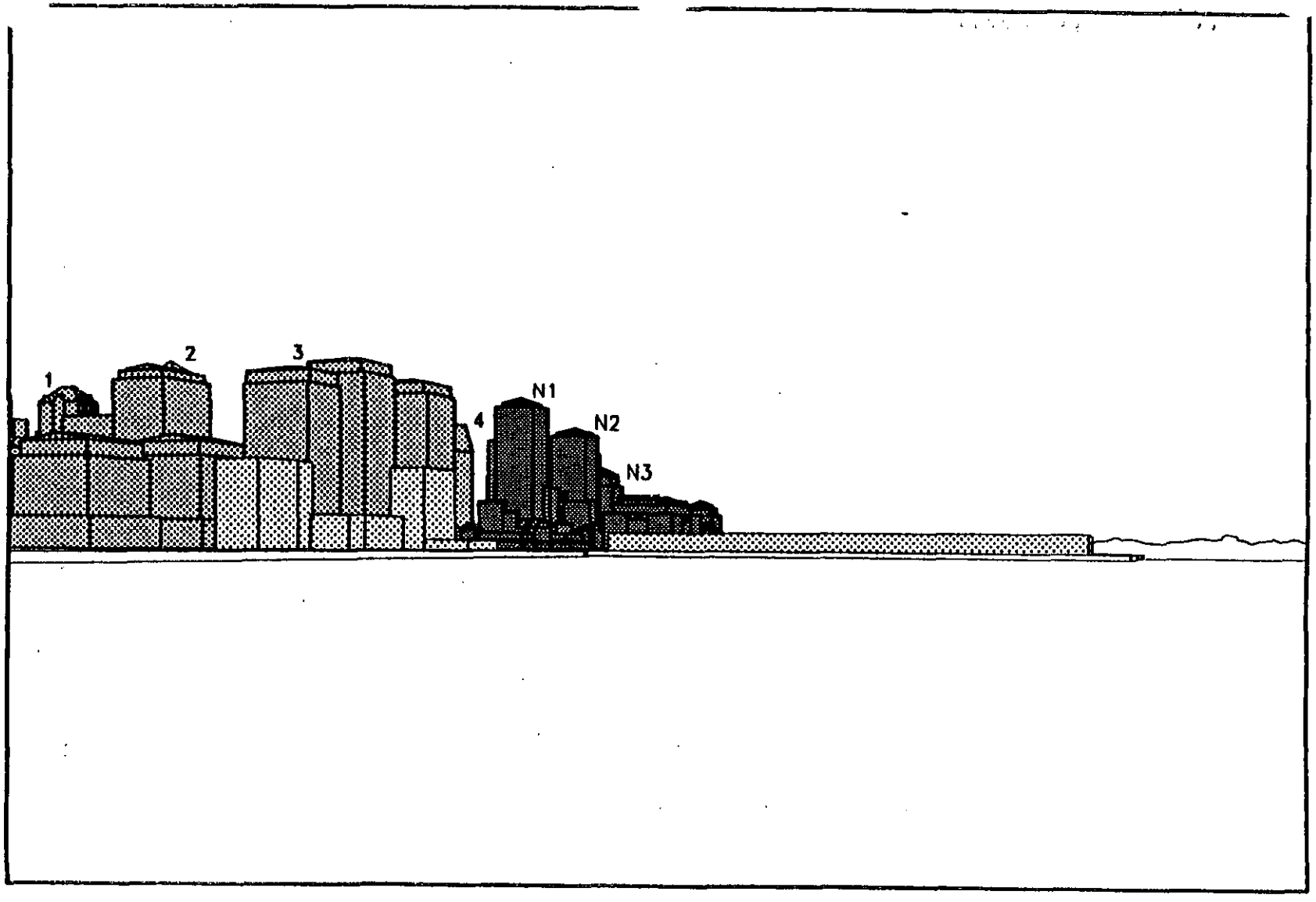


1. The Huntington
2. Great American Plaza
3. Santa Fe Development
4. Hyatt Regency

Existing

Downtown Proposed

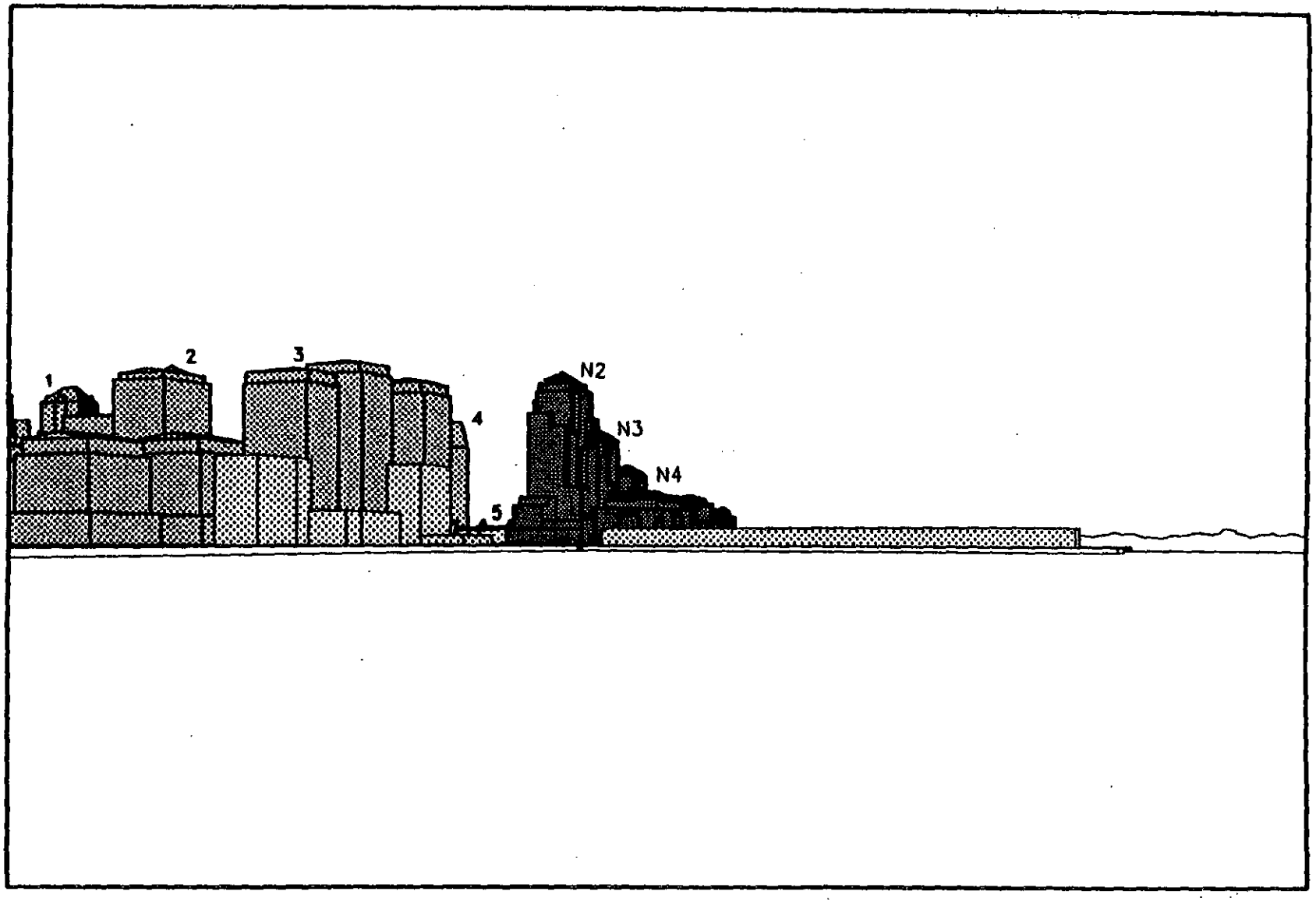
Navy Broadway Complex (Block #)

Gateway View of Alternative A
from Harbor Drive at Laurel Street

Navy Broadway Complex Project

6640001 1/90

Figure 4-29



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

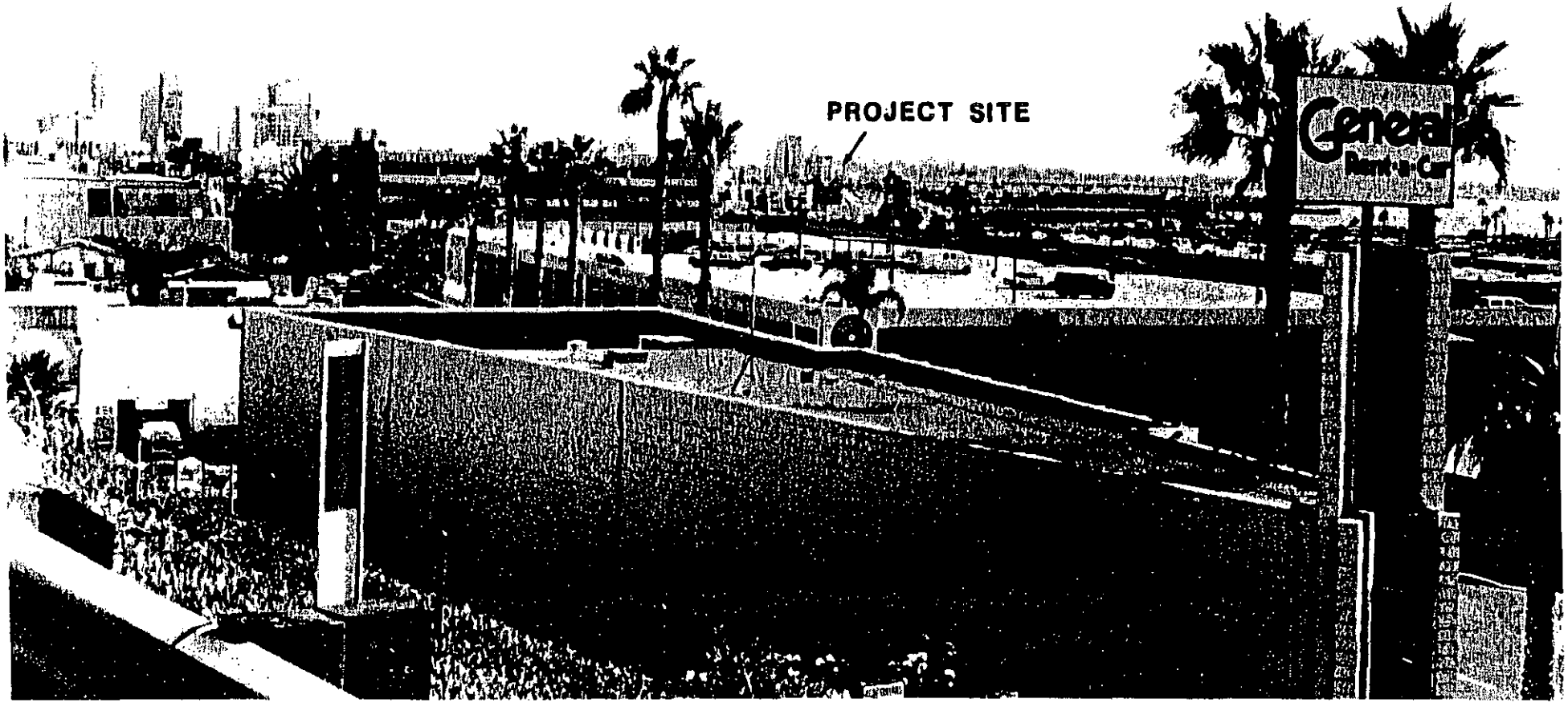
1. The Huntington
2. Great American Plaza
3. Santa Fe Development
4. Hyatt Regency
5. Santa Fe Condominiums

Gateway View of Alternative F from Harbor Drive at Laurel Street

Navy Broadway Complex Project

6640001 1/90

Figure 4-30

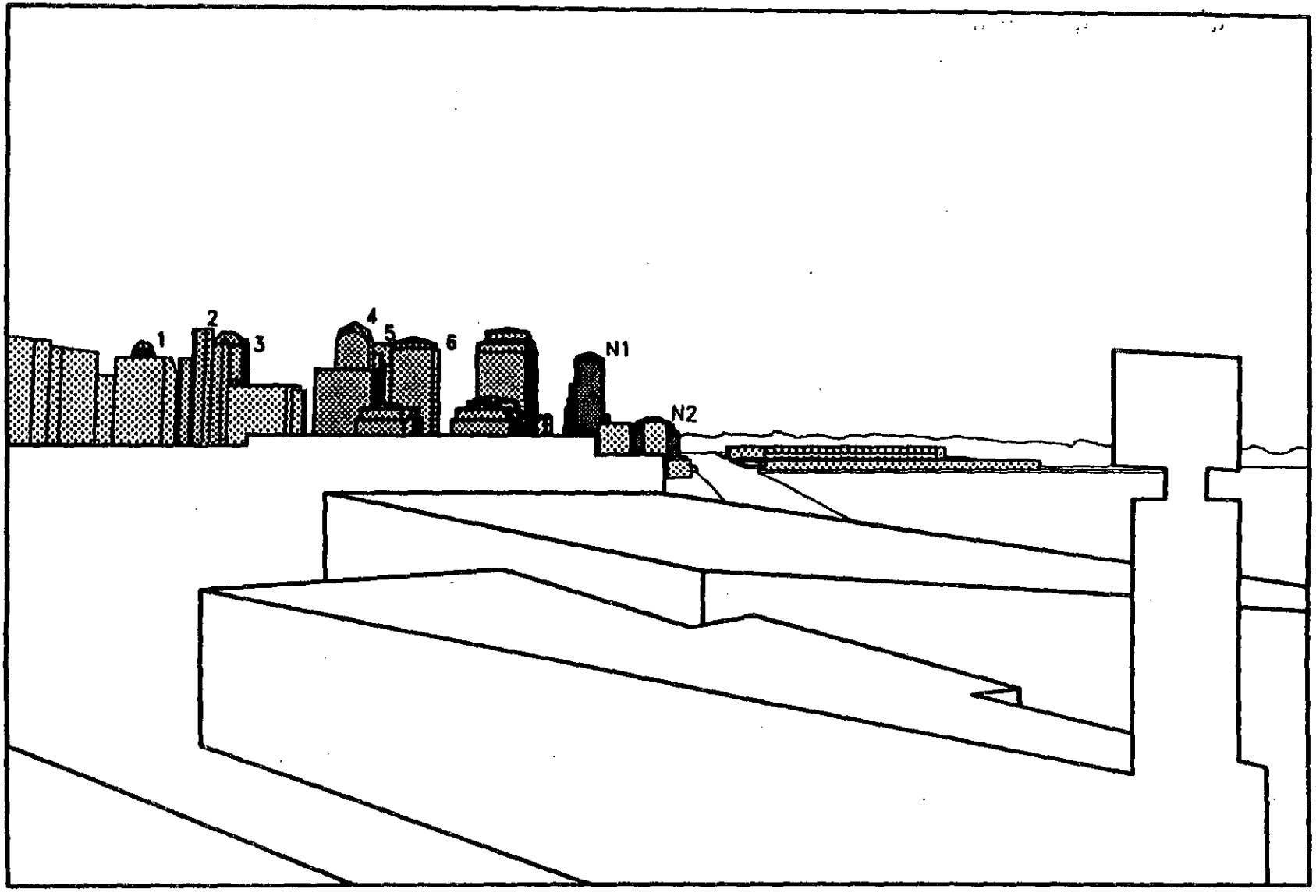


Gateway View from I-5 at Olive Street

Navy Broadway Complex Project

6640001 1/90

Figure 4-31

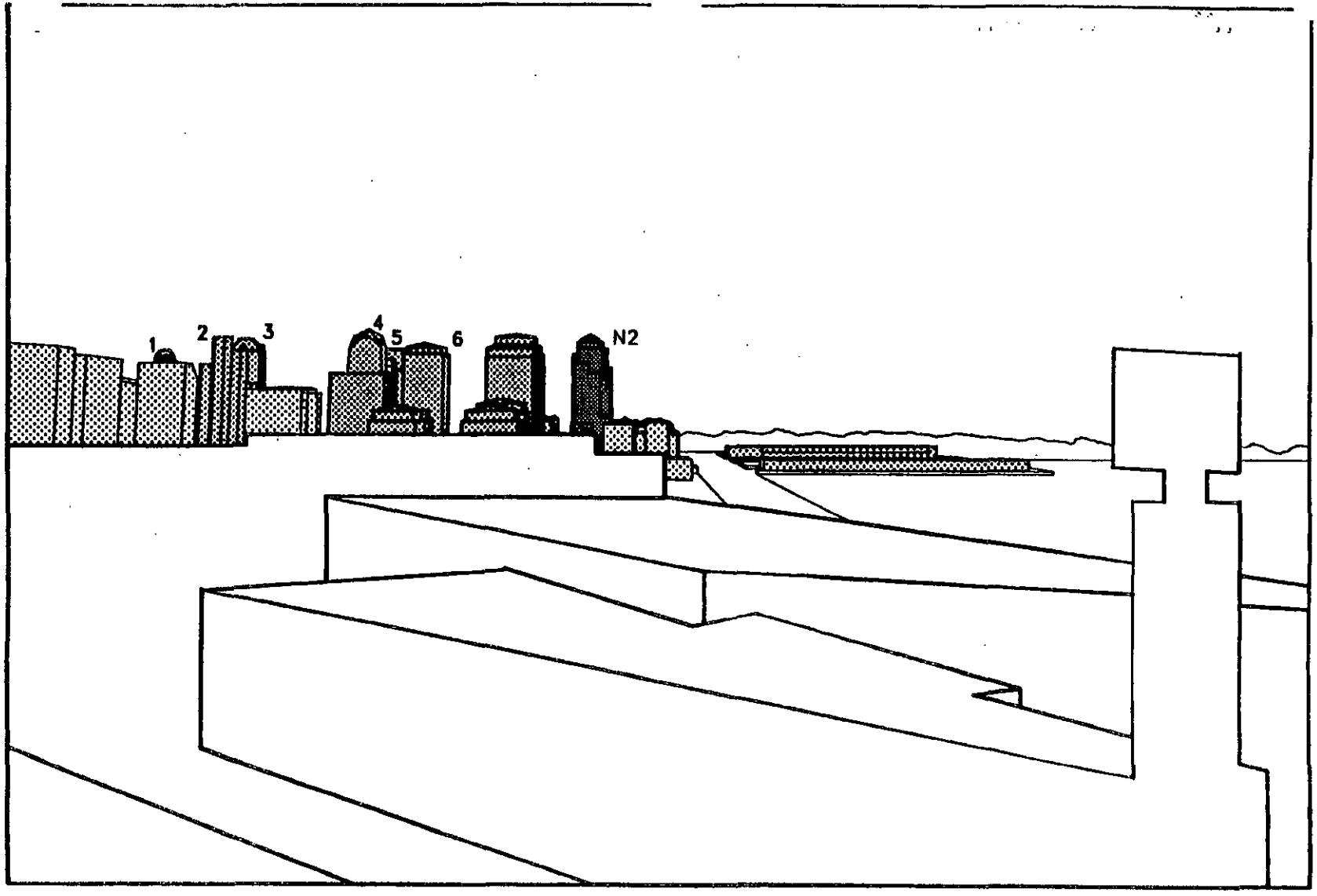


Gateway View of Alternative A
from I-5 at Olive Street

Navy Broadway Complex Project

6640001 1/90

Figure 4-32

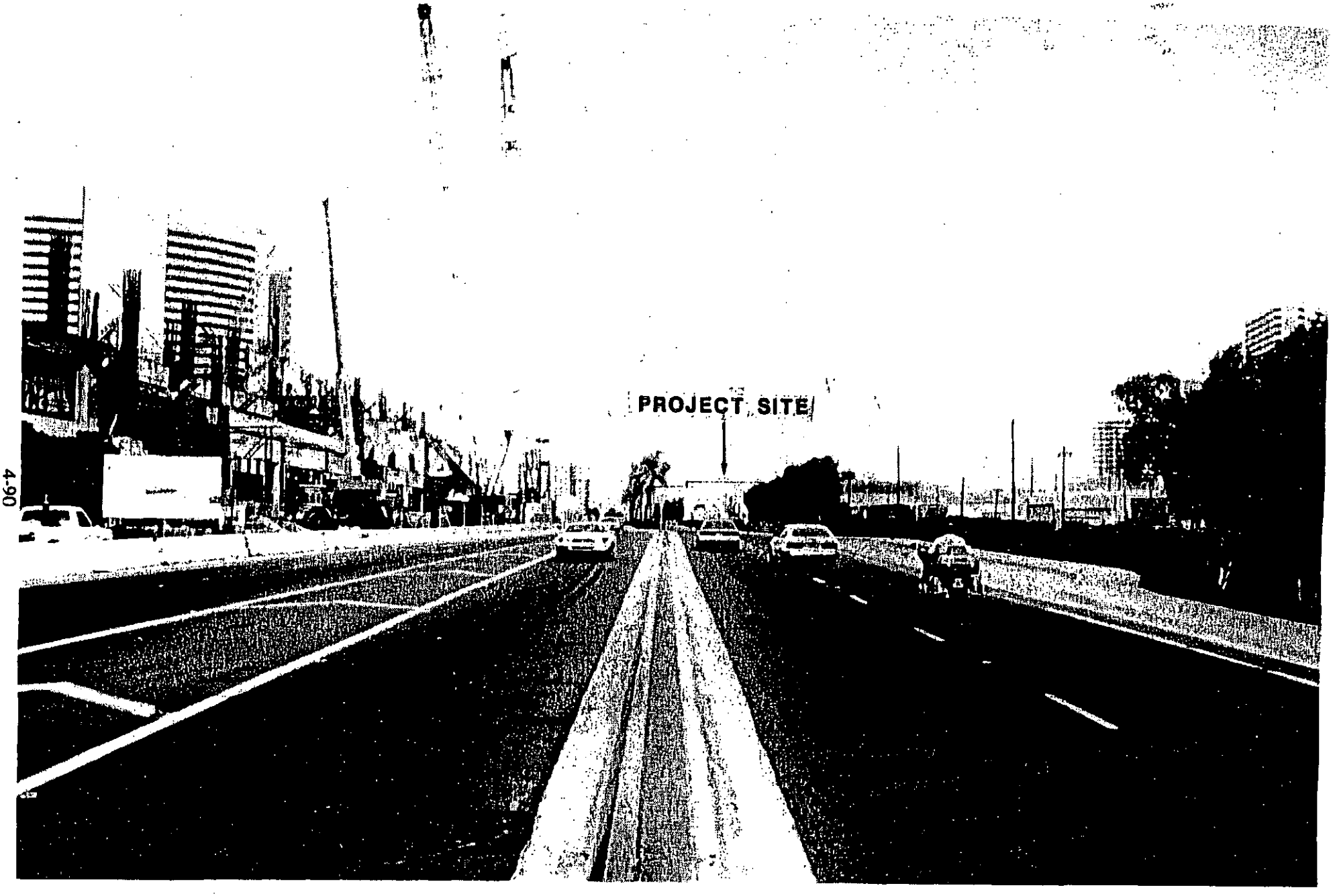


Gateway View of Alternative F
from I-5 at Olive Street

Navy Broadway Complex Project

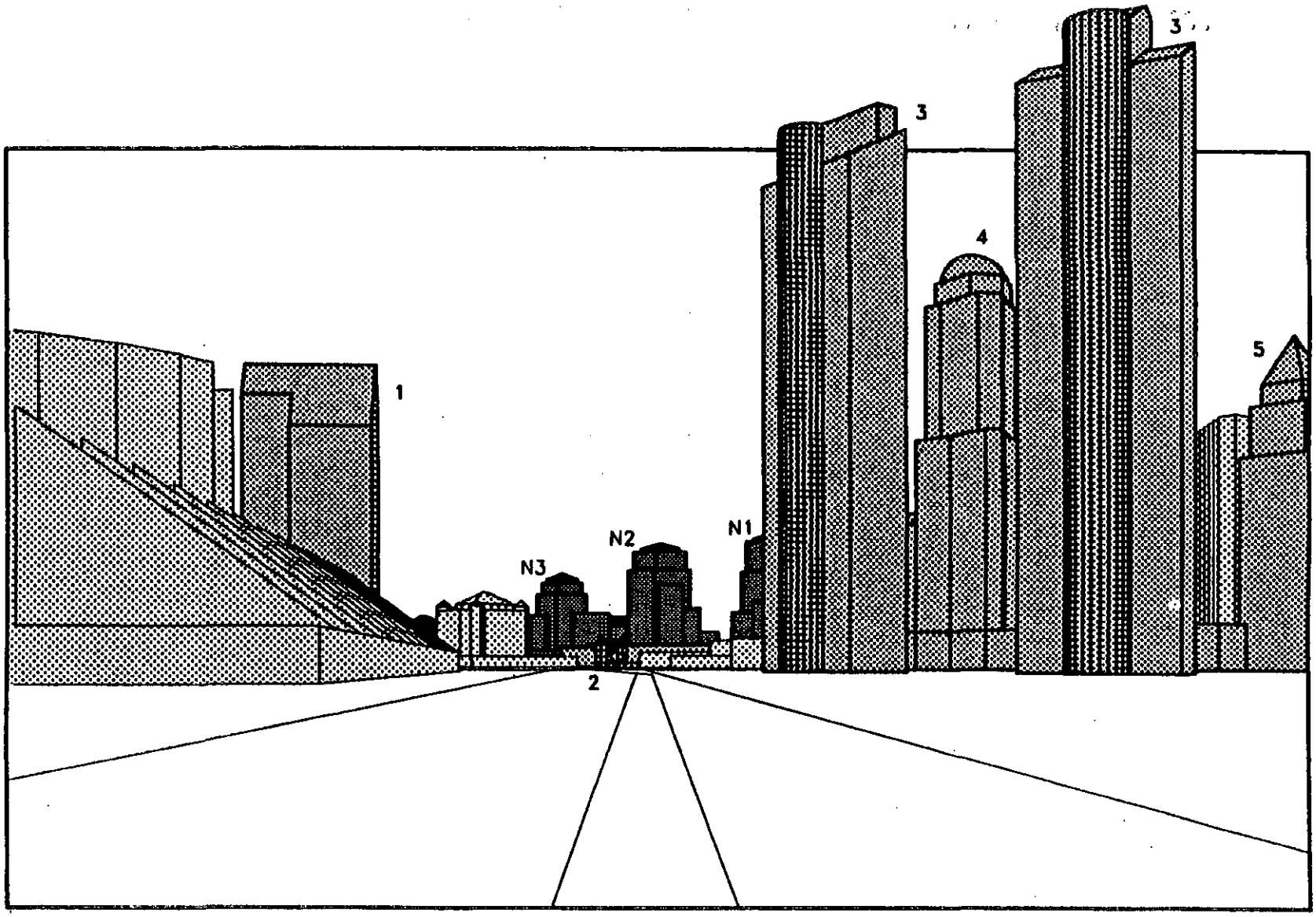
6840001 1/90

Figure 4-33



Gateway View from Harbor Drive at Fifth Avenue

Navy Broadway Complex Project



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

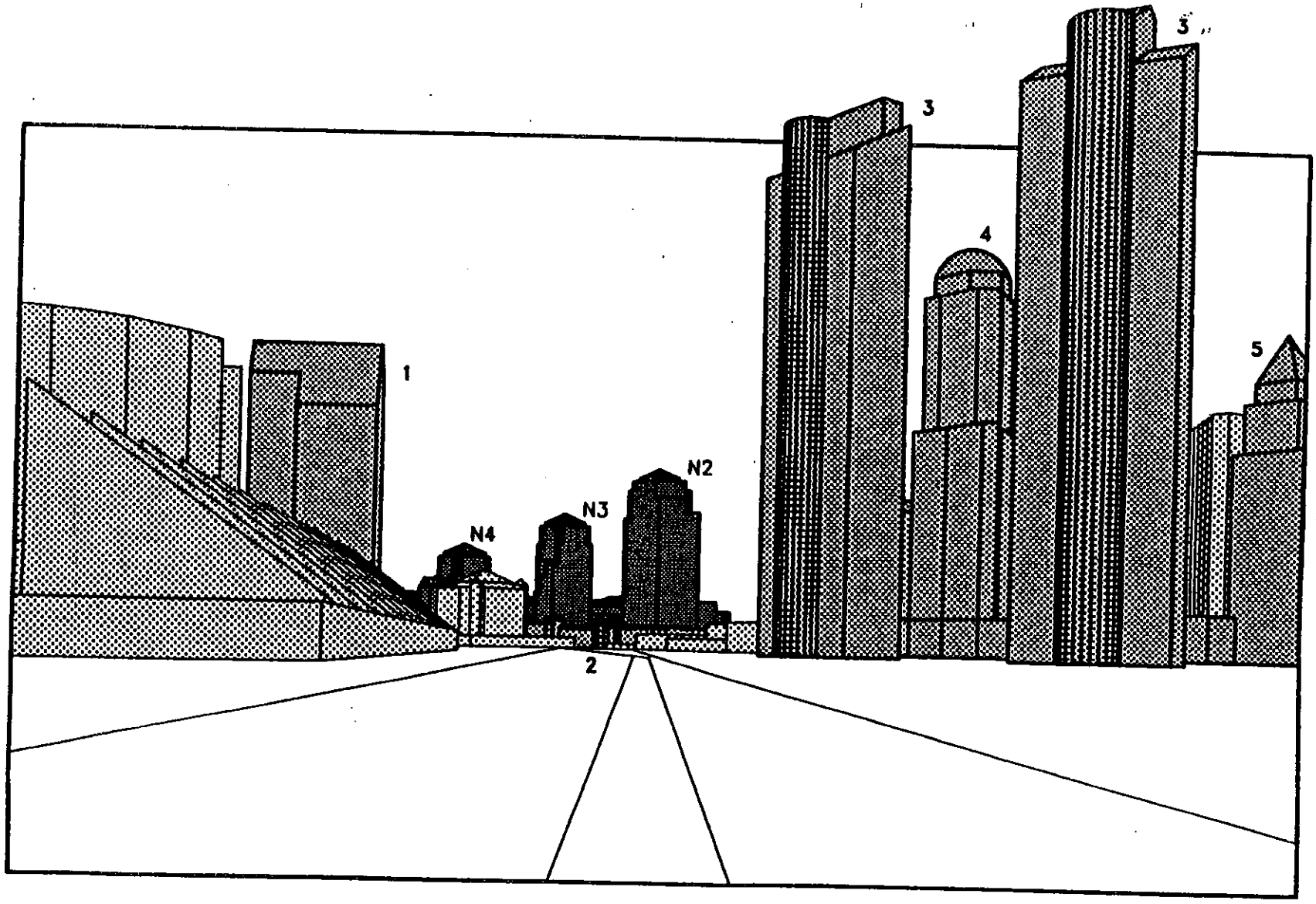
1. Hyatt Regency
2. Santa Fe Condominium
3. One Harbor Drive
4. Roger Morris Plaza
5. The Courtyard

6640001 i/90

Figure 4-35

Gateway View of Alternative A from Harbor Drive at 5th Avenue

Navy Broadway Complex Project



Gateway View of Alternative F
from Harbor Drive at 5th Avenue
Navy Broadway Complex Project

Existing
Downtown Proposed
Navy Broadway Complex (Block #)

1. Hyatt Regency
2. Santa Fe Condominiums
3. One Harbor Place
4. Roger Morris Plaza
5. The Courtyard

6640001 1/90

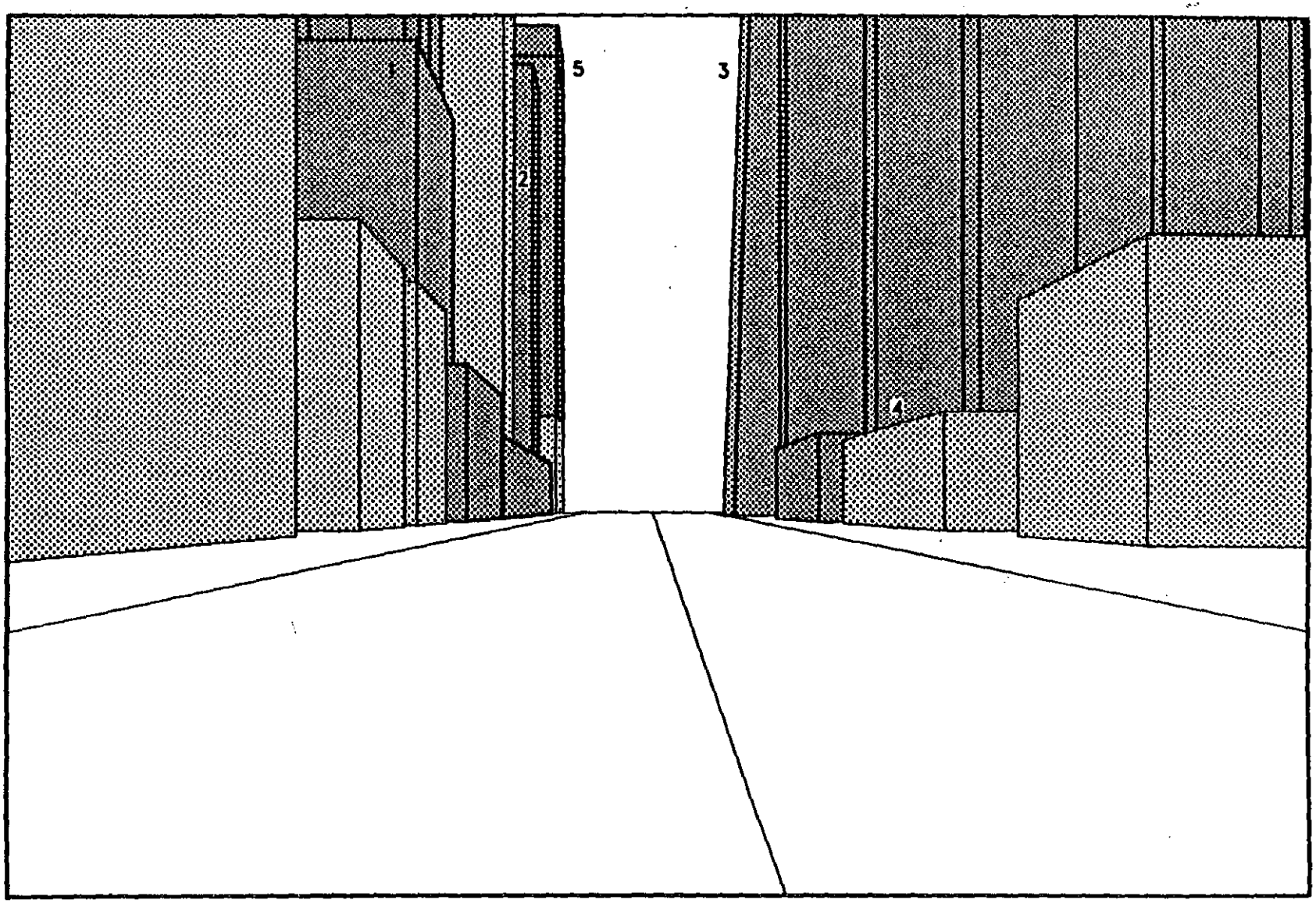
Figure 4-36

Street - End View from Broadway at Front Street

Navy Broadway Complex Project

6840001 1/00

Figure 4-37



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

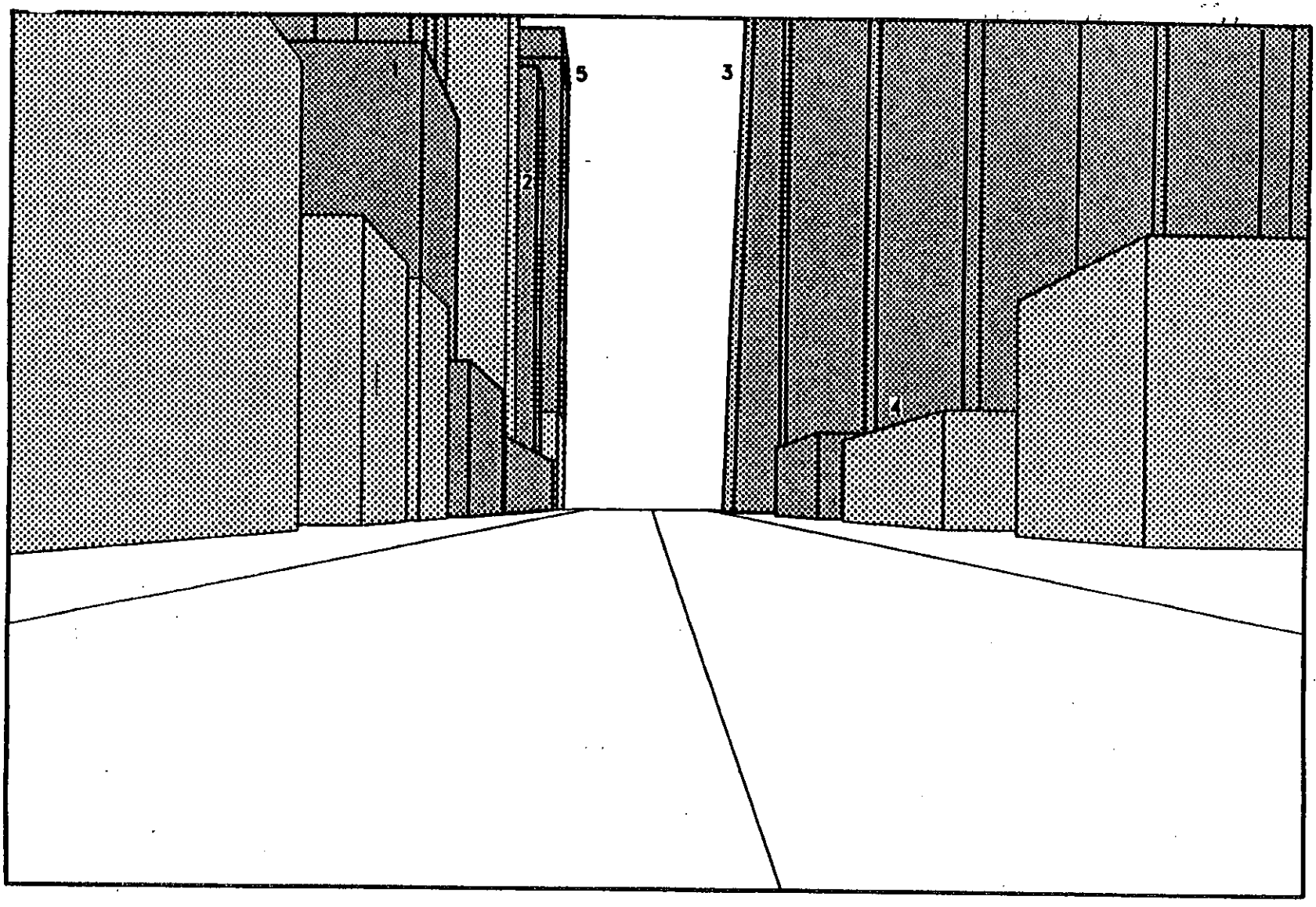
1. The Huntington
2. Koll Center
3. Great American Plaza
4. Emerald-Shapery Center
5. Santa Fe Development

6640001 1/90

Figure 4-38

Street - End View of Alternative A from Broadway at Front Street

Navy Broadway Complex Project



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

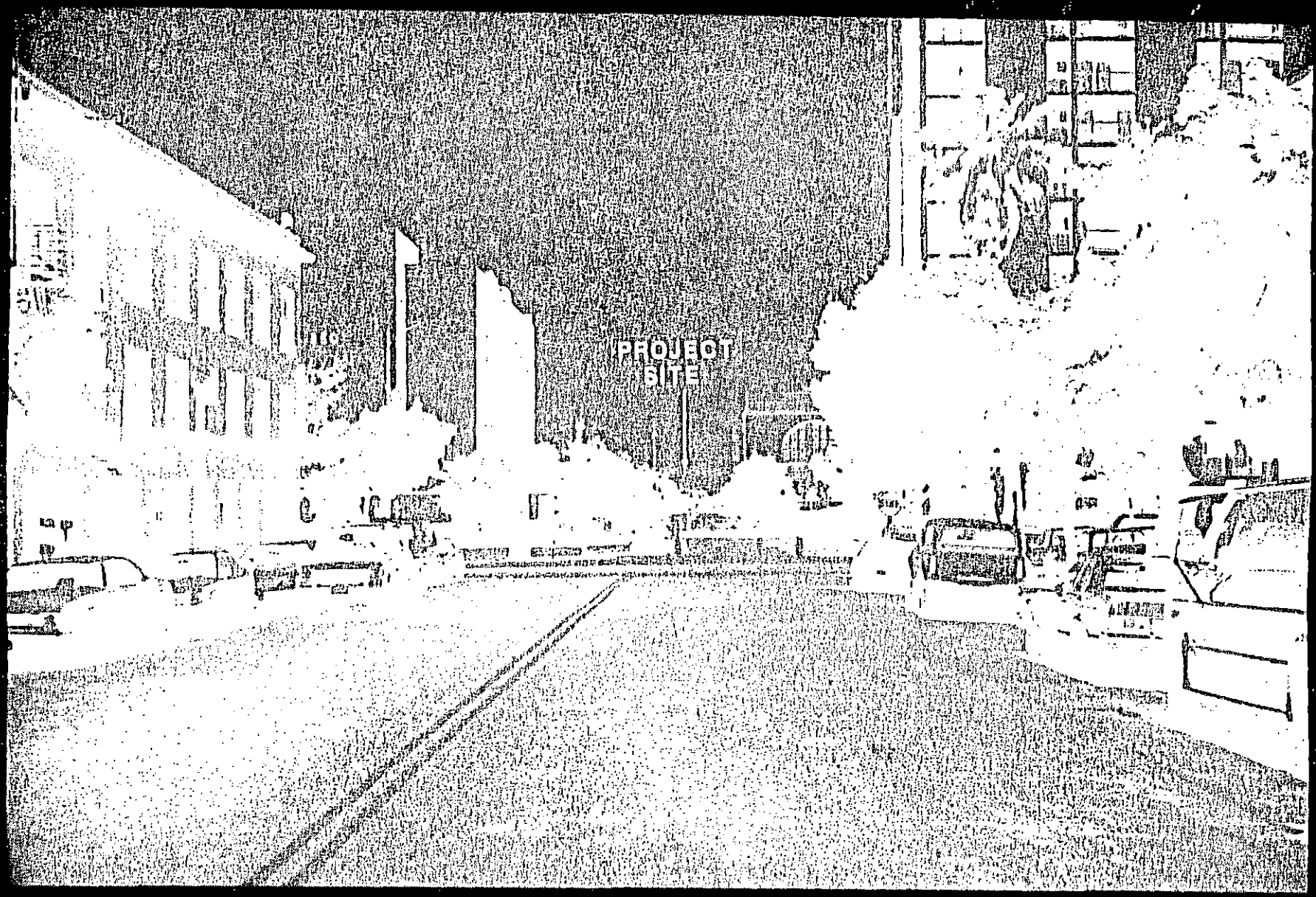
1. The Huntington
2. Koll Center
3. Great American Plaza
4 Emerald-Shapery Center
5 Santa Fe Development

Street–End View of Alternative F from Broadway at Front Street

Navy Broadway Complex Project

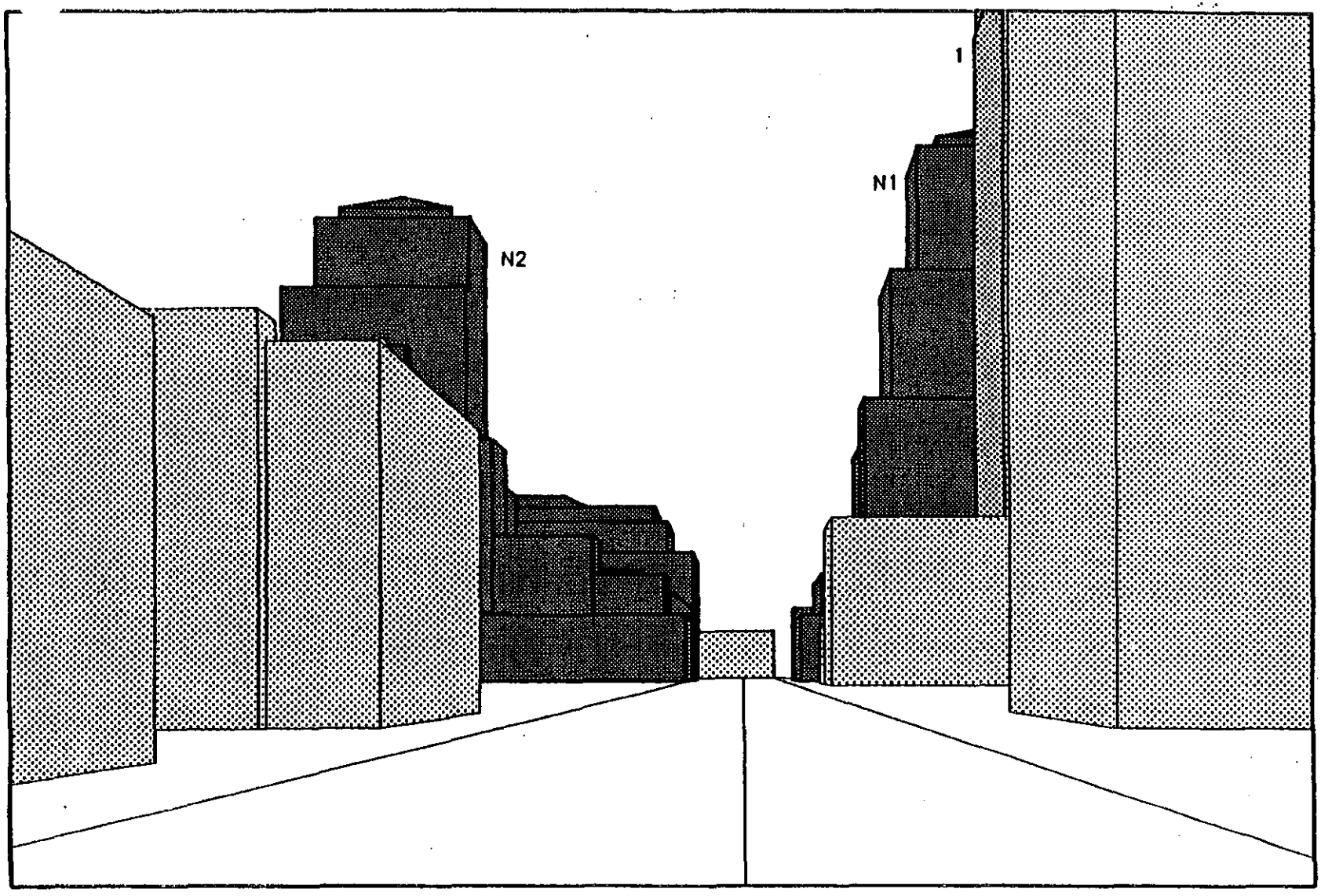
6640001 1/90

Figure 4-



Street - End View from E Street at Union Street

Navy Broadway Complex Project



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

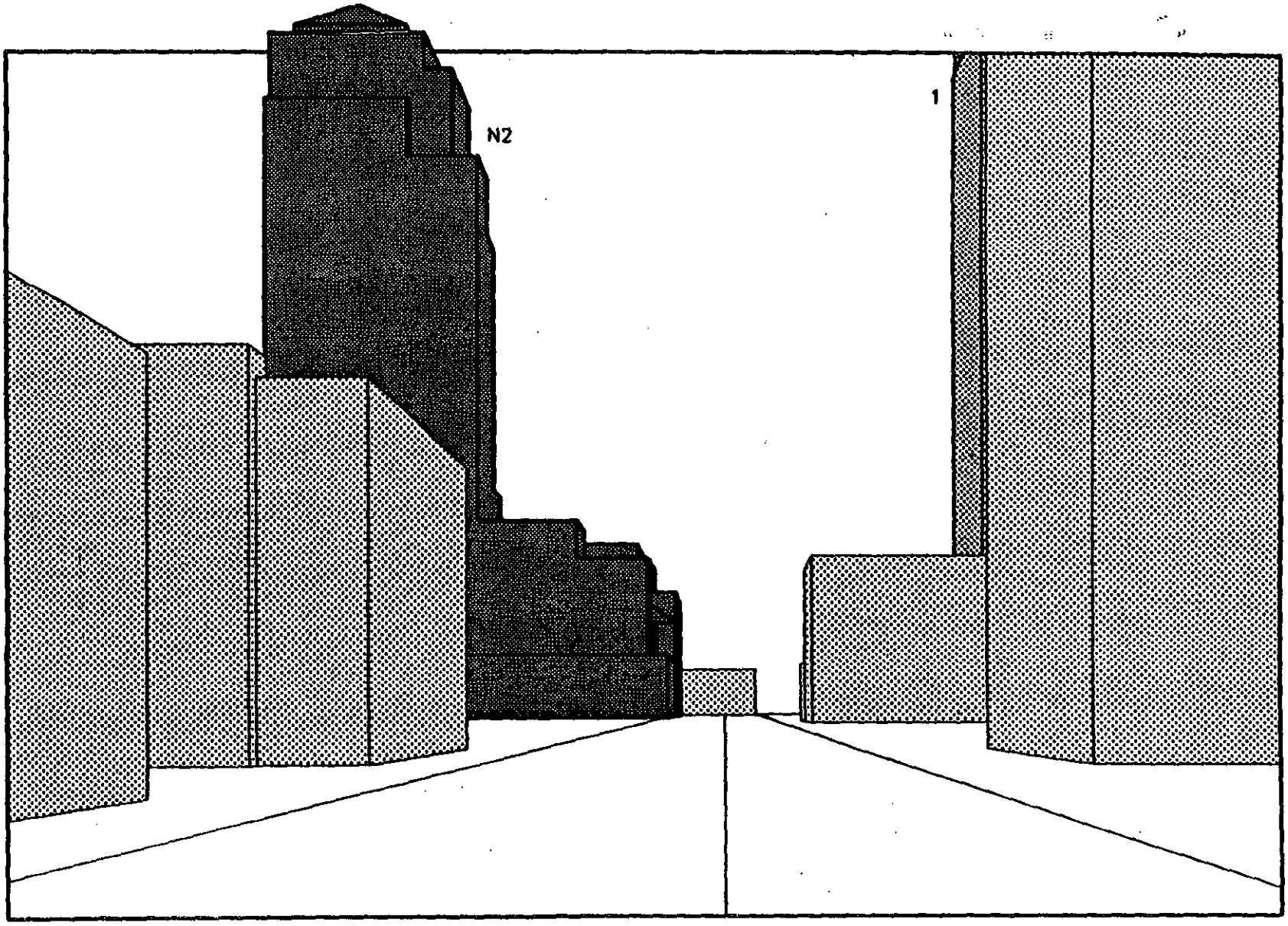
1. Santa Fe Development

Street - End View of Alternative A from E Street at Union Street

Navy Broadway Complex Project

6640001 1/90

Figure 4-41



Street-End View of Alternative F
from E Street at Union Street

Navy Broadway Complex Project

6840001 1/00

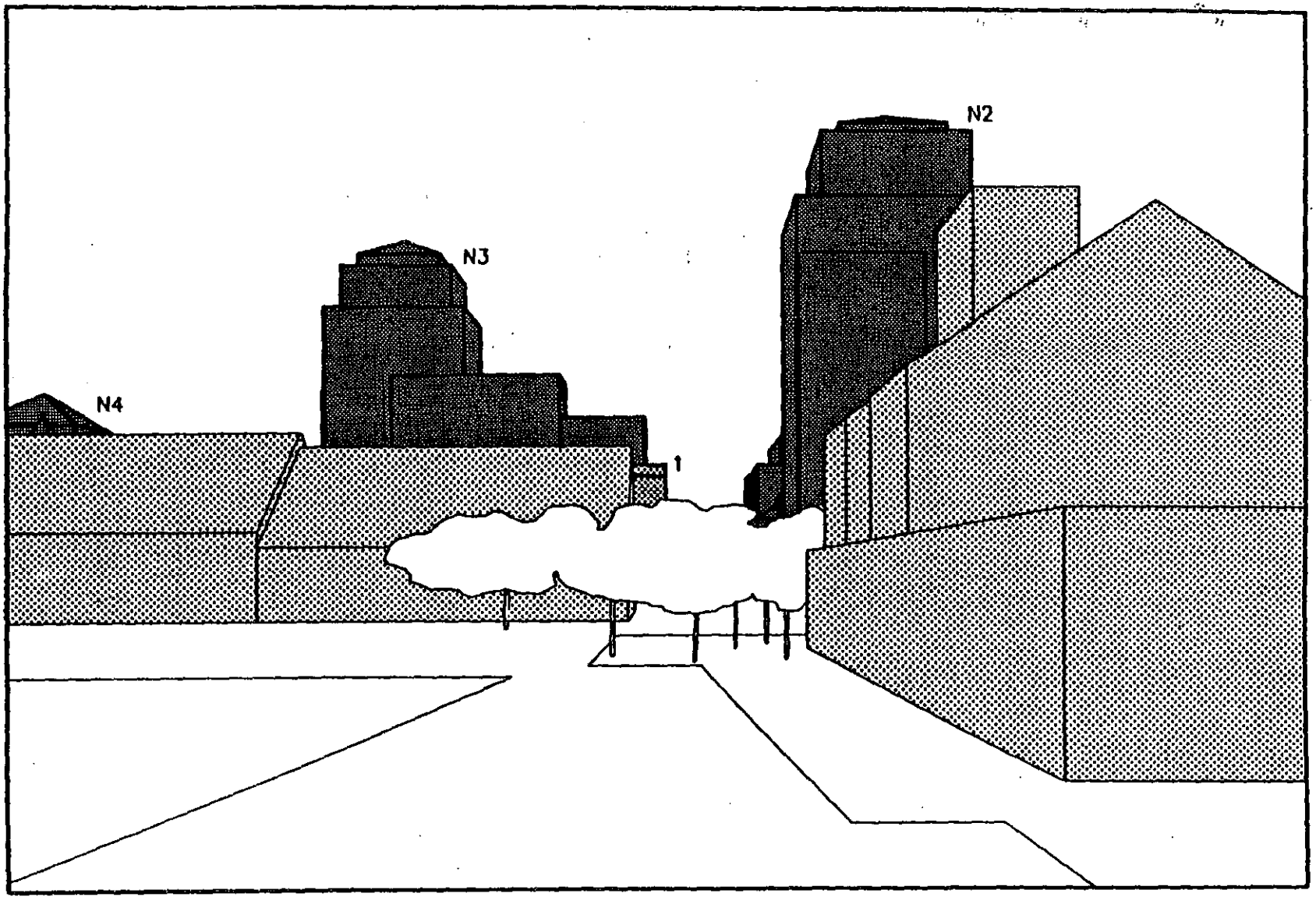
Figure 4.12

Street-End View from F Street at Pantoja Park

Navy Broadway Complex Project

6640001 1/90

Figure 4-43



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

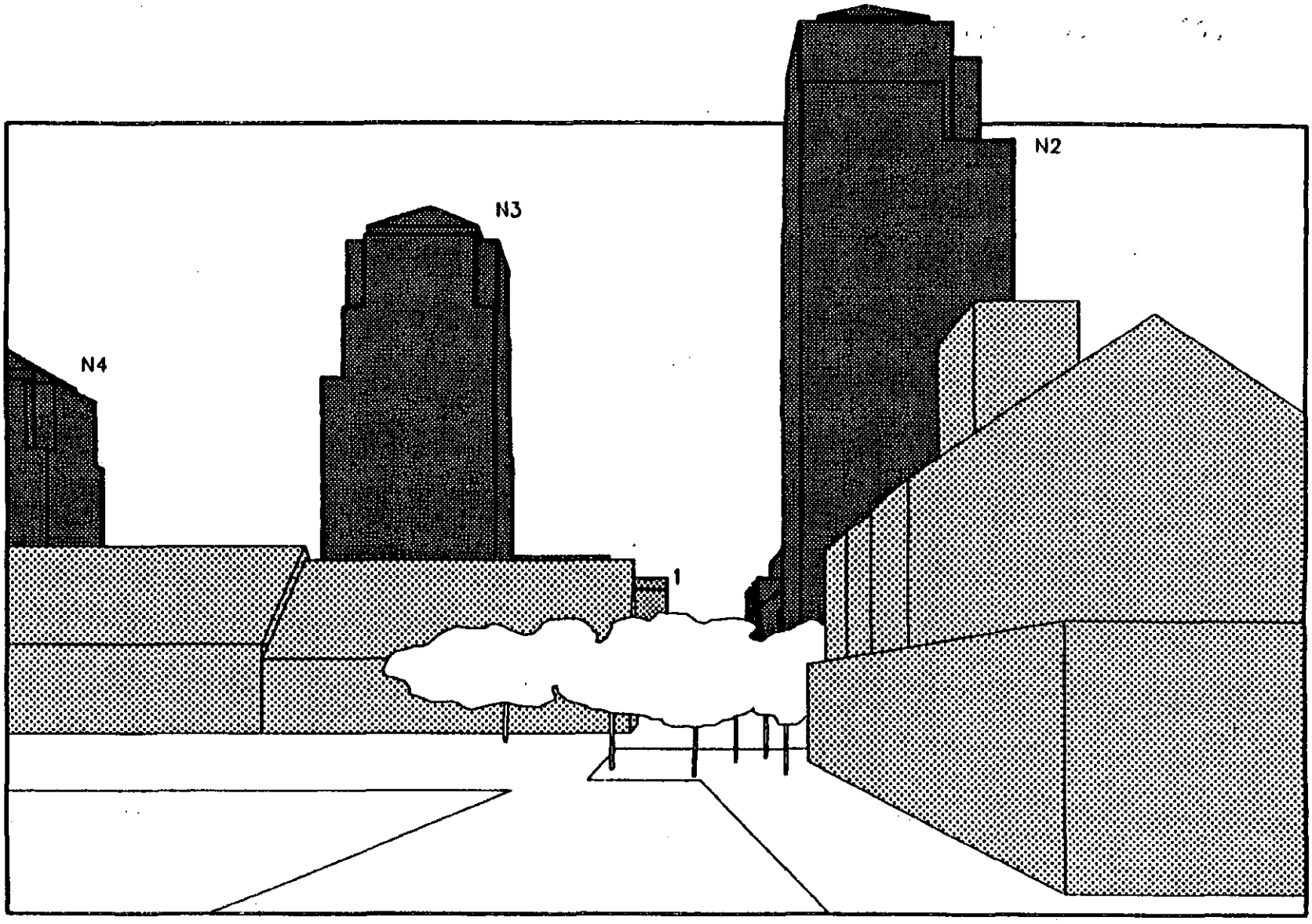
1. Santa Fe Condominiums

Street - End View of Alternative A
from F Street at Pantoja Park

Navy Broadway Complex Project

6640001 1/90

Figure 4-44



Street-End View of Alternative F
from F Street at Pantoja Park

Navy Broadway Complex Project

Existing

Downtown Proposed

Navy Broadway Complex (Block #)

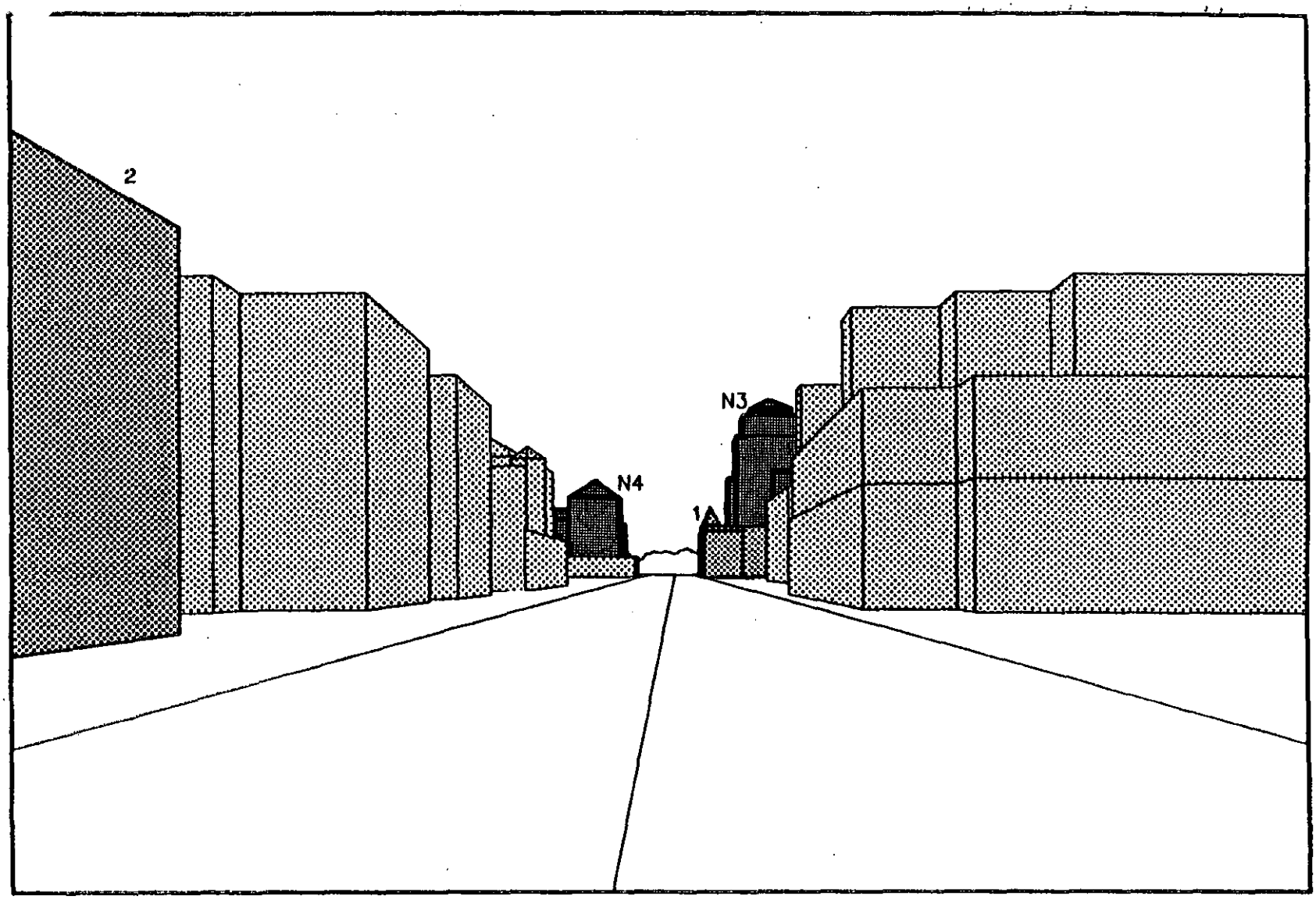
1. Santa Fe Condominiums

6640001 1/90

Figure 4-

Street - End View from G Street at Front Street

Navy Broadway Complex Project



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

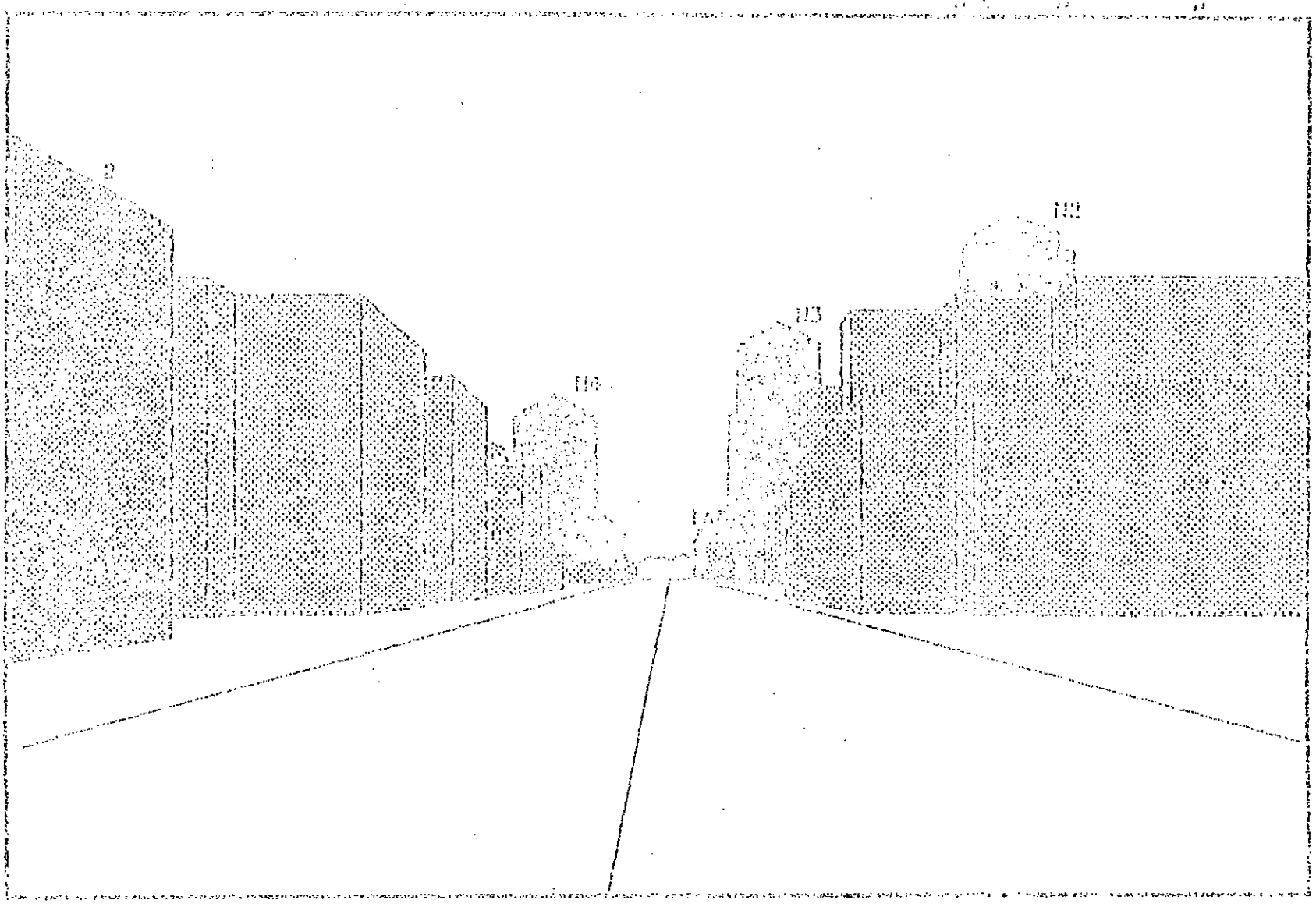
1. Santa Fe Condominiums
2. Courtyard

6640001 1/90

Figure 4-47

Street - End View of Alternative A from G Street at Front Street

Navy Broadway Complex Project



Street-End View of Alternative F
from G Street at Front Street
Navy Broadway Complex Project

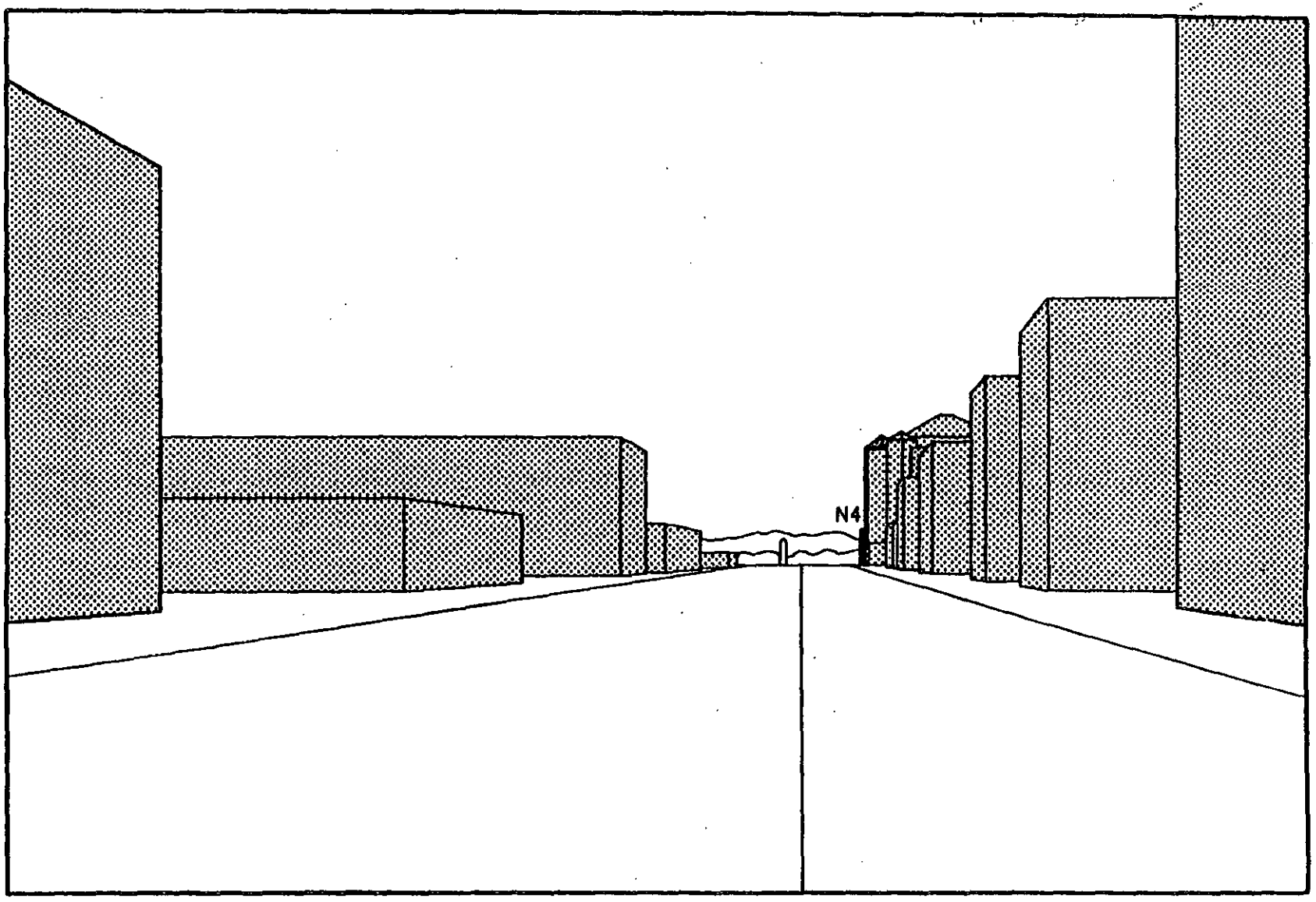
4-105

Street - End View from Market Street at Front Street

Navy Broadway Complex Project

6640001 1/90

Fi 4-49



Existing

Downtown Proposed

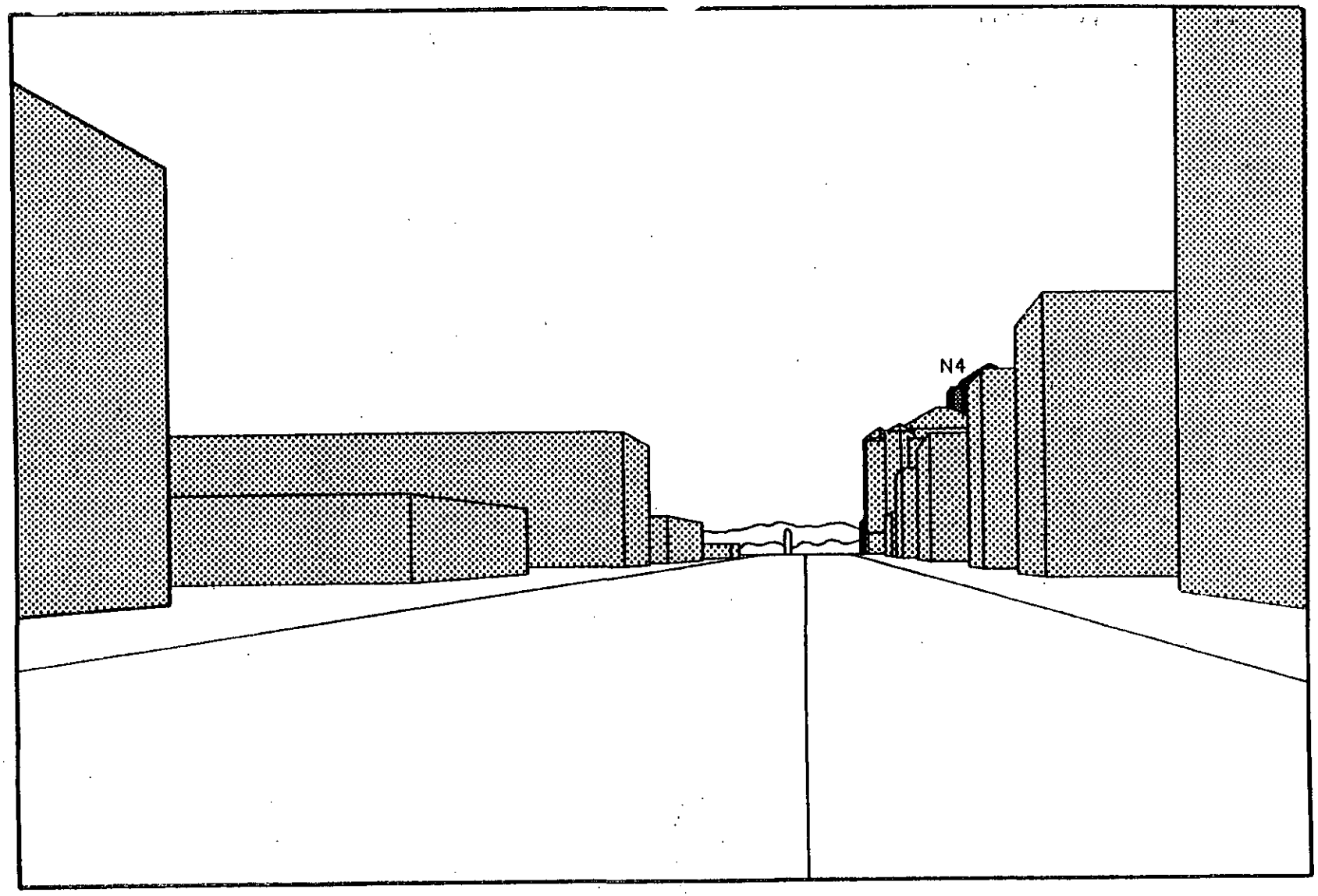
Navy Broadway Complex (Block #)

Street - End View of Alternative A
from Market Street at Front Street

Navy Broadway Complex Project

6640001 1/90

Figure 4-50



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

Street-End View of Alternative F
from Market Street at Front Street

Navy Broadway Complex Project

6640001 1/90

Figure 4-5*

- Market Street–Project site buildings are not visible in the view along Market Street, as depicted in Figure 4-49, page 4-36. Buildings on the project site near Market Street are one to two floors high and are obstructed by intervening buildings located along Market.

Planned View Corridors

As previously discussed in Section 4.1, page 4-30, Broadway, Pacific Highway, and Market Street are all identified as "Gateway Streets" in the Centre City Urban Design Program.[1] "Gateway Streets" link the most intensively developed areas of Centre City with the waterfront and are intended to be major visual corridors, with increased pedestrian use as redevelopment occurs. Private development along these corridors should, according to the program, be designed to enhance the visual quality of the corridor.[2]

Shade/Shadows

Climate in the City of San Diego Centre City is characterized as moderate year-round. The influence of shade from building is not as critical an issue as it is in areas with temperature extremes, where shade can moderate extremely high temperatures and reduce already cool or cold weather.

The primary area of shading from existing project structures is towards the north and northeast, where shadows are cast during the warmest part of the day on the winter solstice. The winter solstice is considered important because it is the day when shadows are at their longest, and it occurs during the cooler part of the year. Due to the current low height of project structures, with no building higher than 150 feet, no substantial shadows are created during the winter solstice.

4.3.2 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

Development of any of the proposed alternatives, except the no-action alternative (Alternative G), would substantially alter the visual characteristics of the Navy Broadway Complex. Existing buildings would be replaced by new or rehabilitated structures. Several currently proposed buildings in the vicinity of the proposed project are anticipated to be completed by the time any of the proposed alternatives are built out (by around 2003), so this analysis assumes buildout of these buildings. Specifically, it is assumed that the Santa Fe Development, Emerald-Shapery Center, Great American Plaza, Koll Center, The Courtyard, One Harbor Drive, and the Hyatt Regency will have been completed, and they are depicted in visual simulations presented herein.

Draft urban design guidelines have been established so that the project will not only complement but also enhance the visual conditions of the project area and create a visually pleasing transition between the downtown core and the Bayfront to the west and south. The draft design guidelines are provided in Appendix D and are subject to minor refinement between the Navy and the City. Alternatives A, B, and the onsite component of Alternative D are all generally consistent with the draft guidelines. Alternatives C and F are partially consistent. Alternatives E and G are not consistent.

Effects on Public Views of the Site

Effects on Panoramic Views

Figure 4-23, page 4-78, depicts a simulated view of Alternative A, as seen from Harbor Island. For comparison, Figure 4-22, page 4-77, depicts the existing view. Figure 4-26, page 4-82, depicts the simulated view of Alternative A from Coronado, compared with the existing view in Figure 4-25, page 4-80. As shown in Figures 4-23, page 4-78, and 4-26, page 4-81, Alternative A provides a smooth visual transition between the downtown core and the waterfront, with buildings stepping down to the south. The Hyatt Regency will become a focal point of the skyline, with the buildings decreasing in height toward the site. Alternative A would not adversely affect the viewshed from this viewpoint; rather, it would complement the existing/planned viewshed and would "complete" the skyline between the downtown core and the proposed Hyatt Regency.

Alternative B and the onsite component of Alternative D would appear the same as Alternative A from this viewpoint, because the buildings would be nearly the same height.

Alternative C would not adversely affect the viewshed from this viewpoint, although it would not provide that same level of visual transition as Alternative A between the downtown core and the area to the south. Rather, this alternative would appear to step down from the downtown, rising as it approaches the southerly area of the site, then stepping down again to the south.

Alternatives E and G would appear visually similar to each other from these viewpoints, and would not substantially alter the viewshed (except that the surrounding skyline would be altered by planned development). Because neither of these alternatives would alter the viewsheds, they would have no adverse visual effect.

Figures 4-24, page 4-79, and 4-27, page 4-82, depict a simulation of Alternative F from Harbor Island and Coronado, respectively. This alternative would provide a contrast in the skyline, with a cluster of higher buildings on Blocks 2, 3, and 4. Both figures show that this alternative would create a second focal point in the viewshed. Compliance with the intent of the draft urban design guidelines for the project (Appendix D) would create a development visually compatible with the skyline.

Effects on Gateway Views

Figures 4-29 (page 4-85), 4-32 (page 4-88), and 4-35 (page 4-91), depict simulated views of Alternative A from Harbor Drive at Laurel Street, Interstate 5 at Olive Street, and Harbor Drive at 5th Avenue, respectively. Figures 4-28 (page 4-84), 4-31 (page 4-87), and 4-33 (page 4-89), depict the existing views. The views of Alternative A from these viewpoints show visual compatibility with the intensity and form of adjacent and surrounding land uses. The greatest visual contrast created is the view from Harbor Drive at 5th Avenue (see Figure 4-35, page 4-91), but smooth visual transition is provided between the existing Embassy Suites Hotel (adjacent to Block 3 in the figure) and the proposed alternative. Alternative A would remain visually subservient to the Hyatt Regency, One Harbor Drive, as well as several other existing and planned buildings that would also be in the viewshed. Thus, it would not adversely affect gateway views.

Alternative B and the onsite component of Alternative D would appear visually similar to Alternative A from these viewpoints, so would also not adversely affect the viewshed.

Alternatives C and E would be less visible than Alternative A. Thus, neither of these alternatives would adversely affect the viewshed.

Figures 4-30 (page 4-86), 4-33 (page 4-89), and 4-36 (page 4-92), depict visual simulations of Alternative F from the same viewpoints as shown in Figures 4-29 (page 4-85), 4-32 (page 4-88), and 4-35 (page 4-91). This alternative would be more visually prominent than either the existing condition or Alternative A. However, it would remain visually compatible with adjacent development, and, therefore, is not considered to have a significant adverse effect on gateway viewsheds.

Effects on Street-End Views

Figures 4-38 (page 4-94), 4-41 (page 4-97), 4-44 (page 4-100), 4-47 (page 4-103), and 4-49 (page 4-105), depict simulated views of Alternative A from Broadway at Front Street, E Street at Union Street, F Street at Pantoja Park, G Street at Front Street, and Market Street at Front Street, respectively. The view along Broadway (Figure 4-38, page 4-94) shows a progression of buildings stepping down to the waterfront, with development on Block 1 of the Navy Broadway Complex providing a smooth transition. The view from E Street (Figure 4-41, page 4-97) shows a corridor framed by the Santa Fe development and buildings on Block 2 of the Navy Broadway Complex. The buildings step down toward the street. Block 1 buildings, which are less visible from this viewpoint, nevertheless step down from the Santa Fe development. The existing Navy Pier would continue to delineate the extension of E Street at the waterfront.

The view from Pantoja Park at F Street (see Figure 4-44, page 4-100) would be of a more intensive development than seen today, with the view of Building 12 blocked by a substantially taller building on Block 2. However, the project would be visually compatible with other buildings in the viewshed. The view along F Street, when closer to the Navy Broadway Complex, would be opened up to provide views of the waterfront, where such views are currently occluded by existing onsite development. This would be a benefit of Alternative A. The view from G Street (Figure 4-47, page 4-103) would also be opened up to the waterfront, another visual benefit of this alternative. Building heights would provide a smooth visual transition from other buildings on the street to the waterfront. Buildings on Alternative A would not be substantially visible from Market Street (see Figure 4-50, page 4-106).

In summary, Alternative A would be generally more visible from street-end views than the existing onsite development. Development would be designed to be visually compatible with surrounding development, and would open up view corridors to the waterfront, from F Street and G Street, where views are currently obstructed by existing Navy Broadway Complex development. Alternative A would not adversely, but would beneficially, affect street-end views.

Alternative B and the onsite component of Alternative D would provide the same level of visual compatibility as Alternative A from these view points, due to the similarity in scale and layout of these alternatives, so they also beneficially affect the street-end views.

Alternative C, with its lower buildings on Blocks 1 and 2, would be less visible than Alternative A, so would also not adversely affect the subject viewsheds. Alternative C would instead appear similar to the existing condition. Alternative E would also have lower buildings than Alternative A, and would have a similar appearance from the subject viewsheds as it currently appears. Thus, it would not adversely alter the current views of the site.

Figures 4-39 (page 4-95), 4-42 (page 4-98), 4-45 (page 4-101), 4-48 (page 4-104), and 4-51 (page 4-107) provide visual simulations of Alternative F from the same viewpoints as depicted with Alternative A. Unlike Alternative A, no development of the Navy Broadway Complex would be seen from Broadway at Front Street (Figure 4-39, page 4-95) because a park would be developed on Block 1, the only block visible from this viewpoint. The view from E Street at Union Street shows a tall building on Block 2 rising well above intervening buildings (see Figure 4-42, page 4-98). This view shows a substantial contrast between the Navy Broadway Complex and other area development. The view from Pantoja Park down F Street would be of intensive development (see Figure 4-45, page 4-101), with no intervening buildings of similar scale. From G Street at Front Street, Alternative F would be larger than the scale of other area development, but the contrast would be less than the view from E Street and from Pantoja Park (Figure 4-48, page 4-104). As with Alternative A, the views of the waterfront down G Street would be opened up with this alternative. The view down Market Street (Figure 4-51, page 4-107) would be similar between this alternative and Alternative A, with existing development dominating the viewshed.

The changes to the views from E Street and Pantoja Park caused by Alternative F would be considered significant aesthetic impacts. This alternative contrasts substantially with surrounding structures seen from these view points. Nonetheless, aesthetic considerations are highly subjective, and this alternative would be required to comply with draft design guidelines that would be adopted by the City and the Navy. Moreover, the view corridors to the bay down F Street and G Street, which are currently blocked by existing Navy Broadway Complex development, would be opened, thereby providing a benefit.

The viewshed of the Alternative G would remain unchanged from current conditions. Although no adverse changes in the viewshed would occur with this alternative, the opportunity to upgrade the appearance of the Navy Broadway Complex and open view corridors through the site would not be created.

Effects on Centre City East Views

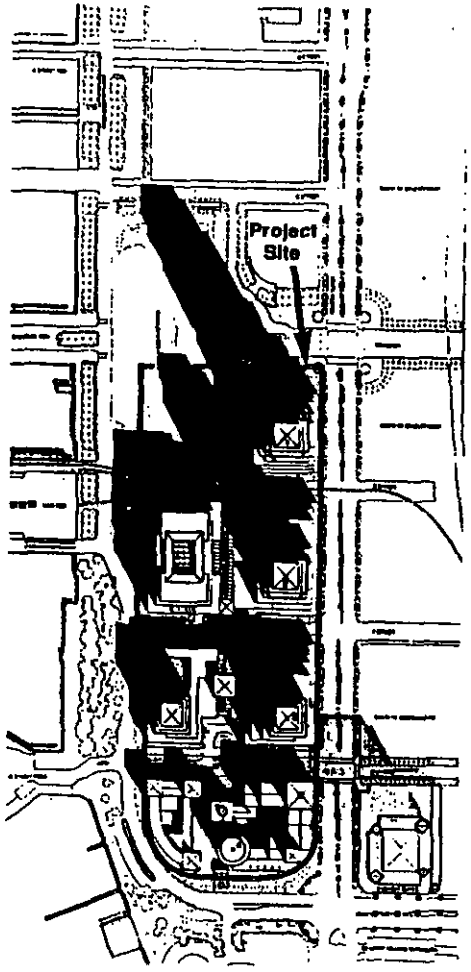
The offsite Navy development associated with Alternative D would be in character with the visual resources in the Centre City East area, in the context of the proposed City Hall and the general intensification of land uses planned for this area. However, because a specific location for this alternative has not been established, the effect of this alternative on its surrounding viewshed has not been determined.

Effects on Planned View Corridors

Please refer to Section 4.1.2 (page 4-33) for a discussion of the consistency of each of the alternatives with the Centre City Urban Design Program.

Effects From Shadows

Figures 4-52 and 4-53 depict the shadows that would be cast at the winter solstice for Alternatives A and F, respectively. These alternatives cast the longest shadows of any alternatives. These shadows are indicative of the largest shadowing between the noon and 2 p.m. that would result from any of the alternatives. The mid-morning shadow (at 10 a.m.) is also shown. As



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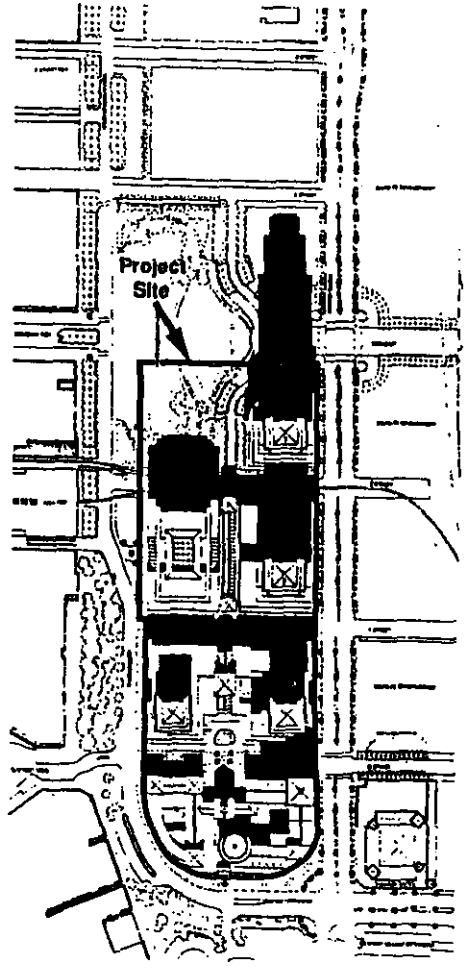

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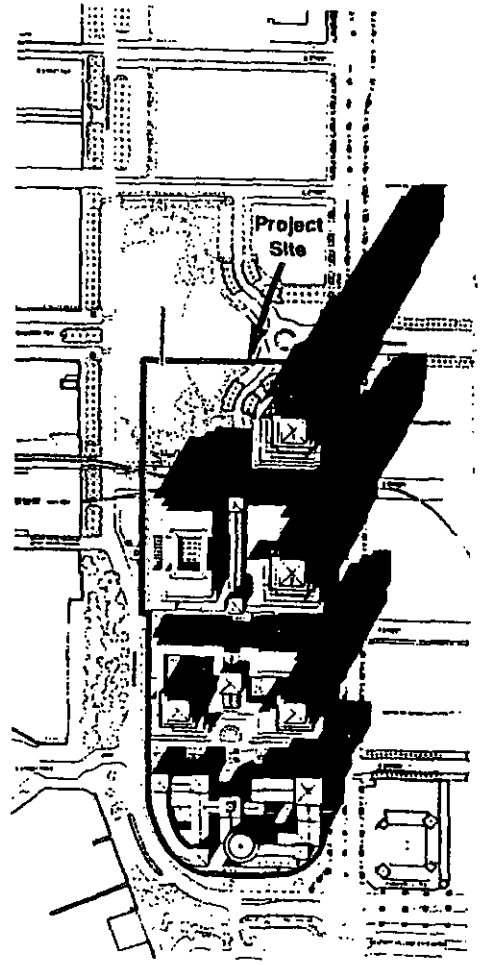


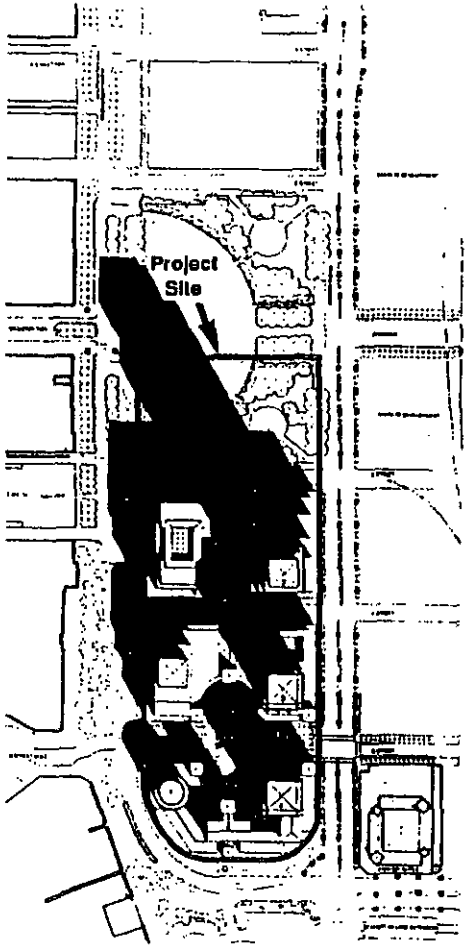
2:00 P.M.

Navy Broadway Complex Project

0 61 321 FEET NORTH

Solar Access (Dec.22) for Alternative A

Figure 4-52



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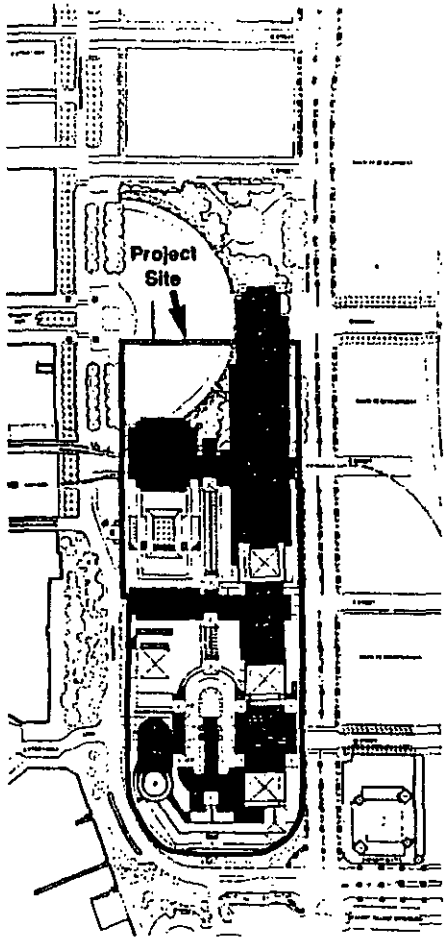
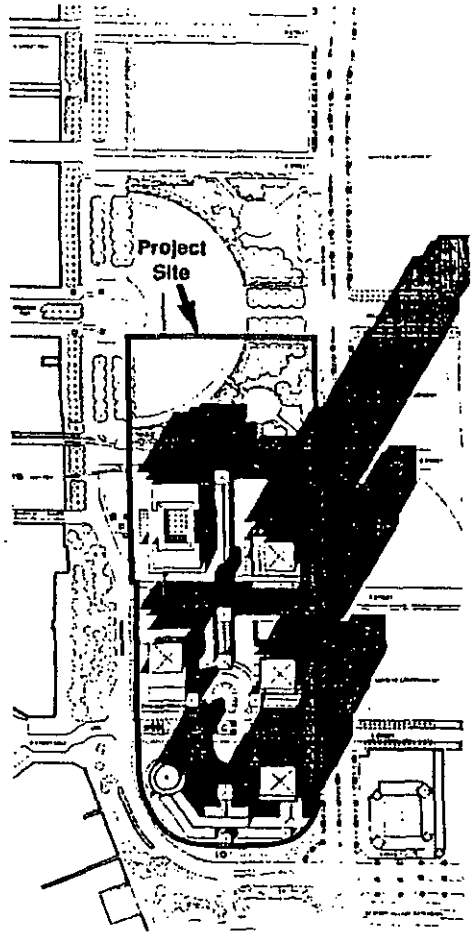


12:00 P.M.



2:00 P.M.

Navy Broadway Complex Project

0 81 321 FEET NORTH

Solar Access (Dec.22)
for Alternative F

Figure 4-53

shown, the shadows would extend north to cover a portion of the Block 1 proposed open space areas at noon for each of these alternatives, moving northeast in the afternoon to cast on primarily office development proposed across Pacific Highway. Shadows would only touch, but would not substantially cover the Santa Fe Condominiums proposed east of Block 3. This is the only residential use that would be affected by shadows from Navy Broadway Complex development, and with the longest possible shadows (Alternative F) would not be substantially covered.

The casting of shadows in moderate climate areas such as in the project area is not necessarily adverse. In fact, shading can provide a moderating effect on hotter summer temperatures, so would be considered beneficial to public uses in the warmer times of the year. During the cooler times, temperatures are moderate enough that shading would not be considered substantially adverse. Therefore, no significant adverse effects from shading would result from any of the alternatives.

4.3.3 MITIGATION MEASURES

Compliance with the draft urban design guidelines (Appendix D) would mitigate aesthetic impacts associated with development of Alternative A, Alternative B, Alternative C, the onsite component of Alternative D, and from most viewpoints, Alternative F.

A significant unavoidable adverse change in the visual environment would occur with respect to views of Alternative F, as seen from E Street and Pantoja Park.

No significant adverse visual changes would result from either Alternative E or Alternative G, so no mitigation is necessary for either of these alternatives.

ENDNOTES:

1. Centre City Development Corporation, 1983.
2. Ibid.

4.4 PUBLIC SERVICES AND UTILITIES

The following analysis is based on consultation with purveyors of public services and utilities that may be affected by the proposed alternatives. A major component of the project involves relocation of personnel from one area of San Diego to the project area.

4.4.1 POLICE PROTECTION

AFFECTED ENVIRONMENT

The City of San Diego Police Department provides police protection to the project area. The department's main station is at Broadway and Fourteenth Street. The response distance to the project site is approximately 1 mile. The project area is located within the Central Division Command, which is one of seven area commands. The Central Division staff currently includes a captain, four patrol lieutenants, 16 sergeants, 140 officers, and 15 detectives. There are 59 patrol vehicles assigned to the Central Division. The Central Division services a population of over 67,000 residents and is responsible for 11.3 miles (3 percent) of the City's 330.7-square-mile jurisdiction.[1] The City of San Diego Police Department is adequately staffed to provide police protection to the project region and vicinity.

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

The City of San Diego Police Department has expressed that any of the alternatives that increase vehicular traffic on surrounding streets and arterials may increase the risk of traffic accidents. Only Alternative G would not generate this effect. Circulation system improvements proposed to mitigate impacts from this and other area development, as discussed in Section 4.2.3, page 4-65, would reduce this potential adverse effect to a level that is less than significant.

In addition, the Police Department has identified car prowls on parked vehicles as another potential adverse effect of the higher density uses proposed by all the alternatives except Alternative G. The existing police facilities, manpower, and available equipment are adequate to provide the project site and surrounding area with a sufficient level of police protection in cases of emergency. No significant adverse effects on the ability to provide police protection or public safety are anticipated from development of any of the alternatives.

MITIGATION MEASURES

Because no significant adverse effects are expected from any of the alternatives, no mitigation measures are necessary.

4.4.2 FIRE PROTECTION

AFFECTED ENVIRONMENT

Fire protection services for the project area are provided by the City of San Diego Fire Department. A Federal fire station, located at the 32nd Street Naval Station, has a mutual aid agreement to assist the City at the site, at the City's request.[3,4] The fire stations that serve the project area are listed in Table 4.4-1 along with the equipment located at each station.

TABLE 4.4-1

FIRE STATIONS IN THE VICINITY OF THE BROADWAY COMPLEX

Station	Location	Equipment
1	1222 1st Street	Two engine companies, chemical fire-fighting rig, light air rig, truck company, and paramedic
3	725 W. Kalamia	Engine company
4	404 8th Avenue	Engine company and rescue unit
11	945 25th Street	Engine company and truck company
Naval Station San Diego	32nd Street	Three engine companies

Source: Sumler, City of San Diego Fire Department, personal communication, 1988.

Station 1 is within 0.5 mile of the project site and is the nearest City fire station. The average response time to the project area from City stations is approximately 4 to 6 minutes. The City stations that serve the project area are currently adequately staffed.[3] The Federal fire station at the 32nd Street Naval Station is 3.7 miles from the project site. It provides fire protection to both federal and nonfederal facilities, pursuant to the San Diego County Mutual Aid Plan. The Federal fire station at 32nd Street is adequately staffed to respond to emergencies in the project vicinity. The average response time to the project area is 6 minutes.

The project site is currently served with a fire flow of 2,500 gallons per minute (gpm).

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

Redevelopment of the project site with Alternatives A, B, C, D, E, or F would result in construction of new buildings, and underground parking facilities (i.e., Alternatives A, B, C, D, and F) that would be susceptible to fire hazards. However, the project would include sprinklers and other fire safety measures that would avoid fire hazard impacts. Fire flow of 2,500 gpm would be required with a sprinkler fire system to adequately serve the site. The current flow of 2,500 gpm, therefore, would be sufficient to serve Alternatives A, B, C, D, E, and F.

Existing structures would be retained with Alternative G in their current condition. Many of the older buildings do not contain fire safety equipment such as roof sprinklers. These buildings are existing and would not introduce any new hazards to Navy personnel on the site.

According to fire department personnel, the existing facilities, manpower and equipment at the city and Federal fire departments are adequate to maintain a sufficient level of fire protection

service to the project site if any of the alternatives are developed. Therefore, no significant impacts to fire protection services are anticipated with implementation of any of the alternatives.

MITIGATION MEASURES

No impacts would result from development of the alternatives; therefore, no mitigation measures are necessary.

4.4.3 SCHOOLS

AFFECTED ENVIRONMENT

The project area is within the boundaries of the San Diego Unified School District (SDUSD). The SDUSD provides public school facilities for grades K through 12. As of October 1987, the SDUSD had 107 elementary schools (grades K-6), 8 middle schools (grades 6-8), 12 junior high schools (grades 7-9), and 15 high schools (grades 10-12).[6] A majority of SDUSD schools are currently operating near or over capacity.[7] The SDUSD is levying school impact fees for the long-range planning and construction of new facilities. The fees, authorized through California Government Code Section 53080, are $1.50 per square foot for newly constructed residential structures and $0.25 per square foot for newly constructed commercial structures.[8]

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

None of the proposed alternatives would directly contribute students to the elementary and secondary schools within the San Diego Unified School District, since residential uses are not being proposed by any alternative. In general, Alternatives A, B, C, D, E, and F would result in the relocation and centralization of outlying Navy administrative personnel already located in the region, so would not result in the introduction of new Navy personnel to the area. However, indirect impacts could potentially occur from the in-migration of civilian personnel and their families as a result of private development associated with Alternatives A, B, C, D, and F.

The density of uses proposed by Alternative E would be similar to that which currently exists onsite, and would not create the need for additional military employment or civilian employment. This alternative would centralize existing military employees within the region. Thus, the amount of Navy personnel and family members within the region would not increase with Alternative E, and no indirect impacts to city schools are anticipated with this alternative.

With Alternative G (no action), all offsite administrative uses would remain in their existing locations throughout the county. There would be no increase in Navy personnel or influx of military families to the region. Therefore, impacts to schools within the district would not occur with implementation of Alternative G.

Since Alternatives A, B, C, D, and F propose an increase in land use density, and propose both military and private development, in-migration of non-military personnel and their families could occur with these five alternatives. The influx of civilian families with elementary school age children could potentially result in indirect adverse impacts to elementary schools, since the combined capacity of these schools (i.e., 63,990) has already been exceeded by over 2,300 students, as shown in Table 4.4-2. Alternatives A, B, C, D, and F could, therefore, contribute incrementally to a cumulatively significant impact. Secondary schools within the District are below their

combined maximum capacity (Table 4.4-2), and they could accommodate approximately 6,700 more secondary grade students.

TABLE 4.4-2

MAXIMUM CAPACITY AND CURRENT ENROLLMENT OF ELEMENTARY AND SECONDARY SCHOOLS WITHIN SAN DIEGO UNIFIED SCHOOL DISTRICT

Grade	Current Enrollment (October 1988)	Maximum Capacity	Capacity Remaining
Elementary	66,309	63,990	-2,319
Secondary	50,748	57,450	+6,702

Source: San Diego Unified School District, 1989.

MITIGATION MEASURES

The Navy office component of any of the alternatives would not result in increased Navy personnel in the region, so no mitigation measures for Navy offices are necessary. Private development has the potential to cause regional immigration, so the following mitigation measure is proposed for the private development component of Alternatives A, B, C, D, and F:

- As authorized by California Government Code Section 53080, the developer of private uses on the Navy Broadway Complex will be assessed a fee of $0.25 per square foot of private commercial and office uses, but excluding parking structures. The fee will be paid to the San Diego City School District.

4.4.4 RECREATIONAL FACILITIES

AFFECTED ENVIRONMENT

The City of San Diego has 13,776 acres of neighborhood, community, and regional parks. Ninety percent of the parkland within the City is concentrated in a few regional parks, such as Balboa Park, Mission Bay Park, Mission Trails Regional Park, and the La Jolla Underwater Park. The remaining 10 percent (1,272 acres) is located within numerous neighborhood and community parks.[9] The San Diego Unified Port District also provides park facilities, such as, the Bayfront Promenade and the G Street Mole.

The City of San Diego Park and Recreation Department has established standards for neighborhood and community parks. Neighborhood parks vary in size from 5 to 10 acres and are intended to serve approximately 3,500 to 5,000 people. Community parks vary from 13 to 20 acres and serve approximately 18,000 to 25,000 residents. The City does not have a standard

for regional parks. The majority of the parkland in Balboa Park (including the San Diego Zoo) and the La Jolla Underwater Park are tourist-oriented and serve both residents and visitors.[10]

The Port District has established a boardwalk along the bay that connects a number of recreation-oriented uses in the project vicinity, such as the G Street Mole and the B Street and Broadway Piers. The boardwalk and associated facilities provide a high level of recreation amenity in the project vicinity.

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

The City of San Diego determines the amount of park land necessary for recreational activities by the number of people anticipated from proposed residential developments. None of the alternatives include residential uses, so there would be no new demands on park facilities. These facilities would, therefore, not be affected by project development.

Four of the seven alternatives are proposed to include significant active and/or passive recreation opportunities at the foot of Broadway. Most notably, the Navy is proposing to provide 1.9 acres of open space area at the foot of Broadway as part of Alternative A and 3.5 acres as part of Alternative F. This could be combined with adjacent property (not under the control of the Navy) to the north of the site to create even larger open space areas (see Figure 3-4, page 3-7).

Alternatives B and D would provide 0.5 acre of open space plazas at the foot of Broadway (see Figures 3-10 and 3-12, pages 3-16 and 3-21). In addition, Alternatives A, B, C, D, and F propose wide sidewalks along, and the opening up of, E, F, and G Streets through the site. Therefore, each of these alternatives would provide substantial recreational benefits.

Alternatives E and G would not provide any new recreational amenities on the Navy Broadway Complex. Therefore, no beneficial recreational effects would result from these alternatives.

MITIGATION MEASURES

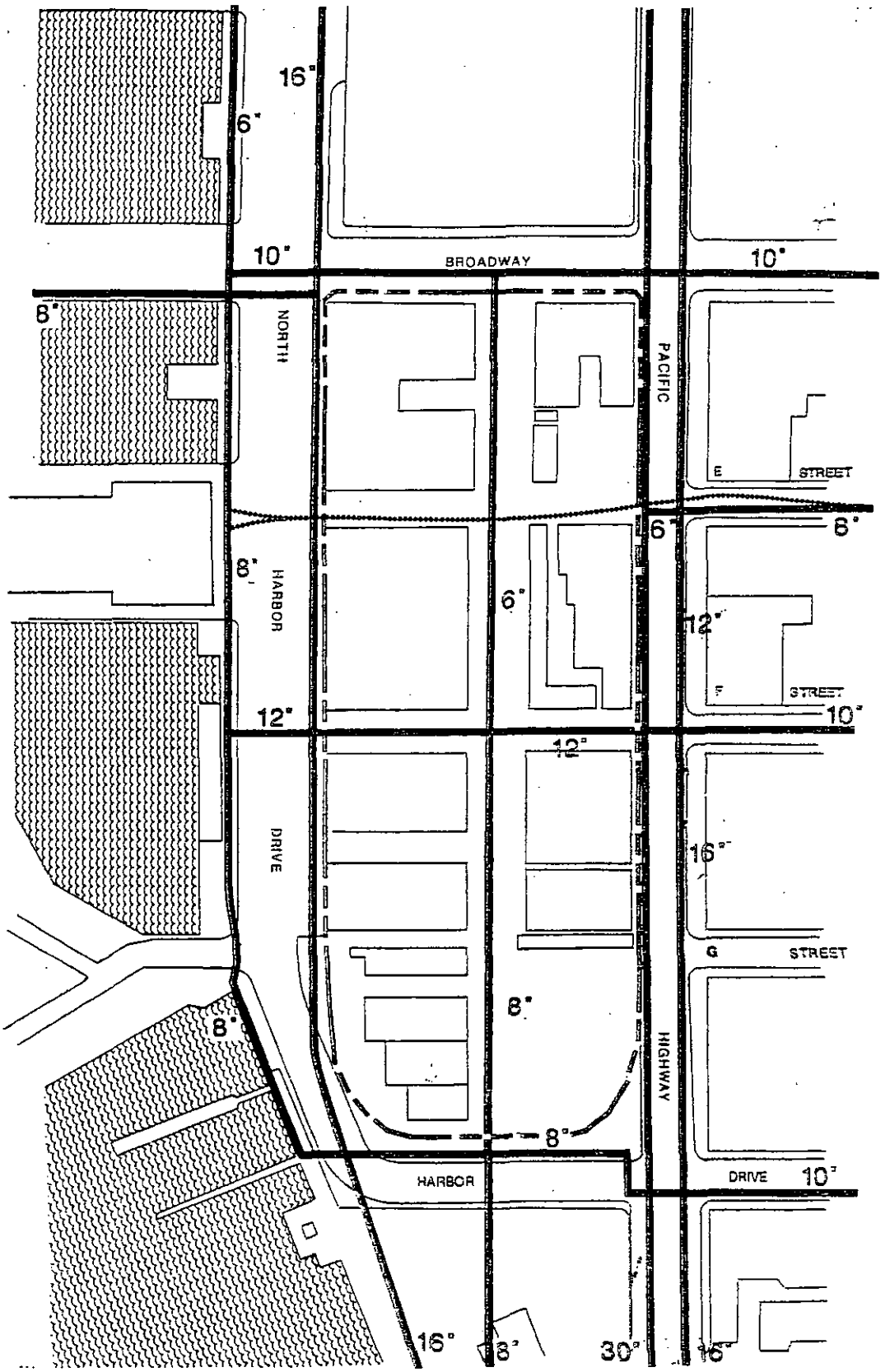
None of the alternatives would generate any significant adverse recreation impacts, so no mitigation measures are necessary.

4.4.5 WATER

AFFECTED ENVIRONMENT

Water for the project area is supplied by the City of San Diego under the administration of the Water Utilities Department. City water is supplied by the Colorado River and the California State Water Project, and is stored in numerous reservoirs. The University Heights Reservoir, located approximately 5 miles northeast of the project site, provides water to the Centre City and the Navy Broadway Complex. Water conveyed from this reservoir is controlled with pressure regulating valves. One of these valves is located at Pacific Highway and F Street adjacent to the project site. Water pressure in the project area is adequate to serve existing needs.[11]

The primary water facilities adjacent to the project site include 30-inch, 16-inch, and 12-inch mains in Pacific Highway; a 16-inch main in Harbor Drive; and a 10-inch main in Broadway (Figure 4-54). In addition, 6- and 8-inch mains bisect the site from Broadway to Market Street. The water facilities in the project area currently operate within their capacity.[12]



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WATER LINE DIAMETER

RAILROAD TRACKS

PROJECT SITE

3640001 1/90

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NORTH

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

The City of San Diego Water Utilities Department applies daily consumption rates for water usage by land use categories. Table 4.4-3 lists the consumption rates and the amount of water projected to be consumed by each alternative. Alternatives A, B, C, D, and F would consume greater quantities of water per day than the existing uses, Alternative G. Alternative E would consume less water than Alternative G.

The uses proposed for Alternative A, B, and F would consume similar amounts of water (309,171 gallons, 334,171 gallons, and 309,171 gallons of water per day, respectively). Alternative D would consume the largest amount of water (436,221 gallons per day), whereas Alternative E would consume approximately 51 percent less water than the existing uses (Alternative G), or 59,425 gallons per day.

Since the existing water facilities in the project vicinity are currently operating well within their service capacity, there would be no significant impacts to water service from the reduced density uses of Alternative E, or the continued onsite uses of Alternative G. These facilities also have sufficient capacity to serve the additional uses proposed by Alternatives A, B, C, D, and F without resulting in significant impacts to water service.

Although the proposed alternatives would not adversely affect existing water facilities, the City of San Diego Water Utilities Department has expressed the need for upgrading the existing cast iron mains near the project site. The Water Utilities Department has an ongoing capital improvement program to upgrade the cast iron water mains within the City, and recommends replacement of all such mains with new mains ranging from 12 to 16 inches. The City specifically recommends upgrading the mains in those portions of Broadway and F Street onsite, which are currently 10-inch and 12-inch mains, respectively, to 16-inch diameter mains. These would connect to existing 16-inch mains in Broadway, F Street, and Harbor Drive (Figure 4-54, page 4-120). The City plans to change the Harbor Drive main from a high pressure transmission main to a downtown pressure distribution main.

MITIGATION MEASURES

None of the alternatives would significantly affect the ability of the City to provide water service; therefore, no mitigation measures are necessary.

4.4.6 WASTEWATER

AFFECTED ENVIRONMENT

Sanitary sewer and wastewater treatment facilities that serve the project area are operated by the City of San Diego Water Utilities Department. The metropolitan sewage collection system consists of a network of collection sewers and interceptors that convey wastewater from the San Diego Metropolitan Sewer Service Area (and participating agencies) to the Point Loma Wastewater Treatment Plant (PLWTP).

TABLE 4.4-3

WATER CONSUMPTION RATES FOR THE PROPOSED LAND USES
(Net Increases)

Alternative	Proposed Uses	Water Consumption Rate Per Day	Anticipated Daily Water Requirements
A	1,244,247 SF office[a]	100 gal./1,000 SF	124,425 gallons
	1,500 hotel rooms	180 gal./room	270,000 gallons
	55,000 SF museum	90 gal./1,000 SF	4,950 gallons
	(601,360 SF industrial)	(150 gal./1,000 SF)	(90,204 gallons)[b]
		Total	**309,171 gallons**
B	1,494,247 SF office[a]	100 gal./1,000 SF	149,425 gallons
	1,500 hotel rooms	180 gal./room	270,000 gallons
	55,000 SF museum	90 gal./1,000 SF	4,950 gallons
	(601,360 SF industrial)	(150 gal./1,000 SF)	(90,204 gallons)[b]
		Total	**334,171 gallons**
C	594,247 SF office[a]	100 gal./1,000 SF	59,425 gallons
	1,500 hotel rooms	180 gal./room	270,000 gallons
	(601,360 SF industrial)	(150 gal./1,000 SF)	(90,204 gallons)[b]
		Total	**239,221 gallons**
D	1,044,247 SF office[a]	100 gal./1,000 SF	104,425 gallons
	1,800 hotel rooms	180 gal./room	324,000 gallons
	980,000 SF office (offsite)	100 gal./1,000 SF	98,000 gallons
	(601,360 SF industrial)	(150 gal./1,000 SF)	(90,204 gallons)[b]
		Total	**436,221 gallons**
E	594,247 SF office[a]	100 gal./1,000 SF	59,425 gallons
	(601,360 SF industrial)	(150 gal./1,000 SF)	(90,204 gallons)[b]
		Total	**(30,779) gallons**
F	1,244,247 SF office[a]	100 gal./1,000 SF	124,425 gallons
	1,500 hotel rooms	180 gal./room	270,000 gallons
	55,000 SF museum	90 gal./1,000 SF	4,950 gallons
	(601,360 SF industrial)	(150 gal./1,000 SF)	(90,204 gallons)[b]
		Total	**309,171 gallons**
G	No New Uses	NA	0 gallons
		Total	**0 gallons**

a Reflects proposed uses in excess of the existing 405,753 square feet of office space onsite. Existing square footage has been subtracted from proposed uses to reflect the potential net increase in water consumption.

b Reflects the reduction in water consumption associated with removal of existing industrial uses.

Source: Jim Wageman, City of San Diego Water Utilities Department, 1989, and Michael Brandman Associates, 1989.

Numerous sewer facilities serve the project site (Figure 4-55). Wastewater from the site is conveyed south to Market Street via a 15-inch sewer main in Pacific Highway. Another 15-inch sewer line in Market Street conveys wastewater to a 36-inch regional trunk sewer in Kettner Boulevard, which then transports wastewater north to the Point Loma Treatment Plant. An abandoned 24-inch line crosses the southwesterly area of the site; there are no current plans to remove this line. Wastewater flows in the project area are currently within the capacity of existing lines; however, approved development in the project area would require upgrading of the 15-inch sewer lines in Pacific Highway and Market Street to Kettner Boulevard.[13]

According to the City of San Diego, Point Loma Plant has capacity to treat 223 million gallons per day (mgd) and has a flow rate of 190 mgd, indicating sufficient capacity[a]. It provides advanced primary treatment, then discharges treated wastewater to the ocean through an outfall. However, the Federal Clean Water Act of 1975 and the National Pollution Discharge Elimination System (NPDES) permit for the PLWTP require that wastewater receive secondary treatment. Therefore, the City does not comply with the Clean Water Act and with the NPDES permit for this plant.[14]

The United States Environmental Protection Agency (EPA) and the Regional Water Quality Control Board (RWQCB) are joint plaintiffs suing the City of San Diego for noncompliance with the Clean Water Act and the NPDES permit, and has issued to the City a cease and desist order requiring compliance by 1996. The City has indicated it may not be able to meet this date and is negotiating an agreement with EPA and RWQCB.[15,16]

Nevertheless, the City has committed to providing secondary treatment at the Point Loma Wastewater Treatment Plant, although the timeline has not been finalized. The City is planning to expand capacity at the plant to 240 mgd by 1992 and to 340 mgd by 2050. Secondary treatment of all this wastewater would be provided.[17] Wastewater flow projections through 2010 are 207 mgd, so adequate plant capacity is projected at least through 2010.[18]

The Point Loma Plant is also subjected to the California State Ocean Plan, which provides water quality standards for wastewater outfalls for the purpose of maintaining beneficial uses of the ocean. Compliance with the plan is monitored by the California Department of Health Services (DHS). DHS has indicated that there are no toxicity problems at the plant's outfall, but that there are periodic coliform problems at the outer edges of some kelp beds. The City of San Diego is considering an outfall extension or a chlorination/dechlorination/discharge program to resolve this problem.[19]

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

The City of San Diego Water Utilities Department has established daily generation rates for wastewater typically produced by the various land uses. Table 4.4-4 lists the generation rates and the amount of wastewater anticipated from the proposed alternatives. At even the highest rate

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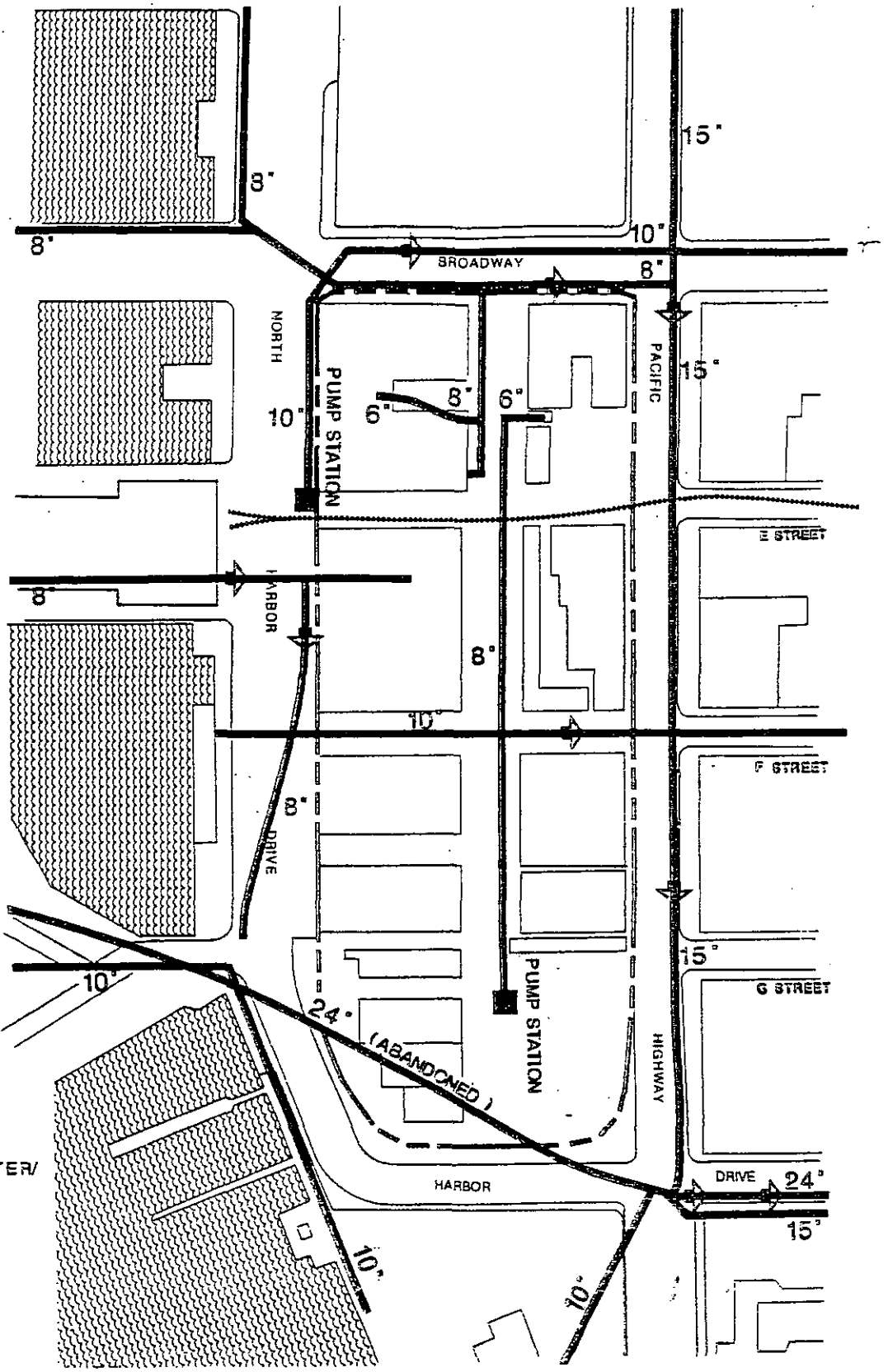
[a] The Regional Water Quality Control Board (RWQCB) has indicated there is some question concerning plant capacity, and is requesting additional information from the city. Nevertheless, RWQCB has also indicated that the system is not capacity constrained.



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- SEWER LINE DIAMETER/ DIRECTION OF FLOW
- RAILROAD TRACK
- PROJECT SITE

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NORTH

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TABLE 4.4-4

WASTEWATER GENERATION RATES FOR THE PROPOSED LAND USES
(Net Increases)

Alternative	Proposed Uses	Wastewater Generation Rate Per Day	Anticipated Wastewater Generation
A	1,244,247 SF office[a]	85 gal./1,000 SF	105,760 gallons
	1,500 hotel rooms	140 gal./room	210,000 gallons
	55,000 SF museum	70 gal./1,000 SF	3,850 gallons
	(601,360 SF industrial)	(115 gal./1,000 SF)	(69,115 gallons)[b]
		Total	**250,495 gallons**
B	1,494,247 SF office[a]	85 gal./1,000 SF	127,011 gallons
	1,500 hotel rooms	140 gal./room	210,000 gallons
	55,000 SF museum	70 gal./1,000 SF	3,850 gallons
	(601,360 SF industrial)	(115 gal./1,000 SF)	(69,115 gallons)[b]
		Total	**271,746 gallons**
C	594,247 SF office[a]	85 gal./1,000 SF	50,510 gallons
	1,500 hotel rooms	140 gal./room	210,000 gallons
	(601,360 SF industrial)	(115 gal./1,000 SF)	(69,115 gallons)[b]
		Total	**191,395 gallons**
D	1,044,247 SF office[a]	85 gal./1,000 SF	88,760 gallons
	1,800 hotel rooms	140 gal./room	252,000 gallons
	980,000 SF office (offsite)	85 gal./1,000 SF	83,300 gallons
	(601,360 SF industrial)	(115 gal./1,000 SF)	(69,115 gallons)[b]
		Total	**354,945 gallons**
E	594,247 SF office[a]	100 gal./1,000 SF	50,510 gallons
	(601,360 SF industrial)	(115 gal./1,000 SF)	(69,115 gallons)[b]
		Total	**(18,605) gallons**
F	1,244,247 SF office[a]	85 gal./1,000 SF	105,760 gallons
	1,500 hotel rooms	140 gal./room	210,000 gallons
	55,000 SF museum	70 gal./1,000 SF	3,850 gallons
	(601,360 SF industrial)	(115 gal./1,000 SF)	(69,115 gallons)[b]
		Total	**250,495 gallons**
G	No New Uses	NA	0 gallons
		Total	**0 gallons**

a Reflects proposed uses in excess of the existing 405,753 square feet of office space onsite. Existing square footage has been subtracted to identify the net increase or decrease in wastewater generation.

b Reflects the reduction in wastewater generation associated with the removal of existing industrial uses.

Source: Jim Wageman, City of San Diego Water Utilities Department, 1989 and Michael Brandman Associates, 1989.

of wastewater generation (354,945 gallons/day, Alternative D), the project would increase flows at the Point Loma Plant by less than 0.2 percent. Both the City of San Diego and the RWQCB have expressed that this additional wastewater would not significantly affect the quality of water discharged from the outfall, nor would it affect the ability of the City to provide secondary treatment of wastewater. It would also not significantly affect the capacity of the treatment system.[20,21] The EPA has concurred with this conclusion.[22]

The density of uses proposed by Alternatives A, B, C, D, and F would significantly increase the amount of wastewater conveyed through existing sewer facilities. Each of these alternatives would represent a substantial increase over the existing uses (i.e., Alternative G), and would result in significant impacts to sewer conveyance facilities.

The uses proposed for Alternative E would result in a decrease in the amount of wastewater currently being generated at the site, so it would not cause any significant impacts. The existing sewer facilities currently provide adequate service to the project site. Therefore, no significant impacts would occur with Alternative G.

MITIGATION MEASURES

The following measures are proposed to mitigate significant impacts from Alternatives A, B, C, D, and F to sanitary sewer facilities:

- The existing 15-inch diameter mains located in Pacific Highway and in Market Street (Figure 4-55, page 4-124) will be upgraded by the project developer, in coordination with the City of San Diego, to a capacity sufficient to serve future onsite development, as well as future upstream and tributary developments that would be linked to them. As recommended in a sewer pipeline capacity analysis, 1,800 linear feet of sewer line will be replaced from the intersection of Pacific Highway and E Street to the intersection of Market Street and Kettner Boulevard. The sewer line will be constructed upon demand for a new line created by the project. Upon implementation of these measures, adverse impacts from Alternatives A, B, C, D, and F related to sewer facilities would be avoided.

4.4.7 SOLID WASTE

AFFECTED ENVIRONMENT

Solid waste disposal in the project area is provided by the combined services of the City of San Diego and private contractors. Refuse collected from the project site is currently taken to the West Miramar Landfill, a Class III facility operated by the City of San Diego Disposal Division. The landfill currently receives 1.6 million cubic yards of refuse per year and has a remaining capacity of 26 million cubic yards. The City has estimated that the landfill will reach capacity in 1995; consequently, the City is in the process of identifying a replacement landfill site. The City has entered into a joint powers agreement with the County of San Diego to determine the location of new sites within the City. In addition, the City is considering expanding the West Miramar site.[23]

Alternatives A through F would generate greater quantities of solid waste than the existing onsite uses (Alternative G). In addition to typical daily solid waste production during project operations, Alternatives A through F would require demolition of most existing onsite structures. The increase of daily solid wastes, and disposal of demolished construction materials, would incrementally decrease the life expectancy of landfills serving the area.

The City of San Diego Waste Management Department has indicated that the current capacity of the West Miramar landfill will provide sufficient solid waste disposal through the year 1995, after which an alternative arrangement will be needed to provide the necessary capacity for future solid waste disposal.

The San Diego County Department of Public Works Solid Waste Division uses a generation factor of 1.6 tons per person per year to determine the quantity of solid waste produced by land uses.[24] Table 4.4-5 lists the quantity of solid waste expected to be generated by future employees of the proposed project alternatives (A through G).

TABLE 4.4-5

ANTICIPATED SOLID WASTE GENERATION
FOR PROPOSED ALTERNATIVES

Alternatives	Increase in Employees[a]	Solid Waste Generation Factor[b]	Solid Waste Generation (tons/yr)
A	8,648	1.6 tons/yr/employee	13,800
B	9,759	1.6 tons/yr/employee	15,600
C	5,745	1.6 tons/yr/employee	9,200
D	12,340	1.6 tons/yr/employee	19,700
E	4,545	1.6 tons/yr/employee	7,300
F	8,648	1.6 tons/yr/employee	13,800
G	0	1.6 tons/yr/employee	0

a Assumes net increase in employment on Navy Broadway Complex over current estimated level of 2,122 employees (Alternative G).

b Generation factor represents average annual per capita trash generation for residential, commercial, and industrial uses, and demolition activities, for 1988 population (Eric Swanson, personal communication, San Diego County Department of Public Works Solid Waste Division, 1989).

Source: Michael Brandman Associates, 1989.

The largest increase of solid waste would occur with the Alternative A, the Alternative B, the Alternative D, and Alternative F, from which an anticipated 13,800, 15,600, 19,700, and 13,800 tons, respectively, would be generated per year. Alternative C and Alternative E would result in lesser increase to solid waste generation (i.e., 9,200 and 7,300 additional tons per year over existing uses, respectively). The West Miramar landfill will provide adequate solid waste disposal through 1995, and the City of San Diego is currently planning to develop new landfills, or expand existing ones, to serve the city's future disposal requirements, so no significant impacts to solid waste disposal are anticipated with implementation of any of the alternatives.

With Alternative G, the site would not be redeveloped, no demolition would take place, and no increase in solid waste generation would occur. Therefore, there would be no significant impacts.

MITIGATION MEASURES

As no significant impacts to solid waste would result from any of the alternatives, no mitigation measures are necessary.

ENDNOTES:

1 City of San Diego, 1987c.
2 Hagman, San Diego Police Department, personal communication, 1988.
3 Inman, San Diego Fire Department, personal communication, 1988.
4 George, San Diego Fire Department, personal communication, 1988.
5 Sumler, San Diego Fire Department, personal communication, 1988.
6 San Diego Unified School District, personal communication, 1988.
7 Cherry, San Diego Unified School District, personal communication, 1988.
8 City of San Diego, op. cit.
9 Smith, San Diego Parks and Recreation Department, personal communication, 1988.
10 Ibid.
11 Jacoby, San Diego Water Conservation Department, personal communication, 1988.
12 Ibid.
13 Graft, San Diego Water Utilities Department, personal communication, 1988.
14 Child, San Diego Water Utilities Department, personal communication, 1989.
15 McCann, Regional Water Quality Control Board - San Diego Region, personal communication, 1989.
16 Tomsavic, Environmental Protection Agency, personal communication, 1989.
17 Child, op. cit.
18 City of San Diego, op. cit.
19 Child, op. cit.
20 McCann, op. cit.
21 Child, op. cit.
22 Tomsavic, op. cit.
23 Clay, West Miramar Landfill, personal communication, 1988.
24 Swanson, San Diego Public Works Department, personal communication, 1988.

4.5 SOCIOECONOMICS

The socioeconomic analysis is based primarily on local and regional growth projections that are provided by the City of San Diego and the regional planning agency for San Diego, the San Diego Association of Governments (SANDAG). Statistics are generally provided by geographic area. The largest area is the "Major Statistical Area" (MSA), which covers the entire San Diego Bay area to several miles inland; next is the "Sub-Regional Area" (SRA), which includes the north-central area of the bay; and the smallest geographic area for which statistics are provided is Centre City, which includes the downtown core and waterfront. The boundaries of the areas are depicted on Figure 4-56. The SRA is a statistical subarea of the MSA, and the Centre City is a statistical subarea of the SRA.

4.5.1 AFFECTED ENVIRONMENT

Regional Population, Housing, and Employment

Existing Regional Population

San Diego County has an estimated 1988 population of 2,320,700,[1] making it the 10th largest metropolitan area in the country. San Diego County is one of the fastest growing counties in California with a 71-percent population increase between 1970 and 1988.[2]

The City of San Diego comprises almost half of the county's population and is now the second largest city in California.[3] The 1988 population is estimated at 1,058,700.[4] Although the City's rate of growth is not as high as the county's, the City's population has increased 51 percent since 1970 and 4.5 percent since 1986.

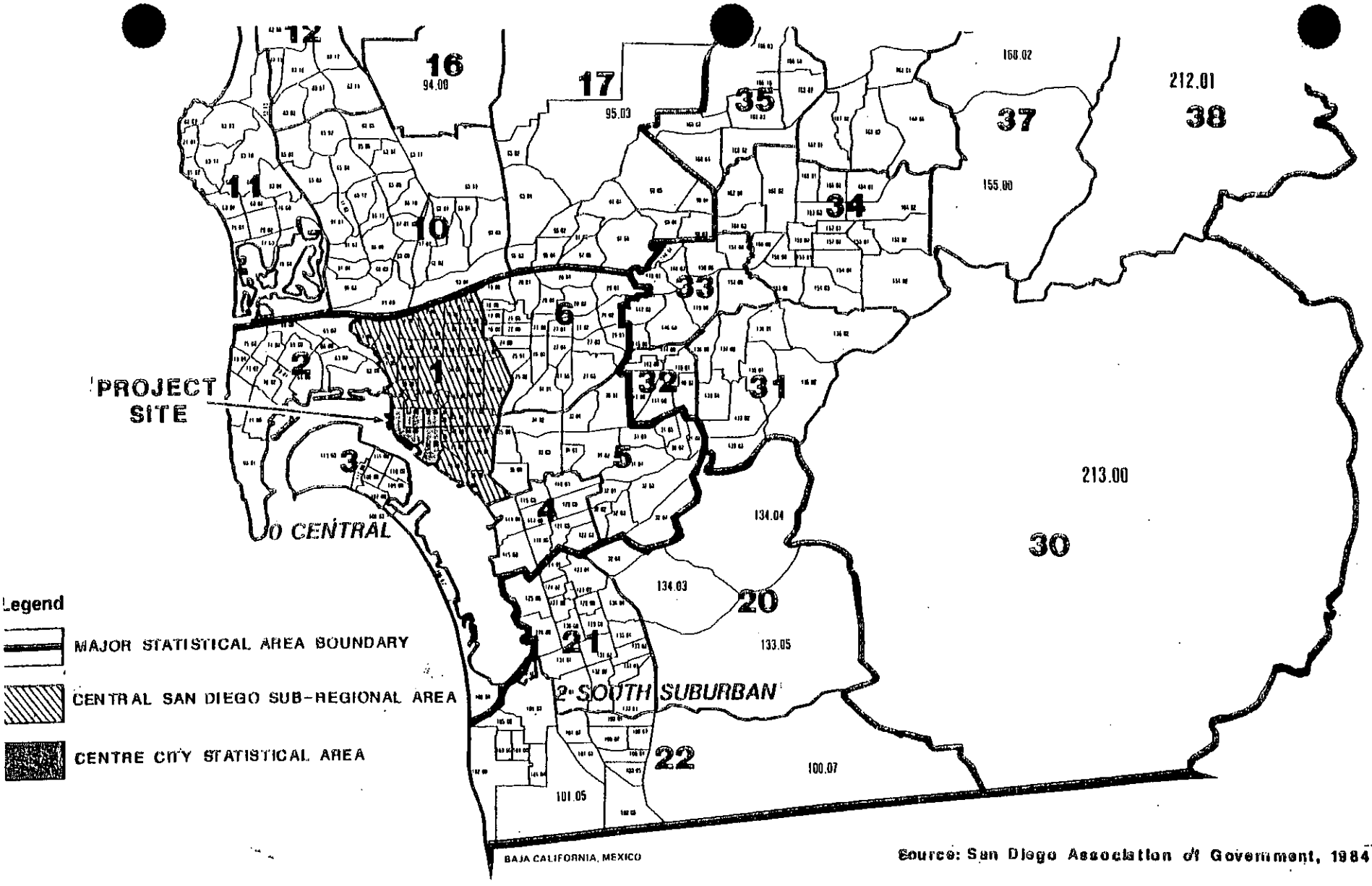
Existing Regional Housing

San Diego County had an estimated 855,545 housing units (as of January 1,1987), an increase of nearly 19 percent since 1980 and nearly 4 percent since 1986. Single-family units have dominated the regional housing inventory, constituting over 57 percent of the total housing. The countywide vacancy rate is 5.6 percent. There are an estimated 10,411 military housing units in the county.

The City of San Diego had an estimated 401,570 housing units (as of January 1, 1987), an increase of over 17 percent since 1980 and nearly 4 percent since 1986. Single-family residences constitute approximately 55 percent of all units. There are an estimated 5,745 military housing units in the City, which is more than half the county total. The City's housing vacancy rate is 4.9 percent.[5]

Existing Regional Employment

San Diego County's civilian labor force numbered 833,300 as of 1986, the most recent year for which data were available. For the third consecutive year, the county's employment showed a significant growth rate of 5.5 percent and a drop in the unemployment rate. The largest growth was in the services sector, which includes an expanding tourism industry and wholesale-retail trade. Table 4.5-1 depicts the labor force by occupation.



Source: San Diego Association of Government, 1984

6840001 1/90

NO SCALE

NORTH

Figure 4-56

Statistical Areas
Navy Broadway Complex Project

TABLE 4.5-1

EMPLOYMENT BY OCCUPATION
COUNTY OF SAN DIEGO

Occupation	1986 Number of Employees	1986 Percent of total
Agricultural, Forestry, Mining, Fishing	12,400	1.5
Construction	52,000	6.2
Nondurable Manufacturing	21,600	2.6
Durable Manufacturing	100,400	12.1
Transportation, Communication	32,100	3.9
Wholesale Trade	34,800	4.2
Retail Trade	162,700	19.5
Finance, Insurance, Real Estate	56,200	6.7
Services	211,1002	5.3
Government	150,000	18.0
TOTAL	**833,300**	**100.0**

Source: California Employment Development Department, 1987.

As shown in Table 4.5-1, the county employment base is diverse. According to the City of San Diego, the county's and city's economy has broadened substantially over the past 20 years "from a base of aerospace and the military to include significant manufacturing and tourism."[6] However, it is estimated that the Navy and the Marine Corps still contribute approximately 20 percent of the county's gross product,[7] which constitutes a substantial segment of the overall economy.

Projected Regional Population

Population forecast data prepared by SANDAG in 1987 indicate that "long-term forecasts show a slight decline of population growth; however, San Diego will nevertheless maintain its status as one of the fastest growing counties in California."[8] The county is forecast to gain 444,726 persons by the year 2000, as shown in Table 4.5-2.

TABLE 4.5-2

REGIONAL GROWTH PROJECTIONS

	City of San Diego			County of San Diego		
Year	Population	Housing	Employment	Population	Housing	Employment
1988[a]	1,058,700	415,590	592,562	2,320,700	765,262	1,026,761
1990[b,c]	1,029,600	385,600	534,500	2,424,240	865,800	930,200
1995[b]	1,160,234	446,385	659,448	2,567,193	958,023	1,263,391
2000[b]	1,238,738	484,941	707,915	2,765,421	1,051,006	1,366,140
2010[b]	1,375,232	543,437	812,583	3,133,851	1,204,899	1,589,260

a 1988 estimates from City of San Diego Planning Department.
b SANDAG, 1987c.
c Current (1988) population employment and housing estimates exceed the projected 1990 estimates by approximately 30,000.

Source: Michael Brandman Associates, Inc., 1989.

The average annual projected growth rate in San Diego County is 2.2 percent, which is greater than both California's (1.1 percent) and the United States (0.8 percent).[9] The estimated average annual increase of 41,000 people is not as large as the recent growth of 69,000 persons between 1986 and 1987. Most growth is expected north of I-8. By the year 2010, the majority of the region's population is expected to reside in north city and north county MSAs.

The City of San Diego is also expected to grow at a reduced rate over the next decade. The growth rate is expected to remain steady and average approximately 1 percent annually through 2000, with an anticipated overall increase of approximately 180,000 persons over 1988 estimates (Table 4.5-2). The most current (as of 1988) population estimates for the city exceed, by 30,000 people, the projected (in 1987) city population by 1990, indicating a more rapid rate of growth than expected.

Projected Regional Housing

The county is anticipated to increase its housing inventory by 37 percent, or nearly 286,000 units, to reach approximately 1,051,000 units by 2000 (Table 4.5-2). A majority of the growth is expected to occur in the northern region where more land is considered available for development.[10]

The City of San Diego's recent building boom is expected to slow to a degree and the north should continue to grow faster than the south. By the year 2000, 69,000 new houses are projected to be built, bringing the citywide total to 484,941 units.[11] As with population, however, the City's estimated housing stock in 1988 exceeds by 30,000 units the total projected (in 1987) for 1990, suggesting a more rapid growth rate than projected.

Projected Regional Employment

The county is expected to gain 339,379 civilian jobs by 2000, a civilian employment increase of 33 percent over 1988 (Table 4.5-2). The highest rate of growth is expected in the wholesale, retail, and services sectors (including tourism), with high technology, manufacturing, transportation, communication, utilities, finance, insurance, and real estate also showing growth. Along with agriculture, forestry, and fisheries, construction and government jobs will decline in percentage of total regional employment. Little change is anticipated in the number of military ships, aircraft, and personnel assigned to San Diego.[12]

The City of San Diego is expected to experience slower employment growth than the region as a whole. By 2000, it is projected that there will be 115,253 new jobs--a 19 percent increase over 1988 levels. However, the current estimate of city employment exceeds the projected employment for 1990 by 58,000, suggesting a more rapid than projected rate of employment growth.

Local Population, Housing, and Employment

Existing Local Population

The population of the Central MSA (where the project site is located) (Figure 4-30, page 4-86) grew 11 percent between 1980 and 1986, reaching a total 1986 population of 548,722. The smaller statistical area--Central San Diego SRA--represented approximately 6.4 percent of the region's 1980 population, with a total of 117,400 persons.

The SRA population has increased 23 percent since 1980 and is currently (1988) 144,805.[13] The Centre City substatistical area had a 1987 population of 12,132.[14]

Existing Local Housing

The 1986 housing inventory for the MSA was 199,105 units, a 7-percent increase from 1980. The SRA's housing inventory grew 9 percent during the same time period to 60,560 in 1986.[15] Centre City had a housing inventory of 7,709 units in 1987.[16]

Existing Local Employment

Employment totaled 259,722 in the Central MSA in 1986, a growth of 5 percent between 1980 and 1986. The SRA had an increase in employment of 20 percent for the same time period, reaching 151,000 in 1986.[17] Centre City had 60,300 jobs in 1986.[18]

Projected Local Growth

Population, housing, and employment growth projections are provided by MSA and SRA, but not for the smaller Centre City statistical area, where only current data are available (except with

regard to employment). Estimates of current (1986/1987) population, housing, and employment exceed 1990 projections for the Central MSA and Central San Diego SRA, indicating a greater than expected level of growth. Table 4.5-3 depicts projected local population, housing, and employment growth.

Projected Local Population

Central MSA population is projected to increase by approximately 28,400 between 1986 and 2000, which is an overall increase of 5.2 percent. At this rate, the Central MSA is projected to be San Diego's slowest growing MSA. The smaller Central San Diego SRA is projected to increase by 3,100 people between 1986 and 2000, a 2-percent increase. However, as noted in Table 4.5-3, the current (1986) population for the SRA already exceeds the projected 1990 population by nearly 21,000 people (or 17 percent). Given this, it is reasonable to assume that actual growth will exceed projected growth in 2000.

Projected Local Housing

Most housing growth in the region between 1986 and 2000 is projected to occur outside the Central MSA. The housing inventory in the MSA is anticipated to increase 12 percent between 1986 and 2000, to 222,134 units. The SRA is projected to increase by 14 percent during this period, bringing the total housing inventory to 69,329 for the SRA.

Projected Local Employment

Total employment for Central MSA is projected to increase by 23 percent (or approximately 60,000 jobs) between the years 1986 and 2000. The largest projected growth in employment in the MSA is anticipated to occur south of I-8. Employment in the Central San Diego SRA is expected to increase by 44 percent (or 56,776 jobs) over the same period. One-third of the projected increase is expected to occur in Centre City, with a projected increase of 19,000 jobs--a 32-percent growth--between 1986 and 2000.

4.5.2 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

Direct Effects on Population, Housing, and Employment

None of the alternatives include the development of residential uses, and therefore, they would not directly contribute to local or regional growth in population or housing. Employment growth associated with development of Alternatives A, B, C, D, and F could result in indirect housing demands and population growth through project-induced in-migration to the region. However, given the substantial housing and population base in San Diego (415,590 housing units and a population of over 1 million in 1988), new employees to the region associated with the project would be absorbed without notable secondary effects. Alternative E (military construction), which consolidates existing Navy administrative staff located in San Diego on the project site and provides no other employment, and Alternative G (no action) would not generate any substantial long-term employment opportunities and, therefore, would not result in-migration to the region. Table 4.5-4 shows the anticipated employment levels for each alternative and Table 4.5-5 compares these levels with the employment growth projected for the Central MSA, Central San Diego SRA, and the Centre City area for 1995 and 2000. Employment levels depicted in Tables 4.5-4 and 4.5-5 represent the jobs in excess of the approximately 2,100 jobs currently held by Navy and civilian administrative personnel onsite.

TABLE

GROWTH PROJECTIONS I. TATISTICAL AREA

	Central MSA			Central San Diego SRA			Centre City Statistical Area		
Year	Population	Housing	Employment	Population	Housing	Employment	Population	Housing	Employment
1980[a]	495,500	180,800	247,600	117,400	55,700	126,100	--	--	--
Current[b,c]	548,721	199,105	259,772	144,806	60,560	128,233	12,132	7,709	60,300
1990[a,d]	521,900	196,100	251,900	123,900	61,100	152,200	--	--	--
1995[c]	559,763	212,554	303,112	150,733	65,645	176,422	--	--	76,740
2000[c]	577,118	222,134	319,311	157,212	69,329	185,009	--	--	79,344

a Unmarked SANDAG Series 6; 1980, 1990, 2000.

b 1987 (i.e., "current") population and Centre City housing provided by the City of San Diego.

c SANDAG Series 7; 1986, 1995, 2000. (The "current" year for housing and employment outside of Centre City is assumed to be 1986, the most recent data year available.)

d Note that current (1986) population, housing, and employment exceeds the 1990 projected levels in the Central MSA. Current (1986) population also exceeds the projected 1990 population in the Central San Diego SRA.

Source: SANDAG.

TABLE 4.5-4

NET EMPLOYMENT LEVEL--ALTERNATIVES A THROUGH G

Proposed Alternative	Land Use Assumptions		Employment Levels[a]
Alternative A	1,000,000 SF Navy office		6,667
	650,000 SF commercial office		2,889
	1,500 hotel rooms		1,200
	55,000 SF museum		15
	25,000 SF retail		50
		Subtotal	**10,821**
		Net Increase	**8,699**[a]
Alternative B	1,000,000 SF Navy office		6,667
	900,000 SF commercial office		4,000
	1,500 hotel rooms		1,200
	55,000 SF museum		15
	25,000 SF retail		50
		Subtotal	**11,932**
		Net Increase	**9,810**[b]
Alternative C	1,000,000 SF Navy office		6,667
	1,500 hotel rooms		1,200
	25,000 SF retail		50
		Subtotal	**7,917**
		Net Increase	**5,795**[b]
Alternative D	20,000 SF Navy office		133
	1,430,000 SF commercial office		6,355
	1,800 hotel rooms		1,440
	25,000 SF retail		50
	980,000 SF Navy office (offsite)		6,544
		Subtotal	**14,522**
		Net Increase	**12,400**[b]
Alternative E	1,000,000 SF Navy office		6,667
		Subtotal	**6,667**
		Net Increase	**4,545**[b]

TABLE 4.5-4 (continued)

Proposed Alternative	Land Use Assumptions		Employment Levels[a]
Alternative F	1,000,000 SF Navy office		6,667
	650,000 SF commercial office		2,889
	1,500 hotel rooms		1,200
	55,000 SF museum		15
	25,000 SF retail		50
		Subtotal	**10,821**
		Net Increase	**8,699[b]**
Alternative G	405,753 SF Navy office		-----
	601,360 SF industrial		-----
		Subtotal	**2,122[c]**
		Net Increase	**0**

a Employment levels assume 150 gross square feet (gsf) of Navy office use per employee, 225 gsf of commercial office use per employee, 1.25 hotel rooms per employee, and 4,000 gsf of museum use per employee.

b Net total assumes future employment level in excess of existing 2,122 employees onsite.

c Estimated existing onsite employment.

Source: Korve Engineering, Inc. and Michael Brandman Associates, 1989.

TABLE 4.5-5

RELATIONSHIP OF ANTICIPATED EMPLOYMENT LEVELS TO EMPLOYMENT GROWTH PROJECTIONS FOR 1995 AND 2000

Project Alternative	Anticipated Emp. Level For Project Alternative	Central MSA 1995 Employ.	Central MSA 1995 Proj. %	Central MSA 2000 Employ.	Central MSA 2000 Proj. %	Central San Diego SRA 1995 Employ.	Central San Diego SRA 1995 Proj. %	Central San Diego SRA 2000 Employ.	Central San Diego SRA 2000 Proj. %	Centre City Statistical Area 1995 Employ.	Centre City Statistical Area 1995 Proj. %	Centre City Statistical Area 2000 Employ.	Centre City Statistical Area 2000 Proj. %
A	8,648[a]	307,485	2.8%	324,753	2.6%	176,473	4.9%	180,100	4.8%	76,740	11%	79,344	11%
B	9,759[a]	307,485	3.2%	324,753	3.0%	176,473	5.5%	180,100	5.4%	76,740	13%	79,344	13%
C	5,745[a]	307,485	1.8%	324,753	1.8%	176,473	3.3%	180,100	3.2%	76,740	7%	79,344	7%
D	10,899[a]	307,485	3.5%	324,753	3.4%	176,473	6.2%	180,100	6.0%	76,740	14%	79,344	14%
E	4,545[a]	307,485	1.5%	324,753	1.4%	176,473	2.6%	180,100	2.5%	76,740	6%	79,344	6%
F	8,648[a]	307,485	2.8%	324,753	2.6%	176,473	4.9%	180,100	4.8%	76,740	11%	79,344	11%
G	0[a]	307,485	0.0%	324,753	0.0%	176,473	0.0%	180,100	0.0%	76,740	0.0%	79,344	0.0%

a Anticipated employment level assumes future employment in excess of existing 2,122 employees onsite.

Source: SANDAG, Series 7 Regional Growth Forecasts, July 1988 and Michael Brandman Associates 1989.

Alternatives A, B, C, D, E, and F would provide employment opportunities that vary according to the uses proposed (see Tables 4.5-4, page 4-136 and 4.5-5, page 4-138). Alternatives C and E propose 1 million square feet of Navy office uses and would result in similar employment levels (5,745 and 4,545, respectively). In addition to the proposed office uses, Alternative C also includes 1,500 hotel rooms, resulting in an additional 1,200 jobs. Alternatives A, B, and F propose similar land uses (i.e., office, hotel, and museum uses) and intensities, and would generate similar employment levels (8,699, 9,810, and 8,699, respectively). The uses proposed by Alternative D would generate the highest net employment level (12,400 employees). Approximately 980,000 square feet of Navy office uses would be developed at an offsite location in the Centre City East area, supporting 6,544 employees, and 7,978 employees would be on the Navy Broadway Complex.

Long-term employment generated by Alternatives A through G would represent a minor percentage (averaging 2 percent) of the projected employment within the Central MSA by the year 2000 (Table 4.5-5, page 4-138). The largest percent contribution to employment growth would be experienced within the Centre City Census Tract, the smallest statistical area. Long term employment levels associated with Alternatives A, B, D, and E (i.e., 11, 13, 14, and 11 percent, respectively) would represent a substantial contribution of employment opportunities for the Centre City area by 2000, which would be a beneficial effect of these alternatives.

Employment opportunities associated with Alternatives C, E, and G would represent a relatively minor percentage of the predicted employment within the Central MSA (1 to 2 percent), Central San Diego SRA (1 to 3 percent), and Centre City area (7, 6, and 3 percent, respectively). The additional employment associated with Alternative C and Alternative E would also beneficially affect employment levels.

Fiscal Impact Assessment

A fiscal impact report was prepared for the proposed alternatives and is on file at the Broadway Complex Office, 555 West Beech Street, Suite 101, San Diego, California, 92101-2937. Provided below is a summary of the report's conclusions.

Methodology

The fiscal impact assessment evaluates the public (governmental) cost and revenue implications derived from changes in employment associated with the project. Only the primary costs that would be incurred and the immediate revenues which would be generated from the proposed development alternatives have been evaluated. Indirect impacts were not addressed due to the difficulty in accurately predicting the secondary consequences of growth, and the potential for double counting when primary and secondary impacts are viewed simultaneously. Three methodological approaches are used: (1) application of municipal tax rates for property, sales, and transient occupancy tax revenues; (2) per capita multipliers for anticipated police and fire protection costs; and (3) per acre multipliers for other revenues and municipal expenditures such as planning, engineering, and other support services. The projected total employment generated from the proposed project alternatives is summarized in Table 4.5-6.

TABLE 4.5-6

PROJECTED TOTAL EMPLOYMENT BY PHASE[a]

Alternative	Phase 1 1992-1994	Phase 2 1995-1997	Phase 3 1998-2000	Phase 4 2001-2003	Stabilized Occupancy 2004-2006
A	2,122	2,572	3,349	10,021	10,821
B	2,122	2,572	3,349	11,143	11,932
C	2,122	2,572	3,701	7,128	7,917
D	2,122	2,572	3,920	11,783	14,513
E	2,122	2,122	6,667	6,667	6,667
F	2,122	2,922	3,699	8,815	10,821
G	2,122	2,122	2,122	2,122	2,122

a Total employment includes existing 2,122 Navy personnel currently on the site. Years refer to approximate years required to reach stabilized occupancy by phase. Based on employment assumptions presented in WK&A fiscal impact assessment report.

Source: Korve Engineering, Inc. and William-Kuebelbeck & Associates, Inc. 1989.

The per acre and per capita revenue and expense multipliers were calculated based upon the current land use distribution and daytime population of the City of San Diego. These multipliers were then applied to employment estimates shown in Table 4.5-6 and the acreage from the project site to derive fiscal impacts from development on the Navy Broadway Complex.

Conclusions

The annual tax revenues generated to the City of San Diego at project buildout (for property taxes) and stabilized occupancy (for retail sales tax and hotel occupancy tax) are summarized in Table 4.5-7. The fiscal impacts of the respective development alternatives are presented in Table 4.5-8. The key findings of the fiscal impact assessment are listed below.

TABLE 4.5-7

PROJECTED ANNUAL TAX REVENUES TO CITY OF SAN DIEGO AT PROJECT BUILDOUT[a]
(in Thousands of Dollars)

Alternative	Annual Property Tax Revenue[b]	Annual Sales Tax Revenue[c]	Annual Transient Occupancy Tax[d]
A	$2,115[e]	$565	$9,286
B	5,371	565	9,286
C	3,193	565	9,286
D	7,364	652	11,246
E	0	0	0
F	4,659[e]	565	9,286
G	0	0	0

a Property taxes based on project buildout in 2003. Retail sales and transient occupancy tax revenues based on project stabilized occupancy in 2005.

b Includes 1 percent property tax increment to city as well as zoological exhibits tax at $0.005 per $100 assessed value. Based on estimated construction cost value of private development at project buildout in 2003. Increases 2 percent annually, per Proposition 13.

c Based on 1 percent of taxable retail sales tax at project stabilized occupancy in 2005. Increases annually at estimated 5 percent inflation rate.

d Based on 9 percent of gross hotel room revenues at project stabilized occupancy in 2005. Increases annually at estimated 5 percent inflation rate.

e After deduction of estimated annual $2.55 million tax allocation bond payments for city-funded public improvement.

Source: Williams-Kuebelbeck & Associates, Inc. 1989.

TABLE 4.5-8

PROJECTED NET AND CUMULATIVE FISCAL IMPACTS OF PROJECT
(in Thousands of Dollars)

Development Alternative	Net Annual Fiscal Impact in 2005[a]	Cumulative Fiscal Impact in 2005[a]	Net Annual Fiscal Impact in Year 20	Cumulative 30-Year Fiscal Impact
A	$19,383	$100,936	$41,317	$576,104
B	23,691	130,275	47,188	686,206
C	18,743	101,592	38,224	547,827
D	30,708	176,476	60,825	894,620
E	-2,138	-19,325	-4,667	-72,435
F	21,209	129,806	42,371	628,408
G	-697	-8,248	-1,521	-25,554

a At full development stabilized occupancy.

Source: Williams-Kuebelbeck & Associates, Inc., 1989.

- Alternatives A, B, C, D, and F all generate significant property tax increment, as well as retail sales tax and hotel transient occupancy tax revenues to the City of San Diego from the proposed private development on the site. Alternatives E and F do not generate tax revenues to the city, as they include only Navy facilities.

- Transient occupancy tax is the most significant component of the tax revenues that would be generated from private development of the Navy Broadway Complex. Annual transient occupancy tax at stabilized occupancy (2005) ranges from $9.3 million under the A, B, C, and F Alternatives, to $11.2 million under Alternative D.

- Alternatives A, B, C, D, and F would all generate net annual operating surpluses to the City of San Diego by 1994, while the Alternatives E and G would consistently yield annual operating deficits throughout the 30-year projection period.

- By year 30 of the proposed project (2021), Alternatives A, B, C, D, and F would generate cumulative surpluses to the City of San Diego of $576.1 million, $686.2 million, $547.8 million, $894.6 million, and $628.4 million, respectively. Conversely, Alternatives E and G would yield cumulative deficits of $72.4 million and $25.6 million, respectively.

4.5.3 MITIGATION MEASURES

Alternatives A through F would provide positive economic and employment effects to the project area and would not result in any significant impacts. Therefore, no mitigation measures are necessary. Even though Alternative G would not generate an increase in employment opportunities, and Alternatives E and G would not generate positive fiscal effects, no significant environmental impacts would result.

ENDNOTES:

1 Turner, City of San Diego, personal communication, 1988.
2 Ibid.
3 City of San Diego, 1987b.
4 Turner, op. cit.
5 San Diego Association of Governments, 1987a.
6 City of San Diego, op. cit.
7 Ibid.
8 San Diego Association of Governments, op. cit.
9 City of San Diego, op. cit.
10 San Diego Association of Governments, op. cit.
11 *Ibid.*
12 City of San Diego, op. cit.
13 Polinsky, San Diego Association of Governments, 1988.
14 Turner, op. cit.
15 Polinsky, op cit.
16 Turner, op. cit.
17 Polinsky, op. cit.
18 Turner, op. cit.

4.6 PHYSICAL ENVIRONMENT

4.6.1 GEOLOGY AND SEISMICITY

The following discussion summarizes a geotechnical investigation[1] conducted for the project site by Hirsch and Company in February 1988.

AFFECTED ENVIRONMENT

Geologic Setting

The project site lies in an area of low relief within the coastal plain adjacent to San Diego Bay. The project area is located west of the historical high tide line in an area that was previously characterized by the tidal flats and marshes that naturally existed around the margins of San Diego Bay. Holocene-age lagoon and bay sediments accumulated in these areas over a gently sloping surface of older Pleistocene-age deposits. The site has subsequently been reclaimed by the hydraulic fill placed between 1920 and the late 1930s. The fill was placed over the depositional surface of the bay deposits to form the existing land surface.

Soils

The project site is covered with surface pavement. Below the surface pavement the site is underlain by a layer of fill soils that was placed over the natural bay deposits. The bay deposits are in turn underlain by older Pleistocene sedimentary deposits of the Bay Point Formation. These geologic units are described below in the order of increasing age.

Fill

Hydraulic fill soils derived from bay dredging operations are located on the project site. The average fill depth is about 10 feet north of F Street. South of F Street, the fill ranges from 7 to 10 feet with an average of approximately 8 feet. The hydraulic fill soils consist of light brown to gray silty and poorly graded fine sands which contain abundant shell fragments, few silt and clay layers, and occasional clay balls and pockets.

The upper few feet of the hydraulic fill soils have been locally reworked. Imported fill (up to 3 feet) has been placed on the hydraulic fill in the northwestern and eastern portions of the site. The observed imported fill soils are generally similar to the hydraulic fill soils and consist of brown silty sands with some clay layers and balls.

Bay Deposits

Late Quaternary-age embayment deposits underlie the fill soils. The deposits generally consist of very loose to medium dense silty and clayey sands with some sandy and clayey silt layers. The average depth of bay deposits is approximately 8 feet north of F Street and 16 feet south of F Street. The bay deposits south of F Street generally thicken toward the west.

Bay Point Formation

Pleistocene-age terrace deposits of the Bay Point Formation underlie the bay deposits to the maximum depths explored (approximately 44 feet). The deposits consist of medium dense to very

dense clayey and silty sands, poorly graded sands, sandy silts, and very stiff to hard sandy lean clays, with clay interbeds and zones within the granular strata. The deposits transition from clayey sands to poorly graded sands and from medium dense to dense or very dense conditions with depth below the top of the Bay Point Formation soils. The depth of dense to very dense portions of the deposits varies across the site and appears to range from approximately 15 to 40 feet below the existing ground surface.

Faulting and Seismicity

The project site, like much of downtown San Diego, is within the Rose Canyon Fault zone. The onshore portion of the Rose Canyon Fault zone extends along the northeast flank of Mount Soledad and continues southward along the eastern portion of Mission Bay. The zone widens and diverges between Mission Bay and San Diego Bay as it continues across to Coronado and beyond to the south. The most significant traces of the Rose Canyon Fault zone generally trend north to north-northwest near downtown San Diego.

The Rose Canyon Fault zone is considered to present a significant seismic hazard to the coastal San Diego area; recent earthquake activity within the general area of southern San Diego Bay further demonstrates the seismic activity of this zone of faults. During July 1985 a series of earthquakes up to Richter magnitude 4.2 were recorded in the vicinity of San Diego Bay. The surface rupture potential associated with faults in the Rose Canyon Fault zone is not well understood. In downtown San Diego, fault traces within the Rose Canyon Fault zone have been difficult to locate due to development dating back many decades which may obscure or obliterate surface geologic expression of faults. In many areas, shallow groundwater conditions also limit geologic studies to shallow exposures. Recent studies in the eastern downtown area have found faults that show Holocene (last 10,000 years) displacements, and many of the offshore faults in and around San Diego Bay are also believed to displace Holocene sediments. Therefore, at least some portions of the fault zone are considered "active."

In addition to the Rose Canyon Fault zone, other major active faults (which have produced recurring earthquakes having a magnitude greater than 4.0) are the Elsinore Fault zone and the Coronado Banks Fault zone, which are approximately 45 miles northeast and 13 miles southwest of the site, respectively.

Liquefaction Potential

The soils on the site, especially the loose sands, could be subject to liquefaction. Liquefaction is a phenomenon known to occur when loose, sandy, water-saturated soils are subjected to strong seismic ground motion of signification duration. The soil loses its normal cohesive properties and behaves more like a liquid than a solid.

The very loose to medium dense sands and nonplastic silts of the hydraulic fills and bay deposits below the groundwater level represent a potential liquefaction hazard to the project site during significant ground shaking. The consequences of liquefaction, should it occur at this site, probably would be seen as localized sand boils, ground cracks, and ground settlements. It is possible that lateral movement of soils into the bay could occur as a result of soil liquefaction. The relatively dense sands and silts of the Bay Point Formation have a low potential for liquefaction. The project site would not be subject to a greater risk of liquefaction potential than other adjacent areas along the San Diego Bay.

Effects on Soils and Erosion

Construction of Alternatives A through F would result in the potential short-term exposure of soils to wind and rain, resulting in two potential environmental impacts:

1. Erosion and hydraulic conveyance of sediments downstream of the site into San Diego Bay, which could affect marine life.

2. Contribution of particulates to the air stream, which could degrade air quality. This is discussed in Section 4.8, page 4-163.

Alternative D, with its additional offsite component, could add sedimentation to storm drains in the easterly Centre City area (in addition to the erosion that could occur at the Navy Broadway Complex site). This sedimentation, if it were to occur, would eventually be conveyed to San Diego Bay. If large areas of the project site(s) were left with exposed soils during storms, the environmental impact from erosion could be significant, because sedimentation of the Bay could adversely affect marine biological resources.

Alternative G would retain the site in its current condition, which is mostly covered with pavement and buildings, with few areas of exposed soils. Therefore, no significant erosion impacts would result.

Effects from Geologic Hazards

Faulting and Seismicity

The precise location of the Rose Canyon Fault and its associated branches is not known. Thus, it is unknown if there is any faulting within the boundaries of the project site or the Centre City site for Alternative D. If the fault does bisect the project or alternative site, seismic activity could cause surface rupture and substantial damage to structures, which would be a significant impact to all of the alternatives.

Since the project site and alternative site are located in a seismically active region, strong seismic activity would be expected to occur within the lifetime of the project. Seismic groundshaking could result in substantial damage to structures and is considered a significant impact to Alternatives A through F.

Additional damage to the Navy Broadway Complex could occur if liquefaction is realized during a seismic event. This is considered a significant impact to Alternatives A through F. It is unknown if a liquefaction hazard is present at the alternative site for Alternative D. However, due to its inland location, the liquefaction potential at this site is likely to be lower than at the Navy Broadway Complex.

With Alternative G, potential seismic shaking could affect existing structures onsite. With the exception of a portion of Building No. 1, none of the existing buildings comply with earthquake safety standards set by the Uniform Building Code. This does not represent a change from current conditions, so no impact would result.

MITIGATION MEASURES

The Regional Water Quality Control Board (RWQCB) was consulted regarding specific mitigation measures for erosion control. RWQCB does not generally develop erosion control measures. The following measure would mitigate any impacts from soil erosion during construction:

- An erosion control plan will be implemented during construction of new structures at the Navy Broadway Complex site and (if it is selected) at the alternative site. The plan will be prepared by the project developer and will receive appropriate approvals prior to the initiation of construction. Major components of the plan would include (but not be limited to) the following:

  - Regular watering of exposed soil.
  - Hydroseeding of large (1-acre-plus) areas of exposed soils that will remain exposed and undisturbed by construction for 3 or more months at a time.
  - Draining any areas where ponding occurs.
  - Placing sandbags in gutters and near storm drains wherever construction activities occur.

  Upon implementation of this measure, adverse impacts from soils erosion would be avoided (Alternatives A through F).

Compliance with building codes would mitigate significant impacts from geologic hazards.

4.6.2 EXTRACTABLE RESOURCES

AFFECTED ENVIRONMENT

An analysis was conducted of the potential for extractable resources to be located on or beneath the site. Based on information available from the U.S. Bureau of Land Management[2] and the California Division of Oil and Gas,[3] the project site is not known to have any extractable resources such as oil, gas, or aggregate, and no resources are currently or are known to have been extracted from the site.

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

The project site and the second site location for Alternative D are not known to contain any extractable resources, and there is no evidence to suggest any would be found during the excavation and grading phases of Alternatives A through F. Therefore, construction of Alternatives A through F would not result in significant impacts to extractable resources.

Since the project site does not contain extractable resources, the existing onsite structures associated with Alternative G would not preclude the mining of essential natural resources. Thus, no significant impacts to extractable resources would occur.

MITIGATION MEASURES

Because no significant impacts to extractable resources would occur, no mitigation measures are necessary.

4.6.3 HYDROLOGY

AFFECTED ENVIRONMENT

Surface Hydrology/Drainage

The project site is level, at street grade, and covered with impervious surfaces. During rain storms, surface water flows to existing subsurface storm drains located on and adjacent to the project site. Five storm drains (one 36-inch, one 24-inch, two 18-inch, and one 16-inch) convey storm water to the San Diego Bay (see Figure 4-57).[4]

The project site is west of the historic mean high tide line of San Diego Bay. However, according to the National Flood Insurance Program, it is within flood hazard Zone C, which denotes minimal flooding.

Groundwater

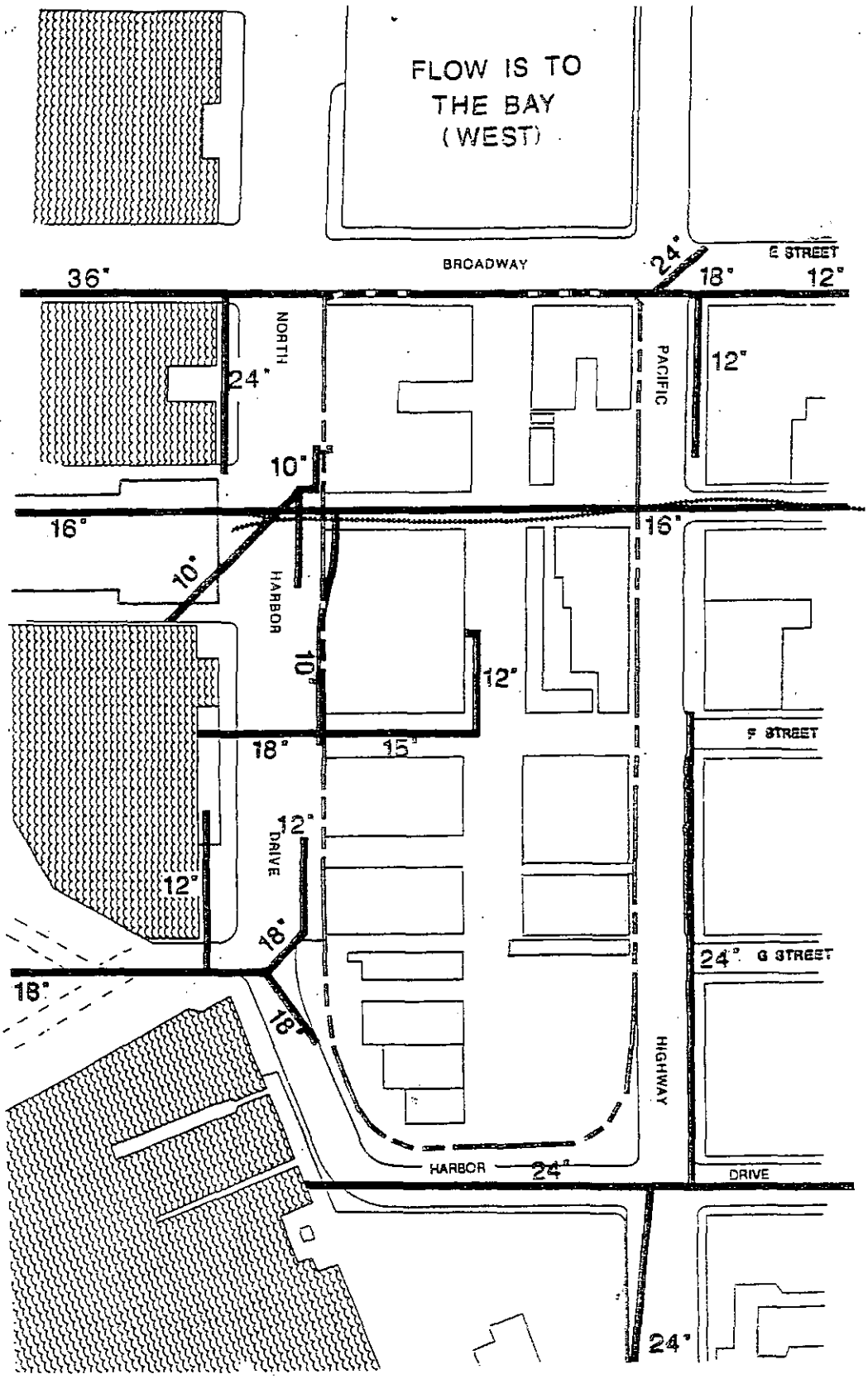
Groundwater was encountered at depths ranging from approximately 7.5 to 11 feet below the project site (approximately 0.5 to 2.5 feet above mean sea level). The proximity of the site to the San Diego Bay causes groundwater level variations due to tidal fluctuations.[5]

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

Implementation of Alternatives A through F would result in increased sedimentation during demolition and construction activities as subsurface soils are exposed to runoff (see Section 4.6.1, page 4-146). No long-term increases in runoff would occur since the Navy Broadway Complex site is already fully developed with impervious surfaces.

One additional concern, expressed by the Environmental Protection Agency (EPA) with respect to water quality, is associated with the potential for nonpoint source pollution from an accidental fuel spill from construction vehicles during project construction or from runoff from the site. In the unlikely event that a large spill were to occur, hydrocarbons could be released directly to the storm-drain system and flow to the bay. The EPA also expressed concern with regard to nonpoint source water contamination from runoff across parking lots. The RWQCB was consulted on this issue and indicated it has not adopted standards or programs for accidental spill response or for control of runoff water quality. RWQCB is developing a runoff control program that would be implemented by municipalities and include standards for water quality in storm-drain systems prior to release into receiving waters. This would have no effect on the project, as the standards would not be directed toward individual developments.[6]

Alternatives A, B, C, D, and F would all include subsurface parking. Construction and operation of these alternatives would require temporary and permanent groundwater dewatering. There is a potential for contaminated groundwater to be drawn to the site during dewatering. This issue is discussed in Section 4.11, page 4-220.



gend

24" STORM DRAIN DIAMETER

RAILROAD

PROJECT SITE

3640001 1/90

Storm Drain Facilities
Navy Broadway Complex Project

0 137 275 FEET

NORTH

MITIGATION MEASURES

- The erosion control plan, described in Section 4.6.1, page 4-147, includes the placement of sandbags in gutters and around storm drains during grading. If fuel was accidentally released during construction, it would collect near the sandbags before it enters the storm drain. The construction personnel will be required to notify local health officials immediately to clean up spilled fuel in order to minimize the amount entering the storm-drain system.

ENDNOTES:

1 Hirsch and Company, 1988.
2 Ortiz, Bureau of Land Management, personal communication, 1988.
3 Guerard, California Division of Oil and Gas, personal communication, 1988.
4 Hirsch and Company, op. cit.
5 Hirsch and Company, Ibid.
6 Posthumous, Regional Water Quality Control Board, personal communication, 1989.

4.7 BIOLOGICAL RESOURCES

4.7.1 AFFECTED ENVIRONMENT

Regional Setting

The project site is located in a highly urbanized region that fronts San Diego Bay. Because of this urbanization, the diversity of native biological species is generally low. However, the adjacent San Diego Bay displays a rich variety of biologic resources. There are three major areas in which significant levels of environmental pollution are found in the bay: heavy metals associated with ship anticorrosion activities near the entrance to the bay, PCBs associated with runoff from activities near Harbor Island, and copper ore residuals associated with ship loading in National City.

Local Setting

The project site is fully developed with urban uses and has been for several decades. As such, there are no areas of the site where biological resources are located that are not substantially disturbed.

Vegetation is confined to a number of invasive weedy species, with a limited amount of landscape material at the periphery of the site. Typical flora found on the site includes mustard (Brassica sp.), Russian thistle (Salsola iberica), horseweed (Conyza canadenis), and sow thistle (Sonchus sp.). None of these species is indigenous to the area and none is considered threatened or endangered by either Federal or state resource agencies.

Wildlife is limited to those species typically associated with highly disturbed urban environments. Species that could be found on the site include the side-blotched lizard (Uta stansburiana), house finch (Carpodacus mexicana), mourning dove (Zenaida macroura), American crow (Corvus brachyrnchos), and European starling (Sturnus vulgaris). As with vegetation, none of these species is considered threatened or endangered by either Federal or state resource agencies.

The San Diego Bay waterfront is located one block west of the site. A monitoring program near the Broadway Pier was conducted in the 1970s to determine if the San Diego Gas and Electric plant, located adjacent to the Navy Broadway Complex, was causing any degradation of marine wildlife habitat. The monitoring program found a rich and diverse marine habitat in this area, and found no signs of substantial deterioration. No other studies are known to have been conducted in the project area since.[1,2] The project site contributes urban runoff to this area through storm water flows that exit the site via storm drains that empty into the bay. Although not conclusive, it can be assumed that runoff from the site does not substantially affect the marine habitat of San Diego Bay because the habitat value in this area is considered rich and diverse.

The offsite location for Navy offices under Alternative D would be in the highly urbanized Centre City East area. Although a specific site has not been selected, it is probable that the biological resources on the site would be similar to those found on the Navy Broadway Complex site.

4.7.2 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

None of the alternatives would alter the biological nature of the Navy Broadway Complex site, which would continue to function as a developed, urban site. There would be no direct effect

on terrestrial biological resources associated with any of the alternatives because there are no known threatened or endangered biological resources on the Navy Broadway Complex site.

The offsite Navy offices associated with Alternative D would also be located in an urbanized area. Although a specific site has not been selected, it is improbable that any sensitive biological resources would be affected due to the urban nature of the area.

Three primary concerns to biological resources have been raised through the environmental scoping process. The first issue raised was that if any over-water structures were developed, they could shade the marine environment and reduce productivity of nearshore plants and animals. Such structures could also eliminate foraging habitat for such birds as the Federal- and state-listed endangered California least tern (Sterna antillarum browni). None of the alternatives includes over-water structures. Representatives of the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) were informed of this and agreed that the project would not have a significant shading impact on marine habitat.[3,4]

A second concern is the potential for bird strikes if reflective materials are used on project structures. The design guidelines proposed for the project (Appendix D) prohibit the use of large areas of reflective glass. Thus, compliance with these guidelines would resolve this potential concern. If nonreflective glass is used, USFWS agrees there would be no significant impact.[5]

The third concern was shading marine resources from onshore project structures. None of the alternatives include any construction in, over, or within 150 feet of the waterfront. An investigation of shading effects of the alternatives found that the highest proposed buildings, a 400-foot-high building on Block 1 and a 500-foot-high building on Block 2 (Alternatives A and F, respectively), would not cast a shadow over the waterfront when the sun is most direct, between 10 a.m. and 2 p.m., during the winter solstice, when shadows are longer than at any other time of the year (see Figures 4-52, page 4-112 and 4-53, page 4-113). Under this condition, shadows would be cast over the near-shore area in the immediate vicinity of the site between sunrise and approximately 9:00 to 9:30 a.m. However, an existing seawall facing the same direction already casts shadows over this area during the same time period. Thus, shadows from development of any of the alternatives would not cause any apparent adverse effects to bay bottom habitats. After reviewing this issue, both USFWS and NMFS agree there would be no adverse effects.[6,7]

An additional concern that was addressed with USFWS and NMFS, but not expressed during environmental scoping, is the discharge of groundwater that would result from construction and operation of Alternatives A, B, C, D, and F, all of which would have subsurface parking that is below the groundwater table. As discussed in Section 4.11 (page 4-212), groundwater beneath the site was tested for contamination and was found to contain no hazardous or toxic substances. Given its proximity to the waterfront and the fact that groundwater beneath the site is near sea level, it is probable that groundwater beneath the site is of similar composition as San Diego Bay. Given these factors, USFWS and NMFS do not feel that discharge to the ocean would adversely affect marine resources.[8,9]

Both USFWS and NMFS would be concerned if it was found that groundwater being discharged contained toxic substances (see Section 4.11, page 4-220). However, both agencies stated that compliance with conditions that may be imposed as part of a National Pollution Discharge Elimination System permit application (also see Section 4.11, page 4-220) would avoid adverse impacts to marine resources.[10,11]

4.7.3 MITIGATION MEASURES

- Design guidelines adopted by the Navy and City of San Diego will specify that no reflective glass will be used in development of new buildings (Alternatives A, B, C, D, and E).

ENDNOTES:

1 Kenney, United States Department of Interior, Fish and Wildlife Service, personal communication, 1989.
2 Hoffman, United States Department of Commerce, National Marine Fisheries Service, personal communication, 1989.
3 Kenney, op. cit.
4 Hoffman, op. cit.
5 Kenney, op. cit.
6 Ibid.
7 Hoffman, op. cit.
8 Kenney, op. cit.
9 Hoffman, op. cit.
10 Kenney, op. cit.
11 Hoffman, op. cit.

4.8 AIR QUALITY

4.8.1 AFFECTED ENVIRONMENT

Climate

San Diego's climate is largely determined by the position of the semi-permanent mid-Pacific high pressure system and the proximity of the moderating effects of the nearby ocean. The resulting Mediterranean-type climate is characterized by cool, dry summers and mild winters. Limited rainfall occurs in winter while summers are often completely dry. Rainfall averages only 10 inches per year and falls mainly from November to late March from the fringes of mid-latitude storms. Temperatures average 62 degrees Fahrenheit with winter lows around 48 degrees Fahrenheit. Temperatures over 100 degrees Fahrenheit or below 32 degrees Fahrenheit almost never occur in the coastal area because the ocean and the onshore breezes moderate any temperature extremes.[1]

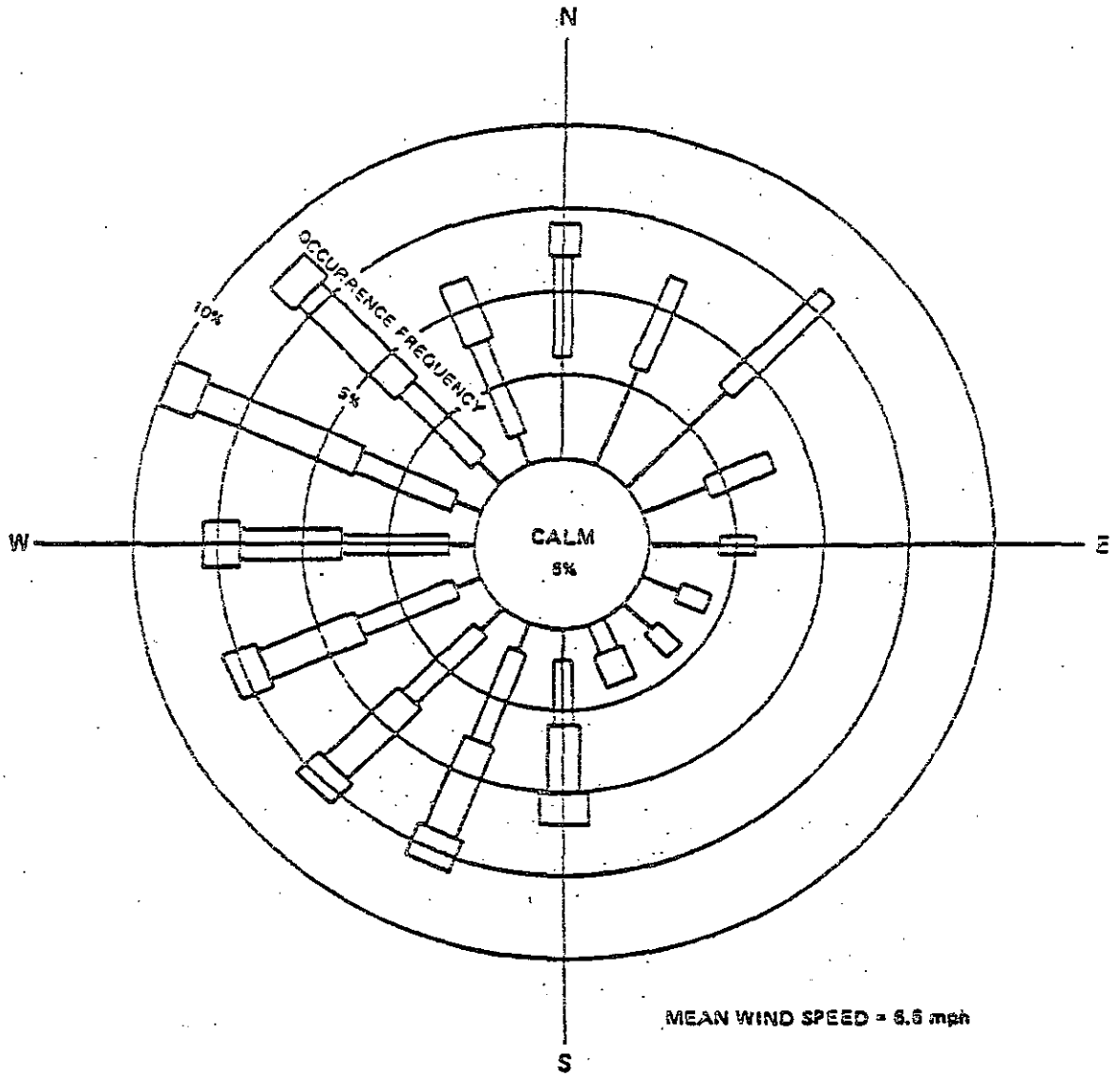
Meteorology

Air pollution transport is primarily affected by prevailing wind patterns. The dominant winds are onshore except in the winter. Figure 4-58 indicates the wind direction frequencies at Lindbergh Field, 1.5 miles north of the project site. Onshore flow dominates with a wide distribution of directions from south-southwest to north-northwest. Offshore flow is less frequent and blows from north-northeast. The onshore flow has moderate average wind speeds of 8 to 12 miles per hour (mph) while the offshore flow is weaker with average speeds of 2 to 4 mph. The onshore flow coming off the ocean is usually unpolluted.[2]

Local air pollution sources contribute to air quality degradation that can become significant when the onshore flow affects the foothill communities east of the metropolitan area. Whereas the moderate onshore flow rapidly ventilates the coastal corridor by day, a slow nocturnal return flow may allow for localized stagnation of pollutants, especially on cool, clear winter nights. There may be isolated carbon monoxide "hot spots" in traffic-intensive areas in the downtown area.[3]

In conjunction with the winds that control horizontal dispersion, there are two characteristic temperature inversions that affect the vertical depth through which any locally generated air pollutants are mixed. When the cool, onshore flow of marine air undercuts a large dome of warm, sinking air over the ocean, a marine/subsidence inversion is formed that creates an impermeable barrier that traps all pollutants within the marine air layer. As this layer moves inland and pollutants are added from urban activities without any dilution from above, the shallow layer becomes progressively more polluted. Hydrocarbons and oxides of nitrogen emitted mainly by vehicular sources in coastal areas react under sunlight, forming photochemical smog (mainly ozone) that can create unhealthful levels of air quality in foothill communities.[4]

A second characteristic inversion forms when the air near the ground cools at night by heat radiation while the undisturbed air aloft remains warm. A shallow radiation inversion forms, trapping surface-based emissions within a few hundred feet of the ground. These inversions may trap vehicular pollutants such as carbon monoxide (CO) or oxides of nitrogen near sources such as freeways, major intersections, or large parking facilities, creating localized health concerns.



Wind Rose at Lindbergh Field
Navy Broadway Complex Project

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Figure 4-58

Both inversions occur throughout the year, but their maximum effectiveness and impact are well separated seasonally. About 70 percent of all summer afternoons have marine/subsidence inversions that may cause degraded air quality in inland areas such as El Cajon or Alpine, while 60 percent of all winter nights have radiation inversions that may cause elevated CO levels around the project site.[5]

Air Quality

Ambient Air Quality Standards

Ambient air quality standards (AAQS) are the levels of air pollutant concentration considered safe to protect the public health and welfare. They are designed to protect people most susceptible to respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Collectively, these are called "sensitive receptors." National AAQS were established by the Environmental Protection Agency (EPA) in 1971 for six air pollution constituents. States have the option to add other pollutants, to require more stringent compliance, or to include different exposure periods.[6] Standards applicable in California are shown in Figure 4-59.

Ambient Air Quality

Ambient air quality is described in terms of compliance with state and Federal standards. One requirement of the California Clean Air Act (1988) is for the California Air Resources Board (CARB) to establish criteria and designate areas of the state as attainment, nonattainment, or unclassified for any state standard. In June 1989, CARB adopted criteria and designations for each area based on those criteria. An attainment designation for an area signifies that pollutant concentrations did not violate the state standard for that pollutant in that area. A nonattainment designation indicates that a pollutant concentration violated the state standard at least once, excluding those occasions when a violation(s) was caused by an exceptional event, as defined in the criteria. The designation of attainment or nonattainment for each pollutant with respect to national standards is based on similar criteria as required by the Clean Air Act Amendments (1977).

The San Diego Air Basin is designated nonattainment for several pollutants. The entire Basin is designated nonattainment of state and national ozone standards, and state PM_{10} (particulate matter less than 10 microns in diameter) standards. The western half of the Basin is designated as nonattainment of state and national carbon monoxide standards and state nitrogen dioxide standards.

Baseline levels of air quality near the project site have been monitored by the San Diego Air Pollution Control District (APCD) for many years at the monitoring station on Island Avenue in downtown San Diego. Table 4.8-1 summarizes the air quality monitoring results from this station for the past 5 years. Specific AAQS exceedances are discussed below.

AMBIENT AIR QUALITY STANDARDS

	CALIFORNIA	FEDERAL	
AIR POLLUTANT	CONCENTRATION	PRIMARY (>)	SECONDARY (>)
Ozone	0.09 ppm, 1-hr. avg. >= *	0.12 ppm, 1-hr. avg.	0.12 ppm, 1-hr. avg.
Carbon Monoxide	9.0 ppm, 8-hr. avg. > a) 20 ppm, 1-hr. avg. >	9 ppm, 8-hr. avg. d) 35 ppm, 1-hr. avg.	9 ppm, 8-hr. avg. 35 ppm, 1-hr. avg.
Nitrogen Dioxide	0.25 ppm, 1-hr. avg. > f)	0.053 ppm, annual avg. e)	0.053 ppm, annual avg. e)
Sulfur Dioxide	0.05 ppm, 24-hr. avg. >= with ozone >= 0.10 ppm, 1-hr. avg. or TSP >= ug/m³, 24-hr. avg. 0.25 ppm, 1-hr. avg. > b)	0.03 ppm, annual avg. 0.14 ppm, 24-hr. avg.	0.50 ppm, 3-hr. avg.
Suspended Particulate Matter (PM10)	30 ug/m³, annual geometric mean > 50 ug/m³, 24-hr. avg. > c) **	50 ug/m³, annual g) arithmetic mean 150 ug/m³, 24-hr. avg.	50 ug/m³, annual g) arithmetic mean 150 ug/m³, 24-hr. avg.
Sulfates	25 ug/m³, 24-hr. avg. >=		
Lead	1.5 ug/m³, 30-day avg. >=	1.5 ug/m³, calendar quarter	1.5 ug/m³, calendar quarter
Hydrogen Sulfide	0.03 ppm, 1-hr. avg. >=		
Vinyl Chloride	0.010 ppm, 24-hr. avg. >=		
Visibility Reducing Particles	In sufficient amount to reduce the prevailing visibility to less than 10 miles at relative humidity less than 70%, 1 obs.		

a) Effective December 15, 1982. The standards were previously 10 ppm, 12-hour average and 40 ppm, 1-hour average.
b) Effective October 5, 1984. The standard was previously .5 ppm, 1-hour average.
c) Effective August 19, 1983. The standards were previously 60 ug/m³ TSP, annual geometric mean, and 100 up/m³ TSP, 24-hour average.
d) Effective September 13, 1985, standard changed from > 10 ug/m³ (>= 9.3 ppm) to > 9 ppm (>= 9.5 ppm).
e) Effective July 1, 1985, standard changed from > 100 ug/m³ (> .0532 ppm) to > .053 ppm (> .0534 ppm).
f) Effective March 9, 1987, standard changed from >= .25 ppm to > .25 ppm.
g) Effective July 1, 1987. The standards were previously:
Primary - Annual geometric mean TSP > 75 ug/m³, and 24-hour average TSP > 260 ug/m³.
Secondary - Annual geometric mean TSP > 60 ug/m³, and 24-hour average TSP > 150 ug/m³.

* ppm = parts per million by volume.
** ug/m³ = micrograms per cubic meter.

National & State Ambient Air Quality Standards

Navy Broadway Complex Project

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Figure 4-59a

AMBIENT AIR QUALITY STANDARDS (continued)

NOTES:

1. California standards, other than carbon monoxide, sulfur dioxide (1 hour), nitrogen dioxide and particulate matter — PM_{10}, are values that are not to be equaled or exceeded. The carbon monoxide, sulfur dioxide (1 hour), nitrogen dioxide and particulate matter — PM_{10} standards are not to be exceeded.

2. National standards, other than ozone and those based on annual averages or annual geometric means, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25° C and a reference pressure of 760 mm of mercury. All measurements of air quality are to be corrected to a reference temperature of 25° C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent procedure which can be shown to the satisfaction of the Air Resources Board to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by the Environmental Protection Agency.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the implementation plan is approved by the EPA.

7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

8. Prevailing visibility is defined as the greatest visibility which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors.

9. At locations where the state standards for oxidant and/or suspended particulate matter are violated. National standards apply elsewhere.

10. Measured as ozone.

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Figure 4-59b

TABLE 4.8-1

DOWNTOWN SAN DIEGO AIR QUALITY MONITORING
SUMMARY 1982-1986
(Number of days standards were exceeded, and maximums for periods indicated)

Pollutant/Standard	1983	1984	1985	1986	1987
Ozone					
1-HR ≥ 0.10 ppm[a]	15	17	23	12	8
1-HR > 0.12 ppm	5	3	5	2	1
1-HR ≥ 0.20 ppm	1	0	0	0	0
Max. 1-HR (ppm)	0.23	0.16	0.16	0.16	0.14
Carbon Monoxide					
1-HR > 20 ppm	0	0	0	0	0
8-HR > 9 ppm	0	0	0	0	
Max. 1-HR (ppm)	16.0	12.0	15.0	16.0	12.0
Max. 8-HR (ppm)	8.0	7.6	9.4	9.0	9.4
Nitrogen Dioxide					
1-HR ≥ 0.25 ppm	0	0	0	0	0
Max. 1-HR (ppm)	0.20	0.17	0.21	0.18	0.22
Sulfur Dioxide					
1-HR ≥ 0.25 ppm	0	0	0	0	0
24-HR ≥ 0.05 ppm	0	0	0	0	0
Max. 1-HR (ppm)	0.04	0.09	0.05	0.05	0.05
Max. 24-HR (ppm)	0.017	0.038	0.023	0.027	0.011
Total Suspended Particulates					
24-HR ≥ 100 ug/m^3	7/58[b]	11/61[b]	14/63[b]	13/59[b]	12/60[b]
24-HR > 260 ug/m^3	0/58[b]	0/61[b]	0/63[b]	0/59[b]	0/60[b]
Max. 24-HR (ug/m^3)	150	164	176	214	194
Lead Particulates					
1-MO ≥ 1.5 ug/m^3	0/12[b]	0/12[b]	0/12[b]	0/12[b]	0/61[b]
Max. 1-MO (ug/m^3)	0.82	0.60	0.38	0.28	.15
Sulfate Particulates					
24-HR ≥ 25 ug/m^3	1/58[b]	0/61[b]	0/54[b]	0/60[b]	ND[c]
Max. 24-HR (ug/m^3)	25.8	18.0	15.4	17.6	

a Changed to 0.09 in 1988.
b Number of days standard was exceeded/number of days sample was taken.
c No Data.

Source: California Air Resources Board, Summary of Air Quality Data, 1983-1987. San Diego APCD Island Avenue Station.

Ozone

During summer's longer daytime hours, plentiful sunshine provides the energy needed to fuel photochemical reactions between nitrogen dioxide and reactive organic compounds. Levels of ozone, a colorless toxic gas that irritates the lungs and damages materials and vegetation, exceed Federal and state standards throughout the Basin. The state standard (0.09 parts per million [ppm], 1 hour) was exceeded an average of 12 days each year at the Island Avenue Station. The less restrictive Federal standard (0.12 ppm, 1 hour) was exceeded an average of 3 days each yearduring 1983 through 1987. The stage one episode (or stage one "smog alert") (over 0.20 ppm/hr),during which hazards to persons with sensitive health can occur, was exceeded once during the 5-year period in 1983. The highest 1-hour ozone level was 0.23 ppm in 1983.[7]

Carbon Monoxide

Carbon monoxide (CO) is a colorless gas, produced almost entirely from automobiles, that interferes with the transfer of oxygen to the brain. From 1983 to 1986, the state and Federal 8-hour CO standard (over 9.0 ppm) was exceeded only once, in 1985. The state and Federal 1-hour CO standards (20.0 ppm and 35.0 ppm, respectively) were not exceeded from 1983 through 1987. The highest 1-hour CO level recorded during this period at the downtown San Diego monitoring station was 9.4 ppm in 1985 and 1987, well within Federal and state standards.[8]

Nitrogen Dioxide

Nitrogen dioxide is a reddish-brown gas that can cause breathing difficulties at high levels. The 1-hour state standard for nitrogen dioxide (over 0.25 ppm, 1 hour) was not exceeded at the Island Avenue Station from 1983 through 1987. The maximum daily nitrogen dioxide concentration measured during the last 5 years was 0.22 ppm in 1987.[9]

Total Suspended Particulates/Particulate Matter

The 24-hour standard for total suspended particulates (TSP) was exceeded on approximately 19 percent of the days monitored between 1983 and 1987. The maximum concentration during this period was approximately twice the standard. On July 1, 1987, the Environmental Protection Agency (EPA) replaced the TSP Standard with a new particulate standard known as PM_{10}. PM_{10} includes only particulate matter 10 microns or less in diameter. PM_{10} is not monitored at the Island Avenue Station. However, the entire air basin is designated as nonattainment for PM_{10} standards, so exceedances at this station would be expected.

State Implementation Plan

The California Air Resources Board (CARB) is the agency responsible for preparing and implementing an Air Quality Management Plan (AQMP). To do this, the CARB has compiled the State Implementation Plan (SIP), which outlines air quality conditions in each of the state's 14 air basins and details measures to achieve the National Ambient Air Quality Standards. In addition, the CARB has established more strict standards for some pollutants due to unique circumstances in California.

The SIP is compiled from air quality plan revisions prepared for each air basin by designated local agencies. In the San Diego Air Basin (SDAB), the Air Pollution Control District (APCD) is responsible for preparing and revising the basin's plans.

The current SIP for the San Diego Air Basin was adopted in 1982. The purpose of the SIP is to develop implementation strategies that will lead to attainment of Federal clean air standards. The San Diego Air Basin continues to be a nonattainment area for ozone and carbon monoxide. However, the SIP for San Diego acknowledged that the region would not likely become an attainment area by the target year, 1987, because of atmospheric conditions that draw polluted air from the South Coast Air Basin to the north into the San Diego Air Basin.[11]

Nevertheless, the SIP contained a number of strategies to reduce air pollutant emissions originating in the San Diego Air Basin. The SIP based its strategies on growth projections for population, employment, and housing. These projections are derived, in part, from adopted general plans. The projections used for the SIP are the San Diego Association of Governments (SANDAG) "Series V" growth projections prepared in 1980. The forecast projected a regionwide population of 2,454,000 in the year 1995. Based on the 1989 population level of 2,418,000, it is anticipated that the 1995 forecast level will be achieved by 1990. The SIP is in the process of being updated to reflect current and expected growth projections. SANDAG Series VII growth projections, which have not yet been adopted, are expected to be the basis for the updated SIP.[13,14,15]

SANDAG is the agency responsible for planning transportation control measures aimed at improving air quality and coordinating the implementation of these measures by local governments. Table 4.8-2 describes four transportation tactics developed by SANDAG that were included in the 1982 SIP for the San Diego Air Basin.

The new SIP is due to CARB in 1991.[16] According to SANDAG and the CARB, the primary means that would be used to reduce emissions within the San Diego Air Basin would be to encourage a reduction in single-occupancy vehicles through ridesharing and public transit.[17,18]

4.8.2 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

A project will normally have a significant effect on the environment if it will violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation or expose sensitive receptors to substantial pollutant concentrations.[19]

The approval of the proposed project would result in increased stationary and mobile sources in the basin. Stationary sources include short-term emissions onsite from construction activities and long-term stationary-source emissions resulting from offsite electrical power generation, natural gas consumption onsite and equipment and materials required by the land uses associated with the completed project. Mobile source considerations include short-term construction activities and long-term traffic generation. The proposed commercial land uses impact air quality almost exclusively through vehicular traffic generated by the development. Generally, such impacts occur both regionally and on a local scale. Regionally, personal commuting, hotel visitor traffic and commercial service trips will add to regional trip generation and increase the vehicle miles traveled (VMT) within the San Diego Air Basin. Locally, traffic within the project vicinity, especially during peak hour traffic, will be added to the local roadway system. The most adverse scenario would be with a congested traffic condition occurring during periods of poor atmospheric ventilation. If this condition occurs there will be a definite potential for the formation of micro-scale air pollution "hot spots" within the project vicinity.

TABLE 4.8-2

1982 STATE IMPLEMENTATION PLAN
TRANSPORTATION TACTICS (T1-T4)

T-1 Ridesharing

- *Increase Level of Rideshare Matching Service*
- Expand Employer Promotion
- Expand Vanpools
- Expand Subscription Bus Service
- Taxipool

T-2 Transit

- Increase Frequency of Service
- Increase Service Area Coverage
- Decrease Transit Travel Times
- Reduce Transit Fares
- Increase Express Bus Service
- Construct Light Rail Transit
- Restructure Transit Routes
- Increase Transit Attractiveness and Convenience

T-3 Bicycling

- Bicycle Lanes and Paths
- Bicycle Parking
- Showers and Lockers for Bicyclists
- Bicycle Racks on Buses
- Direct Subsidy to Bicycle Commuters

T-4 Intercity Bus and Rail

- Increase Frequency of Rail Service
- Decrease Rail Travel Time
- Increase Frequency of Intercity Bus Schedule

The following impact discussion is organized into two general categories for ease of presentation: short-term impacts (fugitive dust and construction equipment emissions) and long-term impacts (stationary and mobile sources).

Short-Term Emissions

The preparation of the project site for building construction would produce two types of air contaminants: exhaust emissions from construction equipment and motor vehicles traveling to the site, and fugitive dust generated as a result of soil movement. These construction impacts could be expected during each phase of development. The emissions produced during grading and

construction activities, although of short-term duration, could be troublesome to workers and adjacent developments, even if prescribed wetting procedures are followed.

Exhaust Emissions From Construction Equipment and Vehicles

Heavy-duty equipment emissions are variable because of day-to-day differences in construction activities and equipment used. Typical emissions for construction equipment were obtained from the Environmental Protection Agency, "Compilation of Air Pollution Emission Factors, Volume I: Mobile Sources," September 1985. Assumptions regarding the type of construction equipment to be used during each phase of construction were based on an environmental impact report prepared for a 700,000-square-foot building in Los Angeles.[20] Appendix E contains the heavy-duty equipment emission factors. Air pollutant emissions for each alternative are given in Table 4.8-3. The amount of pollutants generated by construction equipment indicated in Table 4.8-3 assumes equipment is operating 8 hours each day and all equipment is assumed to be operating at the same time. Also, the phases would occur independent of one another and the total amount of emissions generated for each alternative would occur over several years. Because the emissions would be temporary and would not likely contribute substantially to the exceedance of any air quality standards, the impact would not be significant. Alternative D would generate the greatest amount of construction equipment emissions, followed by Alternative B, Alternatives A and F, Alternative C, and Alternative E. Alternative G would not generate any construction equipment emissions.

Fugitive Dust Emissions

Construction activities are a source of fugitive dust that may have a substantial temporary impact on local air quality. Emissions are associated with demolition, ground excavation and site preparation. Dust emissions vary substantially from day to day, depending on the level of activity, the specific operations, and the prevailing weather. The quantity of fugitive dust generated is proportional to the silt content of the soil (that is, particles smaller than 75 microns in diameter) and inversely proportional to the square of the soil moisture. Based on the U.S. EPA-42 emission factor, typical dust lofting rates are 1.2 tons of fugitive dust per month per acre disturbed.[21] However, this factor does not take into account the relatively high water table at the Navy Broadway Complex, which results in moister soil and less dust generation. Dust control through regular watering and other fugitive dust abatement measures required by the San Diego Air Pollution Control District (APCD) can reduce levels from 50 to 75 percent. Dust emission rates therefore depend on the length of the construction activities and the care with which dust abatement procedures are implemented.

If the uncontrolled dust emission factor is applied to the 15.6-acre site for Alternatives A, B, E, and F, an estimated 18.7 tons of fugitive dust could be generated for each month of construction activity. However, this amount assumes the entire site would be under construction simultaneously and no watering or other dust-palliative measures will be used. In reality, only one-fourth of the site would be under construction at any one time, so the maximum dust generation (not considering the higher moisture content of onsite soils) would be approximately 4.7 tons per month. With dust control measures, the total is reduced to about 2 tons per month of construction activity. Alternative C would generate substantially less dust than Alternatives A, B, and E since the two major buildings on Blocks 1 and 2 would be rehabilitated and not demolished. Alternative D would generate additional fugitive dust at the offsite location. Alternative G would not generate any construction-related fugitive dust. While the overall dust generation is substantial for Alternatives A, B, C, D and E, the daily rate of fugitive dust generation is well

TABLE 4.8-3

ESTIMATED HEAVY-DUTY CONSTRUCTION EQUIPMENT EMISSIONS

	Pollutant (lb/day)				
	Carbon Monoxide	Exhaust Hydrocarbons	Nitrogen Oxides	Sulfur Oxides	Particulates
Alternative A					
Phase 1 (1992-1994)	380	58	899	90	60
Phase 2 (1995-1997)	109	16	257	26	17
Phase 3 (1998-2000)	933	141	2,183	219	146
Phase 4 (2001-2003)	604	91	1,412	142	95
Total	**2,026**	**306**	**4,751**	**477**	**318**
Alternative B					
Phase 1 (1992-1994)	380	58	899	90	60
Phase 2 (1995-1997)	109	16	257	26	17
Phase 3 (1998-2000)	1,098	166	2,568	258	172
Phase 4 (2001-2003)	604	91	1,412	142	95
Total	**2,191**	**331**	**5,136**	**516**	**344**
Alternative C					
Phase 1 (1992-1994)	380	58	899	90	60
se 2 (1995-1997)	77	12	180	18	12	
se 3 (1998-2000)	115	17	270	27	18
Phase 4 (2001-2003)	604	91	1,412	142	95
Total	**1,176**	**178**	**2,761**	**277**	**185**
Alternative D					
Phase 1 (1992-1994)	380	58	899	90	60
Phase 2 (1995-1997)	380	58	899	90	60
Phase 3 (1998-2000)	1,667	252	3,898	392	261
Phase 4 (2001-2003)	604	91	1,412	142	95
Total	**3,031**	**459**	**7,108**	**714**	**476**
Alternative E					
Phase 1 (1996-1998)	**194**	**29**	**455**	**46**	**30**
Alternative F					
Phase 1 (1992-1994)	380	58	899	90	60
Phase 2 (1995-1997)	109	16	257	26	17
Phase 3 (1998-2000)	933	141	2,193	219	146
Phase 4 (2001-2003)	604	91	1,412	142	95
Total	**2,026**	**306**	**4,751**	**477**	**318**
Alternative G	**0**	**0**	**0**	**0**	**0**

Source: U.S. EPA-42 1985 and Michael Brandman Associates 1988.

within the dispersive capacity of the air basin without any adverse air quality impacts. It should also be noted that much of this dust is comprised of large particles that are easily filtered by human breathing passages and settle out rapidly on nearby foliage, parked cars and other horizontal surfaces. The dust thus comprises more of a nuisance rather than any potentially unhealthful air quality impact.

In addition to dust, demolition of onsite structures could result in the release to the airstream of asbestos particles. This issue is addressed in Section 4.11.

Long-Term Mobile-Source Emissions

Regional Air Quality

Emissions from vehicle usage for all the alternatives were calculated in this study with the California Air Resources Board (CARB) computer model. The Urbemis 2 program was specifically designed to quantify the number of vehicles generated by a given land use and the associated emissions. Input variables include the types and extent of the land uses, trip generation rates, wind speed, and temperature. Based on the proposed land uses, as well as other data provided by the traffic consultant, the number of vehicle trips and pollutant emissions were calculated. The projected vehicle trips and emissions are summarized in Table 4.8-4.

TABLE 4.8-4

NET MOBILE SOURCE POLLUTANT EMISSIONS AT PROJECT BUILDOUT

Alternative	Total Vehicle Trips[a]	Net Emissions[a] (lbs/day) TOG[b]	CO[c]	NOx[d]
A	23,000	270	2,405	445
B	25,100	315	2,810	525
C	17,800	180	1,590	280
D	29,200	425	3,800	725
E	9,400	20	190	50
F	23,000	270	2,405	445
G	10,700	0	0	0

a Net vehicle emissions are based on alternative land uses' vehicle-related emissions less the existing (Alternative G) land uses' vehicle-related emissions.
b Total organic gases.
c Carbon Monoxide.
d Nitrogen oxides.

Source: URBEMIS 2 (CARB 1987) and Michael Brandman Associates Analysis 1989.

Alternative A would have the potential to generate 270 pounds per day of total organic gases, 2,406 pounds per day of carbon monoxide and 445 pounds per day of nitrogen oxides. Alternative D would generate more total vehicle trips and vehicle-related emissions than Alternatives A, B, C, E and F. Alternative G (no project) would not generate any additional vehicle-related emissions. Reactive organic gases are a component in the formation of ozone. The model slightly overestimates the quantity of reactive organic gases generated by the project, since total organic gases (TOG) is the category that is quantified by the computer model, and reactive organic gases is a subset of TOG. Ozone measurements taken over the past 5 years at the Island Street Station in Downtown San Diego have exceeded both the state and federal standards for ozone. The project would contribute to an already existing violation of the ozone standard; however, the significance of its impact must be considered in the context of air quality planning, discussed on pages 4-170 through 4-172.

Local Air Quality

The impact of the proposed project alternatives on local air quality with respect to carbon monoxide was assessed through the use of Caltrans Caline 4 Air Quality Model, which allows microscale carbon monoxide concentrations to be estimated along a roadway corridor or intersection. Figure 4-60 shows the locations for which the Caline 4 model was completed. The locations were selected because they were the areas with the highest concentration of traffic near the project site and adjacent to sensitive receptors. Areas along the waterfront were not modeled because traffic volumes are less and, as explained below, the locations selected with higher volumes did not exceed Federal or state standards for carbon monoxide.

Computer readouts for the Caline 4 model appear in Appendix E, and Table 4.8-5 presents the results of the analysis for the worst-case wind angle and windspeed condition. Input to the model was based on the following assumptions and methodology:

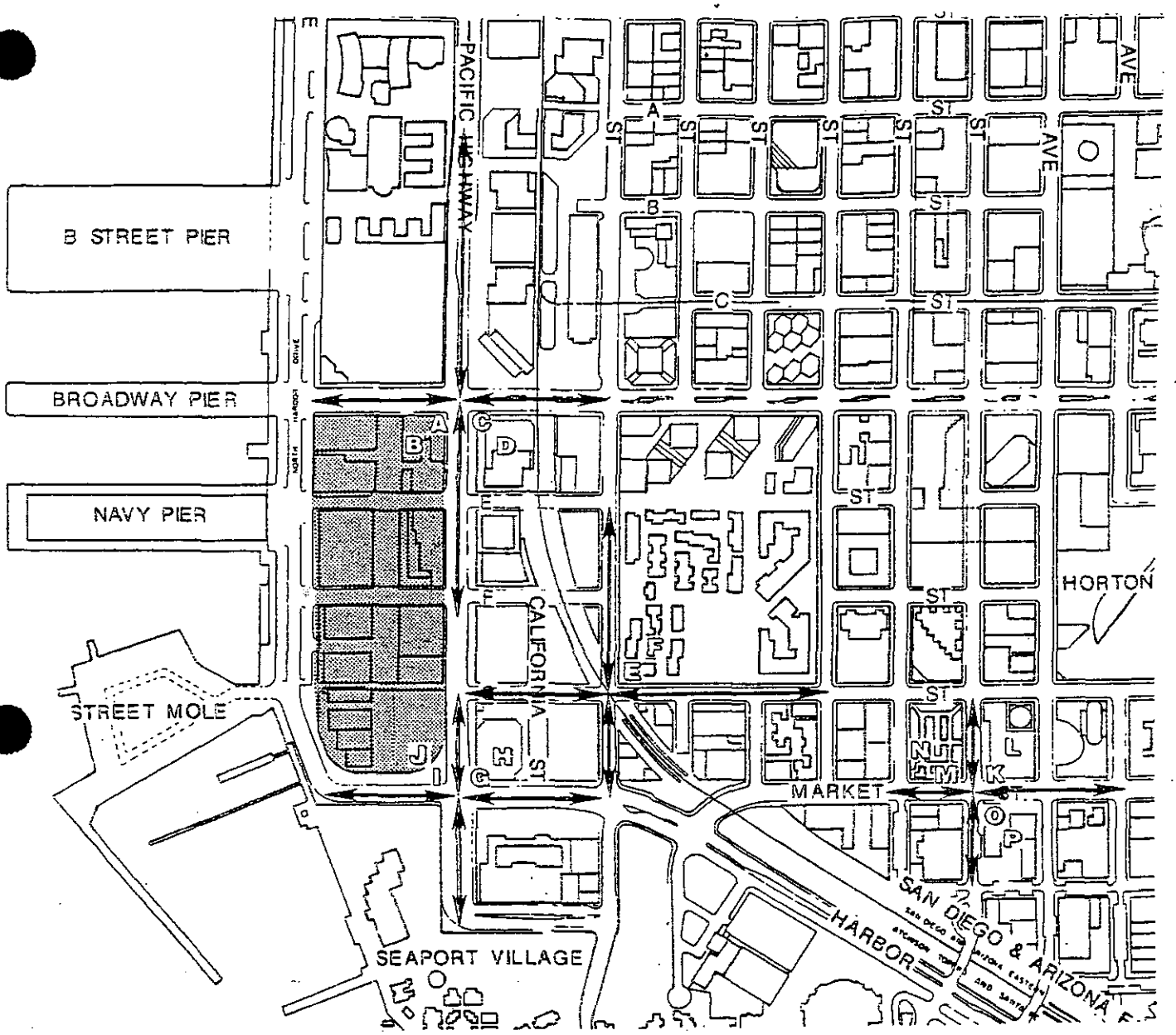
- The calculations assume a meteorological condition of almost no wind (1.0 meters/second), a flat topographical condition between the source and receptor and a mixing height of 1,000 meters.

- CO concentrations are calculated for the 1-hour averaging period, and then compared to the state and Federal 1-hour standards.

- Concentrations are given in parts per million (ppm) at each of the receptor locations indicated in Figure 4-60. The receptor locations indicate sensitive receptors (i.e., condominiums, hotel, park, etc.).

- The average travel speed (most adverse-case assumption) was assumed to be 20 miles per hour on the roadways analyzed. Emission factors provided by the CARB for 1989 were used for existing conditions and emission factors for 2002 were used for all alternative conditions (EMFAC7C, CARB 1987).

- Ambient (background) CO concentrations that represent the second worst-case CO concentration at the San Diego - Island Avenue monitoring station were added to the model results. The background concentration is 11.0 ppm for the 1-hour average (CARB 1987).



Legend

- Project Site
- Indicates Roadway Link Modeled
- A — Receptor Locations

8640001 1/90

Caline Modeling Locations

Navy Broadway Complex Project

0 175 350 FEET

NORTH

TABLE

MAXIMUM CARBON MONOXIDE CONCENTRATIONS[a]
(Parts per Million)

Intersection	Receptor Location on Figure 4-60		Carbon Monoxide Concentrations (1 hr)[b]							
			Existing	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G
Broadway/Pacific Coast Highway										
Receptor	1	A	12.1	12.5	12.5	12.5	12.3	12.5	12.5	12.4
	2	B	11.7	11.9	11.9	11.9	11.8	11.9	11.9	11.9
	3	C	12.1	12.5	12.5	12.5	12.3	12.5	12.5	12.4
	4	D	11.7	11.9	11.9	11.9	11.8	11.9	11.9	11.9
G Street/Kettner St.										
Receptor	1	E	11.8	12.1	12.1	12.1	12.0	12.1	12.1	12.0
	2	F	11.5	11.7	11.7	11.7	11.6	11.7	11.7	11.7
Pacific Coast Highway/ Market Street										
Receptor	1	G	12.5	12.5	12.5	12.5	12.3	12.5	12.5	12.1
	2	H	12.0	12.0	12.0	12.0	11.9	12.0	12.0	11.7
	3	I	12.4	12.5	12.4	12.5	12.3	12.5	12.4	12.1
	4	J	11.9	12.0	12.0	12.0	11.8	12.0	12.0	11.7

TABLE 4.8-5 (continued)

Intersection		Receptor Location on Figure 4-60	Carbon Monoxide Concentrations (1 hr)[b] Existing	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G
Market/Front Street										
Receptor	1	K	12.3	12.5	12.4	12.4	12.3	12.4	12.4	12.3
	2	L	11.9	11.9	11.9	11.9	11.8	11.9	11.9	11.8
	3	M	12.3	12.5	12.4	12.4	12.3	12.4	12.4	12.3
	4	N	11.9	11.9	11.9	11.9	11.8	11.9	11.9	11.8
	5	O	12.3	12.5	12.4	12.4	12.3	12.3	12.4	12.3
	6	P	11.9	11.9	11.9	11.9	11.8	11.9	11.9	11.8

a The federal standards are 35 ppm (1-hour average) and state standards are 20 ppm (1-hour average).
b Concentrations of carbon monoxide in ppm. Background CO levels of 11.0 ppm have been added to the 1-hour average concentrations.

Source: Korve Engineering, Inc. and Michael Brandman Associates, Inc. 1989.

As indicated in Table 4.8-5, carbon monoxide concentrations at the 16 receptor locations for all of the alternatives would not violate state or Federal 1-hour standards. Therefore, none of the project alternatives would have a significant impact on local air quality.

Long-Term Stationary Source Emissions

Stationary source emissions were quantified based on the various proposed land uses and gas and electric consumption rates provided by the San Diego Gas and Electric Company (Sigman 1988 and Schlu 1989). Emission factors were obtained from the U.S. Environmental Protection Agency's Compilation of Air Pollutant Emission Factors, AP-42. Appendix F contains the computer runs for these emissions. The stationary emissions for the proposed project alternatives are summarized in Table 4.8-6.

Consistency With the State Implementation Plan

According to the San Diego APCD, the CARB will be responsible for determining whether the project is consistent with the SIP.[22] CARB indicates that measures to substantially reduce the number of single-occupancy vehicles would be the primary measure of consistency. This is the primary means by which the updated SIP will reduce emissions, so incorporation of such measures would determine conformance with not only the 1982 SIP, but also with the updated SIP currently in preparation.[23]

The U.S. Environmental Protection Agency (EPA) has indicated that because the San Diego Air Basin is a nonattainment area for air quality, all reasonable efforts should be made to not increase vehicular air emissions. In discussions with the EPA, it was agreed that no net increase in vehicle emissions is a desirable goal, but may not be feasible; nevertheless, a reduction in potential emissions to the maximum extent practical is strongly encouraged. EPA acknowledged that conformance with the SIP is a decision made on the local level.[24]

The proposed mixed-use alternatives (A, B, C, D, F) would generate, without mitigation, between 28,000 (Alternative C) and 42,000 (Alternative B) daily vehicle trips, with Alternatives A, D, and F each generating approximately 38,000 trips. Including offsite Navy offices, Alternative D would generate approximately 52,000 daily trips. Approximately 40 percent of these trips (16,000) would be associated with Navy-personnel relocated to the site (except Alternative D, in which 30 percent would be Navy personnel related). These personnel are already located in the San Diego Air Basin, and would simply be relocated to the Navy Broadway Complex. This consolidation provides substantial opportunities to reduce regional emissions loads associated with commute trips by these personnel, as discussed below.

Vehicle trips that are new to the San Diego Air Basin would constitute the remaining approximately 60 percent of the project's trip generation. A Travel Demand Management (TDM) plan (see Section 4.2.3, page 4-70) will be implemented as part of the project to substantially reduce single-occupancy vehicle usage at the site. In addition, the site is located within walking distance of an AMTRAK rail station, 10 bus lines, and two light-rail transit lines (one is under development). This provides a substantial opportunity for utilizing mass transit and reducing single-occupancy vehicle use. By consolidating Navy personnel from a number of smaller, dispersed facilities to a single facility proximate to these transit opportunities, single-occupancy vehicle usage by Navy personnel would be substantially reduced in the air basin, with estimated reductions of 40 percent. Please see Section 4.2.3, page 4-60, for a discussion of TDM-related reductions.

TABLE 4.8-6

PROJECTED STATIONARY SOURCE EMISSIONS[a]
(lbs/day)

Alternative	Pollutant CO	NOx	SOx	Particulates	HC
A	30.04 (14.32)	161.30 (74.83)	14.10 (6.08)	4.74 (2.04)	2.90 (1.60)
B	32.72 (17.00)	176.10 (89.80)	15.50 (7.48)	5.22 (2.52)	3.12 (1.82)
C	23.08 (7.36)	122.82 (36.52)	10.44 (2.42)	3.52 (0.82)	2.38 (1.08)
D	31.50 (15.78)	166.60 (80.3)	13.92 (5.90)	4.70 (2.00)	3.36 (2.06)
E	10.70 (-5.02)	59.22 (-27.08)	5.62 (-2.40)	1.88 (-0.82)	0.82(-0.48)
F	32.72 (17.00)	176.10 (89.80)	15.50 (7.48)	5.22 (2.52)	3.12 (1.82)
G	15.72 (0)	86.30 (0)	8.02 (0)	2.70 (0)	1.30 (0)

a Numbers in parentheses indicate the net emissions over Alternative G (no action).

Source: U.S. EPA-42 1985 and San Diego Gas and Electric 1988 and 1989.

Based on City of San Diego estimates of TDM effectiveness, the TDM measures proposed for this project and the project's proximity to mass transit are estimated to reduce daily vehicle trips from each of the proposed land uses by the following amounts:

Land Use	Estimated Trip Reduction by TDM
Office	60 percent
Hotel	25 percent
Retail	15 percent

Implementation of the TDM plan would reduce the number of trips by approximately 40 percent, which would result in a substantial reduction in potential vehicular emissions. After application of the TDM plan, trips associated with the mixed-use alternatives (A, B, C, D, and F) would range from 17,800 (Alternative C) to 25,100 (Alternative B), with Alternatives A, D, and E at approximately 23,000. Alternative D (including its offsite component) would generate a total of 30,200 trips. If the existing 16,000 vehicles that are associated with Navy personnel located throughout the air basin are discounted, the net increase in daily vehicle trips would be reduced to 2,800 and 7,100 at Navy Broadway Complex, and up to 14,200 with the onsite and second site component of Alternative D (see Table 4.8-7). These net trip levels assume that all of the

remaining vehicles are new to the air basin, a premise which probably overstates the new vehicle travel.

TABLE 4.8-7

NET INCREASE IN VEHICULAR TRAFFIC

Mixed-Use Alternative	Daily Trips After TDM	Less Trips Associated With Navy Personnel	Net New Trips
A	23,000	16,000	7,100
B	25,100	16,000	9,100
C	17,800	16,000	2,800
D (onsite only)[a]	21,700	16,000	5,700
(onsite and offsite)	30,200	16,000	14,200
F	23,000	16,000	7,000

a Does not include offsite Navy offices.

Source: Michael Brandman Associates 1990 and Korve Engineers 1990.

According to the CARB, the incorporation of measures into the project which substantially reduce single-occupancy vehicles would demonstrate consistency with the SIP.[23] As with the CARB and as stated previously, the EPA strongly encourages a reduction in single-occupancy vehicles to the maximum extent practical. The reduction in vehicle trips achieved by implementing the TDM plan would be considerable. There are no known measures to cause a further reduction. Since the Navy Broadway Complex Project would be consistent with the current (1982) and proposed SIP, no significant impacts to air quality would be caused by the project.

4.8.3 MITIGATION MEASURES

The following mitigation measure would be applicable to Alternatives A, B, C, D, E, and F.

Short-Term (Construction) Emissions

- Fugitive dust will be controlled by regular watering as required by the SDAPCD and through erosion control and street washing to reduce dirt spillage onto traveled roadways near the construction site. This measure will be implemented by the project developer and will be included in construction bid packages.

Long-Term Emissions

The primary means by which long-term emissions will be reduced is through a Travel Demand Management (TDM) program. The TDM program for the proposed alternatives is outlined in detail in Section 4.2.3, page 4-60.

ENDNOTES:

1. National Oceanic and Atmospheric Administration (NOAA), 1986.
2. Ibid.
3. San Diego Air Pollution Control District (APCD), 1982.
4. Ibid.
5. Ibid.
6. Ibid.
7. California Air Resources Board, 1983, 1984, 1985, and 1986.
8. Ibid.
9. Ibid.
10. Ibid.
11. San Diego APCD, op. cit.
12. Davis, San Diego APCD, personal communication, 1989.
13. Ibid.
14. Valerio, San Diego Association of Governments (SANDAG), personal communication, 1989.
15. Wyman, California Air Resources Board, personal communication, 1989.
16. Davis, op. cit.
17. Valerio, op. cit.
18. Wyman, op. cit.
19. State of California, California Environmental Quality Act, Statutes and Guidelines, 1986.
20. Michael Brandman Associates, Draft Environmental Impact Report for the California Receptor Center - Los Angeles County, July 1988.
21. U.S. Environmental Protection Agency, Compilation of Air Pollutant Emission Factors (AP-42), September 1985.
22. Davis, op. cit.
23. Wyman, op. cit.
24. Tomsavic, Environmental Protection Agency, personal communication, 1989.
25. Wyman, op. cit.

4.9 NOISE

4.9.1 AFFECTED ENVIRONMENT

Background

People are often subjected to a multitude of sounds in the urban environment. Many of these sounds are by-products of desirable and necessary day-to-day activities. Some of these sounds, such as from cars and trucks, jet aircraft, and air conditioners, are undesirable and may be detrimental to health. These sounds are generally referred to as noise.[1]

The human ear is not equally sensitive to sound at all frequencies, so a specific frequency-dependent rating scale was devised to relate noise to human sensitivity. An A-weighted decibel (dBA) scale performs this compensation by discriminating against frequencies not discernible to the human ear. The basis for comparison is the faintest sound audible to the average, young male, human ear at the frequency of maximum sensitivity.[2]

Using the dBA scale as a base, noise metrics have been developed that attempt not only to measure noise levels but also to adjust those levels according to their duration, frequency, and time between single noise events. A number of Federal agencies, including the Department of Defense, have adopted the day-night average noise level or Ldn as their noise metric to evaluate noise compatibility. The Ldn weights noise events occurring during the nighttime (10:00 p.m. to 7:00 a.m.) hours by 10 dBA, to account for increased sensitivity to noise during that period.[3]

While the Federal government has adopted the Ldn metric for project evaluation, the State of California and the City of San Diego have adopted the Community Noise Equivalent Level (CNEL) as their noise metric.[4] CNEL applies an additional 5 dB penalty to sounds occurring in the evening (7:00 p.m. to 10:00 p.m.). However, the two metrics are essentially equal and used interchangeably. The noise analysis for the Navy Broadway Complex uses the CNEL metric.

Noise Standards

State of California Standards and Guidelines

The State of California has adopted noise standards in areas of regulation not preempted by the Federal government. State standards regulate noise levels of motor vehicles, freeway noise affecting classrooms, noise insulation, occupational noise control, and airport noise. The state has also developed land use compatibility guidelines for community noise environments.[5] None of these state standards would apply to the project because the site is being considered for office, commercial, and hotel uses. However, as a guideline for hotel uses, an interior noise level of 45 dB CNEL in habitable rooms is a residential noise standard.

The State Office of Noise Control has published guidelines for noise and land use compatibility. The objective of the guidelines is to provide a community noise environment that the state deems to be generally acceptable. Office, business commercial, and professional uses are normally acceptable in areas of 70 dB CNEL or less and conditionally acceptable in areas of up to 78 dB CNEL if sound attenuation is provided.[5]

The City of San Diego

The City of San Diego's General Plan provides applicable noise criteria for land use compatibility for transportation sources within its circulation element, as shown in Figure 4-61. Hotels are compatible in areas of 65 dB CNEL or less, office buildings are compatible in areas of 70 dB CNEL or less, and commercial-retail uses are compatible in areas of 75 dB CNEL or less.[7]

Existing Noise Levels

Navy Broadway Complex Site

The dominant noise source in the area is roadway traffic and rail movements. The area is also exposed to aircraft noise from Lindbergh Field, located 1.5 miles to the north, but the levels are not significantly above ambient levels because the site is not directly beneath the primary runway flight tracks. AMTRAK rail lines are located immediately east of the project site. Rail lines, used an average of twice per year by the Navy, also cross through the site along E Street.

A noise survey was conducted by MBA staff on July 6 and 7, 1988 to document the existing noise environment in the project vicinity. Noise measurements were conducted at four sites for a total of 8 hours. The noise monitoring locations are identified in Figure 4-62, and the results are summarized in Table 4.9-1. The Lmax (maximum sound level recorded during the noise measurement duration) ranged from 72.0 dB to 84.0 dB. Noise sources contributing to the Lmax were those typical of an urban environment (i.e., semi-trucks, buses, a fire truck with siren, and airplanes).

Traffic Noise

Existing traffic noise along the major roadway was calculated using the Federal Highway Traffic Noise Prediction Model.[8] This model was modified to generate CNEL and 24-hour average noise level (Leq) values. Model input data were derived from the traffic analysis (Section 4.2, page 4-35) and from field observations. Input includes ADT levels; day/night percentages of autos, medium, and heavy trucks; vehicle speeds; ground attenuation factors; and roadway widths.

The distances from existing roadway centerlines to the 60, 65, and 70 dB CNEL and Leq are provided in Table 4.9-2. The noise contour distances describe worst-case conditions since they do not take into account any obstructions to the noise path (i.e., walls, buildings, etc.). The existing 70 dB CNEL and Leq do not extend onto the project site.

Lindbergh Field Aircraft Noise

According to the Lindbergh Field Quarterly Noise Report (for the period ending March 31, 1988), the project site is located outside the 65 dB CNEL and thus is not subject to significant aircraft noise impacts.[9]

4.9.2 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

The potential noise impact of the project can be divided into short- and long-term impacts. Short-term impacts are due to noise generated by equipment during the construction phase. Long-term impacts are associated with the generation of project traffic along both existing and proposed

	Land Use	Annual Community Noise Equivalent Level in Decibels: 60	55	60	65	70	75
1	Outdoor Amphitheaters (may not be suitable for certain types of music.						
2	Schools, Libraries						
3	Nature Preserves, Wildlife Preserves						
4	Residential-Single Family, Multiple Family, Mobile Homes, Transient Housing						
5	Retirement Home, Intermediate Care Facilities, Convalescent Homes						
6	Hospitals						
7	Parks, Playgrounds						
8	Office Buildings, Business and Professional						
9	Auditoriums, Concert Halls, Indoor Arenas, Churches						
10	Riding Stables, Water Recreation Facilities						
11	Outdoor Spectator Sports, Golf Courses						
12	Livestock Farming, Animal Breeding						
13	Commercial-Retail, Shopping Centers, Restaurants, Movie Theaters						
14	Commercial-Wholesale, Industrial Manufacturing, Utilities						
15	Agriculture (except Livestock), Extractive Industry, Farming						
16	Cemeteries						

COMPATIBLE
The average noise level is such that indoor and outdoor activities associated with the land use may be carried out with essentially no interference from noise.

INCOMPATIBLE
The average noise level is so severe that construction costs to make the indoor environment acceptable for performance of activities would probably be prohibitive. The outdoor environment would be intolerable for outdoor activities associated with the land use.

Source: City of San Diego Planning Department

City of San Diego Noise Land Use Compatibility Chart

Navy Broadway Complex Project

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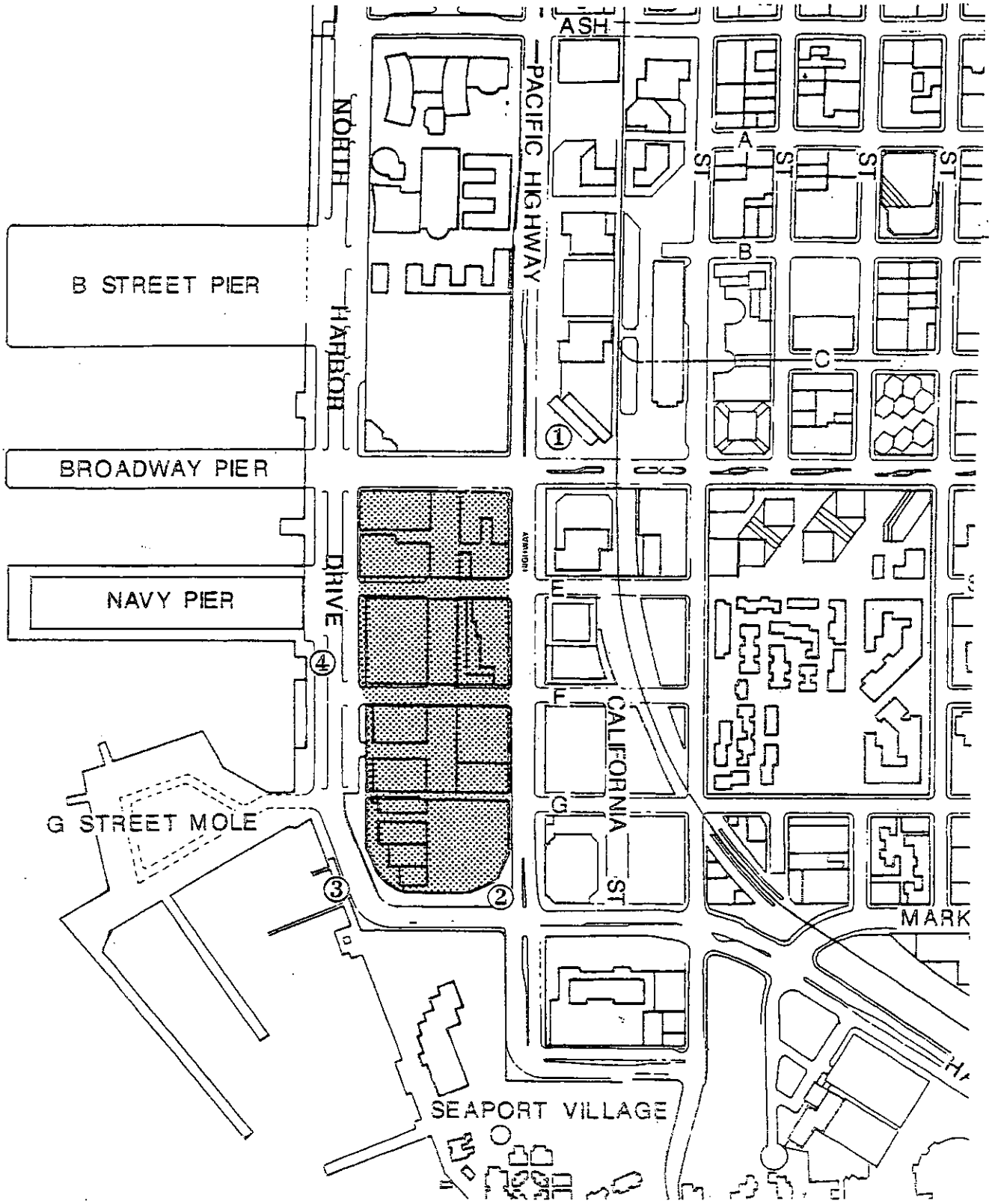
Figure 4-61



Legend

① Noise Monitoring Locations

Project Site

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Noise Monitoring Locations
Navy Broadway Complex Project

0 225 450 FEET

NORTH

TABLE 4.9-1

NOISE MEASUREMENT RESULTS

Location	Lmax[a]	L_{10}[b]	L_{33}[c]	L_{50}[d]	L_{90}[e]
Site 1					
July 6, 1988 (5:07-6:07 p.m.)	84.0	69.0	65.0	63.5	59.5
July 7, 1988 (1:13-2:13 p.m.)	79.0	72.0	69.0	67.0	62.0
Site 2					
July 6, 1988 (12:35-1:35 p.m.)	82.5	70.5	66.5	64.5	60.0
July 7, 1988 (12:01-1:01 p.m.)	80.5	68.0	64.0	62.5	58.5
Site 3					
July 6, 1988 (2:30-3:30 p.m.)	84.0	69.0	65.0	63.0	58.0
July 7, 1988 (7:59-8:59 a.m.)	72.0	76.0	67.0	62.0	57.0
Site 4					
July 7, 1988 (9:13-10:13 a.m.)	77.5	62.5	58.5	57.0	53.5
July 7, 1988 (10:17-11:17 a.m.)	77.5	63.5	60.0	58.5	55.5
Range	72.0-84.0	62.5-76.0	58.5-69.0	57.0-67.0	53.5-62.0

a Lmax is the maximum sound level recorded during the noise measurement duration.
b L_{10} is the sound level exceeded 10 percent of the noise measurement duration.
c L_{33} is the sound level exceeded 33 percent of the noise measurement duration.
d L_{50} is the sound level exceeded 50 percent of the noise measurement duration.
e L_{90} is the sound level exceeded 90 percent of the noise measurement duration; it is also considered the background noise level.

Source: Michael Brandman Associates 1989.

TABLE 4.9-2

EXISTING ROADWAY NOISE LEVELS (LEQ-P.M. PEAK)[a]

Roadway Segment	Distance to CNEL From Roadway Centerline (ft.) 55 dB	65 dB	72 dB	LEQ at[b] 50 feet (dB)
Harbor Drive				
North of Grape Street	3,515	353	<50	71.5
Grape Street to Ash Street	2,264	218	<50	69.9
Ash Street to Broadway	1,481	150	<50	68.3
South of Broadway	619	62	<50	65.5
Ash Street				
West of Pacific Highway	586	61	<50	64.5
Pacific Highway to India	439	46	<50	63.6
Broadway				
West of Pacific Highway	956	99	<50	66.4
Pacific Highway to India	1,453	147	<50	68.2
Grape Street				
West of Pacific Highway	1,042	105	<50	67.3
Pacific Highway to India	1,083	109	<50	67.5
Hawthorne Street				
West of Pacific Highway	929	94	<50	66.8
Pacific Highway to India	1,073	108	<50	67.5
India Street				
North of Hawthorne	248	28	<50	61.1
Hawthorne to Ash Street	258	28	<50	61.3
Ash to Broadway	207	<50	<50	60.3
G Street to Market	140	<50	<50	58.6
Kettner Boulevard				
North of Hawthorne	346	37	<50	62.6
Hawthorne to Ash	269	29	<50	61.4
Ash to Broadway	305	33	<50	62.0
Broadway to F Street	181	<50	<50	59.7
F Street to Market	289	31	<50	61.8
Market Street				
West of Pacific Highway	786	81	<50	65.8
East of Kettner Boulevard	672	70	<50	65.1

TABLE 4.9-2 (continued)

Roadway Segment	Distance to CNEL From Roadway Centerline (ft.) 55 dB	65 dB	72 dB	LEQ at[b] 50 feet (dB)
Laurel				
Pacific Highway to Kettner Blvd.	2,171	218	<50	70.2
Pacific Highway				
North of Hawthorne	2,343	237	<50	70.0
Hawthorne to Ash	2,252	228	<50	69.6
Ash to Broadway	1,792	183	<50	68.6
Broadway to Market	1,282	133	<50	67.2
South of Market	1,680	172	<50	68.3

a Does not measure any obstructions to noise path.
b CNEL measured in feet form centerline of near travel lane.

Source: Michael Brandman Associates 1988.

roadways. The following describes the general characteristics of each type of noise impact for each of the project alternatives.

Short-Term Construction Noise Impacts

Construction noise represents a short-term impact on ambient noise levels for each of Alternatives A through F. Noise generated by construction equipment, including earth movers, material handlers, and portable generators can reach high levels. The U.S. Environmental Protection Agency[10] has found that the noisiest equipment types operating at construction sites typically range from 88 dBA to 91 dBA at 50 feet. Typical operating cycles may involve 2 minutes of full power, followed by 3 or 4 minutes at lower settings. Although noise ranges were found to be similar for all construction phases, the erection phase (laying subbase and paving) tended to be less noisy. Noise levels vary from 79 dBA to 88 dBA (energy average) at 50 feet during the erection phase of construction.

Implementation of any of Alternatives A through F would cause a short-term annoyance to noise-sensitive land uses in the surrounding area due to construction activities. On weekends when, due to the visitor-serving nature, more people are in the area, this impact may be considered a significant nuisance impact to users of the nearby waterfront.

Alternative G, the no action alternative, would result in no short-term noise impacts to the project area.

Long-Term Noise Impacts

With community noise assessment, changes in noise levels greater than 3 dB are often identified as significant to sensitive receptors, while changes less than 1 dB are not discernible to most residents and are not considered significant. In the range of 1 to 3 dB, residents who are very sensitive to noise may perceive a slight change. No scientific evidence is available to support the use of 3 dB as the significant threshold. In laboratory testing situations, humans are able to detect noise level changes of slightly less than 1 dB. However, in a community noise situation, the noise exposure is over a long time period, and changes in noise levels occur over years, rather than the immediate comparison made in a laboratory situation. Therefore, the level at which changes in community noise levels become discernible is likely to be some value greater than 1 dB, and 3 dB appears to be appropriate for most people.

Table 4.9-3 quantifies the distances to the 60, 65, and 70 dB CNEL contours and lists the CNEL value at 50 feet from the centerline of the near travel lane for roadways in the project vicinity for each of the alternatives. Long term buildout of the project area is assumed. As with the existing noise levels, the future roadway noise levels were calculated based on the Federal Highway Administration's Highway Traffic Noise Prediction Model. The roadway noise levels presented in Table 4.9-3 assume no natural or man-made shielding between the roadway and the noise receptor.

As in any downtown urban area characterized by dense development, future traffic noise levels are expected to be relatively high in the vicinity of the Navy Broadway Complex. The proposed hotels in Alternatives A, B, C, D, and F would be within the 65 dB CNEL contour from Pacific Highway. This could result in noise levels in excess of 45 dB CNEL in hotel rooms, which would be significant.

TABLE 4.9-3

FUTURE ROADWAY NOISE LEVELS[a]

oadway Segment: Broadway East of Harbor

ternative	Distance (feet) From Roadway Centerline to CNEL 70 CNEL	65 CNEL	60 CNEL	Future CNEL (dB) at 50 Feet[b]	Increase Over Existing CNEL (dB) at 50 Feet	Increase of Each Alternative Over Future CNEL (dB) at 50 Feet
A	70	208	654	69.7	3.6	0.6
B	71	212	666	69.8	3.6	0.6
C	69	205	643	69.6	3.5	0.5
D	68	202	634	69.6	3.4	0.4
E	69	205	643	69.6	3.5	0.5
F	71	212	666	69.8	3.6	0.6
G	62	184	577	69.2	3.0	0.0

adway Segment: Broadway East of Kettner

ternative	Distance (feet) From Roadway Centerline to CNEL 70 CNEL	65 CNEL	60 CNEL	Future CNEL (dB) at 50 Feet[b]	Increase Over Existing CNEL (dB) at 50 Feet	Increase of Each Alternative Over Future CNEL (dB) at 50 Feet
A	111	344	1,086	71.9	4.0	0.8
B	107	329	1,037	71.7	3.8	0.6
C	108	333	1,052	71.8	3.8	0.6
D	100	306	965	71.4	3.4	0.2
E	108	333	1,052	71.8	3.8	0.6
F	107	329	1,037	71.7	3.8	0.6
G	95	292	919	71.2	3.2	0.0

TABLE 4.9-3 (continued)

Roadway Segment: Harbor South of Broadway

Alternative	Distance (feet) From Roadway Centerline to CNEL: 70 CNEL	65 CNEL	60 CNEL	Future CNEL (dB) at 50 Feet[b]	Increase Over Existing CNEL (dB) at 50 Feet	Increase of Each Alternative Over Future CNEL (dB) at 50 Feet
A	0	82	258	66.7	1.4	0.7
B	0	79	250	66.5	1.3	0.6
C	0	82	258	66.7	1.4	0.7
D	0	67	212	65.8	0.5	(0.2)
E	0	82	258	66.7	1.4	0.7
F	0	79	250	66.5	1.3	0.6
G	0	69	218	65.9	0.7	0.0

Roadway Segment: Harbor West of Pacific

Alternative	Distance (feet) From Roadway Centerline to CNEL: 70 CNEL	65 CNEL	60 CNEL	Future CNEL (dB) at 50 Feet[b]	Increase Over Existing CNEL (dB) at 50 Feet	Increase of Each Alternative Over Future CNEL (dB) at 50 Feet
A	72	221	695	70.3	4.3	2.5
B	74	227	715	70.4	4.4	2.6
C	63	191	601	69.6	3.7	1.9
D	57	170	536	69.1	3.2	1.4
E	63	191	601	69.6	3.7	1.9
F	74	227	715	70.4	4.4	2.6
G	0	126	394	67.8	1.8	0.0

TABLE 4.9-3 (continued)

adway Segment: Kettner South of Broadway

ternative	Distance (feet) From Roadway Centerline to CNEL 70 CNEL	65 CNEL	60 CNEL	Future CNEL (dB) at 50 Feet[b]	Increase Over Existing CNEL (dB) at 50 Feet	Increase of Each Alternative Over Future CNEL (dB) at 50 Feet
A	0	92	289	66.8	7.3	0.2
B	0	94	294	66.8	7.3	0.2
C	0	93	292	66.8	7.3	0.2
D	0	76	238	65.9	6.4	(0.7)
E	0	93	292	66.8	7.3	0.2
F	0	94	294	66.8	7.3	0.2
G	0	89	280	66.6	7.1	0.0

adway Segment: Pacific South of Broadway and North of Market

ve	Distance (feet) From Roadway Centerline to CNEL 70 CNEL	65 CNEL	60 CNEL	Future CNEL (dB) at 50 Feet[b]	Increase Over Existing CNEL (dB) at 50 Feet	Increase of Each Alternative Over Future CNEL (dB) at 50 Feet
A	97	288	904	70.6	3.4	2.1
B	92	270	848	70.4	3.1	1.8
C	105	313	983	71.0	3.7	2.4
D	84	241	754	69.9	2.6	1.3
E	105	313	983	71.0	3.7	2.4
F	92	270	848	70.4	3.1	1.8
G	67	181	563	68.6	1.3	0.0

TABLE 4.9-3 (continued)

Roadway Segment: G Street West of Seventh

Alternative	Distance (feet) From Roadway Centerline to CNEL 70 CNEL	65 CNEL	60 CNEL	Future CNEL (dB) at 50 Feet[b]	Increase Over Existing CNEL (dB) at 50 Feet	Increase of Each Alternative Over Future CNEL (dB) at 50 Feet
A	0	110	347	67.6	3.5	0.5
B	0	111	348	67.6	3.5	0.5
C	0	109	342	67.5	3.5	0.5
D	0	107	337	67.4	3.4	0.4
E	0	109	342	67.5	3.5	0.5
F	0	111	348	67.6	3.5	0.5
G	0	97	305	67.0	3.0	0.0

Roadway Segment: Market Street West of Ninth and East of Kettner

Alternative	Distance (feet) From Roadway Centerline to CNEL 70 CNEL	65 CNEL	60 CNEL	Future CNEL (dB) at 50 Feet[b]	Increase Over Existing CNEL (dB) at 50 Feet	Increase of Each Alternative Over Future CNEL (dB) at 50 Feet
A	87	271	854	71.2	3.6	0.6
B	85	263	829	71.0	3.4	0.4
C	85	262	826	71.0	3.4	0.4
D	76	235	740	70.5	2.9	(0.1)
E	85	262	826	71.0	3.4	0.4
F	85	263	829	71.0	3.4	0.4
G	77	239	753	70.6	3.0	0.0

a Does not consider any obstructions to the noise path.
b CNEL measured in feet from the centerline of the near travel lane.

As Table 4.9-3 indicates, roadway noise level increases due to each of the development alternatives ranges from 0.4 dB to 2.6 dB over the no action alternative, Alternative G. The projected noise level increases for each of the alternatives are at a level that is less than significant.

Rail traffic along the rail lines that bisect the site would be infrequent, occurring an average of twice per year. Thus, any noise associated with this source would not be considered significant due to its infrequency.

Alternative G would result in no long-term noise impacts to the project area, although it would be exposed to additional noise from traffic as traffic levels associated with cumulative development increase.

4.9.3 MITIGATION MEASURES

The following mitigation measures are recommended for each of the Alternatives A through F of the proposed Navy Broadway Complex project.

Short-Term Impacts

- Compliance with the San Diego County Code requires that significant noise-generating construction activities will be limited to Monday through Saturday, 7:00 a.m. to 7:00 p.m.

Long-Term Impacts

- Prior to the issuance of building permits for the hotel structures (Alternatives A, B, C, D, and F), building specifications for hotel structures describing the acoustical design features of the structures and evidence prepared by an acoustical consultant that these sound attenuation measures will satisfy the interior noise standard of 45 dB CNEL shall be submitted to the City Building Inspection Department for approval.

ENDNOTES:

1 U.S. Department of Housing and Urban Development, 1985.
2 Harris, 1979.
3 Federal Interagency Committee on Urban Noise, 1980.
4 City of San Diego, 1976a.
5 State of California, 1976.
6 *Ibid.*
7 City of San Diego, op. cit.
8 U.S. Department of Transportation, 1978.
9 San Diego Unified Port District, 1988.
10 U.S. Environmental Protection Agency, 1971.

4.10 CULTURAL RESOURCES

This section is based upon a cultural resources study that was prepared for the project. A complete copy of the report is available for review at the Broadway Complex Project Office, 555 West Beech Street, Suite 101, San Diego, California 92101-2937. The study involved a literature search of the historical background of the project area and a surface and subsurface investigation of the site, to document cultural properties located within the project area that may qualify for the National Register of Historic Places. The cultural resources study was prepared in accordance with the regulations for protection of Historic Properties (36 CFR Part 800), which implement Section 106 of the National Historic Preservation Act. Section 106 mandates Federal agencies to take into account the effects of their undertakings on properties included in or eligible for the National Register. The National Register Criteria for Evaluation (36 CFR 60.4) are used to assess a property's eligibility. This study is being used to make determinations of eligibility in consultation with the California State Historic Preservation Officer (SHPO). SHPO has concurred with the basic findings of this analysis. For those properties found to meet National Register criteria, consultation will be initiated with the Advisory Council on Historic Preservation, as required by Section 106. The Advisory Council's comment will be included in the final environmental documentation.

4.10.1 AFFECTED ENVIRONMENT

Regional Historic Setting

The Navy Broadway Complex includes 10 major structures and various smaller buildings that were constructed between the early 1920s and the mid-1940s. Many of the buildings have been remodeled and are well maintained, giving the impression that the complex is not as old as the original construction dates would suggest.

The project site is bounded by Pacific Highway, Harbor Drive (on two sides), and Broadway. These streets were formerly known as Atlantic Street (Pacific Highway), Ocean Street (Harbor Drive), and D Street (Broadway), and were laid out as part of the development of New Town San Diego during the 1850s. The majority of the project site was actually located below the high tide line during the 1800s (when New Town San Diego was laid out). It was only after the improvement of the harbor began in the early 1900s, culminating in the construction of a bulkhead and the use of dredged materials to fill behind the bulkhead, did the project site become dry land.

Overview of Project Area History

Prior to 1850, the focus of activity in San Diego revolved around the Presidio of San Diego, Old Town, and the Mission San Diego de Alcala, all of which were located near the San Diego River several miles to the north of the site. The project area consisted primarily of tidal flats and open shore. In 1850, a survey party that included William Heath Davis and Andrew B. Gray chose the upland area near the project site for a camp. Gray thought the place would make a fine site for a town. Gray and Lieutenant T. D. Johns drew up plans for a new town site, which encompassed the project area. The New Town concept was presented to a group of San Diegans, who on March 16, 1850, formed a partnership to buy and develop the 160-acre site[1]. At the time, about half of the New Town plots lay below the level of mean high tide.

The construction of New Town began in the summer of 1850. A deep-water wharf was constructed just to the south of the present Navy Broadway Complex. After the wharf was

completed in 1851, ships could off-load cargo and passengers directly at the pier rather than requiring the use of lighters to ferry them to the shore.[2,3] In October 1868, Stephen S. Culverwell constructed a wharf at New Town at the foot of F Street, which extended 150 feet into the bay.[4]

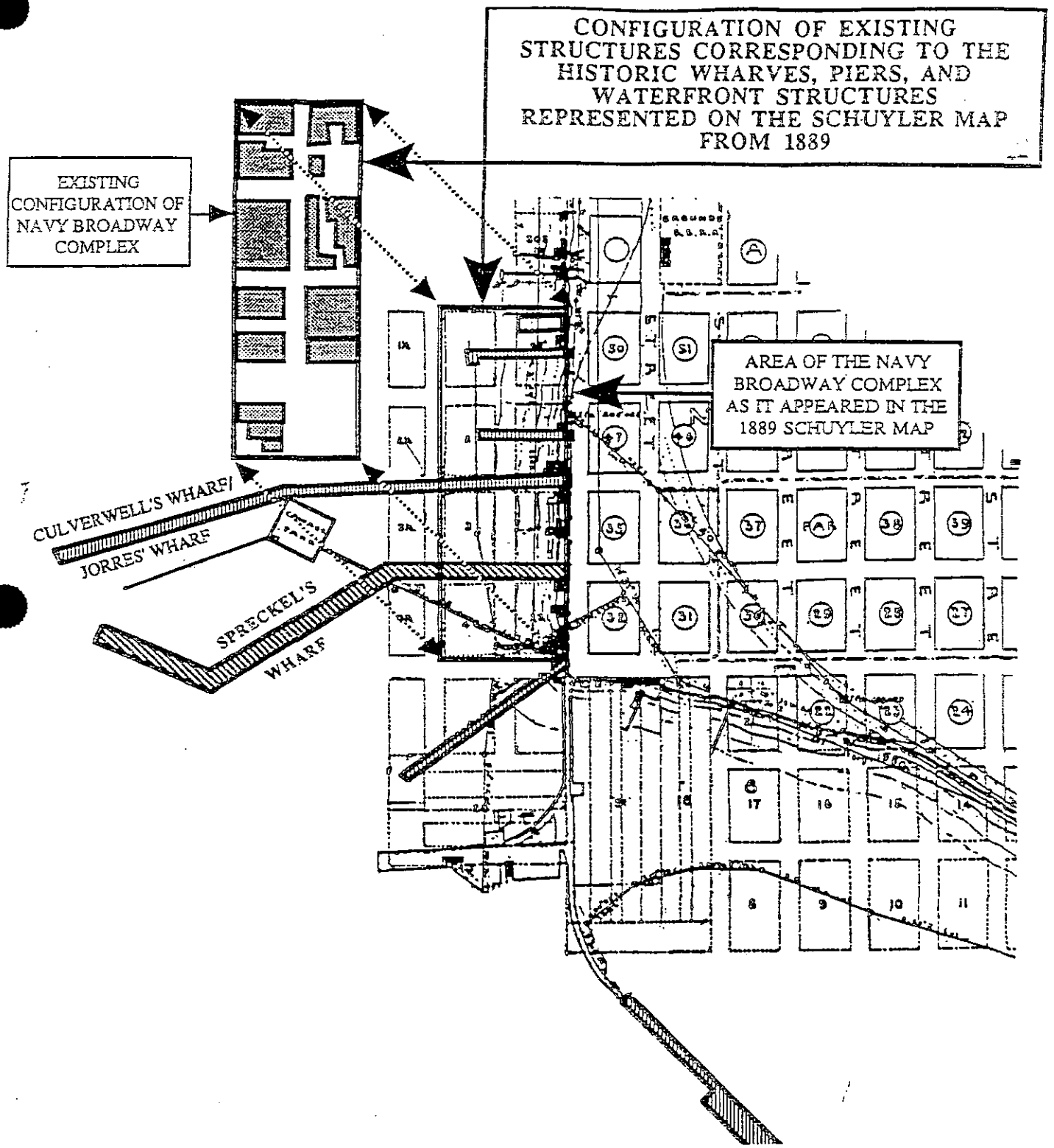
In the mid-1880s, the City experienced the first of a series of major construction booms. City crews paved streets, gas and electricity were introduced, street car tracks were laid down, and several water mains and drains carried sewage and stormwater to the deep waters of the bay. Along the waterfront, wharves became a focal point of the importation of goods into San Diego.

The major wharves constructed within the current boundaries of the project site included Culverwell's Wharf and the Spreckels Brothers' Wharf (see Figure 4-63). The Spreckels Brothers' Wharf was also known as the Coal Bunkers Wharf.[5] It was approximately 2,000 feet long, in a zig-zag configuration, with rail carts and steam-driven cable lines and winches to unload cargos of coal, cement and lumber. The wharf was located at the foot of G Street and extended through the southern area of the present Navy Broadway Complex. Adjacent to the Spreckels Brothers' Wharf was Culverwell's Wharf, at the foot of F Street, which also extended out several hundred feet over the tidal area to deep water. Culverwell's Wharf was subsequently purchased by William Jorres and later bore his name. Structures were constructed at the end of the wharf in the approximate locations of Buildings Nos. 7 and 8. The construction of these wharves improved shipping conditions and further solidified the advance in the harbor development and waterfront activities.[6]

Prior to 1900, the area along Pacific Highway, paralleling the high tide line, included a concentration of shanties, wharves, and businesses. The area was unique to San Diego and played an important role in the flourishing development of New Town. As shown on the illustrations drawn from the Sanborn Fire Map of 1904, the Navy Broadway Complex site included several recorded structures (see Figure 4-64). In addition, photographs from the 1880s through the early 1900s reveal that the concentration of structures was even greater than was shown on the Sanborn Fire Maps (see Figure 4-65).

In 1911, the City of San Diego, along with Los Angeles and Oakland, petitioned the State of California to grant the tidelands within the respective harbors to the cities for development. The bill authorizing this transfer passed, with the provision that the City of San Diego would make improvements (primarily dredging, filling, and the construction of bulkheads) to the tideland areas.[7] The construction of the new concrete bulkhead and the filling of the tidelands occurred by dredging of the channel along Broadway and the deposition of the dredged material behind the bulkhead.

Based upon photographs of the dredging operation, it appears that the shanties and piers or wharves that were located in the fill area were buried beneath the dredged fill. In 1919, the City of San Diego deeded approximately 1.55 acres to the Navy at the corner of Broadway and Harbor Drive. The remaining Navy Broadway Complex property was subsequently granted to the Navy in several land exchange transactions with the City of San Diego.



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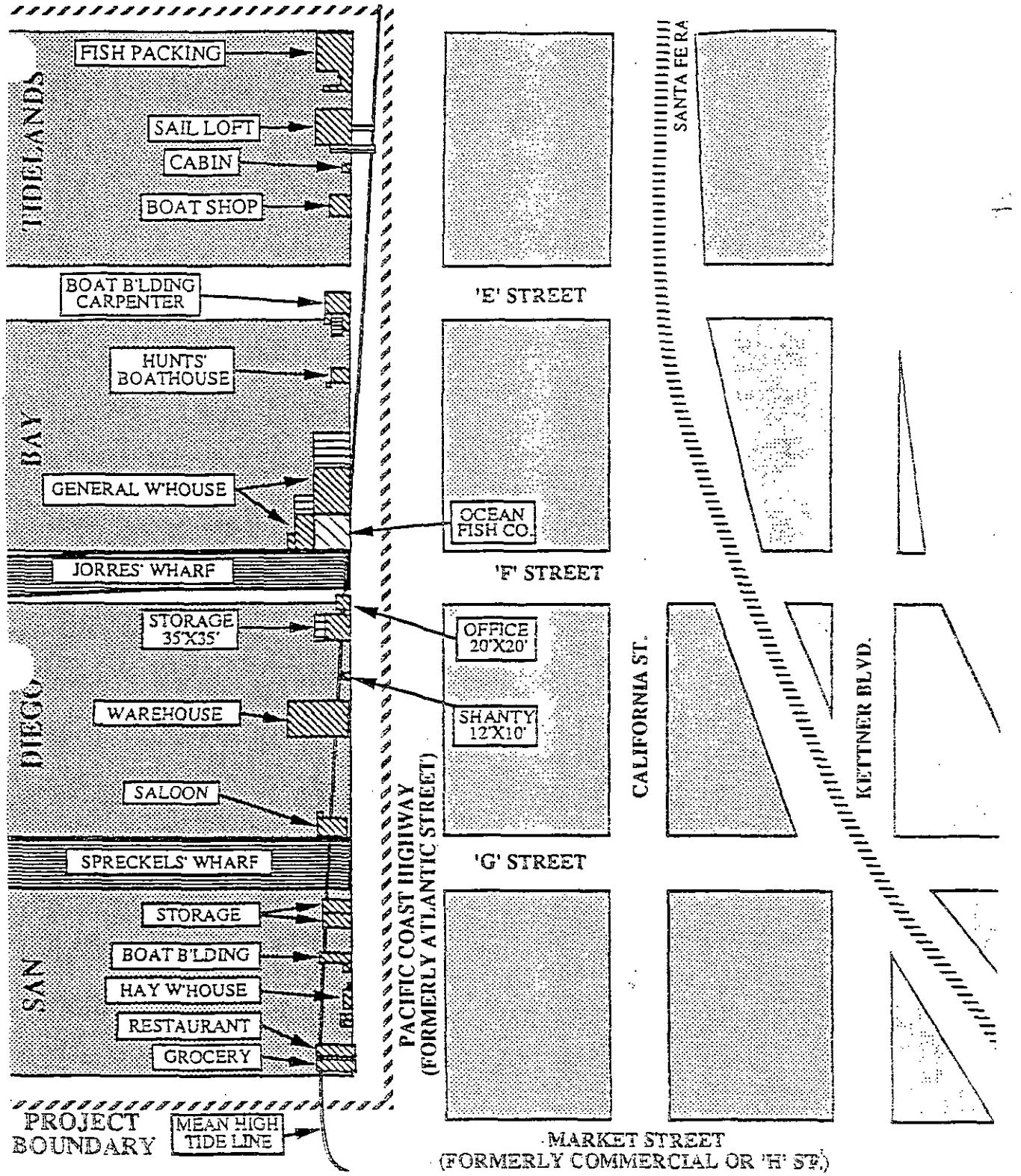
NO SCALE

NORTH

San Diego Bay Waterfront (1889) with Present Day Navy Broadway Complex Superimposed

Navy Broadway Complex Project

Figure 4-63



Source: Sanborne Fire Maps

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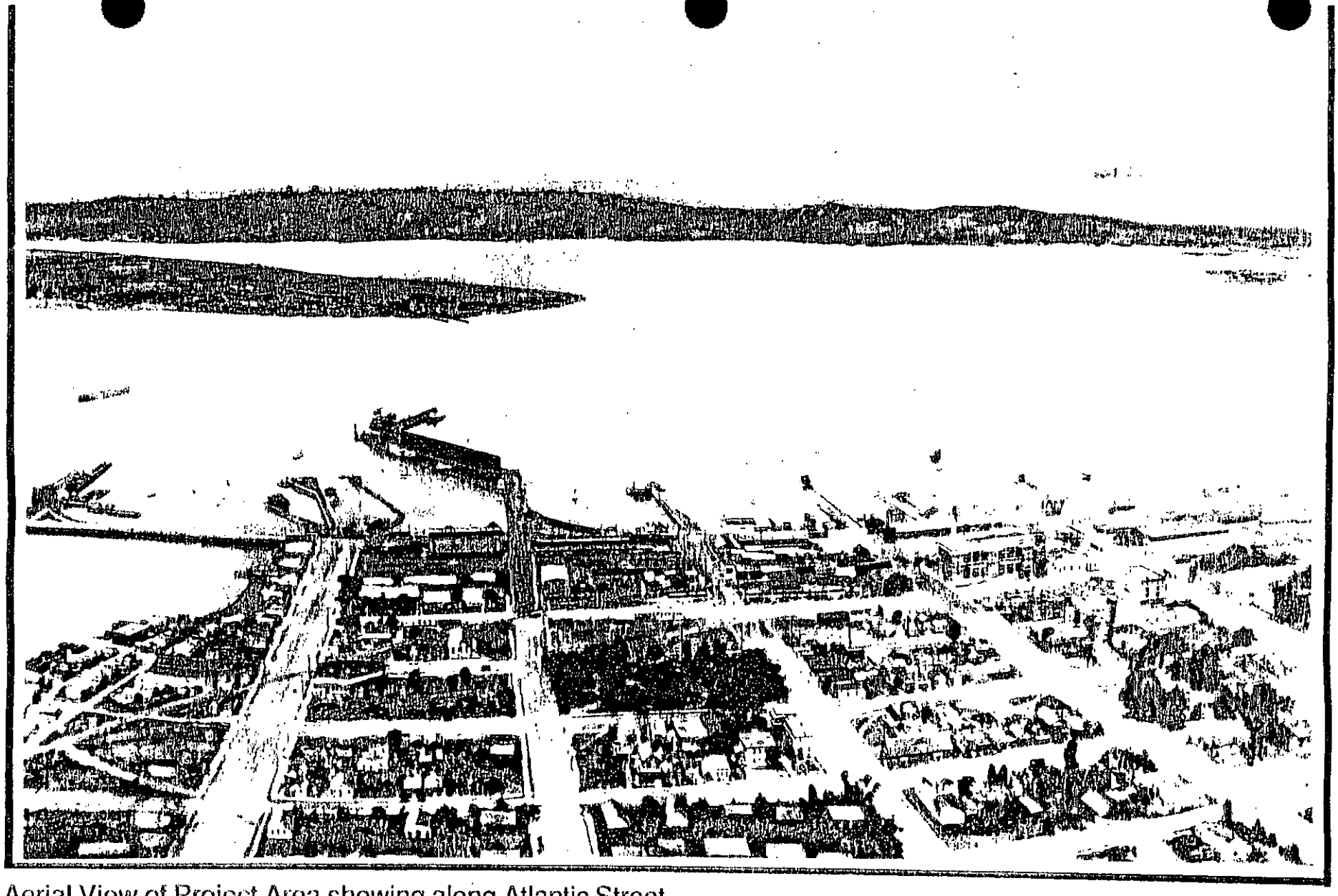
0 100 200 FEET NORTH

New Town Waterfront Area Map
(circa 1904)

Navy Broadway Complex Project

Figure 4-64



Aerial View of Project Area showing along Atlantic Street (now Pacific Highway). Large Wharf in left-center is Spreckels Brothers' Wharf (Photograph circa 1910)

Navy Broadway Complex Project

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Figure 4-65

Subsurface Investigation of Navy Broadway Complex

A subsurface investigation of the Navy Broadway Complex was conducted to locate the archaeological remains of the variety of commercial activities which occurred along the waterfront, and which might demonstrate the change in these commercial enterprises through time reflecting the maturing of the metropolitan environment in downtown San Diego. For instance, as coal was replaced by oil as the primary fuel for heat, the numerous waterfront companies that had been associated with the Spreckels Brothers' coal importing business had to adapt to the change in this major commercial activity. The subsurface investigation was intended to also find artifacts associated with the commercial wharves and shanties constructed on the project site.

The objective of the investigation was to determine if any extant archaeology would yield information important to the historical record of the waterfront area.

Specific sets of artifacts that were considered to be important to the data and which were expected in the deposit included:

- Faunal materials that would reveal the dietary patterns of the occupants of the area. This information would, in turn, indicate the social/financial status of those occupants, which should have changed through time as the City grew and prospered.

- Items reflecting the variety of commercial activities that occurred along the waterfront. This information would be significant to the understanding of San Diego history because it would reveal the relationship of the waterfront community to the major waterfront business (freight importing) as opposed to the primary local trade (fishing and whaling).

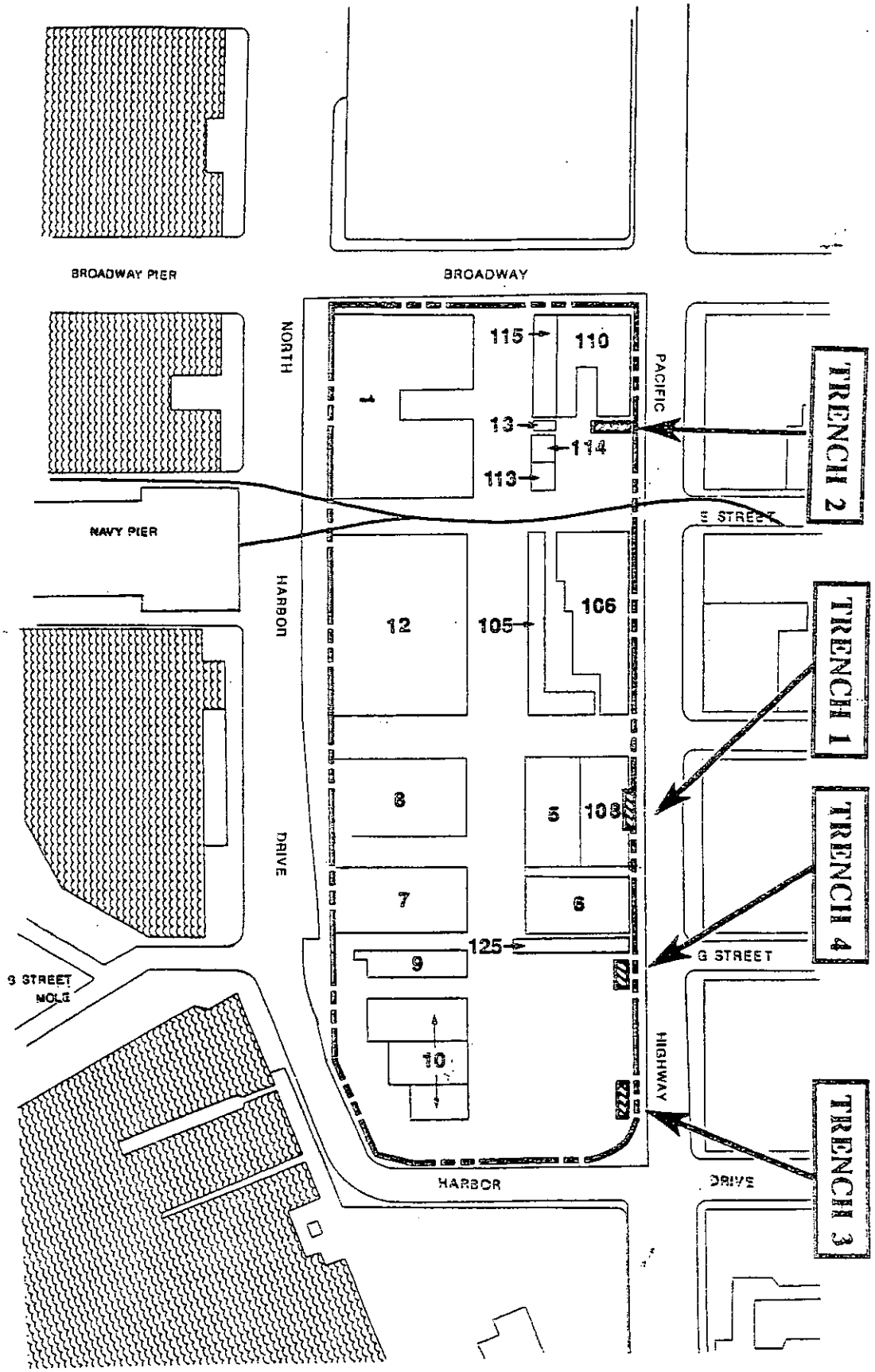
- Artifacts reflecting the freight importing business and the arrival of ships from around the world, significant in what they reveal about how these activities affected the local population.

- Artifacts reflecting the types of materials actually imported, such as coal, cement, wood, building materials or other goods, demonstrating trends in business and merchandising in San Diego during a time when the City was becoming a major urban center.

Four trenches were excavated on the site. A map of the trench locations is shown in Figure 4-66. Only one trench did not produce historic materials. This may have been due to previous disturbance from pipeline installations.

The subsurface investigation found the following:

- The target soils contained historic materials in three of the four trenches, indicating that deposits relating to the historic waterfront are present beneath the dredged fill.



nd

Project Site

Building Number (Refer to Table 4.2-1)

Railroad Tracks

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nch Location Map

vv Broadway Complex Project

0 137 275 FEET NORTH

- The preservation of organic materials in the deposit, such as wood, bone, leather, seeds, glass, and ceramics, is excellent, due in part to the encapsulation of the deposit by the dredged fill.

- Although certain intact elements of the wharves and shanties (i.e., the pier pilings) remained, the integrity of the material appeared to be substantially damaged, probably by the dredging operations when the bulkhead was constructed.

- The variety of materials recovered from the trenches reveal the wide range of activities that occurred at the waterfront.

Evaluation of Eligibility of Subsurface Resources

The laboratory analysis of the recovered items documented a wide range of materials; however, while some of the categories were too numerous to count, such as wood fragments or pebble-sized pieces of brick, the majority of the categories included too few items to provide a basis from which to address any important research questions. Food bone was a particular category that included too few specimens to permit valid interpretation. Similarly, bottle glass was present in the recovery, but in quantities too small to permit any meaningful interpretations.

As an adjunct to the laboratory analysis, the presence of fish remains in the collection was reported to the San Diego Unified Port District. This information was considered to be potentially important because the Port District is currently attempting to develop a historical account of the natural resources of the bay. One means by which to identify the fish species in the bay is through the study of historical sites around the bay that include remains of fish taken as part of commercial fishing enterprises and sold in local markets. The size of the sample of fish materials from beneath the project site was too small to supply valuable information.

The recovered artifacts did not provide any indication of the variety of commercial activities that took place within the study area. The research effort using maps and other data provides a useful compilation of businesses located along the waterfront, but the artifact collection from the trenches was too small and the integrity of data was too unclear to support a correlation between the historic research data and the archaeological deposit. The artifact materials also do not definitively demonstrate a shift from shanties or residences in the area to business concerns during the late 1800s. The artifact recovery also did not include any noteworthy data concerning the shipping business, other than the coal importing enterprise of the Spreckels Brothers' Company (represented by pieces of coal in Trenches 3 and 4). It is more likely that data of this type would be found on the west side of the project site, where the ships were moored, rather than on the east side along the historic shoreline, where the trenches were excavated.

The subsurface analysis demonstrated that the historic deposit within the project potentially contains a variety of well-preserved materials to document the socioeconomic conditions of the waterfront population. Because San Diego is a major city that has played a major role in the history of California, the historic waterfront has been documented substantially in maps, photographs, and the literature. While the data beneath the site is interesting in its content, it appears that an understanding of the history of the waterfront can more efficiently be gained by use of existing documentation. Substantial additional excavation would yield larger samples of some materials, but it is not clear that these artifacts would provide new important information which is not already available from other sources.

Determination of Eligibility for Subsurface Resources

Criterion D of the National Register criteria for evaluation (36 CFR 60.4) would be the most likely determinant for the subsurface resources, i.e., that the site "may be likely to yield information important in history." However, based on the investigation of historic documentation, it is evident that substantial data is already available to answer the important questions about San Diego's historic waterfront. Also, the damage to the integrity of the artifacts (caused by historic dredging operations which moved and mixed materials) and the resultant lack of a clear stratigraphy (which hinders the ability to relate artifacts to time and place) diminishes the value of this resource for the National Register. Consequently, the Navy has determined that the subsurface resources do not meet the criteria for inclusion in the National Register. The State Historic Preservation Officer (SHPO) has concurred.

Navy Broadway Complex Buildings

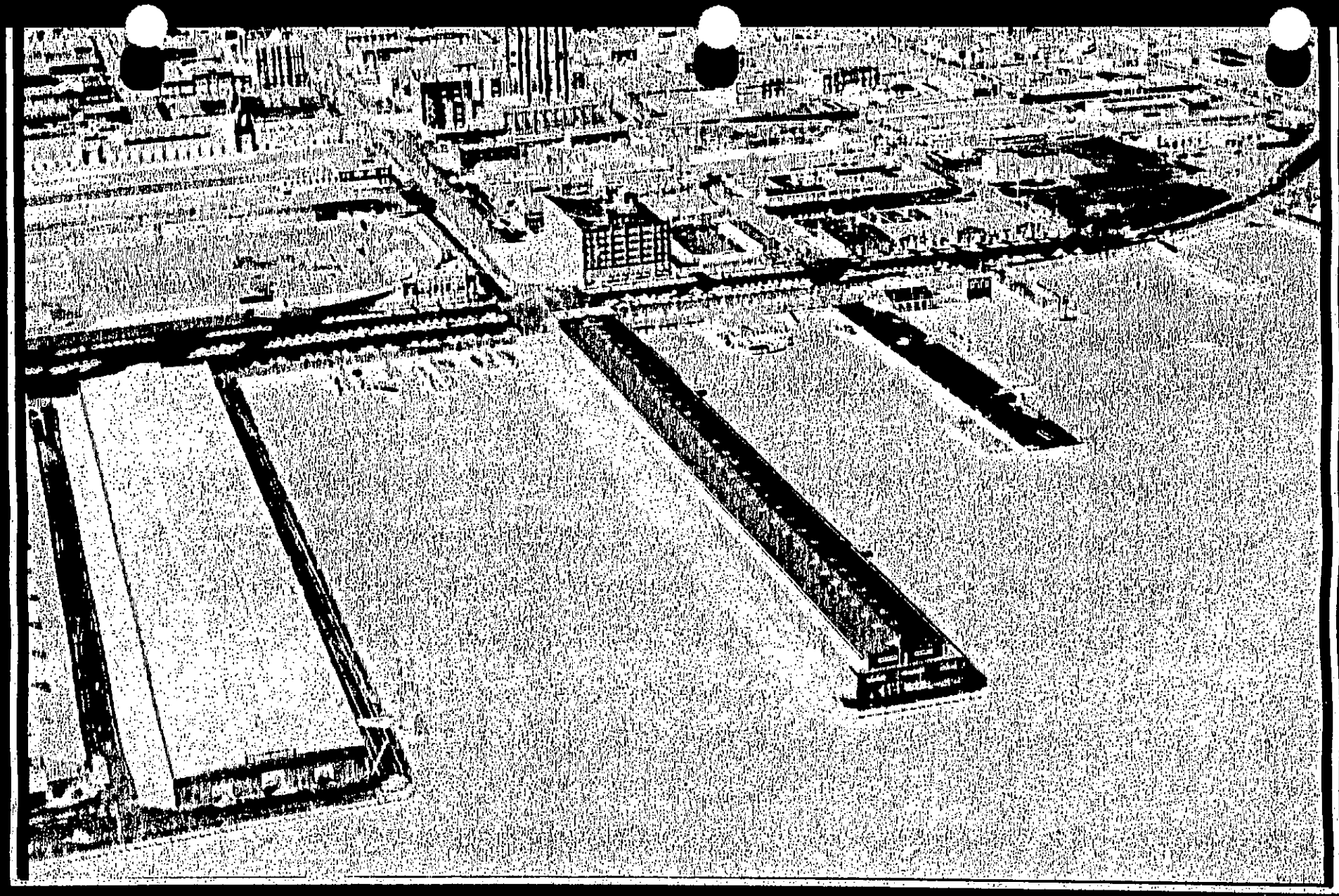
An important part of the Navy presence in San Diego was, and is, the Naval Supply Center (NSC), San Diego, one of the commands located on the Navy Broadway Complex. NSC is one of the four largest supply facilities in the Navy, with annexes at North Island, National City, Point Loma, and Long Beach. As part of the 11th Naval District established in February of 1921, the first unit of the Naval Supply Center--the north wing of Building No. 1--was begun late in 1921. It was completed in May of 1922, officially opened on August 8, 1922, and the first stores arrived on February 1, 1923. This structure (and the later 1938-1939 addition) has served as the headquarters facility for the Naval Supply Center since the base was first opened. In 1926, funds were appropriated for the construction of the Navy Pier across Harbor Drive from the future site of Building No. 12. Figure 4-67 provides an aerial view of the project area as seen in 1932. In the 1930s and 1940s, construction was completed on the remainder of the buildings on the Navy Broadway Complex, including the largest structure, Building No. 12. The expansion of the Naval Supply Center facilities was necessitated by World War II.

Today, the Naval Supply Center continues to serve as the supply headquarters facility. The majority of buildings have, however, been altered (interior and/or exterior) to accommodate changing needs and storage requirements.

Field Survey and Building Inventory

A field survey of the existing buildings on the Navy Broadway Complex was conducted to determine the age, architectural status, present condition, and historical status of the buildings on the site. All major structural and architectural features were photographed. Table 4.10-1 lists the buildings, their units, and dates of construction. In addition, a reconnaissance of the project site for evidence of historic deposits or other cultural resources was conducted.

The aboveground structures were each constructed in one of three major developmental phases, and not as part of a unified development plan. As a result, they were built in a number of generally industrial styles utilizing a wide variety of construction materials. The majority of buildings on the Navy Broadway Complex do not, therefore, appear to qualify for either individual or district listing on the National Register. Despite this, Buildings No. 1 and No. 12 onsite--along with the Navy Pier adjacent to the site--present an historical and architectural presence



Aerial View of the Project Area
(February 2, 1932)

Navy Broadway Complex Project

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Figure 4-67

TABLE 4.10-1

INVENTORY OF EXISTING STRUCTURES AT THE NAVY BROADWAY COMPLEX

Building No.1

Original Name/Use:	Storehouse
Current Name/Use:	Administration building, administration offices, general warehouse
Construction Date:	1921-1922, 1938-1939 (two phases)
Size:	357,577 square feet
Architect:	U. S. Navy Public Works
Builder:	Unknown
Condition:	Good
Alterations:	Major addition of a seven-story south wing in 1938, modifications to the window and doorway openings, and numerous interior remodelings

Building No. 5

Original Name/Use:	Bulger Building
Current Name/Use:	Transit shed, training space, administration building
Construction Date:	1935
Size:	15,219 square feet
Architect:	Unknown (presumably U. S. Navy Public Works)
Builder:	Unknown
Condition:	Good
Alterations:	Altered in accordance with plans drawn in 1939, and undergone numerous minor modification to the window and doorway openings.

Building No. 6

Original Name/Use:	Storehouse
Current Name/Use:	Packing shed, warehouse
Construction Date:	1938-1939
Size:	30,688 square feet
Architect:	U.S. Navy Public Works
Builder:	Unknown
Condition:	Good
Alterations:	Unaltered exterior

TABLE 4.10-1 (continued)

Building No. 7

Original Name/Use:	Storehouse
Current Name/Use:	Cold storage warehouse
Construction Date:	1938-1939
Size:	313,539 cubic feet, 25,913 square feet
Architect:	U.S. Navy Public Works
Builder:	Unknown
Condition:	Good
Alterations:	Altered by the enclosure of both window and doorway openings, and by the addition of Building No. 9

Building No. 8

Original Name/Use:	Storehouse
Current Name/Use:	Flammables storehouse
Construction Date:	1938-1939
Size:	22,090 square feet
Architect:	U.S. Navy Public Works
Builder:	Unknown
Condition:	Good
Alterations:	Altered by the enclosure of the original doorway opening and the removal of the original concrete steps

Building No. 9

Original Name/Use:	Gas and cylinder storage building
Current Name/Use:	Cold Storage, administration building, and battery shop
Construction Date:	1940-1941
Size:	4,855 square feet
Architect:	U.S. Navy Public Works
Builder:	Unknown
Condition:	Good
Alterations:	Minor modifications to several window and doorway openings

TABLE 4.10-1 (continued)

Building No. 10

Original Name/Use:	Storehouse for bulk storage
Current Name/Use:	General warehouse
Construction Date:	1940-1941
Size:	30,277 square feet
Architect:	U.S. Navy Public Works
Builder:	Unknown
Condition:	Good
Alterations:	Minor modifications to window and doorway openings

Building No. 11

Original Name/Use:	Pier and transit shed
Current Name/Use:	Transit shed, general warehouse, pier
Construction Date:	1941-1942
Size:	297,775 square feet (not including attached supply pier)
Architect:	U.S. Navy Public Works
Builder:	Unknown
Condition:	Good
Alterations:	Substantially unaltered

Building No. 12

Original Name/Use:	Unknown
Current Name/Use:	General warehouse, administration building
Construction Date:	1944
Size:	427,041 square feet
Architect:	Unknown
Builder:	Unknown
Condition:	Good
Alterations:	Connected to Building No. 1 at the third story level by an overpass

TABLE 4.10-1 (continued)

Building No. 13

Original Name/Use:	Unknown
Current Name/Use:	Substation (presumably an electrical transformer room)
Construction Date:	1942
Size:	Approximately 100 square feet
Architect:	Unknown
Builder:	Unknown
Condition:	Good
Alterations:	None

Building No. 19

Original Name/Use:	Sentry house
Current Name/Use:	Gatehouse
Construction Date:	1956
Size:	12 square feet
Architect:	U.S. Navy Public Works
Builder:	Unknown
Condition:	Good
Alterations:	None

Building No. 105

Original Name/Use:	Garage and shed
Current Name/Use:	Public Works shops, administration offices
Construction Date:	1931-1932
Size:	11,000 square feet
Architect:	U.S. Navy Public Works
Builder:	Unknown
Condition:	Good
Alterations:	Altered by many modifications to window and doorway openings by considerable interior remodeling, and by the removal of a structure form the central courtyard

TABLE 4.10-1 (continued)

Building No. 106

Original Name/Use:	Temporary storage building
Current Name/Use:	Public Works shops, cafeteria
Construction Date:	1935
Size:	20,067 square feet
Architect:	U.S. Navy Public Works
Builder:	Unknown
Condition:	Good
Alterations:	Altered by many modifications to window and doorway openings, by considerable interior remodeling, and by the removal of a structure from the central courtyard

Building No. 108

Original Name/Use:	Storehouse
Current Name/Use:	Transit Shed
Construction Date:	1936
Size:	12,960 square feet
Architect:	U.S. Navy Public Works
Builder:	Unknown
Condition:	Good
Alterations:	Virtually unaltered

Building No. 110

Original Name/Use:	Medical storage building
Current Name/Use:	Administration building, education center, post office, conference room
Construction Date:	1942-1943
Size:	40,856 square feet
Architect:	U.S. Navy Public Works
Builder:	Unknown
Condition:	Good
Alterations:	Altered by many minor modifications to the window openings and extensive interior remodeling and conversion of use

TABLE 4.10-1 (continued)

Building No. 113

Original Name/Use:	Storage building for fire fighting equipment
Current Name/Use:	Fire station, guard locker room
Construction Date:	1942-1943
Size:	2,304 square feet
Architect:	U.S. Navy Public Works
Builder:	Unknown
Condition:	Good
Alterations:	Virtually unaltered

Building No. 114

Original Name/Use:	Temporary warehouse, labor force temporary lockers, toilet building
Current Name/Use:	Credit union/labor lobby
Construction Date:	1943
Size:	1,440 square feet
Architect:	U.S. Navy Public Works
Builder:	Unknown
Condition:	Good
Alterations:	Altered by minor modifications to the window and doorway openings

Building No. 115

Original Name/Use:	Fish market
Current Name/Use:	Dispensary
Construction Date:	1928-1929
Size:	3,856 square feet
Architect:	Navy acquired long after it was built
Builder:	Unknown
Condition:	Good
Alterations:	Substantially altered by window enclosures, doorway alterations, and by conversion of use and interior remodeling

(see Figures 4-68 and 4-69). Building No. 1 contains a north wing built in 1922, and a south wing built in 1938 and 1939. The pier and Building No. 11 (see Figure 4-70) were built between 1932 and 1942, and Building No. 12 was built in 1944. These buildings also form an architectural unit, and are tied together both in terms of general form (design) and function. In effect, although the entire Navy Broadway Complex does not appear to qualify as an architectural district, these three units would appear to qualify for the National Register listing as a single architectural and/or historical group. (Note: Building No. 11, the Navy Pier, is not within the boundaries of the defined project site, but is part of a potentially significant grouping of three structures.)

Evaluation of Eligibility of the Structures

Based upon Criterion C of 36 CFR 60.4, Buildings 1, 11, and 12 appear to meet National Register Criteria as a single architectural and historical group. They represent the entire development history of the Navy Broadway Complex, and are the principal architectural components of the facility. They are all designed in compatible utilitarian/industrial styles, and retain a high degree of integrity in consideration of the fact that the major alteration (the south wing addition to Building No. 1) is 50 years old. Building No. 12 (1944) is less than 50 years old, but it represents the largest structure on the Navy Broadway Complex and is a dominant architectural feature. These three structures are primary contributing features to the overall architectural character of this area of the San Diego waterfront.

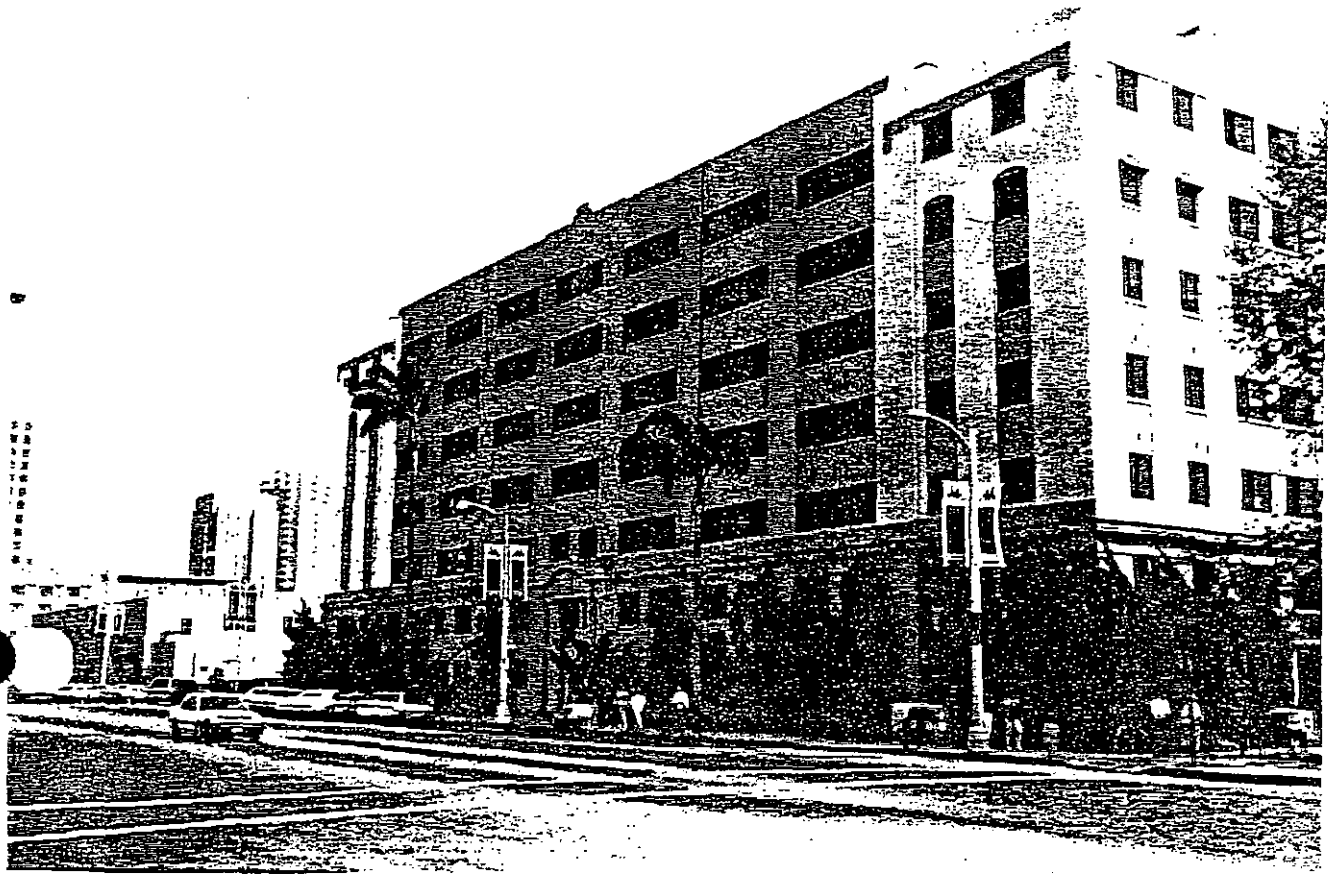
None of the other buildings on the Navy Broadway Complex appear eligible for nomination to the National Register, based upon the following factors:

- Alterations (form and/or function)
- Lack of distinguishing features
- Level of original historical or functional importance to base operations

Each of the non-eligible buildings clearly played a role in the development and operational history of the base, but the relative level of importance of each of these buildings is clearly less significant than the three buildings listed as potentially eligible for nomination to the National Register. The non-eligible buildings are most appropriately seen as architecturally associated features related to the three primary structures. The architectural associations are, however, relatively weak, as the numerous associated buildings are carried out in a number of differing styles and construction materials. None of the other buildings on the site would appear to qualify as individually eligible for listing.

In addition, because the majority of the buildings within the Navy Broadway Complex were not constructed as part of a planned development; are not of any unified design, type, or method of construction; and have been substantially modified both through physical alteration and/or range of use, it is suggested that the entire building complex as a whole or unified district not be considered to be eligible for nomination to the National Register.

The fact that these buildings serve as a functional supply unit on a single property does not appear to justify a level of historical significance sufficient to include, within a single district, buildings which are architecturally incompatible, altered, and/or representative of differing periods of development. Specifically, although this facility is the headquarters complex, annexes are located at North Island, National City, Point Loma, and Long Beach. Most appropriately, any consideration of district eligibility, as justified on a functional or purely historical/developmental



View of Building 1

Navy Broadway Complex Project

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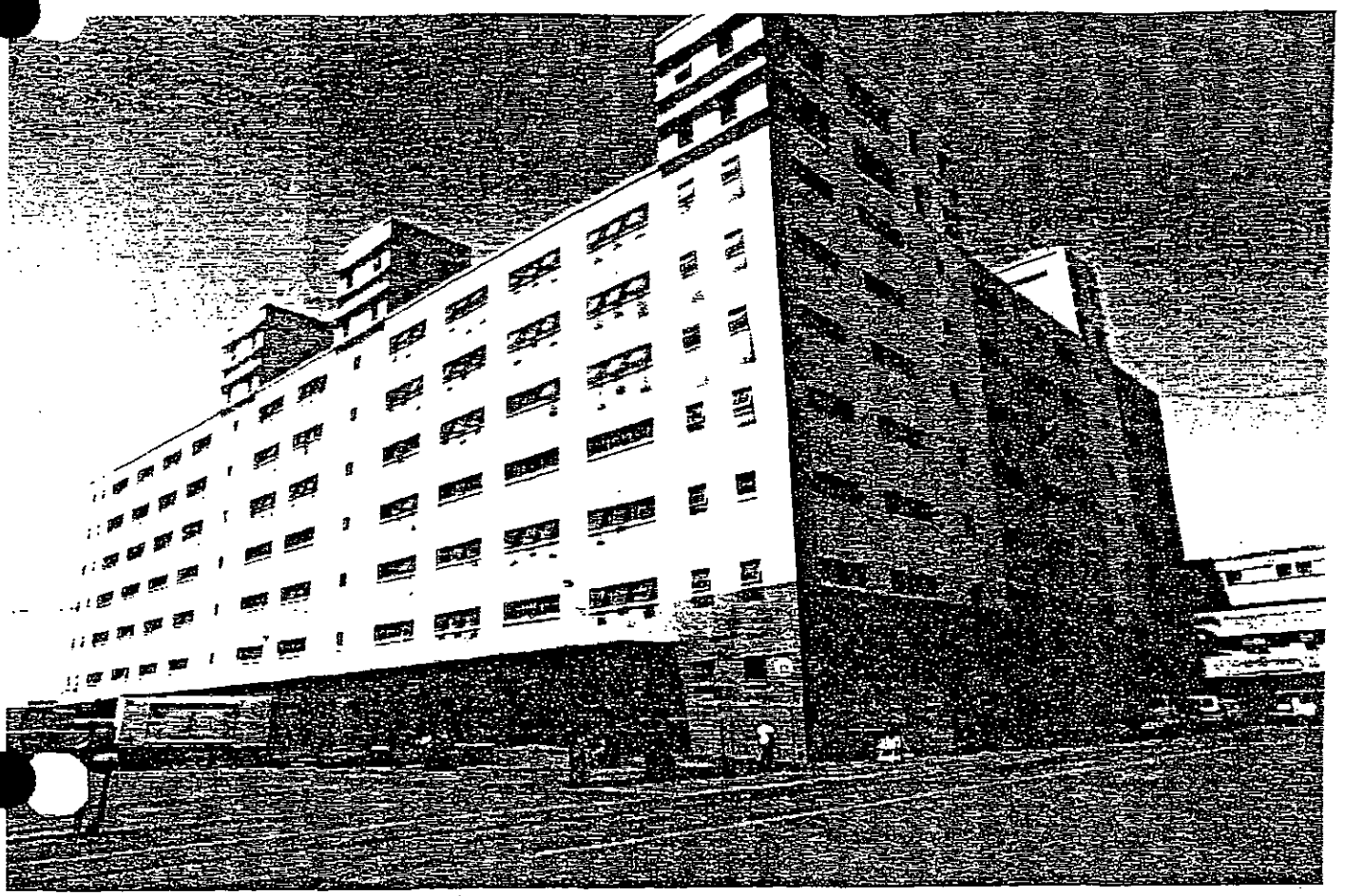
Figure 4-68



View of Building 12

Navy Broadway Complex Project

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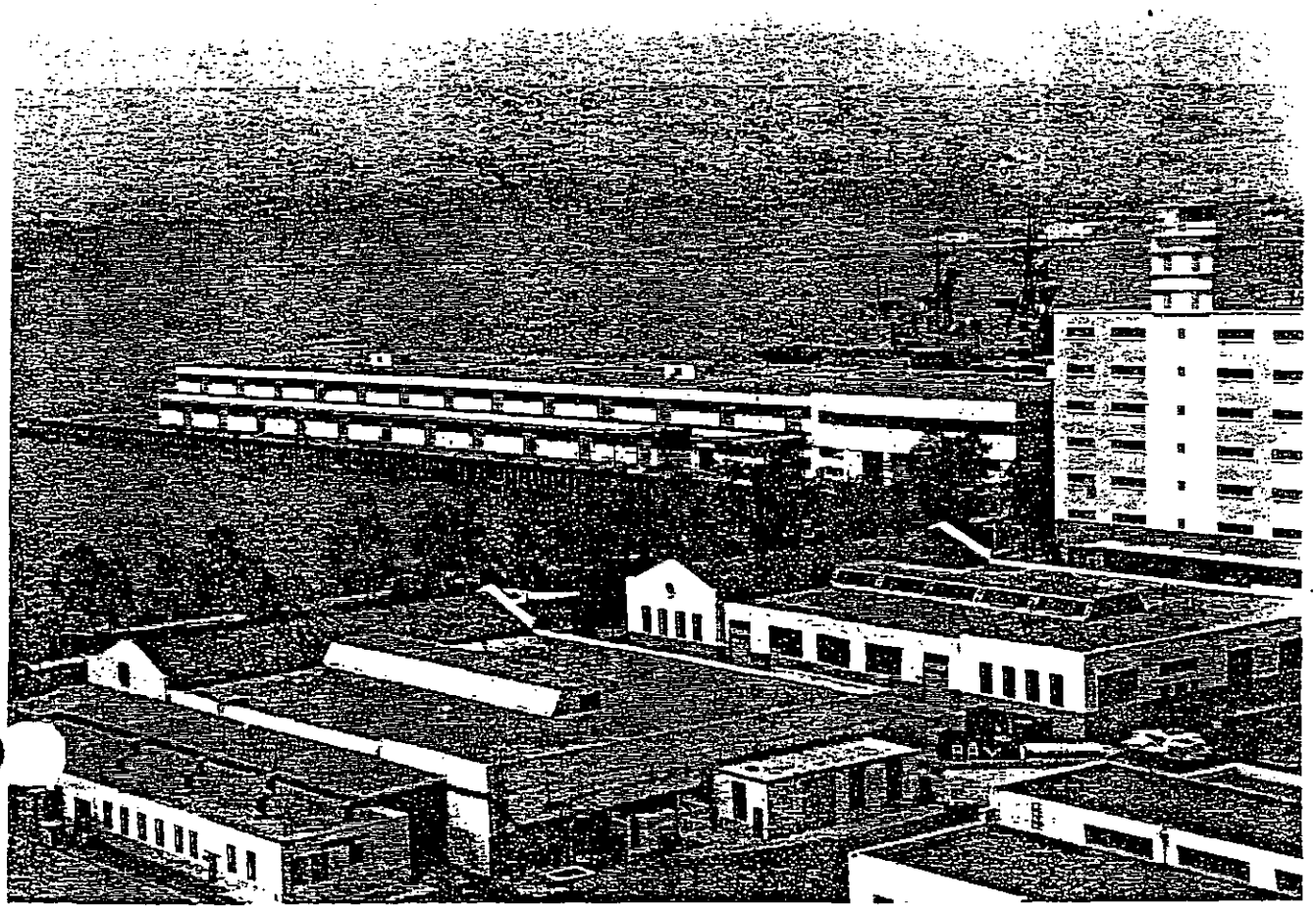
Figure 4-69



View of Offsite Building 11
(and Navy Pier)

Navy Broadway Complex Project

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Figure 4-70

basis, would have to include these annexes. The possibility of making a positive finding for such a district determination of eligibility is extremely remote, and it is again suggested that consideration of a district for the Navy Broadway Complex is inappropriate.

Determination of Eligibility for the Structures

Building Nos. 1 and 12 clearly represent a district architectural entity in conjunction with the Navy Pier. They further represent a recognizable type of construction, and represent every major period of base development. As such, the Navy believes these structures qualify as eligible under Criterion C: Distinctive Characteristics for listing on the National Register. It is not suggested here that these buildings would each qualify as individually eligible, but rather as a unit. Other buildings on the site do not appear to qualify either individually or as a unit. SHPO has concurred with this finding.

Cultural Resources in the Vicinity of the Project

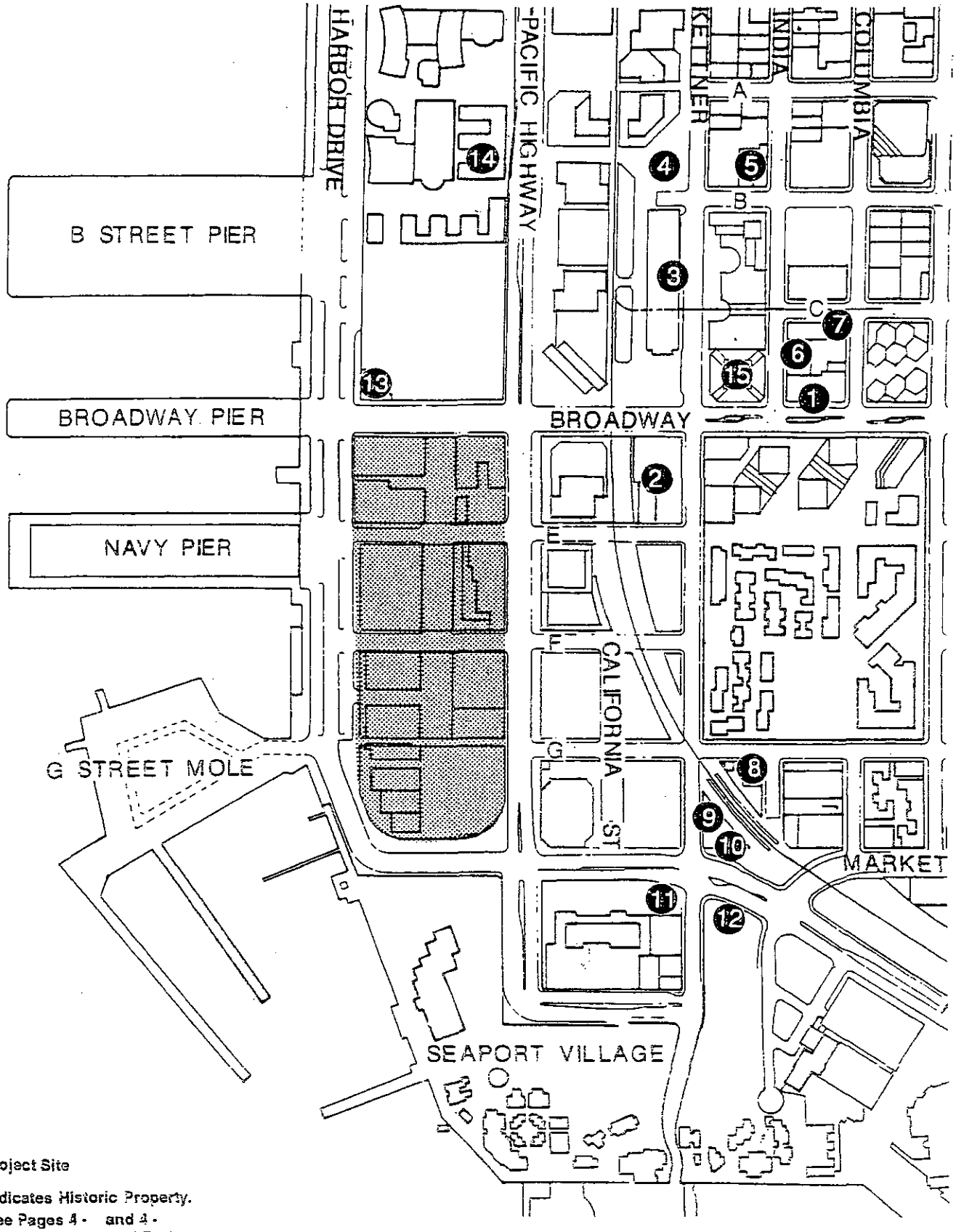
As an element of the Section 106 process, all cultural resources within the vicinity of the project must be considered because of possible adverse consequences from the project. In order to determine the extent of cultural resources within a three-block radius of the project, various sources were consulted and an on-foot reconnaissance was conducted.

The files of the San Diego Museum of Man and the South Coastal Information Center at San Diego State University were consulted for records of previously recorded sites. The records did not indicate that any sites are known to exist in the study area.

The search for historic resources was completed by researching listings of historic properties. The sources consulted included the National Register of Historic Places, the California Historical Landmarks Register, and the City of San Diego's Historic Sites Register. All of the structures listed on the registers within the study area were reviewed from the viewpoint of potential eligibility for nomination to the National Register. Lastly, the entire surrounding area was surveyed on foot to visually inspect the area for any historic sites that could be potentially eligible, but not previously identified or evaluated. In all of the facets of this survey, no in-depth evaluations or research pertaining to individual properties was conducted--the review of the area was sufficient only to determine potential for eligibility.

The following list provides the names of structures that are currently listed, determined to be eligible, or are potentially eligible for inclusion in the National Register of Historic Places within three blocks of the Navy Broadway Complex. Each location is keyed to Figure 4-71.

1. Armed Services YMCA, 500 West Broadway. Eligible.
2. SDG&E Power Generating Plant (Station B) 1911 Kettner Street. Eligible.
3. Santa Fe Depot, 1050 Kettner Street. Listed (June 26, 1972).
4. McClintock Storage Company, 1202 Kettner Street. Listed (October 3, 1980).
5. Wetmore's Garage, 1200 India Street. Potentially eligible.
6. American Youth Hostel "AYH," affiliated with the Armed Services YMCA, 031 India Street. Potentially eligible.
7. Retail and office building, 1061 India Street. Potentially eligible.
8. Warehouse Ltd., 654 India Street. Potentially eligible.
9. Building at 633 Kettner Street. Potentially eligible.
10. Kansas City Barbeque, 610 West Market Street. Potentially eligible.



end

Project Site

Indicates Historic Property.
See Pages 4 - and 4 -
For a Description of Each
Property

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storic Properties in
e Project Vicinity

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0 225 450 FEET NORTH

11. Old San Diego Police Headquarters Building, 700 block of West Market Street. Eligible.
12. San Diego Marine Hardware, 505 West G Street. Potentially eligible.
13. Ship's Galley Restaurant, northeast corner of Broadway and Harbor Drive. This was the Harbormaster's Office. Potentially eligible.
14. Naval Facilities Engineering Command, Western Region, 1220 Pacific Highway. Potentially eligible.
15. The Tower Bowling Alley has been determined to be eligible but has been demolished by Center City Development Corp. as part of the redevelopment program.

These structures, along with a few adjoining ones, represent an era of harborside commerce dating to the 1920s and 1930s. The historic structures in the vicinity are separated from the historic Gaslamp District (circa 1880s), Little Italy (circa 1910), and Old Town (circa 1840s) areas by redevelopment and commercial/residential zones. The most important of the listed and eligible structures are the Santa Fe Depot, the Armed Services YMCA, the San Diego Gas and Electric Power Generating Plant (Station B), and the McClintock Storage Company Building. The remaining structures on the list are smaller, but have architectural and/or cultural significance as elements of a harborside community.

4.10.2 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

The findings of the investigations presented in the previous section represent three separate impact issues. The first issue concerns the historic structures (Buildings No. 1, No. 11, and No. 12) and the determination that these be considered eligible for listing on the National Register of Historic Places. The second issue involves the presence of historic archaeology below the layer of dredged fill. This archaeological material does not appear to meet the criteria for listing on the National Register. The third resource consists of offsite historic resources represented by various structures that are or may be eligible for nomination to the National Register, are actually listed on the National Register, or are listed on other state or local landmarks registers. The evaluation of the effect of the project and the various alternatives upon cultural resources that are listed on or eligible for nomination to the National Register has been summarized in Table 4.10-2.

Impacts to Subsurface Resources

The impact evaluation for the subsurface archaeological deposits indicated the alternatives requiring deep excavations for footings and below-grade construction would most likely destroy these resources. However, this impact is not considered to be significant because the archaeology is not likely to yield any important information about the history or prehistory of the area. The plans for Alternatives A, B, C, D, and F would include the excavation of subterranean parking structures and foundations for the larger structures that would disrupt the historic deposits, so an adverse impact would occur. The historic deposits lie approximately 6 to 8 feet below the current ground surface, and the construction excavations would reach as deep as 20 to 30 feet, thus disturbing the deposits wherever the construction would require the removal of soil for subterranean structures. At the present time, it is impossible to quantify the exact area of the deposits that would be affected by these alternatives, since the dimensions of the subsurface deposits are not fully known, nor is the extent of the construction for subterranean structures precisely drawn. However, the key factor for assessing the significance of the impact to subsurface

TABLE 4.10-2

ENVIRONMENTAL CONSEQUENCES ON CULTURAL RESOURCES

Navy Broadway Complex Alternatives	Cultural Resources: Subsurface Deposits Significant Impact	Cultural Resources: Historic Buildings Significant Impact	Cultural Resources: Offsite Resources Significant Impact
A	No	Yes	No
B	No	Yes	No
C	No	Yes	No
D	No	Yes	No
E	No	Yes	No
F	No	Yes	No
G	No	No	No

resources is the importance of the resource. Based on the determination that the subsurface deposits are not eligible for the National Register, their disturbance by subgrade construction is not a significant impact.

Alternatives E and G would not affect the historic archaeological deposits because they do not include disturbance of the subsurface soils in which the archaeology is located.

Because it is possible that construction activity (including offsite infrastructure construction) could expose important buried archaeological features not anticipated from previous investigations, such discoveries will be addressed in accordance with the regulations for implementing Section 106: "discovering properties during the implementation of an undertaking" (36 CFR 800.11).

Impacts to Historic Structures

The impact evaluation for the historic buildings which appear to qualify for the National Register (Buildings 1, 11, and 12) resulted in the conclusion that Alternatives A, B, C, D, E, and F would have a significant impact on cultural resources. In each of these alternatives, the impacts would result from the removal or substantial renovation (modification of the exterior and interior components) of portions of Buildings No. 1 and No. 12. Building 11 is beyond the project limits and would not be affected by the proposed project. The removal or substantial alteration of these structures would constitute an effect that would be "adverse" as defined by the Criteria for Effect

and Adverse Effect (36 CFR 800.9). Alternative G (no action) would not have an impact on the buildings as they would be retained in their current configuration.

Offsite Cultural Resources

Offsite historic resources would not be affected by the development, either directly or indirectly. The majority of the structures are situated at least one to two blocks from the project, with the exceptions being the old harbormaster's headquarters at the northeast corner of Broadway and Harbor Drive, the San Diego Gas and Electric Substation B at 1911 Kettner Street, and the old San Diego Police Headquarters in the 700 block of West Market Street. The historic sites that are located beyond one block of the project would not be affected by the project. None of the alternatives have features that would remove or otherwise significantly alter the use or integrity of these offsite resources.

Cumulative Impacts to Cultural Resources

The consideration of cumulative impacts to cultural resources was not an issue for this project. The resources are site specific, with the exception of historic buildings adjacent to the project. No historic districts have been identified in this area that would be affected through the loss of resources within the project.

4.10.3 MITIGATION MEASURES

The environmental consequences section of this study delineated potential impacts to subsurface historic archaeological resources and significant adverse effects to Buildings Nos. 1 and 12, which appear to qualify for inclusion in the National Register of Historic Places. In order to determine appropriate steps to mitigate the impacts to these cultural resources, the Navy has initiated consultation with the California SHPO and the Advisory Council on Historic Preservation. The Navy is proposing a program for recording Buildings 1 and 12 pursuant to Section 110(b) of the National Historic Preservation Act and will monitor excavations to ensure that no significant archaeology is inadvertently lost. SHPO has concurred with the basic findings of this analysis and is consulting with the Navy on mitigation. The Section 106 process will lead to mitigation that reduces project impacts to a level that is not significant.

ENDNOTES:

1 County Recorder, Deed Book B.
2 Rolle 1968.
3 Brandes et al. 1985.
4 MacMullen 1969.
5 Ibid.
6 Heilbron 1936.
7 Ibid.
8 U.S. Congress 1916.

4.11 PUBLIC HEALTH AND SAFETY

Two issues of potential concern are associated with public health and safety: (1) the potential for hazardous waste to be located on the site or in groundwater beneath the site and (2) the proximity of the site to the Lindbergh Field Airport and North Island Naval Air Station.

4.11.1 AFFECTED ENVIRONMENT

Hazardous Materials

Methodology

An assessment was completed by Woodward-Clyde Consultants in January 1988, as part of the Hirsch and Company report,[1] to detect possible contamination and any threats to human health from ongoing and previous activities on the Navy Broadway Complex. The investigation focused on the possible presence of fuel products and EPA priority pollutants in the soil and groundwater. Petroleum hydrocarbons associated with fuel products, metals, and PCBs (from electrical transformers) were identified as the most probable potential contaminants on the project site, given the history of project operations. In addition, the site was investigated for the presence of asbestos, a hazardous material with previous widespread use in building construction. Because a precise location for the offsite location of Navy offices for Alternative D has not been established, a study on hazardous materials for the offsite component was not conducted.

The field investigations included visual reconnaissance, test borings, groundwater and soil sampling, and soil gas surveys. The visual reconnaissance helped identify areas with the greatest likelihood of contamination. Soil and groundwater sampling was conducted using methodologies that maximize the possibility of discovering hazardous substances. Tests focused on areas where underground and surface storage tanks have been located, and where long-term industrial activities have occurred.

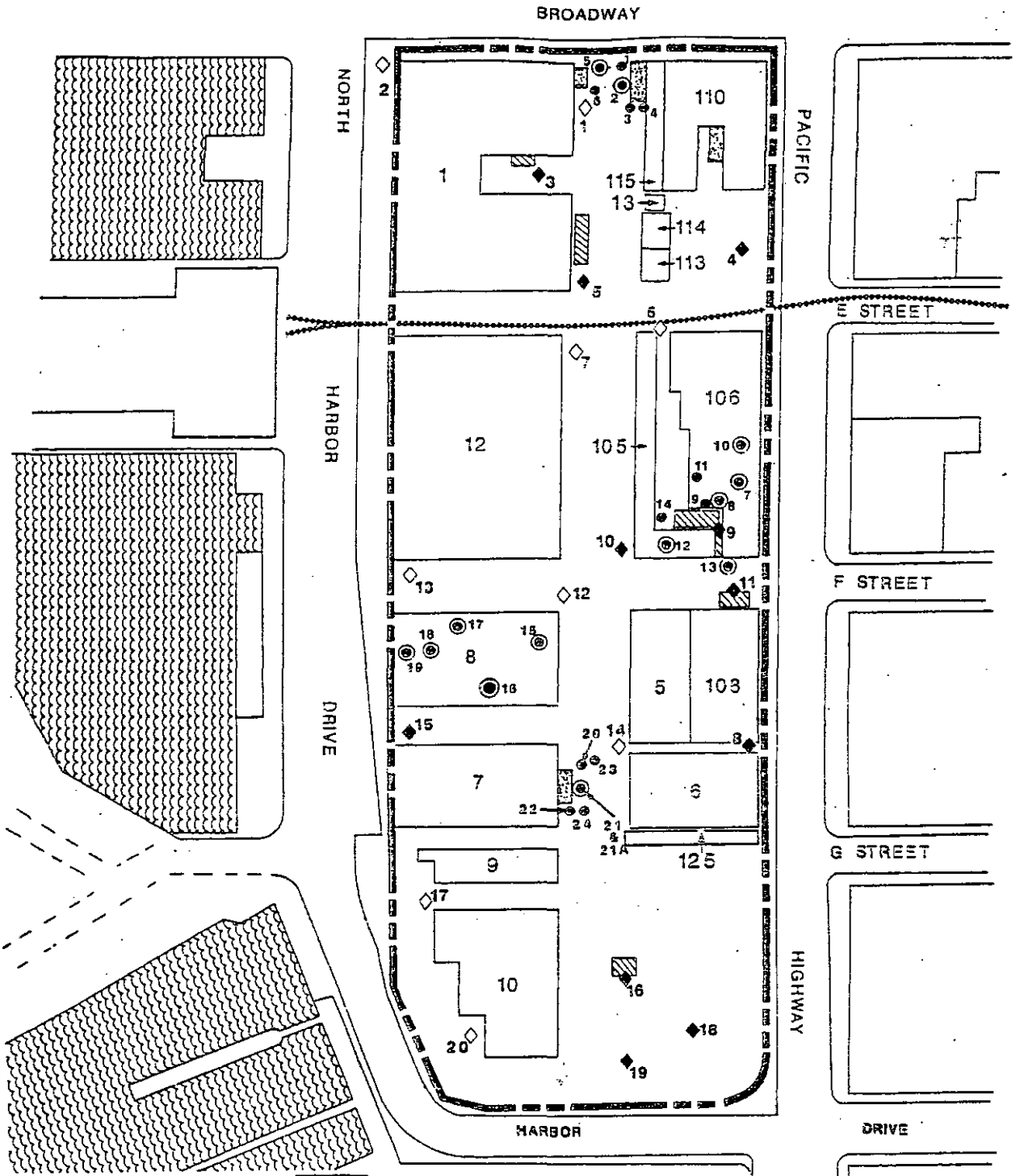
Twenty borings were conducted throughout the site. Monitoring wells were installed in 10 of these boring wells. Soil samples were taken from above the water table, which is 8 to 10 feet below grade, and were analyzed for PCBs, priority pollutant metals, and petroleum hydrocarbons. In addition to the test bores, 24 hand-augured bores were drilled in the upper 3 feet of soil. During hand auguring, a soil gas analysis was conducted to identify the presence of volatile organics. Figure 4-72 depicts the locations where samples were taken.

Materials Found Onsite

Table 4.11-1 describes the presence of hazardous materials and asbestos at or near each of the onsite buildings.

Petroleum Hydrocarbons/EPA Priority Pollutants

Laboratory analysis found no detectable hydrocarbon concentrations in the groundwater in the 10 monitoring wells dug on the site. Generally 2 or 3 soil samples were taken from each of the 20 test borings, at depths of 1 to 8 feet. Petroleum hydrocarbons were detected in only one boring, No. 19-1 (Figure 4-72). The action level for hydrocarbon cleanup, as established by the State Water Quality Control Board (SWQCB), is 1,000 parts per million (ppm). At 2 feet below surface in this boring, 19 ppm of total hydrocarbons were detected. The source of the



INDICATES APPROXIMATE LOCATION OF TEST BORING

INDICATES APPROXIMATE LOCATION OF MONITORING WELL

INDICATES APPROXIMATE LOCATION OF HAND AUGERED BORING

INDICATES APPROXIMATE LOCATION OF FUEL TANK

INDICATES APPROXIMATE LOCATION OF ELECTRICAL TRANSFORMER OR TRANFER STATION

1 INDICATES NAVY DESIGNATED BUILDING NUMBER

ATES APPROXIMATE LOCATION OF HAND AUGERED BORING
BOIL GAS PROBE

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ation of Soil Sample Borings

/y Broadway Complex Project

hydrocarbon traces is not certain; however, 19 ppm is well below the threshold that generally requires remediation.

TABLE 4.11-1

PRESENCE OF ASBESTOS AND HAZARDOUS MATERIALS

Bldg. No.	Building Use	Asbestos Present	Hazardous Materials Present
1	Administration Offices	Yes	Yes
5	Warehouse and Administration	Yes	No
6	Warehouse	Yes	No
7	Cold Storage Warehouse	Yes	Yes
8	Warehouse	Yes	No
9	Offices	Yes	No
10	Warehouse	No	No
12	Warehouse and Offices	Yes	Yes
13	Substation	No	No
105	PW Shops	Yes	Yes
106	Cafeteria and Shops	Yes	Yes
108	Warehouse	No	No
110	Administration	Yes	No
113	Fire Station and Office	Yes	No
114	Administration Office	Yes	No
115	Administration	Yes	No
125	Warehouse and Offices	Yes	Yes

Note: Hazardous materials include sulfuric acid batteries, freon, sulfuric acid, cleaning chemicals, propane, and paints. All buildings contained fluorescent lighting ballast and some buildings contained electrical transformers. These apparatuses contain PCBs in sealed structures.

Source: Hirsch and Company 1988.

An oily surface spill with surface staining was apparent outside Building 106 in the vicinity of a forklift maintenance and drum storage area. Concrete and asphalt surface in this location may be limiting the migration of this contamination into the soil. Hand-augured drillings Nos. 8 and 10 at Building 106 found high acidity as a result of sulfuric acid being previously stored in this building. The source is assumed to be battery acid used for batteries in fork lifts and vehicles. It was determined that the metals concentrations associated with the acid were below any action levels that would require remediation.

No petroleum hydrocarbons were found in any of the 24 hand-augured samples with the exception of boring HA-21 adjacent to Building 7, which contained 390 ppm total petrohydrocarbons in

some discolored soil near some fuel tanks. This contamination is below the SWQCB threshold that generally requires remediation. However, the extent of this contamination has not been identified, and could be greater than tested.

No PCBs were found in any of the 15 soil samples analyzed, even in the vicinity of three large transformer units that contain oil laden with PCBs. No leakage was reported to have occurred in any of the transformers or other electronic units located on the site.

Twelve soil samples were analyzed for EPA priority pollutant metals. Samples HA-7 and HA-9 showed higher than normal levels of some priority pollutant metals. However, the samples do not exceed threshold levels that would require remediation.

Field readings from an organic vapor meter showed concentrations of 0 to 4 ppm in soil gas analysis, an almost undetectable quantity of volatile organics. No significant areas of contamination were identified.

Asbestos

In an encased or non-friable form (i.e., not peeling or cracking) asbestos does not pose a significant health risk factor. However, friable asbestos can enter the air stream and become a human health hazard. As shown in Table 4.11-1, some form of asbestos was found in all but three buildings onsite. None of the buildings with asbestos were found to pose an imminent health threat.

Asbestos-containing materials (ACM) found in Building 1 include pipe insulation, floor tile adhesive, corrugated paneling, and sprayed-on ceiling material. Approximately 270,000 square feet of ACM was detected in this building.

Building 12 contains approximately 32,000 square feet of ACMs, including pipe insulation, blown-on fire-proofing material, and flooring. Building 115 contains ACM mainly in pipe insulation and flooring materials. Approximately 3,000 square feet of ACM was found in this building.

Approximately 800 square feet of ACM was found in Building 114 in the form of painted wall paneling. Approximately 900 square feet of vinyl floor tile and adhesive containing 5 percent asbestos was found in Building 113. Flooring materials, covering approximately 24,000 square feet of Building 110, contained asbestos. Approximately 14 square feet and 100 linear feet of ACM were detected in Building 7.

Building 8 contained 400 square feet of ACM in the form of vinyl floor tile and adhesive. In Building 9, about 2,800 square feet of flooring contains ACM along with 200 linear feet of pipe insulation. Approximately 1,000 square feet of flooring containing 3 percent asbestos was found in Building 5.

Building No. 106 contains approximately 26,000 square feet of ACM. A significant portion of that area is flooring that contains 1 to 3 percent asbestos. More than 8,000 square feet of ACM and two asbestos-containing waste containers were also found in Building 106.

Conclusion of Site Investigation

Investigations conducted by Woodward-Clyde Consultants (as part of the Hirsch and Company report) found that groundwater at the Navy Broadway Complex appears to be free of contamination. Soil contamination by hydrocarbons occurs in isolated areas, but only in substantial quantities in the vicinity of the forklift maintenance area (at Building 106), where soil removal and disposal would be recommended prior to future development on the site.

Although PCB-containing sources were found onsite (fluorescent lighting ballasts and electrical transformers), no contamination from PCBs was detected on the project site. Thus, PCBs are well contained within their storage sources.

The Woodward-Clyde study also indicated several areas that would require further investigation to determine the type and extent of any hazardous waste and the potential need for additional remediation. These areas include:

- A source of black, hydrocarbon-discolored soil encountered in hand-augured borings HA-21, HA-21A, and HA-24 near Building 7.
- A former hazardous waste storage area located in Building 8. The results of a soil gas survey indicate that further investigation would be needed to determine if there is spillage beneath or around this building.
- The soil around the forklift area should be evaluated for acid levels, and remediated if the pH is less than 5. At lower pH levels, heavy metals have a propensity to migrate.
- Oil within fluorescent lighting ballasts and transformers should be tested to identify PCB concentrations. If sufficiently high concentrations are found, remediation would be recommended to reduce the probability of future onsite soils contamination.

Asbestos is present in all buildings except two warehouses and the substation building. Although not posing an imminent health threat, asbestos has the potential to become a health threat over time. Asbestos has the potential to be friable and become a human health hazard. This hazard would be increased if demolition of buildings occurred, thus potentially releasing asbestos into the local air stream.

Agency Consultation on Hazardous Substances

The California Department of Health Services (DHS), Regional Water Quality Control Board (RWQCB) and the Environmental Protection Agency (EPA) were consulted to determine if there were any reports of hazardous substances at the Navy Broadway Complex. No hazardous substance releases or underground storage tank leaks at the Navy Broadway Complex have been reported.[2,3,4] However, RWQCB did express concern with respect to leaking underground storage tanks in the Centre City area outside the project boundaries, especially with regard to a known plume of contaminated groundwater southwest of the site.[5] This is discussed below.

Regional Groundwater Contamination--A plume of contaminated groundwater was discovered in 1986 approximately 1/3 mile east of the site in the area of Market Street and Front Street (see

Figure 4-73). The plume contains concentrations of hydrocarbons in the form of gasoline and diesel.[6] The gradient of the plume is to the southwest,[7] which would result in normal migration south of and away from the Navy Broadway Complex. The IT Corporation conducted a detailed characterization and remediation study in 1988.

The study found that the Convention Center project, located southeast of the Navy Broadway Complex and south of the plume, may have promoted migration of the plume towards the Convention Center site through a groundwater dewatering program that was removing over 800,000 (and up to 1.3 million) gallons of groundwater per day in 1987 and 1988.[8]

The RWQCB expressed concern that there may be plumes of contaminated groundwater in other areas of Centre City.[9]

Airport Hazards

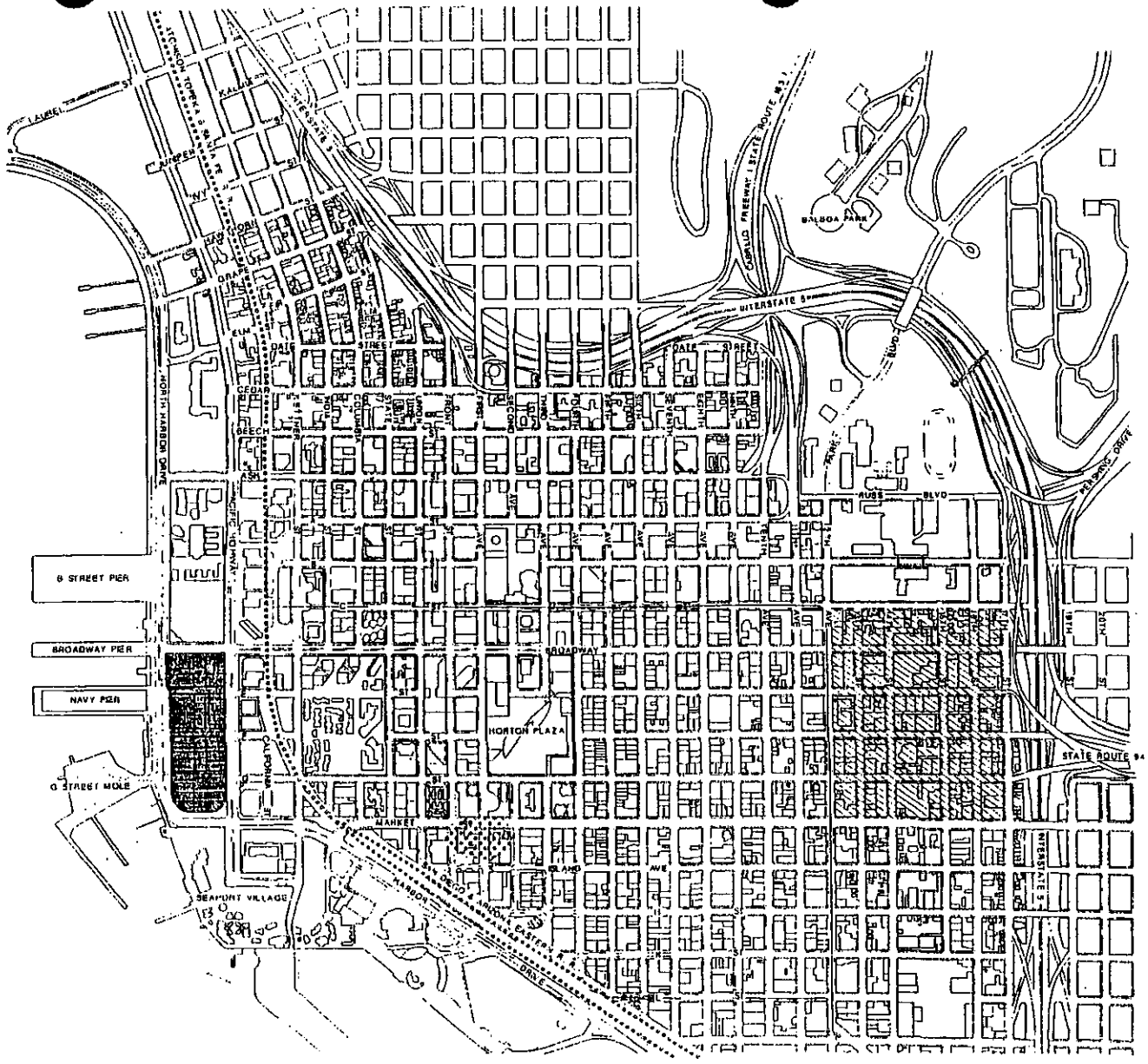
Regional Setting

The project site is located in the vicinity of both Lindbergh Field and the Naval Air Station, North Island. Guidelines that require consideration of structure height to prevent hazards to navigable airspace have been defined in an "Airport Approach Overlay Zone" for the areas around these facilities. In 1986, the City of San Diego adopted the Airport Approach Overlay Zone (Ordinance No. 0-16556) for Lindbergh Field. The purpose of the ordinance is to establish a procedure by which a proposed structure is evaluated for compliance with the zone's height limitation, prior to the issuance of a building permit for the structure. This is consistent with the FAA's procedures for determining potential hazards, as specified in Federal Aviation Regulations Part 77. The height limitations are not absolute restrictions; rather they signify the threshold that, once exceeded, would require an evaluation by the FAA to determine if a hazard to air navigation would result, and if so what remedial measures should be imposed to avoid the hazard. Buildings, structures, or uses not exceeding 30 feet in height would be exempt from the procedures of the Overlay Zone.[10] The Overlay Zone encompasses an irregular area surrounding Lindbergh Field that continues outward and upward from the airport along aircraft approach paths up to an elevation of 500-feet mean sea level (msl).

The Naval Air Station (NAS), North Island has identified height limitations (imaginary surfaces) through Federal Aviation Regulations Part 77 designed to protect its navigable airspace. Areas to the north and east of the air station are within both the Overlay Zone and air station height limitations.

Project Site

The Navy Broadway Complex is within imaginary height surfaces associated with Lindbergh Field and NAS, North Island. The site is not within any safety hazard zones or beneath any flight tracks, as defined by the Aircraft Installation Compatibility Use Zone (AICUZ) study for NAS, North Island, and is not within any clear zones or other high safety hazard zones associated with Lindbergh Field. A non-operational Part 77 imaginary surface from Lindbergh Field (the horizontal surface) crosses over the site at 165 feet above mean sea level (msl). Structures above this height would require submittal of a Notice of Proposed Construction or Alteration to the FAA. The lowest imaginary surface that crosses the site from NAS, North Island, above which a Notice of Proposed Construction or Alteration must be filed with the FAA, is of 391 feet msl associated with the conical surface, which is approximately 381 feet above Block 1. Imaginary



Legend

- Project Site
- Approximate Location of Plume
- Location of possible Navy Office for Alternative D (Will Encompass 2 Blocks)

Figure 4-73

Contaminated Plume Location

0 470 940 FEET

NORTH

SOURCE: IT Corporation, 1988

surfaces that extend over other areas of the site (Blocks 2, 3, and 4) associated with NAS, North Island are at approximately the same height. The lowest operational imaginary surfaces that are located over the site are at 500 feet msl. These surfaces are associated with a circling area for missed approaches to Lindbergh Field, and extend over the length of the site and a large part of the Centre City area.

4.11.2 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

Effects From Hazardous Materials

Soils Contamination

Health hazards are associated with the presence of substantial quantities of hazardous substances, so hazardous substances identified on the project site would have a similar effect on each of the alternatives. No action-level (i.e., clean-up level) concentrations of hazardous substances were found in the investigation, no study is thorough enough to preclude the detection of all substances that might be present on the site. Several areas of contamination or potential contamination were identified on the site that could adversely affect the health of personnel on the site, especially during construction activities that uncover soils.

The area beneath and surrounding Building 8 may contain hazardous substances. If these materials exist and are exposed, they could cause significant health impacts. If the integrity of any units that store PCB-laden oil is compromised, contamination with this material could occur, also a significant health concern. Acid levels in soils near Building 106 could cause metals in the soils to become more mobile. It is not presently known if the acid levels are sufficient to cause this to occur, but from a conservative consideration, this would be considered a significant adverse effect. The oily surface residue in the vicinity of Buildings 7 and 106 may contain residues of concern with regard to health. From a conservative consideration, this would be considered a significant adverse effect.

If Alternative D is adopted, the location of the offsite Navy offices would need to be inspected to determine if there is a potential health risk at that site associated with hazardous materials in soils.

Effects Related to Asbestos

Development in accordance with Alternatives A through F would pose significant health exposure risks associated with demolition of buildings that contain asbestos. During demolition, asbestos fibers could become airborne, thereby providing a pathway to enter the human system. Asbestos exposure is considered a human health risk, and building demolition in accordance with any of these alternatives would be considered a significant safety impact.

If Alternative D is adopted, the offsite Navy office location would need to be inspected to determine if there are any existing facilities that require removal and contain asbestos that could pose a health risk.

Alternative G would not involve the demolition of any structures, so the risk of exposure to airborne asbestos would be substantially reduced. There is no eminent health risk associated with existing asbestos on the site.

Effects Related to Regional Groundwater Contamination

Alternatives A, B, C, D, and F include subsurface parking and would likely include subsurface foundation components. Groundwater is located at approximately 7 to 11 feet below the ground surface of the site. Subsurface construction would encounter substantial quantities of groundwater, and a temporary groundwater dewatering program would be required during construction. Following construction, a permanent groundwater dewatering program would be required to avoid flooding of subsurface facilities. Dewatered groundwater would be released either to storm drains for disposal to the bay, or to the sanitary sewer system, where it would be conveyed to the Point Loma Wastewater Treatment Plant (PLWTP) and released to the bay.

Ongoing studies have shown the hydrocarbon-contaminated groundwater plume to be 1/3 of a mile east of the Navy Broadway Complex, with a gradient to the southwest, away from the site. Tests of groundwater beneath the site have found no presence of hydrocarbons. Given the distance to a known contaminated source and the gradient of flow away from the Navy Broadway Complex, it is unlikely that any contaminated groundwater would be encountered during temporary or permanent dewatering activities. However, it was found that the dewatering program associated with the Convention Center may have promoted migration of the contaminated plume in the direction of that project. It is, therefore, conceivable that groundwater dewatering associated with any of these alternatives could cause migration of the plume, or of a currently unknown source of contaminated groundwater, towards the Navy Broadway Complex.

If the discharge of groundwater occurred, a National Pollution Discharge Elimination System (NPDES) permit application would need to be filed with the RWQCB. The RWQCB would review the permit application and determine if an NPDES permit is necessary. The RWQCB has indicated, given the uncertainty associated with groundwater quality in the Centre City area, that an NPDES permit would likely be required for the discharge of groundwater directly into the storm drain system and to the bay. The RWQCB expressed uncertainty regarding the need for a permit if dewatered groundwater is discharged into the sanitary sewer, where it would be conveyed to PLWTP for advanced primary treatment prior to release to the bay. The RWQCB would determine that an NPDES permit is needed if it is felt that the dewatered groundwater could adversely affect the water quality of the bay. If a permit is required, it would include quality standards for discharge that would protect water quality. Thus, compliance of the project with any NPDES permit conditions, if it is determined a permit is needed, would avoid adverse impacts to water quality from discharged groundwater.[11]

The offsite Navy offices associated with Alternative D would be located in the Centre City East area, well away from the contaminated groundwater plume. Although subsurface parking would be constructed at the offsite location with this alternative, it is probable that groundwater in this area is sufficiently deep to not require an extensive dewatering program. Therefore, this component of Alternative D would not result in a significant impact to water quality.

Alternatives E and G would not include the construction of subsurface facilities. Therefore, no dewatering would be associated with either of these alternatives, and no impacts associated with water quality would result.

Effects Associated With Airport Hazards

Alternatives A, B, C, D, and F include building heights that approach the imaginary surfaces associated with Lindbergh Field and NAS, North Island designed to protect navigable airspace. However, the site is not within any safety hazard zones as defined by the AICUZ for NAS, North Island, and is not within any clear zones or other high safety hazard zones associated with Lindbergh Field. Each of these alternatives has 250-foot-high buildings on Block 3, which is 260 feet msl and is above the horizontal surface from Lindbergh Field. In addition, Alternative A has a building height of 400 feet (410 feet msl) on Block 1, which is above the 391-foot msl imaginary conical surface from NAS, North Island. Neither the horizontal surface from Lindbergh Field nor the conical surface from NAS, North Island, are surfaces that affect the operations of either airfield, and the exceedance of these surfaces means only that notification to the FAA is required. The Navy has notified the FAA of the proposed development of Alternative A. In response, the FAA has prepared a Determination of No Hazard to Air Navigation and has indicated the project would not have a significant effect on the safe and efficient utilization of navigable airspace. Proposed structures on Block 1 and the easterly halves of Blocks 2 and 3 would need to be obstruction lighted in accordance with FAA Advisory Circular AC 70/7460-1G.[12]

Alternative F includes a 500-foot-high building (510 feet msl) on Block 2, which would be the only building in any alternative that exceeds an operational imaginary surface, which is the 500-foot msl circling area for missed approaches at Lindbergh Field. Alternative F has the potential to adversely affect air navigation. However, the FAA has previously approved structures for as high as 500 feet (msl) on blocks in the vicinity of the project. Therefore, it is unlikely that the FAA would consider any of the alternatives a hazard to air navigation.

The offsite Navy office component of Alternative D would be a maximum of 350 feet high. The entire area in which this site would be located has imaginary surfaces associated with Lindbergh Field and the NAS, North Island in excess of 500 feet. Therefore, the offsite component of this alternative would not result in adverse effects to air navigation.

Alternatives E, with buildings proposed as high as 150 feet, and G, with existing buildings as high as 100 feet, do not include any buildings that approach the imaginary surfaces associated with Lindbergh Field or the North Island Naval Air Station. Therefore, these alternatives do not have the potential to adversely affect air navigation.

4.11.3 MITIGATION MEASURES

Hazardous Materials

The EPA has requested inclusion of the following mitigation measures for Alternatives A through F:[13]

- If any underground storage tanks on the site are found to be leaking, such leaks will be cleaned up by the Navy in accordance with the Resource Conservation and Recovery Act (RCRA) and any other applicable state or City of San Diego regulations, with clean up being initiated upon discovery of any leaks.

- If the Navy discovers evidence of substantial hazardous substances contamination in the future, it will promptly notify the EPA and comply with all applicable requirements of the Comprehensive Emergency Response Compensation and

Liability Act and the Superfund Amendment and Reauthorization Act (CERCLA/SARA) and the National Contingency Plan (NCP).

- If CERCLA hazardous substances are discovered, no construction will occur until the requirements of CERCLA/SARA and the NCP have been fully satisfied by the Navy. CERCLA/SARA/NCP activities would take priority over new construction until CERCLA/SARA compliance has been achieved.

The following additional measures are applicable to Alternatives A through F and would reduce impacts associated with exposure to hazardous materials to a level that is less than significant:

- The area beneath Building 8 will be further investigated by the Navy, prior to construction in this area, for the presence of hazardous materials in the soils. The tests will include soils sampling and testing in accordance with accepted professional standards. If any contaminated soils are found, they will be cleaned up in accordance with the regulations specified by the EPA.

- The fluid in transformers and other electrical units will be tested by the Navy prior to onsite construction to determine if such fluid contains PCBs. If PCBs are found, the fluid and the units will be disposed of by the Navy at an approved waste disposal facility.[a]

- The soil in the vicinity of the forklift maintenance area at Building 106 will be tested for acidity by the Navy prior to development in this area. If the pH of the soil is less than 5, the pH will be adjusted so that it is greater than 5.

- The oily residue-stained soil and paving materials in the vicinities of Buildings 7 and 106 will be removed by the Navy to the satisfaction of the EPA prior to development in this area and disposed of in an approved waste disposal facility.[a]

- Demolition of buildings containing asbestos on the Navy Broadway Complex will be conducted by the Navy in accordance with commonly accepted practices and in compliance with the Federal Clean Air Act. Asbestos-containing materials will be disposed of by the Navy in a landfill or other such facility that is permitted to accept such waste.

The following mitigation measure is applicable to the offsite Navy office component of Alternative D, if that alternative is selected, and would reduce to a level that is below significance any potential impacts associated with hazardous materials:

- A visual and historic land use survey of the offsite location will be conducted by the Navy prior to final purchase of the location to determine if there are any evident hazardous materials requiring remediation, or if there is the potential for such. If it is found that there may be hazardous materials at the offsite location, a remediation program will be designed and implemented.

The following mitigation measure is applicable to Alternatives A, B, C, D, and F and would reduce to a level that is less than significant any potential impacts associated with groundwater dewatering:

- A National Pollution Discharge Elimination System (NPDES) permit application will be filed with the Regional Water Quality Control Board (RWQCB). The project developer will comply with any conditions expressed by the RWQCB.

Airport Hazards

The FAA has reviewed the Notice of Proposed Construction or Alteration for Alternative A. Based on that review, the following measure has been required:

- Buildings on Block 1 and the easterly halves of Blocks 2 and 3 will be red obstruction lighted in accordance with the provisions of FAA Advisory Circular AC 70/7460-1G, Obstruction Marking and Lighting.

The following mitigation measure is applicable to Alternatives B, C, D, and F.

- A Notice of Proposed Construction or Alteration has been filed with the FAA. Any conditions that the FAA imposes on the site (e.g., lighting, striping, poles, etc.) will be followed.

ENDNOTES:

1 Woodward-Clyde Consultants, 1988 and Hirsch and Company, 1988.
2 Foley, California Department of Health Services, personal communication, 1989.
3 Posthumous, Regional Water Quality Control Board-San Diego Region, personal communication, 1989.
4 Region 9 Federal Facility Hazardous Waste Information Docket, July 1989.
5 Posthumous, op. cit.
6 Owen Geotechnical, 1989.
7 Ibid.
8 IT Corporation, 1988.
9 Posthumous, op. cit.
10 City of San Diego, 1986.
11 Posthumous, op. cit.
12 Federal Aviation Administration, 1990.
13 Tomsavic, Environmental Protection Agency, personal communication, 1989.

4.12 ENERGY AND CONSERVATION

4.12.1 NATURAL GAS

AFFECTED ENVIRONMENT

The San Diego Gas & Electric Company (SDG&E) provides natural gas service to the project area. The primary gas supplier to SDG&E is the Southern California Gas Company.

Natural gas facilities in the project area include a 2-inch main in Harbor Drive; 1-inch, 1.5-inch, and 4-inch mains in Pacific Highway; a 2-inch main in Broadway; and a 1-inch main in Market Street (Figure 4-74). These facilities are operating within their capacity.[1]

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

As depicted in Table 4.12-1, Alternatives A, B, C, D, and F would consume over 10 million therms of natural gas per year. This is a substantial increase over that consumed by the existing onsite uses (i.e., Alternative G). The uses proposed by Alternative E would consume approximately 70,000 therms on an annual basis, also a large increase over current consumption. Nevertheless, SDG&E can provide gas service associated with any of these alternatives without adversely affecting the ability to provide natural gas to SDG&E's service area.

The existing natural gas facilities serving the project area are operating well within their capacity. A preliminary study of surrounding gas facilities suggests that the natural gas lines serving the project vicinity may be sufficient to supply any of the proposed alternatives with natural gas. Therefore, significant impacts to natural gas distribution are not anticipated with implementation of the land uses proposed by Alternatives A through F, or perpetuation of the existing uses under Alternative G.

MITIGATION MEASURES

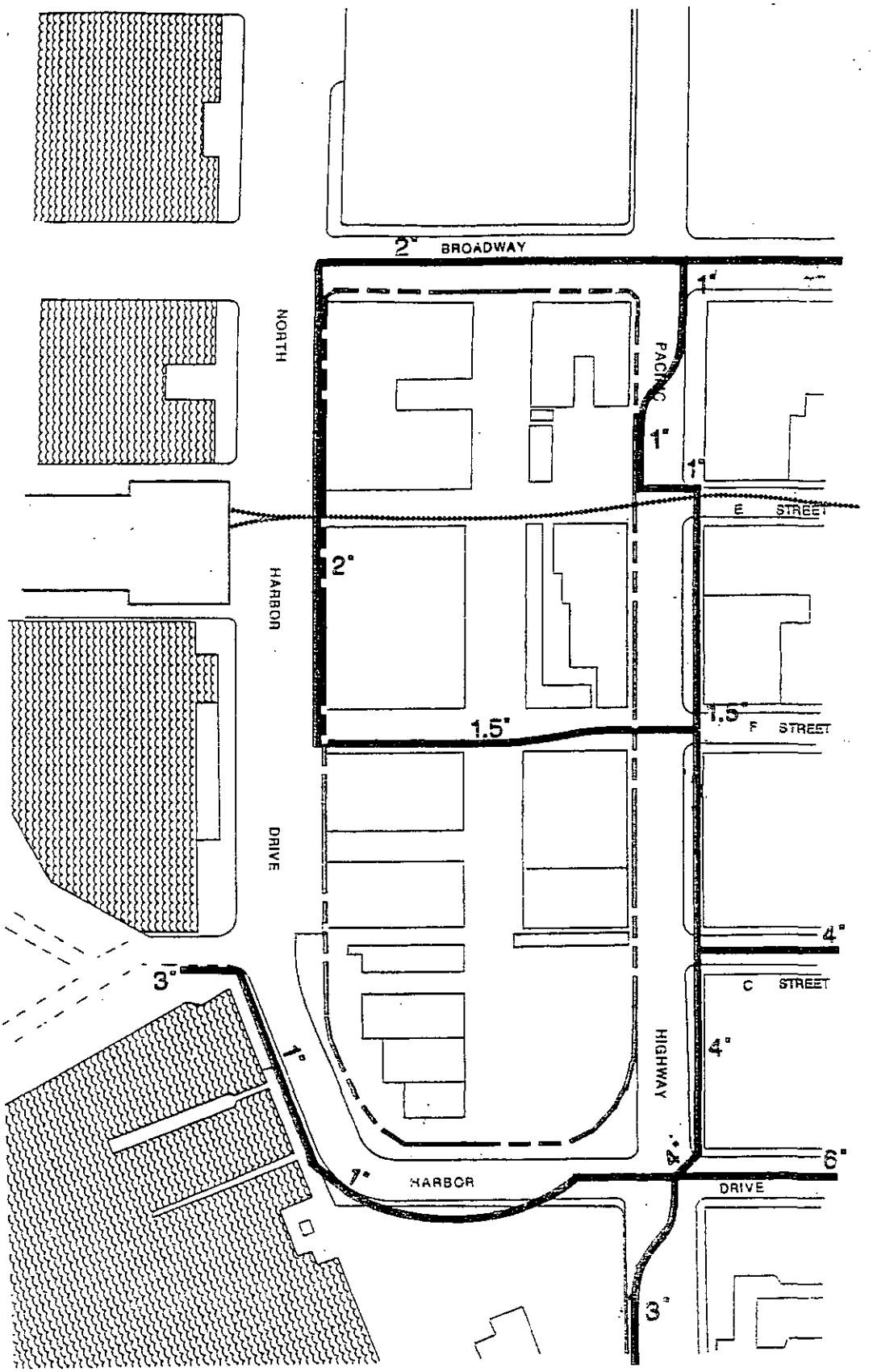
Private development associated with Alternatives A through D and Alternative F would be required to meet State of California Title 24 energy conservation standards. No other mitigation measures are necessary.

4.12.2 ELECTRICITY

AFFECTED ENVIRONMENT

San Diego Gas and Electric provides electrical service to the project area. San Diego Gas and Electric has a substation, Station B, located one block east of the project site, on Kettner Boulevard between E Street and F Street. The capacity of Station B will be upgraded from 75 megawatts to 100 megawatts in the first quarter of 1990. The peak demand of Station B is approximately 63 megawatts.[2]

SDG&E currently provides 12-kilovolt electrical service to the project site.[3] The location of electrical infrastructure serving the site is shown on Figure 4-75. The primary distribution line facility is located along Broadway.



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GAS LINE/ SIZE

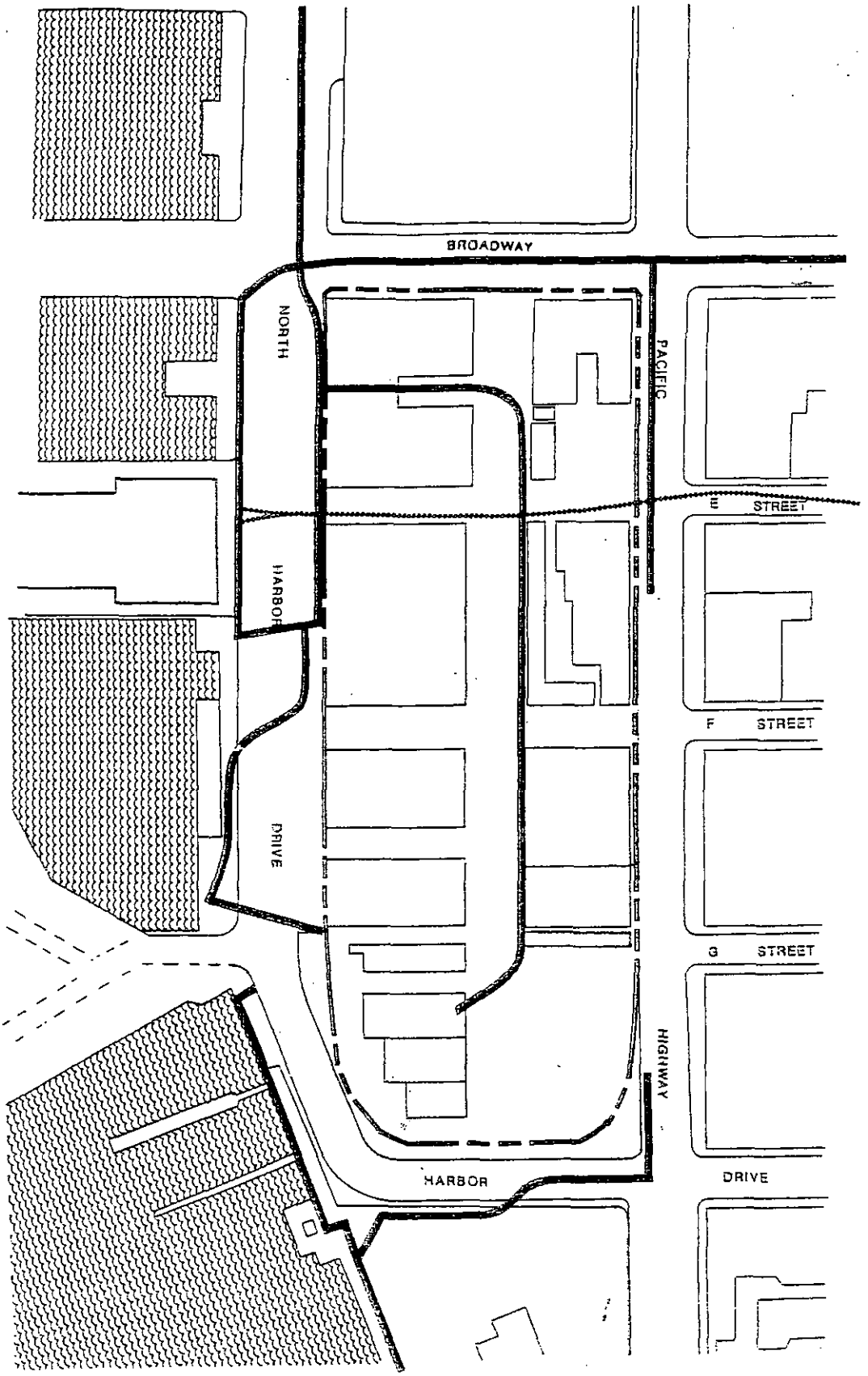
RAILROAD TRACKS

PROJECT SITE

3640001 1/90

atural Gas Facilities

Jayy Broadway Complex Project



ELECTRICAL DISTRIBUTION LINE

RAILROAD TRACKS

PROJECT SITE

9640001 1/90

lectrical Facilities

Jazz Broadway Complex Projec

TABLE 4.12-1

NATURAL GAS CONSUMPTION FOR THE PROPOSED ALTERNATIVES
(Net Increase)

Alternative	Land Use	Consumption (Therms/Year)[b]
A	1,249,247 SF office[a]	159,597
	1,245,000 SF hotel	10,012,600
	Total	**10,172,197**
B	1,549,247 SF office[a]	195,063
	1,245,000 SF hotel	10,012,600
	Total	**10,207,663**
C	594,247 SF office[a]	70,932
	1,245,000 SF hotel	10,012,600
	Total	**10,083,532**
D	2,024,247 SF office[a]	248,262
	1,445,000 SF hotel	11,574,566
	Total	**11,822,828**
E	594,247 SF office[a]	70,932
	Total	**70,932**
F	1,249,247 SF office[a]	159,597
	1,245,000 SF hotel	10,012,600
	Total	**10,172,197**
G	No new uses	0[c]
	Total	0

a Existing office uses on the site are subtracted from proposed uses to arrive at net office uses. Industrial uses currently on the site consume a minor amount of natural gas annually (less than 3,500 therms), so are not considered in the analysis.

b Generation rates provided by San Diego Gas & Electric.

c There would be no net increases in natural gas usage because no new uses are proposed.

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

When compared to Alternative G, the no action alternative, redevelopment of the project site with Alternatives A, B, D, and F would result in an increase in electricity consumption, whereas implementation of Alternative E would result in a decreased demand for electricity.

Table 4.12-2 lists the anticipated electricity requirements of the proposed alternatives. Alternatives A, B, C, D, and F would all substantially increase the demand for electricity over existing consumption (Alternative G). The uses proposed by Alternative E would actually reduce the amount of electricity that would be consumed on the site.

According to the preliminary public utilities assessment by Cash and Associates, a looped 12 kV system would be required to serve the new or rehabilitated structures associated with Alternatives A through F. The loop system could be constructed in conjunction with the phased development of these alternatives.

Development of the 12 kV system, as well as the underutilized capacity of Station B, would provide sufficient electrical service to the project site. No significant impacts are expected from implementation of any of the alternatives.

MITIGATION MEASURES

The following measures should be incorporated into the project design to reduce potential adverse effects on consumption and distribution of electricity to the project site:

- A looped 12 kV system will be constructed by the developer in phases to provide adequate electricity to the various individual structures within the Navy Broadway Complex as they are developed.

- Coordination by project developers will occur with SDG&E regarding recommendations on energy conservation measures. All private development will be constructed in accordance with Title 24 of the California Administrative Code, which provides energy conservation measures.

TABLE 4.12-2

ELECTRICITY CONSUMPTION FOR THE PROPOSED ALTERNATIVES
(Net Increase)

Alternative	Net Land Use	Consumption[b] kWh/Year
A	1,249,247 SF office[a]	19,156,797
	1,245,000 SF hotel	11,787,425
	(601,276 SF industrial)	(16,806,240)[c]
	Total	**14,137,982**
B	1,549,247 SF office[a]	23,413,863
	1,245,000 SF hotel	11,787,425
	(601,276 SF industrial)	(16,806,240)[c]
	Total	**18,395,048**
C	594,247 SF office[a]	8,514,132
	1,245,000 SF hotel	11,787,425
	(601,276 SF industrial)	(16,806,240)[c]
	Total	**3,495,317**
D	2,024,247 SF office[a]	28,339,458
	1,445,000 SF hotel	21,285,330
	(601,276 SF industrial)	(16,806,240)[c]
	Total	**32,818,548**
E	594,247 SF office[a]	8,514,132
	(601,276 SF industrial)	(16,806,240)[c]
	Total	**-8,292,108**
F	1,249,247 SF office[a]	19,156,797
	1,245,000 SF hotel	11,787,425
	(601,276 SF industrial)	(16,806,240)[c]
	Total	**14,137,982**
G		0[d]
	Total	**0**

a Net increase in proposed office uses over existing office uses that would be removed.
b Consumption factors were provided by San Diego Gas & Electric.
c Existing industrial uses that would be removed by Alternatives A through F.
d No net increases in electricity consumption would occur because no new uses are proposed.

ENDNOTES:

1 Cash and Associates, 1988.
2 Ables, San Diego Gas and Electric, personal communications, 1989.
3 Cash and Associates, op. cit.

SECTION 5

CUMULATIVE IMPACTS

The Navy Broadway Complex is located in an area of San Diego that is undergoing substantial development. As shown in Table 4.1-2, page 4-7, and Figure 4-3, page 4-8, major projects with over 6.5 million SF of office, 600,000 SF of commercial-retail, 4,000 hotel rooms, nearly 2,000 residential units, and a convention center are proposed to be completed in the project vicinity between 1989 and 2010. Attendant with this level of development would be cumulative impacts to many of the environmental systems in the project area.

Due to the relatively long buildout period of the alternatives, with completion of all but Alternative E and Alternative G (no action) not expected until 2003, many of the impacts of the proposed project were considered in Section 4 along with cumulative development. Provided herein is a qualitative discussion of the potential cumulative impacts of the proposed alternatives, with references to quantitative discussions in Section 4, where appropriate. Cumulative impacts are generally regional impacts associated with several developments to which the project may contribute.

5.1 LAND USE AND APPLICABLE PLANS

Section 4.1.1, page 4-12, discusses the impacts of the proposed alternatives on existing and proposed surrounding land uses. As indicated in that discussion, none of the alternatives introduce incompatibilities to the existing and future land uses in the project area.

The ability of the Navy Broadway Complex to provide waterfront access is a site-specific issue that would be unaffected by cumulative development in the project vicinity. Nonetheless, to the extent that the development of either of Alternatives A through F would provide new pedestrian linkages from the downtown core to the waterfront, the following mitigation measure should be considered:

- New development along Broadway, E Street, F Street, G Street, and Market Street in the vicinity of the Navy Broadway Complex should be designed to facilitate and encourage pedestrian flow.

5.2 TRANSPORTATION/CIRCULATION

Section 4.2.2 (page 4-47) addressed two traffic impact scenarios: a short-term scenario that addressed the impacts of the first phase of the project on the circulation system that would be in place in 1995, and a long-term scenario that addressed the impacts of buildout of the project alternatives with buildout of cumulative development. As indicated in Section 4.2.2 (page 4-47), several of the alternatives would contribute incrementally to cumulatively significant impacts at the following intersections:

- Grape/Pacific Highway (Alternatives A through F)
- Broadway/Harbor (Alternatives B, C, and E)
- Broadway/Pacific Highway (Alternatives A through F)
- Broadway/Front (Alternatives A through F)

Several alternatives also contribute incrementally to cumulatively significant impacts at the following roadway segments:

- Pacific Highway south of Broadway (Alternatives A, B, C, E, and F)
- First Avenue south of Ash (Alternatives A, B, C, E, and F)

Mitigation measures, listed in Section 4.2.3, page 4-65, would reduce the traffic contributions of the alternatives to all intersections and road segments to a level that is below significance.

5.3 AESTHETICS AND VIEWSHED

The aesthetics and viewshed analysis in Section 4.3.2, page 4-108, includes visual simulations of Alternatives A and F. Included in those simulations were simulations of cumulative development. As indicated in Section 4.3.2, page 4-108, the alternatives would fill in the skyline of downtown San Diego. Only Alternative F, at some selected street-end views, would adversely affect the aesthetic character of the skyline.

5.4 PUBLIC SERVICES AND UTILITIES

Section 4.4 (page 4-115) discusses the impacts of the proposed alternatives on police protection, fire protection, recreation facilities, water, wastewater, and solid waste. Impacts created by project demand for these services and utilities would be mitigated to a level that is less than significant. The suppliers of these services and utilities did not indicate that cumulative development would adversely affect their ability to provide services. As discussed in Section 4.4, page 4-115, the project alternatives that include private development (Alternatives A, B, C, D, and F) would contribute incrementally to a cumulatively significant impact to schools. Measures to mitigate project impacts would reduce to less than significant the project's contribution to this effect.

5.5 SOCIOECONOMICS

The San Diego Association of Governments (SANDAG) provides projections of population, housing, and employment growth based on growth trends, land use patterns, and general plan land use designations. The SANDAG projections are cumulative in nature. The SANDAG growth projections for the site have been based on mixed-use development of the site, as designated by the City of San Diego General Plan. Development of any of the proposed alternatives, which would fall within the parameters of a mixed-use development, would be consistent with regional growth projections for the site. Therefore, the project would not adversely affect cumulative socioeconomic projections.

5.6 PHYSICAL ENVIRONMENT

5.6.1 GEOLOGY AND SEISMICITY

Geology and seismicity impacts are site-specific, and would not be affected by, nor would contribute to, cumulative impacts.

5.6.2 EXTRACTABLE RESOURCES

Impacts to extractable resources are site-specific. Therefore, the proposed project would not contribute cumulatively to impacts on extractable resources.

5.6.3 HYDROLOGY

Other development in the project vicinity would be located primarily on sites that already have some form of urban development. Therefore, redevelopment with the new uses would not add substantial areas of impervious material to the area. As such, no cumulative impacts on hydrology would occur.

5.7 BIOLOGICAL RESOURCES

As discussed in Section 4.7.2, page 4-151, the proposed alternatives would not adversely affect biological resources in the project vicinity. Therefore, development of the alternatives would not contribute to cumulative impacts on biological resources.

5.8 AIR QUALITY

The air quality analysis in Section 4.8.2, page 4-161, considers the impact of each of the alternatives on the air quality in the project vicinity and in the San Diego Air Basin. The San Diego Air Basin is a non-attainment area for ozone, nitrogen dioxide, and carbon monoxide. The proposed alternatives would include transportation demand management measures (TDM) that would substantially reduce the potential air quality impacts of the project. Incorporation of the TDM would, according to the California Air Resources Board, demonstrate consistency with the State Implementation Plan.

The Regional Air Quality Strategy establishes a goal of maintaining a Level of Service (LOS) C or better to reduce idling times and vehicular emissions. Cumulative development in the project vicinity would create congestion (LOS D or below) at six intersections. The proposed project would contribute a substantial increment to this congestion at one or two of these intersections. City of San Diego standards provide that this incremental contribution to the region's non-attainment of ozone and carbon monoxide standards is a cumulatively significant unmitigated impact.

5.9 NOISE

The noise analysis in Section 4.9.2, page 4-175, considers the impacts of each of the alternatives on buildout of the project vicinity. No significant noise impacts in the project vicinity would result.

5.10 CULTURAL RESOURCES

Unless the proposed alternatives would affect a historic district, cultural resource impacts from Navy Broadway Complex development are considered site-specific. As discussed in Section 4.10.1, page 4-207, the area surrounding the site is not in a historic district; therefore, development on the site would not create cumulative cultural resource impacts.

5.11 PUBLIC HEALTH AND SAFETY

Public health (i.e., hazardous waste) and safety (i.e., proximity to an airport) impacts are site-specific and would, therefore, not be affected by other development.

5.12 ENERGY AND CONSERVATION

5.12.1 NATURAL GAS

The San Diego Gas & Electric Company (SDG&E) has sufficient capacity to supply natural gas to other development in the Centre City without adversely affecting its ability to continue providing existing services.

5.12.2 ELECTRICITY

SDG&E has indicated that a new substation may be needed to service the electrical needs of cumulative development in Centre City. Development of any of the proposed alternatives, except Alternatives C and E (both of which would provide a net reduction in onsite electricity use), and Alternative G, would contribute to this need.

SECTION 6

GROWTH-INDUCING IMPACTS

The project site is located in a dynamic area of San Diego that is undergoing substantial development. A number of major office, hotel, and commercial developments are proposed, under construction, or have been recently completed in the vicinity of the project site.

Growth-inducing impacts are those direct or indirect effects of a project that could result in economic or population growth, or the need for new housing. Section 4.5 (page 4-129), Socioeconomics, discusses the population and housing growth potential associated with the project. It is not anticipated that the proposed project would cause or encourage the intensification of any surrounding land uses, because surrounding land uses have long been responding to dynamic market forces that have already resulted in substantial growth, without apparent regard to the proposed redevelopment of the Navy Broadway Complex. Infrastructure in the project vicinity is already in place, and has not been a primary constraint to development of the surrounding area. Therefore, project development would not result in the introduction to the project area of new infrastructure that would remove constraints to the development of surrounding properties.

Alternatives A, B, C, D, and F would result in substantial increased usage of the waterfront. This would occur because major pathways between the Centre City core and the waterfront, such as E, F, and G Streets would be opened and enhanced for public use. In addition, pedestrian-encouraging treatments along Harbor Drive and the provision of ground-level retail on the site would serve to increase pedestrian use of this area. In turn, patronage of other waterfront establishments, such as Seaport Village, would be expected to increase, which is a growth-inducing effect of the project.

SECTION 7

ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED SHOULD THE PROPOSED ACTION BE IMPLEMENTED

Section 4, beginning on page 4-1, addressed the potential environmental consequences of the proposed action, and included measures to mitigate significant environmental consequences to the extent feasible. After mitigation, certain of the proposed alternatives would still cause significant adverse environmental effects, as discussed below. Please refer to Section 4 for a complete discussion of the potential impacts and mitigation measures.

7.1 LAND USE AND PLANNING

Alternatives C and E would not implement City of San Diego urban design goals that specify a pedestrian orientation along Broadway and would not be consistent with City or regional goals for providing a plaza at the foot of Broadway.

7.2 TRANSPORTATION/CIRCULATION

No significant unavoidable impacts associated with traffic would result from development of any of the alternatives.

7.3 AESTHETICS AND VIEWSHED

Development of Alternative F would significantly affect street-end views, such as from Pantoja Park down F Street, because this alternative would contrast substantially with the skyline from this distance. Even so, it is recognized that visual resource impacts are highly subjective, and development of this alternative may be considered aesthetically appropriate, even if its building height is out of character with the scale of nearby development.

7.4 PUBLIC SERVICES AND UTILITIES

No significant unavoidable impacts associated with public services and utilities would result from development of any of the alternatives.

7.5 SOCIOECONOMICS

No significant unavoidable impacts associated with socioeconomics would result from development of any of the alternatives.

7.6 PHYSICAL ENVIRONMENT

No significant unavoidable impacts associated with physical environmental resources would result from development of any of the alternatives.

7.7 BIOLOGICAL RESOURCES

No significant unavoidable impacts associated with biological resources would result from development of any of the alternatives.

7.8 AIR QUALITY

Development of Alternatives A through F would result in increased emissions of air pollutants. The project region is located in a nonattainment area for the achievement of air quality standards, so any increase in emissions is considered a significant environmental effect. However, substantial reductions in emissions would result from the proposed mitigation measures, so development of Alternatives A through F would not result in significant project-related unavoidable effects to air quality. The project would contribute an increment to cumulatively significant air quality impacts. This increment is considered significant under City of San Diego guidelines (see Section 5.8, page 5-3).

7.9 NOISE

No significant unavoidable impacts associated with noise would result from development of any of the alternatives.

7.10 CULTURAL RESOURCES

No significant unavoidable impacts associated with cultural resources would result from development of any of the alternatives.

7.11 PUBLIC HEALTH AND SAFETY

No significant unavoidable impacts associated with public health and safety would result from development of any of the alternatives.

7.12 ENERGY AND CONSERVATION

No significant unavoidable impacts associated with energy and conservation would result from development of any of the alternatives.

SECTION 8

ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES THAT WOULD BE INVOLVED IN THE PROPOSED ACTION IF IMPLEMENTED

The Navy Broadway Complex is located in the urbanized downtown area of the City of San Diego. Redevelopment of the site with any of the proposed alternatives would not commit new land or sensitive environmental resources to urban uses.

As with any urban development, nonrenewable resources and resources used to manufacture construction materials will be used during both the construction and operational phases of the project. Such resources include oil and gas, sand and gravel, and other construction materials. This represents an irreversible commitment of resources.

SECTION 9

THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Development of the Navy Broadway Complex with the proposed uses would provide a continuation of the urban uses on the project site. In the short term, noise, traffic, and air pollution would be generated as old structures are removed or renovated and new facilities are constructed. No sensitive environmental resources would be used in the short term.

The project site is located in a highly urbanized area, and land use plans indicate a long-term commitment to highly urbanized uses, such as high-rise office and hotel uses. The proposed uses would represent a continuation of this long-term commitment to urban uses. The proposed uses would enhance the long-term productivity of the site. Each of the alternatives, except Alternative G, would create view corridors to the waterfront along E, F, and G Streets. Alternatives A and F would provide significant open space uses at the foot of Broadway, and Alternatives B and D would provide smaller pedestrian plazas at the foot of Broadway. Other urban amenities would be provided by redevelopment of the site with the proposed alternatives.

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