demolition costs.

In all, 48 sites were identified in this process. The screening criteria comprised several key factors including: site size in acres, general configuration of the site, and proximity to existing or planned rail lines. Potential sites in industrial areas were preferred over locations in non-industrial settings.

Of the 48 locations, 24 were not considered viable primarily because of the small size of the site. The general screening criteria when applied to the remaining 24 locations showed that 15 of them had existing observable conditions, conflicts or flaws that could render them less than ideal candidates for development in the short-term. Among the factors that rendered certain sites less than ideal were: scale of potential displacement of functioning business concerns, site configuration and accessibility issues, and site constraints limiting the capacity to house a full service facility. A key consideration of site suitability was whether a site can be developed soon enough to meet the known 2016 storage capacity needs.

Nine sites were considered to have the highest potential for development as rail yard storage and maintenance facilities. One of nine has now become unavailable because of its use in a new business incubator program. Several of these sites are under review as part of the environmental work or planning efforts for the Crenshaw alignment and the Exposition Phase II studies. The eight sites met most or all of the general screening criteria and represent the best opportunity for development in the near-term. They also satisfy long term requirements for future growth in capacity for storage and maintenance of the Light Rail fleet.

Future operations of the expanded light rail system will consider sharing numerous facilities between the lines for cost and efficiency benefits. Sites that could potentially be expanded in the event future needs require additional capacity were also identified.

NEXT STEPS

Staff will begin the process of securing consultant support in order to complete the more detailed study of the highest ranking potential sites.

ATTACHMENT(S)

A. Consolidated Rail Yard Analysis Report

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ATTACHMENT A

Consolidated Rail Yard Analysis Report Initial Study

Purpose of Report

The purpose of this Site Selection Initial Study is to determine whether viable locations exist for development of new rail operating facilities to serve the current and planned expansion of the Metro light rail system. Existing facilities are adequate for current operations on the Blue Line, Gold Line and Green Line. There is a lack of capacity, however, to absorb the expected growth in the Light Rail fleet when the light system expands with the activation of the new Exposition Line and the new Gold Line Eastside extension in 2009 and 2010, respectively. The Initial Study looked at the need for new facilities in surveying potential sites in Los Angeles County. Screening criteria were developed and utilized to help identify candidate locations and assess their suitability for the new facilities. This report indicates there are a number of viable prospect sites that could be suitable for development of storage and maintenance facilities.

Nearly fifty sites were considered in this evaluation. Suitable locations for a new Light Rail consolidated yard facility as well as sites along each of the current and future Light Rail lines have been identified. Locations along the lines ranged from as small as 1 acre to nearly 46 acres; the area identified for the consolidated yard is approximately 133 acres. While some of the sites offer considerable available acreage, Metro determined that the best locations are those adjacent to the rail mainline that would minimize deadheading travel times and minimize the expense of constructing structures for stub tracks through developed areas. In addition, Metro determined that it was important to locate the new consolidated yard facility as close as possible to the junction of the Blue/Expo and Gold Lines in the central Los Angeles area to promote operational efficiencies and, again, to minimize deadhead travel time for LRT vehicles.

Overview of Existing Facility

Metro's current light rail operating facilities are located in Carson along the Blue Line, near downtown Los Angeles at the Midway yard serving the Gold Line, and the Green Line yard located in El Segundo. These facilities are dedicated to each service line with each having differing capabilities for performance of light rail vehicle maintenance functions such as cleaning, washing, sanding, light and heavy repairs, and painting. Metro also has associated facilities for the performance of wayside maintenance—signals, traction electrification, track, and station.

Need for Facility

The current Metro Light Rail fleet consists of 121 vehicles. The fleet size reached its current complement when the Gold Line was activated and includes the vehicles necessary for full service operations of the Blue Line, Gold Line and Green Line. While the storage capacity at each of the three existing yards is sufficient for the current fleet, the maintenance capacity at these facilities varies in significant ways. The existing facilities actually have a surplus storage capacity of 54 vehicles. The lack of connection through the central business district to link the Blue/Expo

lines with the Gold line and between the Blue Line and the Green Line imposes additional costs and inefficiencies as well as duplication in servicing and maintaining the light rail vehicles.

An assessment of existing and future light rail vehicle storage and maintenance capacity shows that Metro faces a shortage in storage space beginning with the activation of the Exposition Line in 2010. The lack of adequate storage capacity will also affect the Gold Line when the East Side Extension is activated in 2011. The storage capacity problem exists in at least two dimensions. First, the lack of connection between the Blue Line and the Green Line or between the Blue and the Gold Lines means that vehicles cannot share storage/maintenance facilities. The facilities solution adopted for the Blue and the Green Lines was development of separate, dedicated yards to service each line. Second, there are operations inefficiencies and costs that arise due to the lack of a centralized maintenance facility that services the four trunk lines of the Metro Light Rail network. In part, this problem exists due to the lack of connection through downtown Los Angeles that links the Blue/Exposition Lines with the Gold Line. A central yard, located near the point of junction of the trunk lines, would provide the optimal solution for servicing and storing the Light Rail fleet while completing the integration of system into an operational whole.

The capacity gap study identified the need to develop additional storage and maintenance facilities to absorb the projected doubling of the fleet size between 2010 and 2030. The study showed the incremental fleet growth as a whole and by Line during the period of the 2008 Long Range Transportation Plan. Metro's existing rail yards, vehicles per line, and yard capacity is shown below in Table 1. The table shows that existing capacity is adequate to service the existing LRT vehicle fleet and that the existing facilities can absorb a maximum of 54 new vehicles.

Table 1: Maintenance Facility Capacity existing in 2008

<i>Light Rail Transit Line</i>	<i>Associated Maintenance Facility</i>	<i>Total Facility Vehicle Storage Capacity</i>	<i>Current Vehicles Per Line</i>	<i>Current Train Vehicle Length</i>	<i>Balance of Facility Vehicle Capacity</i>
Blue Line	Blue Line Yard (Division 11)	86	69	3	17
Gold Line	Midway Gold Line Yard (Division 21)	50	24	2	26
Green Line	Green Line Yard (Division 22)	39	28	2	11
	Total	175	121		54

Table 2 shows that the existing spare capacity of 54 vehicles becomes a deficit of 9 vehicles once the Exposition Line is activated. While the Midway Gold Line yard is expected to have adequate capacity through 2010, the Blue Line yard will already be experiencing a significant deficiency due to having to service the vehicles that will operate on the Metro Exposition Line. This deficiency will persist into the foreseeable future since the Exposition Line does not have a developed yard along its route for maintenance and storage of its vehicles. Lack of the yard facilities will impose a series of operational costs and inefficiencies, including deadhead time, which will escalate over time until additional capacity is made available in more centralized locations.

Table 2: Maintenance Facility Capacity in 2009-2010 After System Expansion

<i>Light Rail Transit Line</i>	<i>Associated Maintenance Facility</i>	<i>Total Facility Vehicle Storage Capacity</i>	<i>Planned Vehicles Per Line</i>	<i>Planned Train Vehicle Length</i>	<i>Balance of Facility Vehicle Capacity</i>
Blue Line – Long Beach	Blue Line Yard	86	80	3	+6
Exposition	Blue Line Yard	0	23	3	(-23)
Gold Line	Midway Gold Line Yard	50	45	3	5
Green	Green Line Yard	39	36	2	3
Total		175	184		(-9)

Table 3 shows that Metro will have a system-wide deficiency in storage/maintenance facilities of 46 vehicles by 2012. The total system-wide deficiency in storage capacity will double between 2010 and 2012 when the Gold Line Eastside extension is activated. Table 3 also shows that the problem of storage capacity significantly worsens at the Blue Line yard, going from a deficit of 23 to 40 vehicles. The table also shows that the deficiency in storage capacity has extended to include a 15 vehicle deficit at the Midway yard on the Gold Line as the result of the activation of the Eastside extension. Of the 100 vehicles that will be added to the fleet between 2008 and 2012, Metro does not have storage and maintenance facilities to house nearly half (46) of them.

Table 3: Projected LRT System Vehicle Growth by 2012

<i>Light Rail Transit Line</i>	<i>Associated Maintenance Facility</i>	<i>Total Facility Vehicle Storage Capacity</i>	<i>Planned Vehicles Per Line</i>	<i>Planned Train Vehicle Length</i>	<i>Balance of Facility Vehicle Capacity</i>
Blue Line – Long Beach	Blue Line Yard	86	80	3	6
Exposition	Blue Line Yard*	0	40	3	(-40)
Gold Line Pasadena/East side	Midway Gold Line Yard	50	65	3	-15
Green	Green Line Yard	39	36	2	3
Total		175	221		(-46)

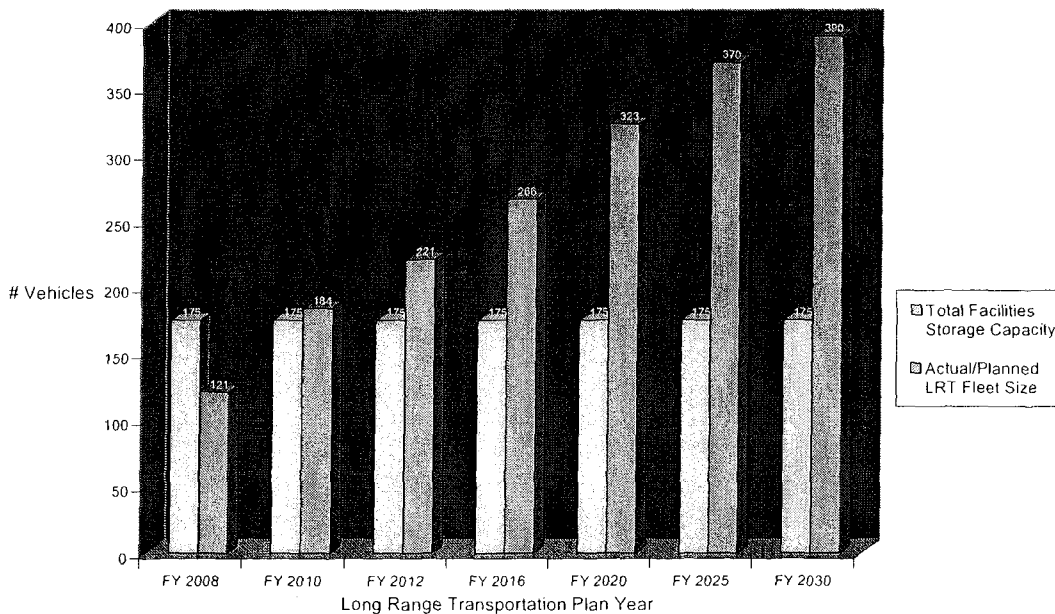
Table 4 below shows that the need for yard facilities to service the projected 2016 LRT fleet will continue to grow as the Light Rail fleet size increases. By 2016, the deficiency in storage space will nearly double from 46 to 91 vehicles. System-wide, the facility deficiency in 2016 is equal to about 75% of Metro's 2008 total LRT fleet.

Table 4: Projected LRT System Vehicle Growth by 2016

Light Rail Transit Line	Associated Maintenance Facility	Total Facility Vehicle Storage Capacity	Planned Vehicles Per Line	Planned Train Vehicle Length	Balance of Facility Vehicle Capacity
Blue	Blue Line Yard	86	80	3	6
Expo 1 & 2	Blue Line Yard*	0	65	3	(-65)
	Washington/Long Beach temp facility*	17	65	3	(-48)
Gold (Pasadena & Eastside)	Midway Gold Line Yard	50	85	3	(-35)
Green	Green Line Yard	39	36	2	3
Total		175	266		(-91)

Figure 1 illustrates how the gap between the increase in vehicles and storage capacity will widen over the time horizon of the Long Range Plan if storage capacity is not increased. In 2016, some 91 vehicles will lack storage facilities. By 2030, the deficiency of storage facilities will worsen until the number of vehicles that cannot be stored (215) will be nearly equal to the entire 2012 operational fleet of 221 vehicles.

Metro LRT Rail Yard Facilities Gap in Storage Capacity
2008 to 2030



To address this looming problem, and the operational constraints and inefficiencies the lack of adequate facilities poses for the growth of the Light Rail system and its capacity to meet future public demand, a site identification process has begun that will identify candidate locations for yard facilities. A number of locations were examined. Some 49 locations were considered. A series of screening criteria were applied to evaluate potential locations and determine whether any of these would be suitable for development of maintenance and storage facilities. These criteria are shown in Appendix A. The screening criteria do not attempt to determine the quality of a given location, assess any costs or acquisition factors, nor compare any two or more sites.

Objectives

Development of the facilities to support Light Rail operations would satisfy several objectives. These include:

1. Develop a centralized maintenance facility that links the Light Rail Lines in or near their junction in the downtown Los Angeles area.
2. Reduce costs and operate the light rail transit system more efficiently.
3. Develop new facilities for the storage, maintenance, and operation of Metros' expanding fleet of light rail vehicles.
4. Support for the operation of the new Exposition and Gold Line Eastside Light Rail lines.
5. Relieve overcrowded conditions at existing maintenance facilities.
6. Integrate facilities that help to reduce costs and operations inefficiencies.

Site Requirements

1. Site area sufficient to store 20 or more vehicles
2. Site area sufficient to develop medium to full scale maintenance facility
3. Ability to serve two or more rail lines
4. Rectangular shape to accommodate required features
5. Ability for expansion
6. Two or more points of exclusive Metro Light Rail access
7. Minimal conflict with surrounding community
8. Acceptable roadway access

Site Selection Criteria

Forty-nine potential locations along existing and planned alignments were initially examined as to their suitability for new storage and maintenance facilities. While some of these sites have adequate acreage, Staff determined that the optimal sites are those that minimize deadheading travel times, have the lowest development cost, possess future expansion potential and meet most of the criteria listed below.

The evaluation criteria for the site selection analysis are useful to assess the characteristics of a prototypical rail operating facility. The characteristics include attributes in four general categories:

- Site Characteristics
- Facility Operations
- System Operations
- Relative Costs

Specific evaluation criteria in each of these categories are defined to help derive a qualitative and objective assessment of the candidate sites.

Site Characteristics

The site should possess characteristics that minimize operational costs, potential short- and long-term effects on the surrounding area, and should not require significant modifications to accommodate the proposed facility. Specific evaluation criteria pertaining to site characteristics include the following:

- **Terrain**
The site should have level terrain to simplify the storage and maintenance of vehicles, to minimize the potential for uncontrolled vehicle movement within the site or onto the mainline tracks, and to minimize the need for grading and earth retention structures.
- **Adjacent Land Use**
The yard and shop site should have adjacent land uses that are generally compatible with anticipated operations and maintenance activities and support the frequent movement of vehicles through constrained trackwork and reduction of noise.
- **Environmental Considerations**
The site should have minimal effects on the neighboring natural and built environments, be compatible with surrounding land uses and activities or improve existing conditions.
- **Expansion**
The site should be large enough to accommodate future expansion of the facility with limited additional impacts to the surrounding area. Where possible, the site configuration should allow for support of the initial vehicle fleet and allow for construction of added capacity when the need arises.

Facility Operations

The site should efficiently accommodate the multiple functions associated with such facilities, including vehicle storage, cleaning, and heavy maintenance; system operations and administration; and maintenance of way storage and operations. Specific evaluation criteria pertaining to facility operations include the following:

- **Runaround Loop**
The site should ideally accommodate a full runaround loop, bypassing but allowing access to both the storage yard and the shop facility. In addition to providing operational flexibility on the site, a continuous runaround loop minimizes the impact of vehicle testing on revenue operations. However, a runaround requires added space, and thus can reduce the overall capacity of a given site.
- **Redundancy**
The site should accommodate a redundant configuration that precludes entrapment of vehicles in the storage yard and/or maintenance facility during routine operations. Typically, this is accomplished by providing double-ended access to both the storage and maintenance tracks, and by limiting each maintenance bay to two vehicle positions. However, a redundant configuration requires added space, and thus can reduce the overall capacity of a given site.
- **Reverse Operation**
The site should accommodate the ability to turn vehicles end-for-end within the yard or through a combination yard and mainline movements. Typically, this is accomplished by providing a wye or loop track on the site. Light rail vehicles have operator cabs at both ends, and regularly alternating the travel direction of the

vehicles can balance wear on vehicle components and maximize the interval between routine maintenance needs.

- **Functional Efficiency**

The site should accommodate an efficient configuration that provides direct access between the mainline and the storage yard or the vehicle maintenance facility. In addition, the site should be configured so that other elements can be efficiently located, including maintenance-of-way operations and storage, a traction power substation, the system administration and operations center, internal roadways, parking, and loading docks.

- **Existing Utilities**

The availability of utilities at the site should be typical as to the type of utilities required to run and maintain a large operation.

System Operations

The site should be located and sized in a manner that supports efficient operations for the initial corridor and for potential system expansions.

- **System Connectivity**

The site should be in close proximity to and easily accessible from the mainline tracks and should be compatible with all initial and ultimate operating segment alternatives.

- **System Efficiency**

The site should be located to minimize the need for non-revenue operation (deadheading) on the mainline tracks. The most efficient location for the yard and shop facility is generally at the end of the line where serving a single line. The most efficient location for a yard and shop facility that will serve multiple lines (current or future) is closer to the junction of the lines.

Relative Costs

The site should result in the lowest capital investment possible to acquire the necessary property and construct the proposed facility, and the lowest system-wide operating and maintenance costs. Specific evaluation criteria pertaining to relative costs include the following:

- **Acquisition Costs**

The site should result in the lowest capital investment possible for property acquisition, relocation, and demolition. Relative acquisition cost is primarily a function of the existing uses of the site and the potential market value of the property.

- **Capital Costs**

The site should result in the lowest capital investment possible to construct the proposed facility. Relative capital cost is primarily a function of the civil work necessary to provide a sufficiently level site for the yard and shop facility.

- **O&M Costs**

The site should result in the lowest system-wide operating and maintenance costs. Relative operating and maintenance cost is a function of the efficiency of both the site configuration and its location on the system.

Sites Considered in the Initial Study

The Initial Study identified 48 sites as potentially suitable for consideration as candidates for development of Metro Light Rail storage and maintenance yards. The site consideration process was designed to identify locations that could serve as either or both storage and maintenance

facilities. The ideal candidate site has characteristics that allow it to be developed with storage and maintenance facilities, in addition to meeting other criteria as described above.

The screening criteria process reduced the initial 48 locations to 24 sites that are considered to be viable candidates to meet Metros' short term and long range requirements for the Light Rail Fleet. These sites are proximate to the existing or planned light rail corridors, are sufficiently large size to handle the storage needs for enough vehicles to reduce deadhead costs and the need for and cost of redundant facilities.

Further application of the screening criteria to these sites led to a short list of 9 sites that are considered to be the most ideal locations to meet the requirements for storage and maintenance of the light rail fleet, their impact on reducing operations costs and inefficiencies. Table 5 presents the short list of the 9 most ideal candidate locations. Table 6 summarizes the findings for the top 24 sites that were identified. Table 7 shows the estimated light rail vehicle storage capacity and an initial assessment of the suitability of a site for a full service or partial service maintenance facility for each of the 48 sites. Table 8 provides a summary for each of the 48 site locations considered in the initial study.

Conclusion and Recommendation

The results of the Initial Study indicate there are enough viable locations to warrant a fuller study of these sites to develop the framework for moving forward toward acquisition and site assembly. This analysis would involve a more rigorous application of the screening criteria and include a feasibility assessment to gauge whether any of the sites has real potential for development of the required storage and maintenance facilities. A comprehensive site analysis will reveal pertinent details about each candidate location and a ranking of those sites that best meet the objectives and requirements for new light rail yard facilities. Such a study will also provide the basis for the actions that will lead to and result in the development of new light rail yard facilities in the shortest possible time.

Table 5

Top 9 Candidate Site Locations for Development of Light Rail Fleet
Full Service Maintenance and Storage Facilities

No.	Light Rail Line	Site Description	Location	Size (acres)	Comments - Candidate Sites for Future Study
	All	Union Pacific Yard	Alhambra/N Mission//I-5	132.8	This large site could meet needs for a large consolidated LRT facility. Extensive logistics needed with UPRR and connections to Gold Line across the River and to the Blue and Expo Lines along the River to the south and along Washington Blvd. Need a minimum of 3 double track leads to properly access this large facility.
6	Blue/Expo	Crown Coach (not available)	S Santa Fe/E Washington	25.9	This site could be capable of storing 80 to 100 cars. Some traffic concerns since this would impact Washington Blvd as the leads to Expo and Blue Lines.
7	Gold Line	Miller Brewery Site	SE of I-210/I-605 Junction	24.1	This would require extension of Gold Line to Irwindale (minimum) but could handle up to 100 cars would assist in needs of the Gold Line. Was included in DEIS/DEIR, but not cleared in the Final EIR.
10	Gold Line	Irwindale	2500 E Central Avenue, Irwindale,	20.3	This would require extension of Gold Line to Duarte (just east of Duarte in Irwindale) (minimum) but could handle up to 100 cars would assist in needs of the Gold Line. Was discussed in early Gold Line extension studies but carried forward for environmental analysis. Already has a track to the site under the I-210 Freeway.
8	Blue Line	Blue Line Division 11 Adjacent	West of I-710/North of Carson	23	Large site across from Division 11 (Blue Line Yard). Could accommodate up to 100 cars. Long deadheading for Expo operation.
18	Blue Line	Blue Line Division 11 Expansion	Between I-710 & Blue Line near Carson	15.5	This site was to be the Expo facility. Needs to be re-examined with Edison and others. Could handle 60 to 80 cars, but again long deadheading for Expo.
15	Crenshaw	Crenshaw Site B	Osage/83rd/Harbor Subdivision RR	16.9	This site is being considered in the Crenshaw-Prairie DEIS/DEIR. It can accommodate up to 60 cars. Sufficient for Crenshaw-Prairie alternatives but probably not the Green Line expansion needs.
19	Crenshaw	Crenshaw Site D	Rosecrans/Sepulveda/PCH	15/36	This site is being considered in the Crenshaw-Prairie DEIS/DEIR. It can accommodate up to 100 cars. Sufficient for Crenshaw alternatives and the Green Line expansion needs.
24	Expo 2	Expo 2 Option (Olympic/Stewart)	Olympic/Stewart/Centinela	9	Storage capacity between 40 and 65 vehicles.

Source: Parsons Brinckerhoff/Countywide Planning

Table 6

Twenty-four Candidate Locations for Light Rail Storage/Maintenance Facility

Location	Size (acres)	Comments - Candidate Sites for Future Study
Alhambra/N Mission//I-5	132.8	This large site could meet needs for a large consolidated LRT facility. Need a minimum of 3 double track leads to properly access this large facility.
E Mariposa/N Nash/N Douglas	45.9	This large site could meet needs for a full service LRT facility.
Long Beach/Alameda/MLK	38	This large site could meet needs for a full service LRT facility.
E 1st/I-10	29.5	This large site could meet needs for a full service LRT facility.
W Imperial Hwy/Aviation/W 11th	29.0	This large site could meet needs for a full service LRT facility.
S Santa Fe/E Washington	25.9	This site could be capable of storing 80 to 100 cars. Some traffic concerns since this would impact Washington Blvd as the leads to Expo and Blue Lines.
SE of I-210/I-605 Junction	24.1	Use of this site requires extension of Gold Line to Irwindale. Potential storage is up to 100 cars. Was included in DEIS/DEIR, but not cleared in the Final EIR.
West of I-710/North of Carson	23	Large site across from Division 11 (Blue Line Yard). Could accommodate up to 100 cars. Long deadheading for Expo operation.
W Imperial Hwy/Aviation	20.5	This site could meet needs for a full service LRT facility.
2500 E Central Avenue, Irwindale, 91706	20.3	Use of this site requires extension of Gold Line to Duarte. Potential storage is up to 100 vehicles. Already has a track to the site under the I-210 Freeway.
Colorado/Olympic/11th/14th	20	This site could meet needs for a full service LRT facility.
Cloverfield/I-10	19	This site could meet needs for a full service LRT facility.
Manchester/Osage/Harbor Subdivision RR	17.8	This site could meet needs for a partial to full service LRT facility.
Alameda/20th	17.0	This site could meet needs for a partial to full service LRT facility.
Osage/83rd/Harbor Subdivision RR	16.9	Site is under consideration Crenshaw-Prairie DEIS/DEIR. Storage up to 60 vehicles.
Alameda/22nd/Alameda Corridor	16.6	This site could meet needs for a partial to full service LRT facility.
Compton/24th/Long Beach/Blue Line	16	This site could meet needs for a partial to full service LRT facility.
Between I-710 & Blue Line near Carson	15.5	This site was to be the Expo facility. Needs to be re-examined with Edison and others. Could handle 60 to 80 cars, but again long deadheading for Expo.
Rosecrans/Sepulveda/PCH	15	Site under consideration in the Crenshaw-Prairie DEIS/DEIR. Storage up to 100 cars including the Green Line expansion needs.
Slauson/Central/59th	14.9	This site could meet needs for a partial to full service LRT facility.
4462 Pacific Boulevard, Vernon	14.5	This site could meet needs for a partial to full service LRT facility.
Olympic/Stewart	14	This site could meet needs for a partial to full service LRT facility.
Olympic/Federal/Exposition	14	This site could meet needs for a partial to full service LRT facility.
Olympic/Stewart/Centinel	9	Suitable for storage of between 40 and 65 vehicles.

Source: Parsons Brinckerhoff/Countywide Planning

Table 7

Storage and Maintenance Facility Capacity of Potential LRT Yard Site Locations						
Light Rail Line	Site ID #	Site Name	Site Location	Site Size in acres (approx.)	Storage Capacity (4cars/acre)	Area for Maintenance Facility
All	1	Union Pacific Yard	Alhambra/N Mission//I-5	132.8	531	Full Service
	2	Mariposa Station Adjacent	E Mariposa/N Nash/N Douglas	45.9	184	Full Service
Blue/Expo	3	Blue Line Adjacent 1	Long Beach/Alameda/MLK	16.4	65	Utilize existing Blue Line facility
Blue/Expo	4	Union Pacific 1st Street Yard	E 1st/I-10	29.5	118	Full Service
Crenshaw	5	Aviation Station (Lot B Adjacent)	W Imperial Hwy/Aviation/W 11th	29.0	116	Full Service
Blue/Expo	6	Crown Coach (not available)	S Santa Fe/E Washington	25.9	104	Full Service
Gold Line	7	Miller Brewery Site	SE of I-210/I-605 Junction	24.1	96	Full Service
Blue Line	8	Blue Line Division 11 Adjacent	West of I-710/North of Carson	23	92	Full Service
Green Line/Crenshaw	9	Aviation Station (Under I-105)	W Imperial Hwy/Aviation	20.5	82	Full Service
Gold Line	10	Irwindale	2500 E Central Avenue, Irwindale, 91706	20.3	81	Full Service
Expo	11	Expo 2 Option (Colorado/14th)	Colorado/Olympic/11th/14th	20	80	Full Service
Expo	12	Expo 2 Option (City Yard)	Cloverfield/I-10	19	76	Partial to Full Service
Crenshaw	13	Crenshaw Site C	Manchester/Osage/Harb or Subdivision RR/Bellanca	17.8	71	Partial to Full Service
Expo	14	Expo Site No. 7	Alameda/20th	17.0	68	Partial to Full Service
Crenshaw	15	Crenshaw Site B	Osage/83rd/Harbor Subdivision RR	16.9	68	Partial to Full Service
Expo	16	Expo Site No. 18	Alameda/22nd/Alameda Corridor	16.6	66	Partial to Full Service
Blue Line	17	Blue Line Adjacent 2	Compton/24th/Long Beach/Blue Line	16	64	Partial to Full Service
Blue Line	18	Blue Line Div. 11 Expansion	Between I-710 & Blue Line near Carson	15.5	62	Partial to Full Service
Crenshaw	19	Crenshaw Site D	Rosecrans/Sepulveda/PCH	15	60	Partial to Full Service
Expo	20	Expo Site No. 17	Slauson/Central/59th	14.9	60	Partial to Full Service
Expo	21	Expo Site No. 9	4462 Pacific Boulevard, Vernon	14.5	58	Partial to Full Service
Expo	22	Expo 2 (City Yard Adjacent)	Olympic/Stewart	14	56	Partial to Full Service
Expo	23	Expo 2 Option Olympic/Federal	Olympic/Federal/Exposit ion	14	56	Partial to Full Service

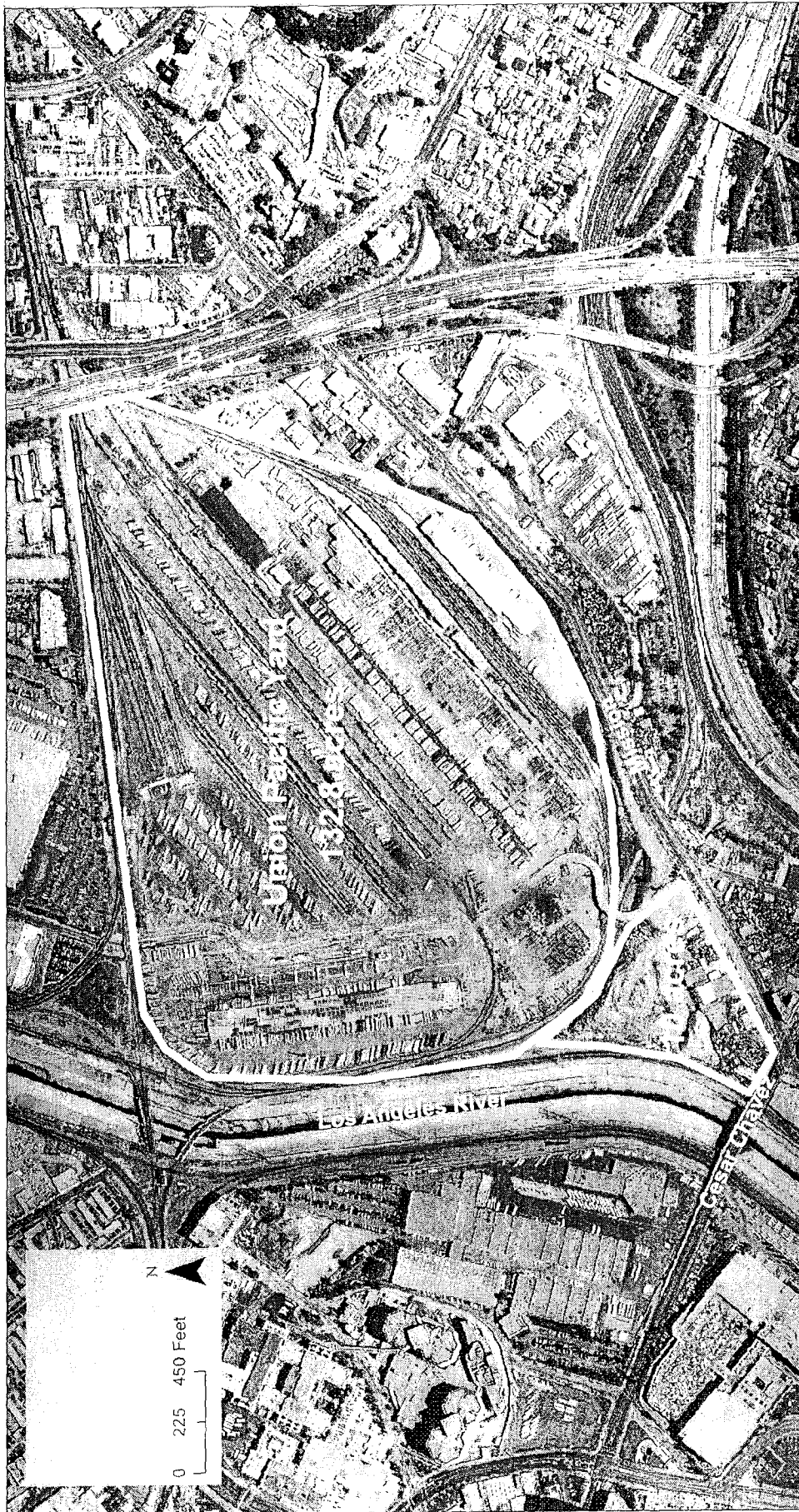
Storage and Maintenance Facility Capacity of Potential LRT Yard Site Locations						
Expo	24	Expo Site No. 1	Flower St/Pico Blvd/Hope St/Cameron Ln	1.1	4	No
Expo	25	Expo Site No. 2	Washington Blvd/Grand Ave/18th St	3.8	15	No
Expo	26	Expo Site No. 3	Washington Blvd/Main St/12th St/Broadway	4.9	20	No
Expo	27	Expo Site No. 4	San Pedro St/16th St/Griffith Ave/15th St	7.6	30	No
Expo	28	Expo Site No. 5	Washington Blvd/Long Beach Ave/16th St	6.5	26	No
Expo	29	Expo Site No. 6	Washington Blvd/Alameda St/16th St	10.2	41	Partial Service
Expo	30	Expo Site No. 8	25th St	11.9	48	Partial Service
Expo	31	Expo Site No. 11	Long Beach Ave/41st St/Alameda St	12.2	49	Partial Service
Expo	32	Expo Site No. 12	Long Beach Ave/50th St/Alameda St/51st St	14.9	60	Partial Service
Expo	33	Expo Site No. 13	5413 S Avalon Blvd	9.0	36	No
Expo	34	Expo Site No. 14	Mid-2300 Block of E 25th St (north side)	5.8	23	No
Expo	35	Expo Site No. 16	Santa Fe Ave (east side) and 14th St (north side)	4.9	20	No
Crenshaw	36	Crenshaw Site A	West Blvd/67 th /Crenshaw/Harbor Subdivision RR	13.0	52	Partial Service
Expo	37	Expo 2 - Olympic & 17th Small	Olympic Blvd/17th St/20th St/I-10	4.1	16	No
Expo	38	Expo 2 - Olympic & 17th Big	Olympic Blvd/17th St/20th St/I-10	0.0		No
Expo	39	Expo 2 - Olympic & Cloverfield	Olympic Blvd/26th St	0.0		No
Expo	40	Expo 2 - Exposition & Stewart	Exposition Blvd/Stewart St	0.0		No
Expo	41	Expo 2 - Venice & Exposition	Venice/Exposition/Durango	6.5	26	Partial Service
Expo	42	Expo 2 - National & I-10	National/I-10	2.6	10	No
Expo	43	Expo 2 - Colorado & 17th	Colorado/17th/14th	4.9	20	No
Expo	44	Expo 2 - Colorado & 20th	Colorado/20th/17th	5.4	22	Partial Service
Expo	45	Expo 2 - Olympic & 14th	Olympic/17th/14th/I-10	5.8	23	Partial Service
Expo	46	Expo 2 - Pico & Exposition	Exposition/Pico/Federal/Purdue	7.5	30	Partial Service
Blue Line	47	Expo 1 Compton-Blue Line	RR ROW btwn Compton & Blue Line near Adams	0.0		No
Expo	48	Expo - Long Beach Blvd Mid-Day Storage	Long Beach/Washington/24th	1.4	6	No

Source: Parsons Brinckerhoff/Countywide Planning

Light Rail Line	Site ID #	Site Name	Site Location	Site Size in acres (approx.)	LRT Storage Capacity (@ 4 cars/acre)	Area for Maintenance Facility
All	1	Union Pacific Yard	Alhambra/N Mission//I-5	132.8	531	Yes
	2	Mariposa Station Adjacent	E Mariposa/N Nash/N Douglas	45.9	184	Yes
Blue/Expo	3	Blue Line Adjacent 1	Long Beach/Alameda/MLK	16.4	65	Yes
Blue/Expo	4	Union Pacific 1st Street Yard	E 1st/I-10	29.5	118	Yes
Crenshaw	5	Aviation Station (Lot B Adjacent)	W Imperial Hwy/Aviation/W 11th	29.0	116	Yes
Blue/Expo	6	Crown Coach (not available)	S Santa Fe/E Washington	25.9	104	Yes
Gold Line	7	Miller Brewery Site	SE of I-210/I-605 Junction	24.1	96	Yes
Blue Line	8	Blue Line Division 11 Adjacent	West of I-710/ North of Carson	23	92	Yes
Green Line/ Crenshaw	9	Aviation Station	W Imperial Hwy/ Aviation	20.5	82	Yes
Gold Line	10	Irwindale	2500 E Central Avenue, Irwindale, 91706	20.3	81	Yes
Expo	11	Expo 2 Option (Colorado/14th)	Colorado/Olympic/1 1th/14th	20	80	Yes
Expo	12	Expo 2 Option (City Yard)	Cloverfield/ I-10	19	76	yes
Crenshaw	13	Crenshaw Site C	Manchester/Osage/ Harbor Subdiv. RR/Bellanca	17.8	71	yes
Expo	14	Expo Site No. 7	Alameda/ 20th	17.0	68	yes
Crenshaw	15	Crenshaw Site B	Osage/83rd/Harbor Subdivision RR	16.9	68	yes
Expo	16	Expo Site No. 18	Alameda/22nd/Alameda Corridor	16.6	66	yes
Blue Line	17	Blue Line Adjacent 2	Compton/24th/Long Beach/Blue Line	16	64	yes
Blue Line	18	Blue Line Division 11 Expansion	Between I-710 & Blue Line near Carson	15.5	62	yes
Crenshaw	19	Crenshaw Site D	Rosecrans/Sepulveda/PCH	15	60	possibly
Expo	20	Expo Site No. 17	Slauson/Central/59th	14.9	60	possibly
Expo	21	Expo Site No. 9	4462 Pacific Boulevard, Vernon	14.5	58	possibly
Expo	22	Expo 2 (City Yard Adjacent)	Olympic/Stewart	14	56	possibly
Expo	23	Expo 2 Option (Olympic/Federal)	Olympic/Federal/Exposition	14	56	possibly

Table 8 cont.						
Initial Study: Sites Considered for Suitability as Light Rail Vehicle Storage and Maintenance Facility Site Locations						
Light Rail Line	Site ID #	Site Name	Site Location	Site Size in acres (approx.)	LRT Storage Capacity (@ 4 cars/acre)	Area for Maintenance Facility
Expo	24	Expo Site No. 1	Flower St/Pico Blvd/Hope St/Cameron Ln	1.1	4	no
Expo	25	Expo Site No. 2	Washington Blvd/Grand Ave/18th St	3.8	15	no
Expo	26	Expo Site No. 3	Washington Blvd/Main St/12th St/Broadway	4.9	20	no
Expo	27	Expo Site No. 4	San Pedro St/16th St/Griffith Ave/15th St	7.6	30	no
Expo	28	Expo Site No. 5	Washington Blvd/Long Beach Ave/16th St	6.5	26	no
Expo	29	Expo Site No. 6	Washington Blvd/Alameda St/16th St	10.2	41	Possibly
Expo	30	Expo Site No. 8	25th St	11.9	48	Possibly
Expo	31	Expo Site No. 11	Long Beach Ave/41st St/Alameda St/MLK Jr Blvd	12.2	49	Possibly
Expo	32	Expo Site No. 12	Long Beach Ave/50th St/Alameda St/51st St	14.9	60	Possibly
Expo	33	Expo Site No. 13	5413 S Avalon Blvd	9.0	36	no
Expo	34	Expo Site No. 14	Mid-2300 Block of E 25th St (north side)	5.8	23	no
Expo	35	Expo Site No. 16	Santa Fe Ave (east side) and 14th St (north side)	4.9	20	no
Crenshaw	36	Crenshaw Site A	West Blvd/67th/Crenshaw/Harbor Subdivision RR	13.0	52	Possibly
Expo	37	Expo 2 - Olympic & 17th Small	Olympic Blvd/17th St/20th St/I-10	4.1	16	no
Expo	38	Expo 2 - Olympic & 17th Big	Olympic Blvd/17th St/20th St/J-10	0.0		no
Expo	39	Expo 2 - Olympic & Cloverfield	Olympic Blvd/Cloverfield Blvd/26th St	0.0		no
Expo	40	Expo 2 - Exposition & Stewart	Exposition Blvd/Stewart St	0.0		no

Table 8 cont.						
Initial Study: Sites Considered for Suitability as Light Rail Vehicle Storage and Maintenance Facility Site Locations						
Expo	41	Expo 2 - Venice & Exposition	Venice/Exposition/Durango	6.5	26	no
Expo	42	Expo 2 - National & I-10	National/I-10	2.6	10	no
Expo	43	Expo 2 - Colorado & 17th	Colorado/17th/14th	4.9	20	no
Expo	44	Expo 2 - Colorado & 20th	Colorado/20th/17th	5.4	22	no
Expo	46	Expo 2 - Pico & Exposition	Exposition/Pico/Federal/Purdue	7.5	30	no
Blue Line	47	Expo 1 Compton-Blue Line	RR ROW btwn Compton & Blue Line near Adams	0.0		no
Expo	48	Expo - Long Beach Blvd Mid-Day Storage	Long Beach/Washington/24th	1.4	6	no
Source: Parsons Brinckerhoff/Countywide Planning						

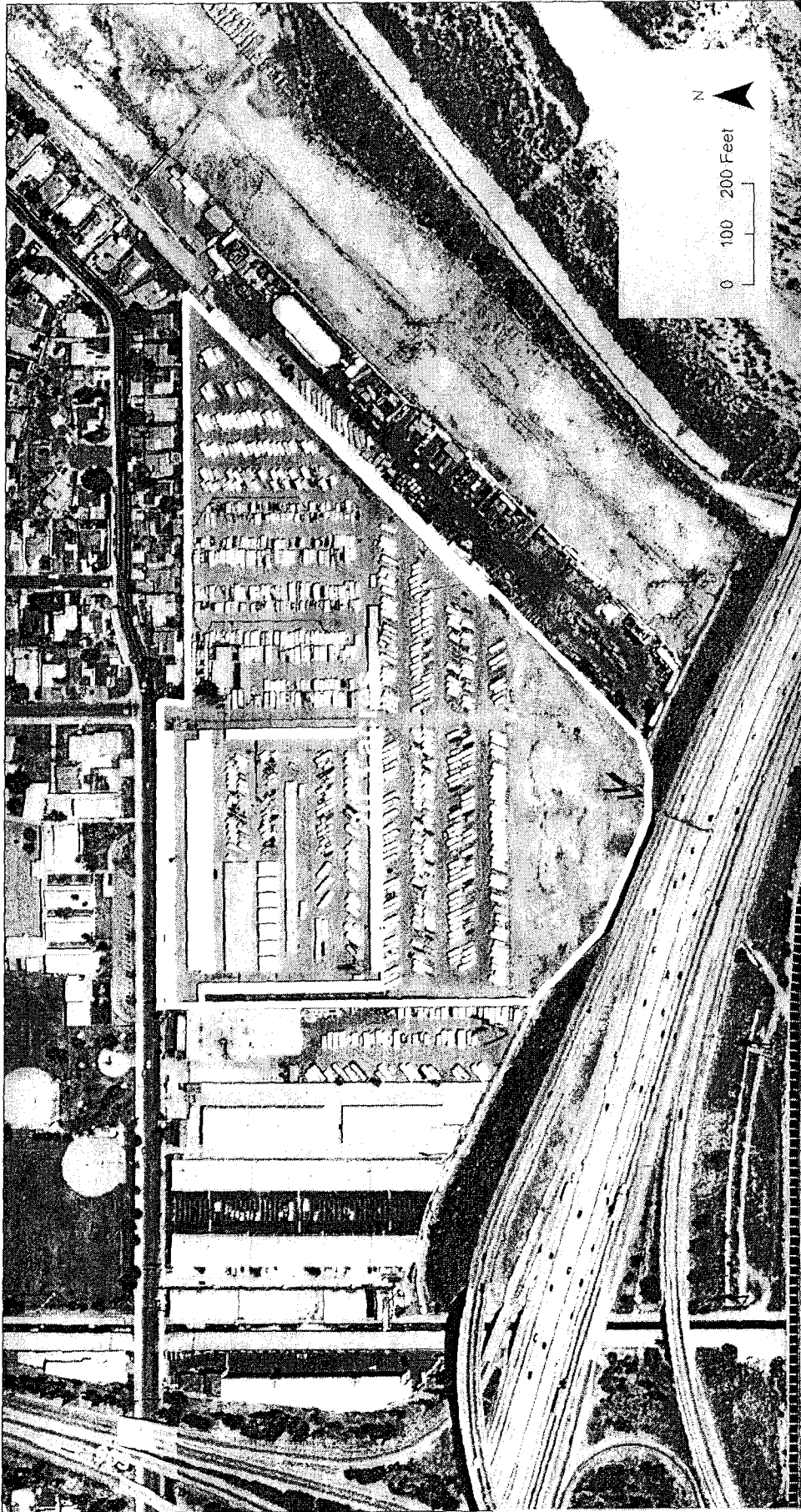




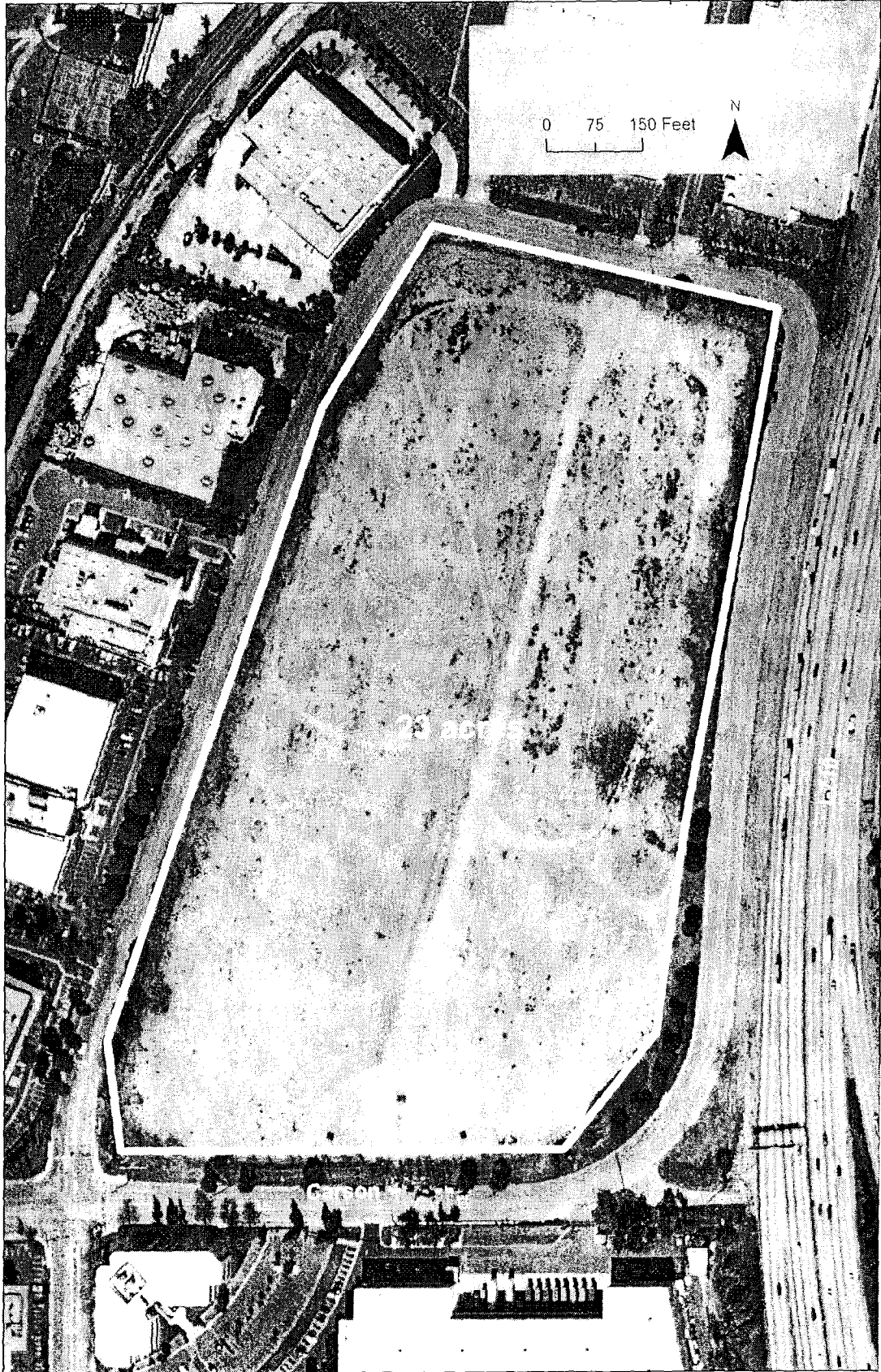
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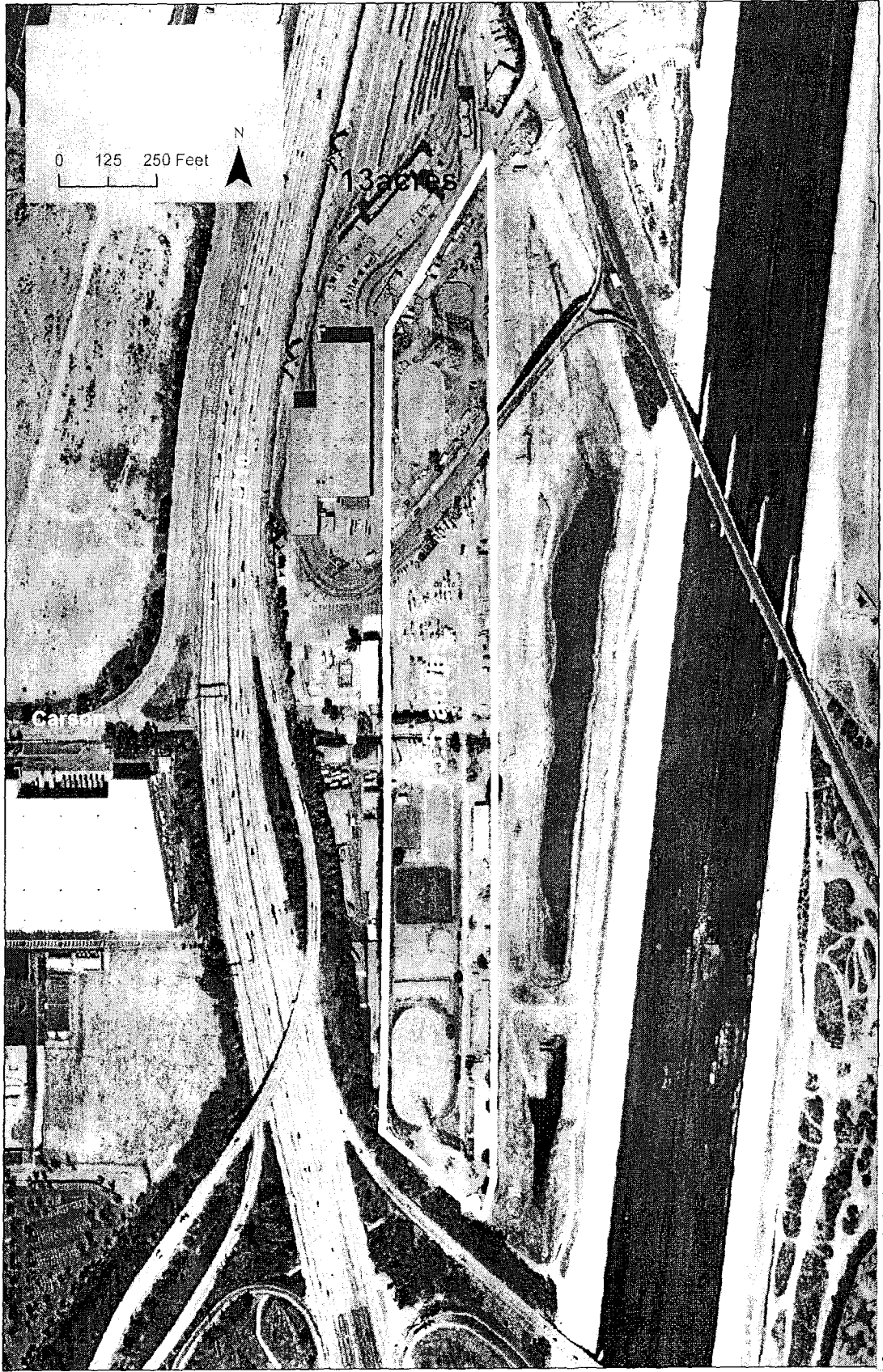
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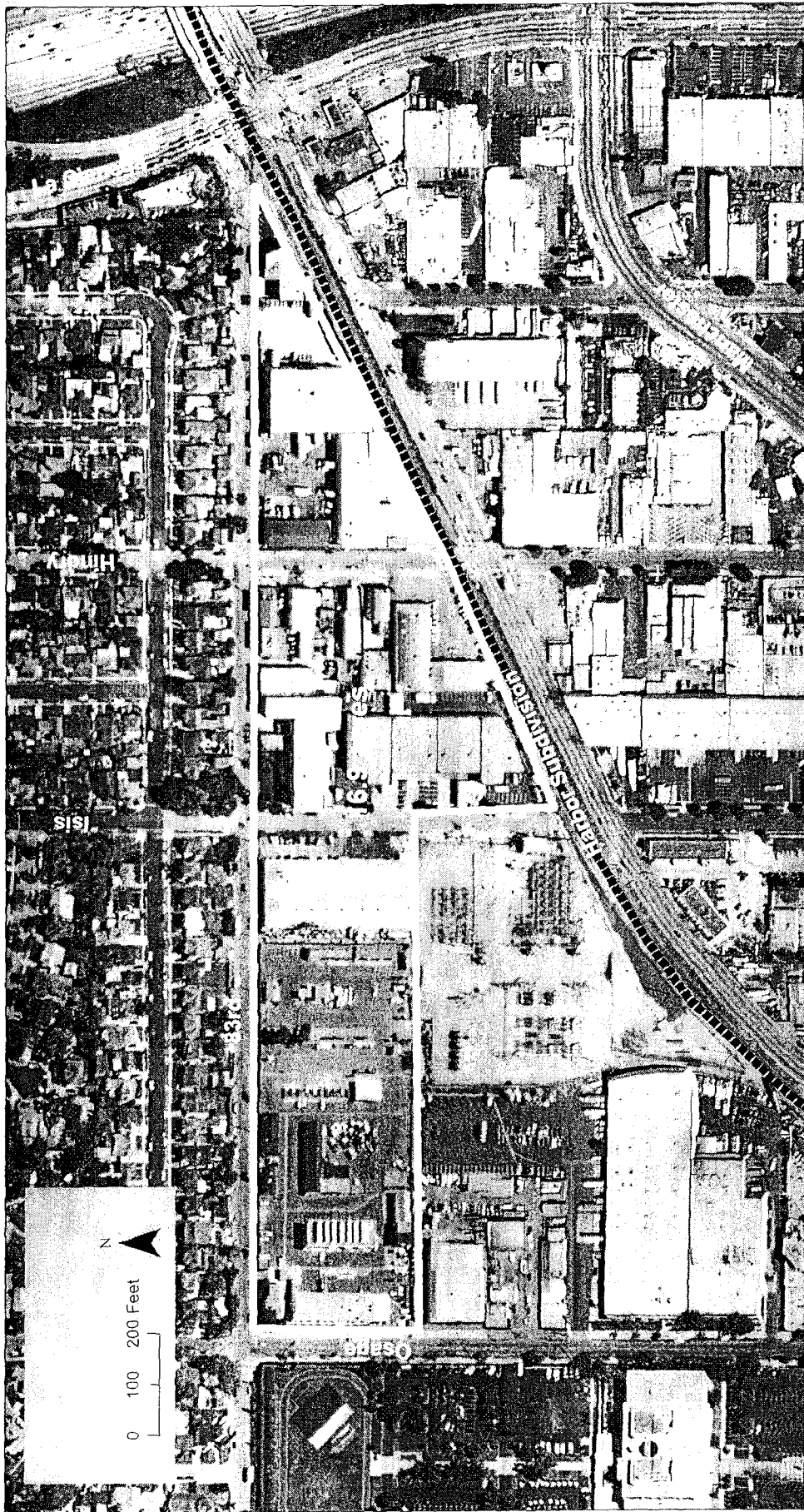
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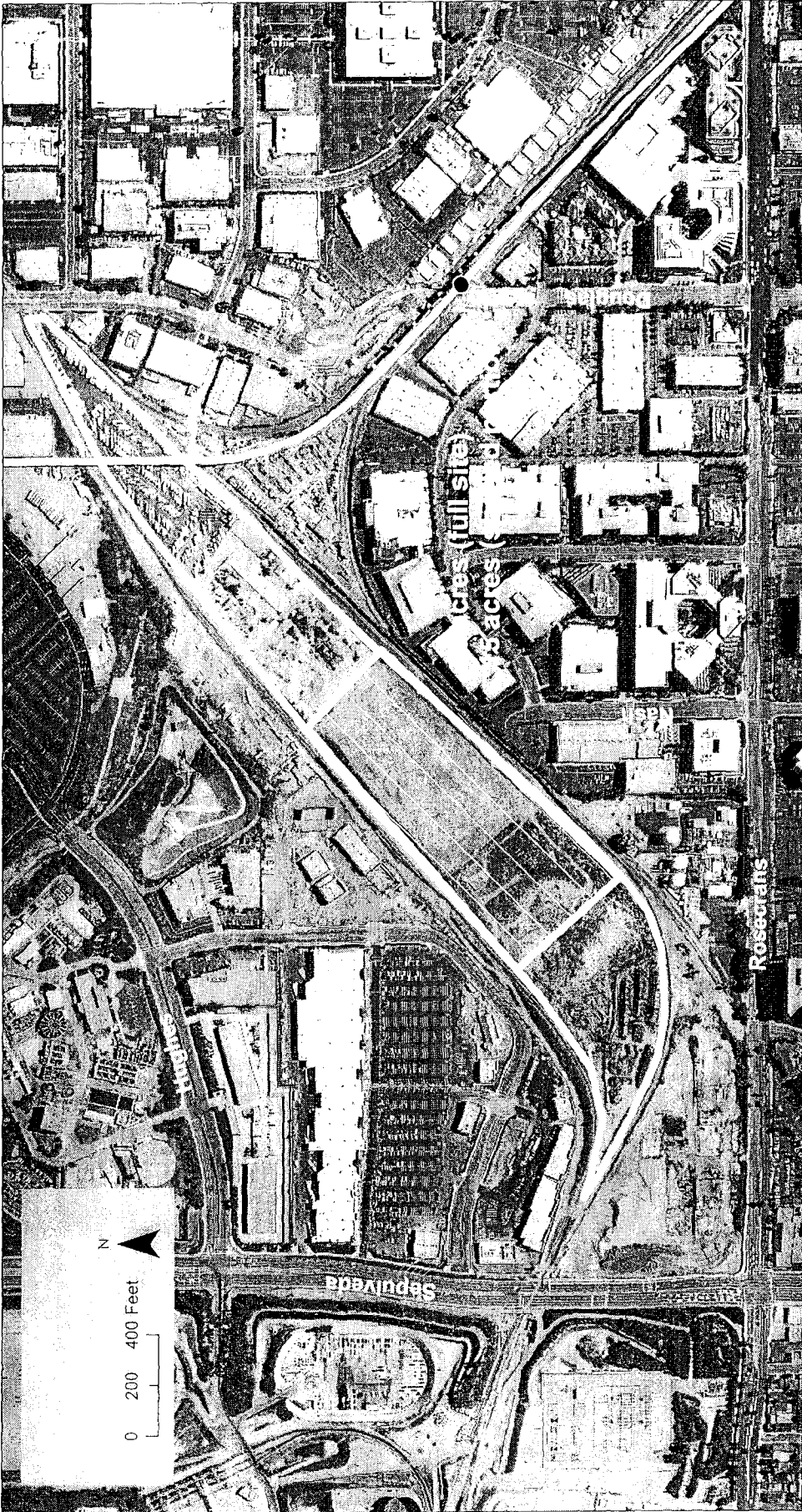


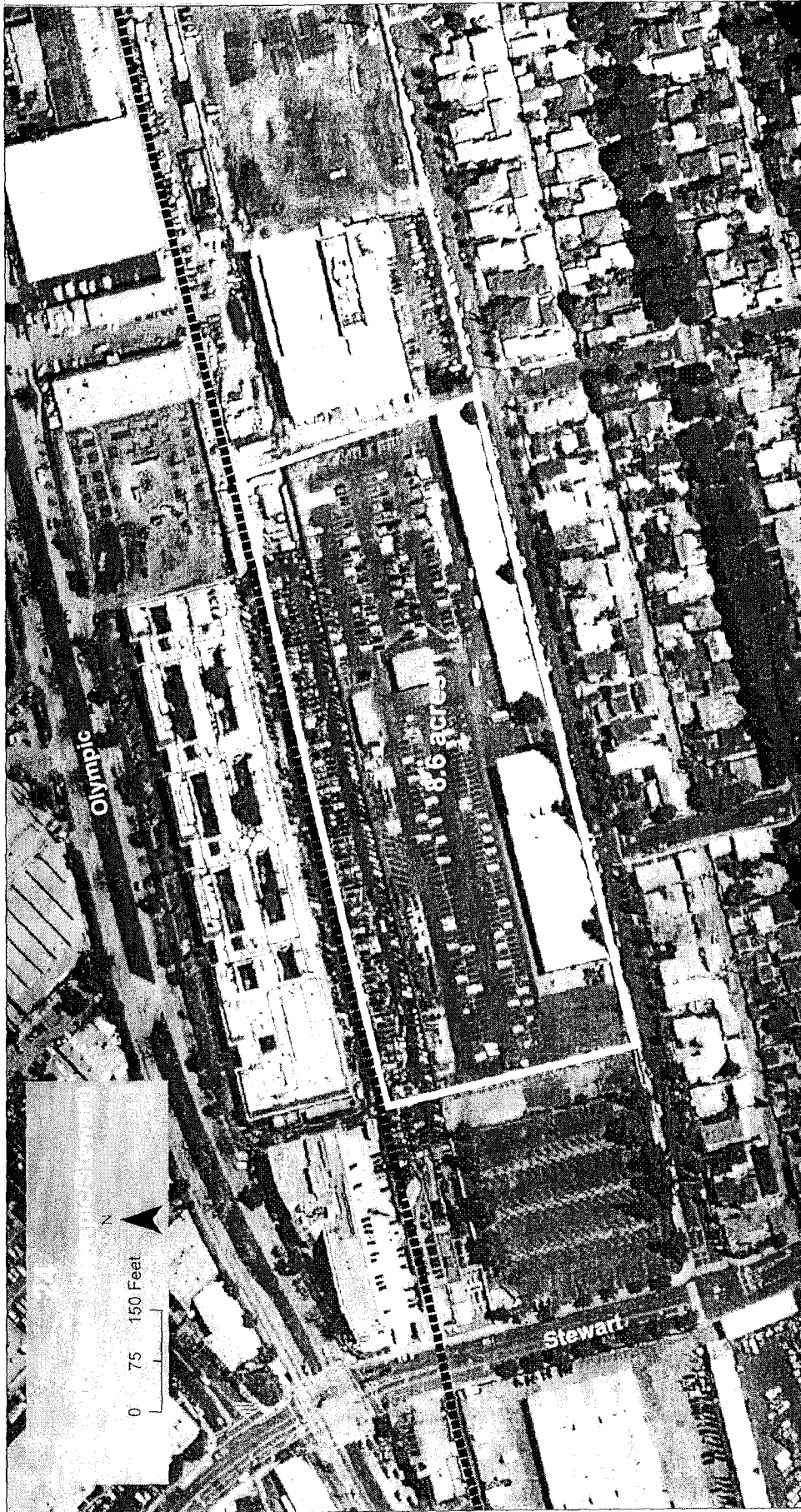
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