

## **SHADOW**

This subsection describes the Proposed Project's shadow impacts on open spaces and recreation facilities in the vicinity of the Project Site. The Setting discussion identifies existing public and private open spaces and recreation facilities, describes applicable government regulations related to shadow impacts, and describes existing shadows on existing private open spaces and recreation facilities. The Impacts discussion describes significance criteria for determining if shadow impacts are significant under CEQA, analyzes the shadows impacts of the Proposed Project and cumulative development projects, and identifies mitigation and improvement measures. Background materials supporting the discussion of shadow impacts consist of shadow diagrams that were prepared by CADP Associates.<sup>25</sup>

## **SETTING**

### **PUBLIC OPEN SPACES AND RECREATION FACILITIES**

There are 13 public open spaces and recreation facilities in the vicinity of the Project Site. Some of these properties are under the jurisdiction of the San Francisco Recreation and Park Commission, while the other properties are under the jurisdiction of other government agencies.

#### **Recreation and Park Commission Properties**

Public open spaces and recreation facilities in the vicinity of the Project Site that are under the jurisdiction of the Recreation and Park Commission include Rolph Nicol Park (0.9 mile north of the Project Site), Junipero Serra Playground (0.5 mile northeast), Aptos Playground (0.9 mile northeast), Merced Heights Playground (0.4 mile east), Brooks Park (0.6 mile east), Lakeview & Ashton Mini-Park (0.9 mile east), Brotherhood Chester Mini-Park (0.5 mile southeast), Brotherhood Head Mini-Park (0.8 mile southeast), Randolph Bright Mini-Park (0.8 mile southeast), and Ocean View Playground and Recreation Center (1.1 miles southeast).

#### **Other Public Open Spaces and Recreation Facilities**

Public open spaces and recreation facilities in the vicinity of the Project Site that are not under the jurisdiction of the Recreation and Park Commission include Fort Funston (1 mile west of the Project Site), which is part of the Golden Gate National Recreation Area and is under the jurisdiction of the National Park Service, Lake Merced Park (adjacent to and west of the Project Site), which is under the jurisdiction of the San Francisco Public Utilities Commission, and Peace

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<sup>25</sup> The shadow diagrams are available for review at the Planning Department, 1650 Mission Street, Suite 400, in the files for Case No. 2008.0021E.

Park (0.1 mile south of the Project Site), which is under the jurisdiction of the San Francisco Department of Public Works.

## **PRIVATE OPEN SPACES AND RECREATION FACILITIES**

Private open spaces and recreation facilities in the vicinity of the Project Site include the San Francisco Golf Club (0.1 mile south of the Project Site) and the Olympic Country Club (0.4 mile southwest of the Project Site).

## **REGULATORY FRAMEWORK**

### **San Francisco Planning Code**

#### Section 295

In 1984, San Francisco voters approved an initiative known as “Proposition K, The Sunlight Ordinance,” which was codified in 1985 as Planning Code Section 295. Planning Code Section 295 prohibits the approval of “any structure that would cast any shade or shadow upon any property under the jurisdiction of, or designated for acquisition by, the Recreation and Park Commission” unless the Planning Commission, with review and comment by the Recreation and Park Commission, has found that the shadows cast by the proposed project would not have a significant impact on the use of the property. Section 295 does not apply to structures that do not exceed 40 feet in height. The period analyzed is from the first hour after sunrise until the last hour before sunset.

The Sunlight Ordinance further requires that the Planning Commission and the Recreation and Park Commission jointly adopt criteria to be used by the Planning Commission in implementing the Sunlight Ordinance.

### **Methodology**

The following discussion describes the methodology established by the Planning Commission for analyzing shadow impacts.

#### Shadow Fan

In order to determine whether any publicly accessible open spaces, recreation facilities, or parks could be potentially affected by project shadow, the Planning Department prepared a “shadow fan” diagram. The shadow fan plots the maximum potential reach of project shadow over the course of a year (from one hour after sunrise until one hour before sunset on each day of the year) and plots the locations of nearby open spaces, recreation facilities, and parks. The shadow fan accounts for topographical changes, but it does not account for existing shadows cast by existing

buildings. The shadow fan is used by the Planning Department as the basis for initially identifying which open spaces, recreation facilities, and parks merit further study. Those that are outside the maximum potential reach of project shadow do not require further study.

#### Shadow Diagrams

Using a computer program that accounts for the heights of existing and proposed buildings as well as topographical data, shadow diagrams have been prepared by CADP Associates for the three open spaces that would be affected by the Proposed Project. Fog, rain, and shadows from trees, existing or proposed, are not taken into account. Shadow diagrams are “snapshots” taken at a particular representative time of day and day of the year. They illustrate the extent and location of shadows cast by existing buildings, net new shadow from a proposed development project, and the remaining sunlight on the subject open space. A series of shadow diagrams from the same day demonstrates how the shadow moves across the space over a specific period of time. Shadow diagrams are presented in this section and serve as the basis for the qualitative discussion of shadow impacts.

The Proposed Project is represented by the information shown on Figure III.10: Proposed Representative Building Heights Plan, p. III.27. These building configurations, heights, and locations shown on this plan are representative as opposed to actual building designs. The Proposed Project includes an amendment to the Planning Code and the *General Plan* to adopt a proposed Special Use District that would apply to the Project Site. The Special Use District, shown on Figure III.9: Proposed Zoning Height Limit Plan, p. III.25, provides an overlay that would accommodate a plan that would increase height limits and/or change building footprints in certain locations on the Project Site. This overlay would designate specific areas for new buildings taller than six stories. Rather than designate the exact location of all proposed buildings less than six stories in height, the proposed overlay would impose a base height limit within certain districts and then permit a certain percentage of the land area within that district to be improved with buildings that exceed the base height limit. At these locations, there is the potential to construct buildings that are slightly taller or shorter, bulkier or less bulky, in slightly different locations, or oriented differently than the buildings and locations currently proposed under the Proposed Project and shown on Figure III.10. These potential differences in building bulk, configuration, height, and location were taken into account in constructing the computer model used to generate the shadow diagrams. As a result, the Impacts discussion is based on shadow diagrams that show the shadow impacts of larger potential building envelopes that would be allowed under the proposed Special Use District. By using the larger building envelopes that would be allowed under the proposed Special Use District, the shadow analysis produces more conservative results (i.e., greater shadows) than those that would be produced by using the smaller building envelopes of the Proposed Project as shown on Figure III.10.

Existing shadows cast by the existing Parkmerced buildings are shown in Figure V.I.7: Existing Parkmerced Shadows, September 21, 7:56 AM, through Figure V.I.26: Existing Parkmerced Shadows, June 21, 7:35 PM on pp. V.I.28-V.I.47. Net new shadows cast by the Proposed Project are shown in Figure V.I.27: Proposed Parkmerced Project Shadows, September 21, 7:56 AM, through Figure V.I.46: Proposed Parkmerced Project Shadows, June 21, 7:35 PM on pp. V.I.62-V.I.81.

## **EXISTING SHADOWS**

### **Lake Merced Park**

Lake Merced Park, which is adjacent to and west of the Project Site, is a 614-acre park that offers active and passive recreation opportunities. There are trails for cycling, running, and walking, as well as three fishing piers, two picnic areas, and a boathouse. Lake Merced Park is also a popular destination for birdwatching. The nine-hole Jack Fleming Golf Course and the 18-hole Harding Park Golf Course occupy the eastern portion of the park. Other uses along the western shore of the lake include the San Francisco Police Pistol Range and the Pacific Rod and Gun Club.

Several of the existing buildings on the western portion of the Project Site shadow the eastern edge of Lake Merced Park in the morning throughout the year. The areas of Lake Merced Park that are shadowed by the existing buildings consist of several fairways on the Harding Park Golf Course, several maintenance buildings, two parking lots, and the southeast corner of Lake Merced. The shadows begin approximately one hour after sunrise<sup>26</sup> and move off the park at approximately 10:00 AM. Shadows from the existing buildings on the Project Site do not reach Lake Merced Park at any other time of the day during the year (see Figures V.I.7 through V.I.26).

### **Peace Park**

On the north side of Brotherhood Way just west of Chumasero Drive, there is a street-level open space known as Peace Park that is under the jurisdiction of the San Francisco Department of Public Works. Peace Park is landscaped with ornamental grasses, small shrubs, and several groves of trees and features a 20-foot-tall statue by sculptor Benjamin Bufano. There are three benches, but no walkways, restrooms, or other amenities. Peace Park is suitable for passive recreation. The land north of Peace Park slopes up to a vacant development site at 800 Brotherhood Way, where it plateaus before sloping up to the southern edge of the Project Site.

Some of the existing buildings near the south central portion of the Project Site and in the southeast corner of the Project Site cast shadows on Peace Park in the morning and in the evening

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<sup>26</sup> Pursuant to the methodology established by the San Francisco Planning Department, shadow impacts (existing and net new) are analyzed from one hour after sunrise until one hour before sunset.

during certain times of the year. From early February until early November, morning shadows begin approximately one hour after sunrise and move off Peace Park by approximately 9:30 AM. When the morning shadows begin, they cover almost all of Peace Park before receding as the day progresses. From early November until early February, the existing buildings on the Project Site do not cast shadows on Peace Park at any time during the day (see Figures V.I.7 through V.I.26).

From late May until mid-July, evening shadows occur during the last 15 to 30 minutes of the day. The evening shadows fall on the western portion of Peace Park. During the last minute of the day, the evening shadows reach their maximum area, covering approximately 50 percent of Peace Park (see Figure V.I.26). The existing hillside north of Peace Park casts shadow on Peace Park in the morning and in the evening during the spring, summer, and autumn.

### **San Francisco Golf Club**

The San Francisco Golf Club, which is approximately 0.1 mile south of the Project Site, is a private golf course that straddles the border between San Francisco County and San Mateo County. It is not accessible to the public.

The existing buildings on the Project Site do not shadow the San Francisco Golf Club at any time during the year (see Figures V.I.7 through V.I.26).

### **Existing On-Site Open Spaces**

The Project Site includes a total of approximately 75 acres of existing open space in the form of playgrounds, lawns, and interior courtyards (see Figure III.5: Existing Open Space Plan, in Chapter III, Project Description). The Meadow is an east-west lawn area located between Juan Bautista Circle and Arballo Drive, and the Commons is a landscaped open space that is encircled by Juan Bautista Circle near the center of the Project Site.

The existing open spaces can be characterized as sunny. Since most of the existing buildings do not exceed two stories in height, the playgrounds and lawns are generally without shadows from 10:00 AM until 3:00 PM or later during the spring, summer, and autumn. When the sun is lower in the sky during the winter, the playgrounds and lawns are without shadows during the day for a shorter period of time, from noon until approximately 1:00 PM. Although the interior courtyards are enclosed on all sides by two-story buildings, they are generally without shadows from 10:00 AM until 3:00 PM or later during the spring, summer, and autumn due to the relatively low heights of the buildings that surround them. When the sun is lower in the sky during the winter, the interior courtyards are generally without shadows during the day for a shorter period of time, from noon until approximately 1:00 PM (see Figures V.I.7 through V.I.26). To give a fuller representation of existing shadow conditions on the Project Site, the Meadow and the Commons are discussed in more detail below.

### The Meadow

The Meadow is an east-west lawn area located between Juan Bautista Circle and Arballo Drive. There are two existing 13-story towers along the northern perimeter and two existing 13-story towers along the southern perimeter (see Figure III.5). The Meadow is landscaped with grass and flowers and is suitable for active and passive recreation.

The four existing towers shadow the Meadow throughout the year. During the spring, summer, and autumn, the four existing towers shadow between 25 and 50 percent of the Meadow. The shadows fall on the west end of the Meadow in the morning, on the central portion of the Meadow in the afternoon, and on the east end of the Meadow in the evening. Although portions of the Meadow are shadowed throughout the day during the spring, summer, and autumn, the Meadow receives 10 to 12 hours of sunlight each day. During the winter, the four existing towers shadow between 50 and 75 percent of the Meadow. The shadows fall on the western and central portions of the Meadow in the morning, on the central portion of the Meadow in the afternoon, and on the central and eastern portions of the Meadow in the evening. Although portions of the Meadow are shadowed throughout the day during the winter, the Meadow receives approximately eight hours of sunlight each day (see Figures VI.7 through VI.26).

### The Commons

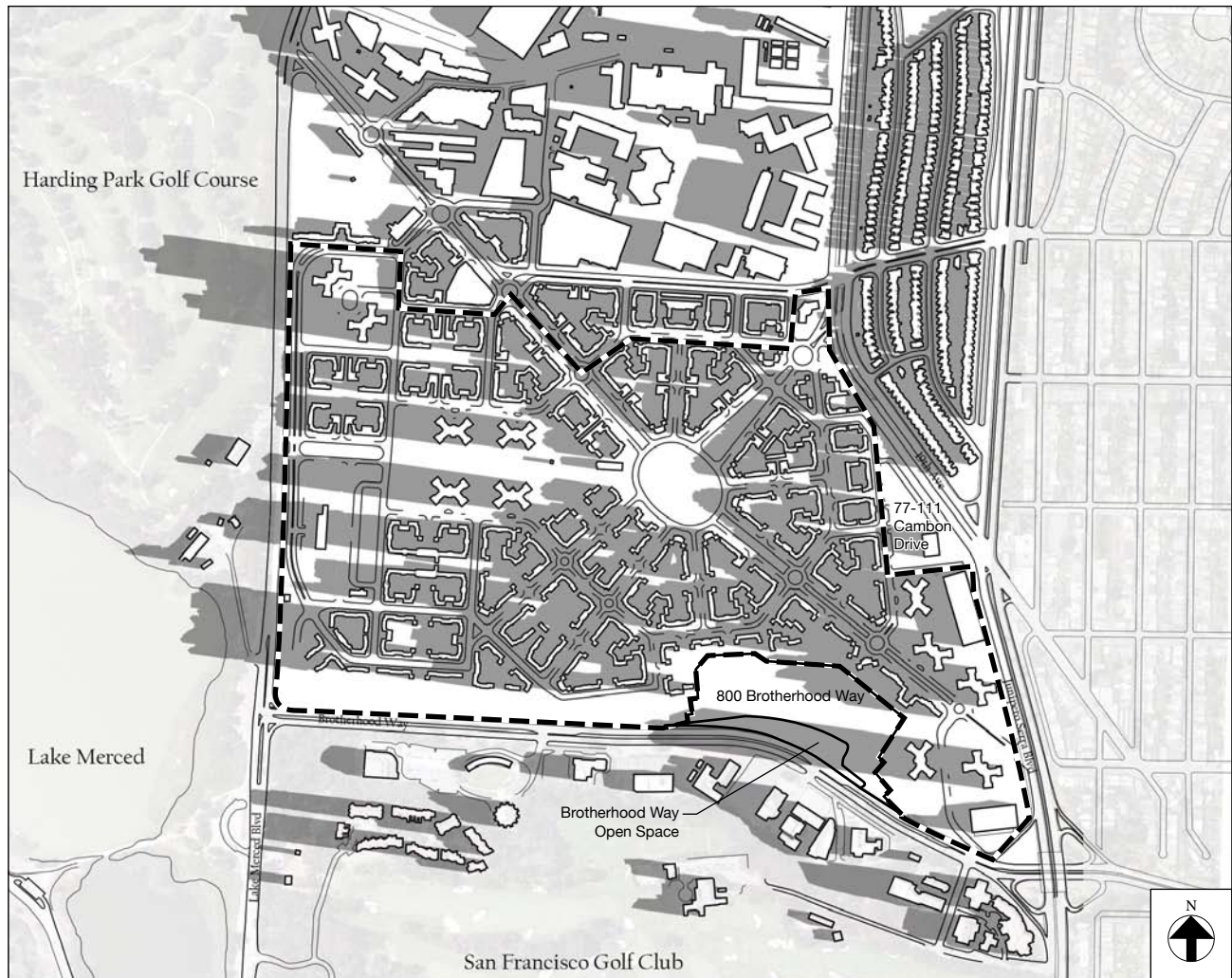
The Commons is an oval-shaped open space that is encircled by Juan Bautista Circle near the center of the Project Site. The Commons is landscaped with grass and several groves of mature trees. There are planters and paved walkways within the open space, and there are benches around the perimeter. The Commons is suitable for passive recreation.

For most of the day, existing buildings on the Project Site do not shadow the Commons. However, some shadows from existing buildings reach the Commons in the morning and in the evening throughout the year (see Figures V.H.7 through VI.26). From late January until mid-November, morning shadows begin approximately one hour after sunrise and move off the Commons by approximately 9:00 AM. From mid-November until late January, morning shadows begin approximately one hour after sunrise and move off the Commons between 9:30 AM and 10:30 AM. The morning shadows fall primarily on the northeastern and southeastern portions of the Commons during the spring, summer, and autumn and primarily on the southern and eastern portions of the Commons during the winter. When the morning shadows begin, they cover approximately one-quarter of the Commons before receding as the day progresses (see Figures VI.7, VI.12, VI.17, and VI.22).

From mid-February until late October, evening shadows occur during the last 15 minutes of the day. From late October until mid-February, evening shadows occur during the last 30 to 45 minutes of the day. The evening shadows fall primarily on the western and southwestern portions

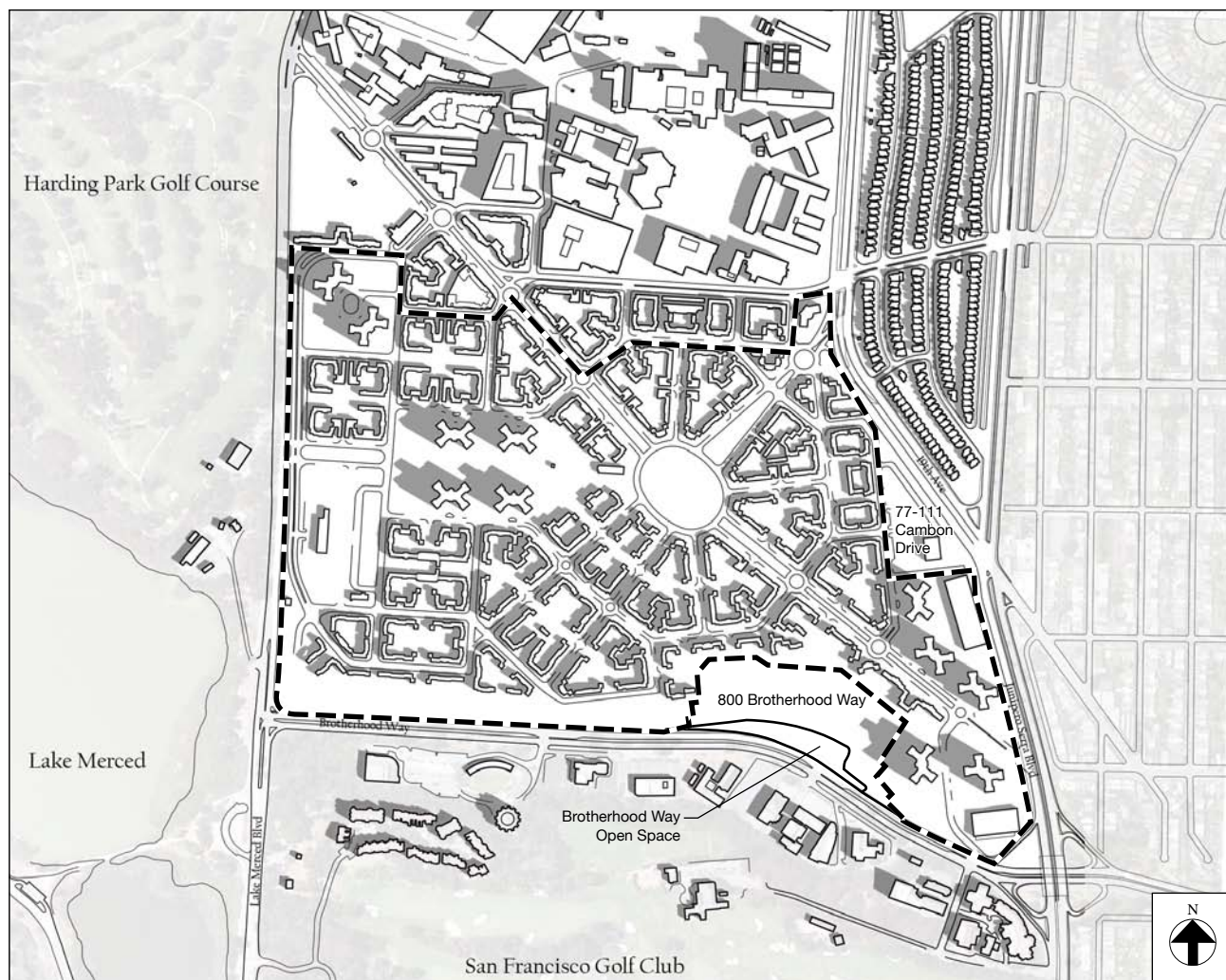
of the Commons throughout the year. During the last minute of the day, the evening shadows reach their maximum area, covering approximately one-quarter of the Commons (see Figures V.I.11, V.I.16, V.I.21, and V.I.26).

The Commons includes several groves of mature trees that shadow most of the Commons from the morning until the late afternoon. Shadows from trees are experienced differently than shadows from buildings. Whereas building shadows are solid and clearly defined, tree shadows are more fluid and dynamic. Depending on the characteristics of a tree's canopy (the number and size of the branches and the shape and size of the leaves), sunlight can filter through a tree's canopy and reach the ground. In addition, tree branches can move with breezes and winds, allowing filtered sunlight to reach the ground.



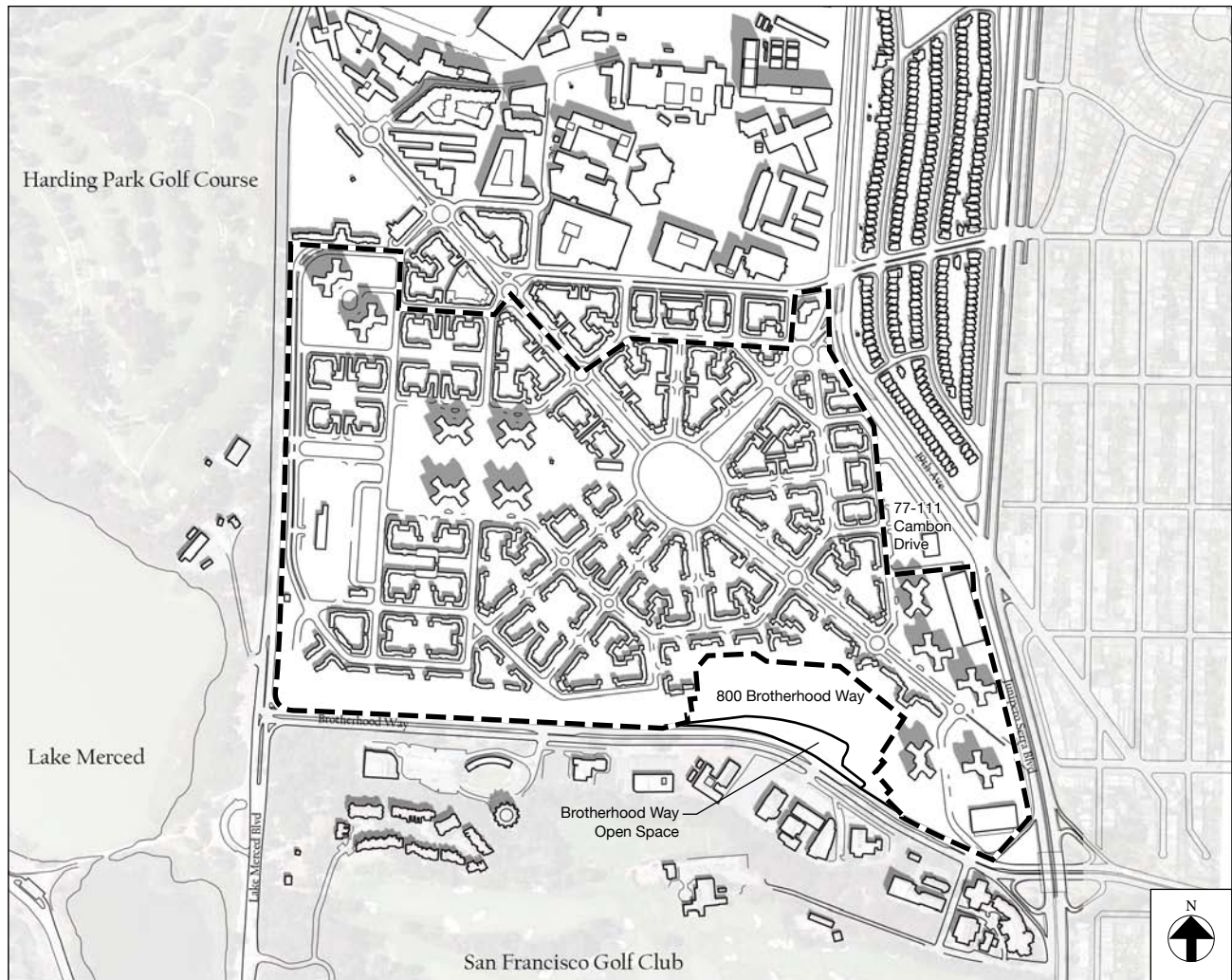
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- EXISTING SHADOWS
- PROJECT SITE BOUNDARY



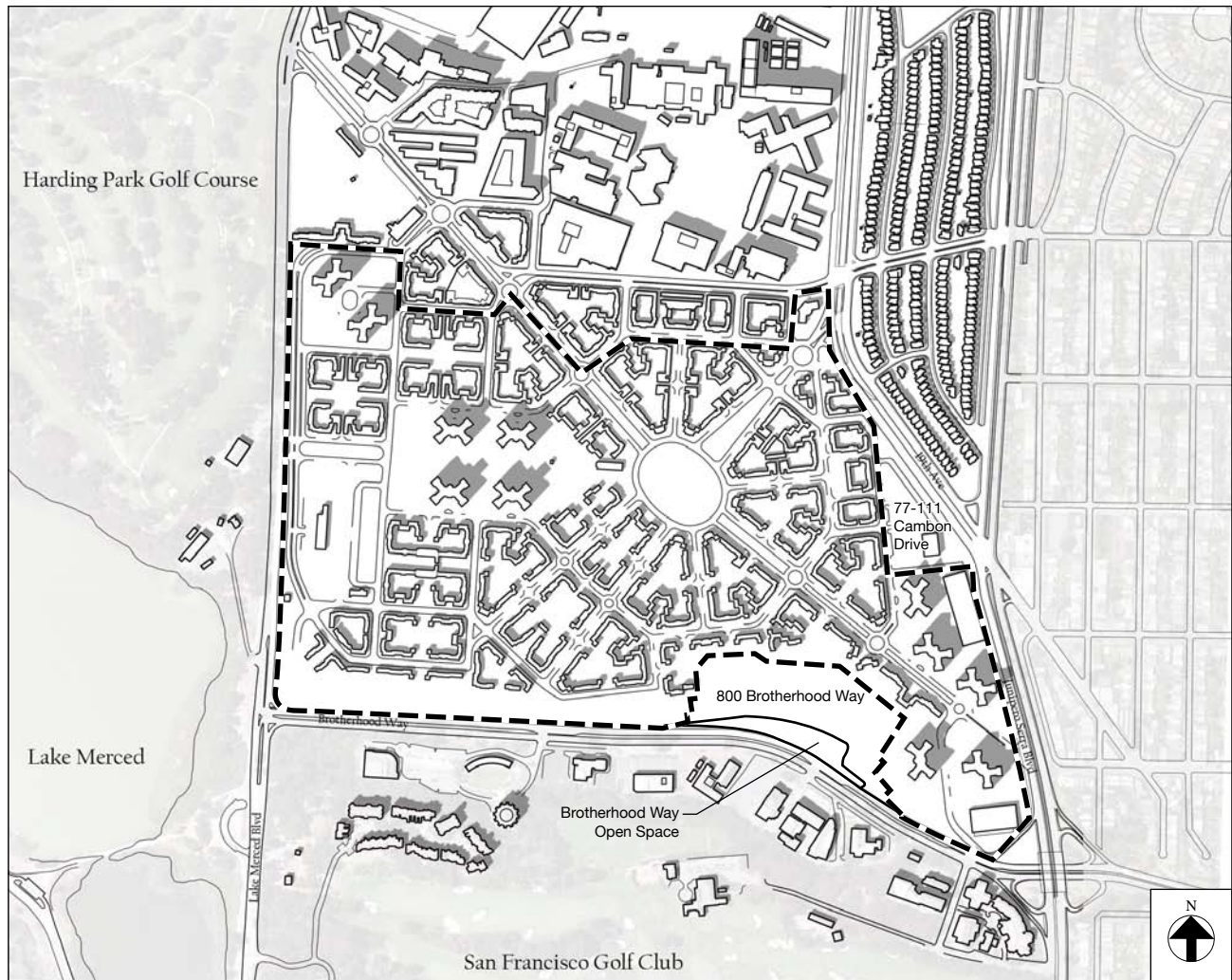
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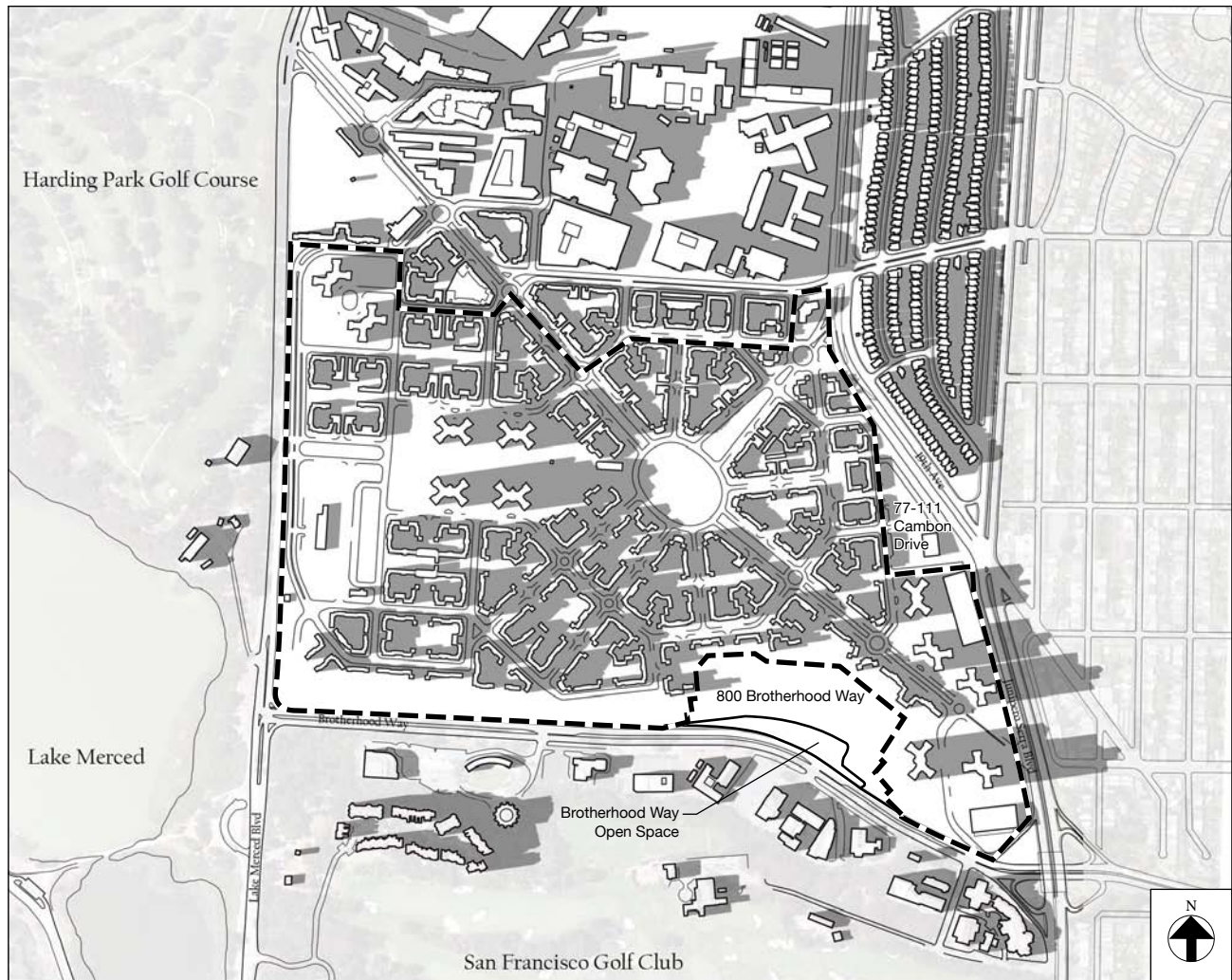
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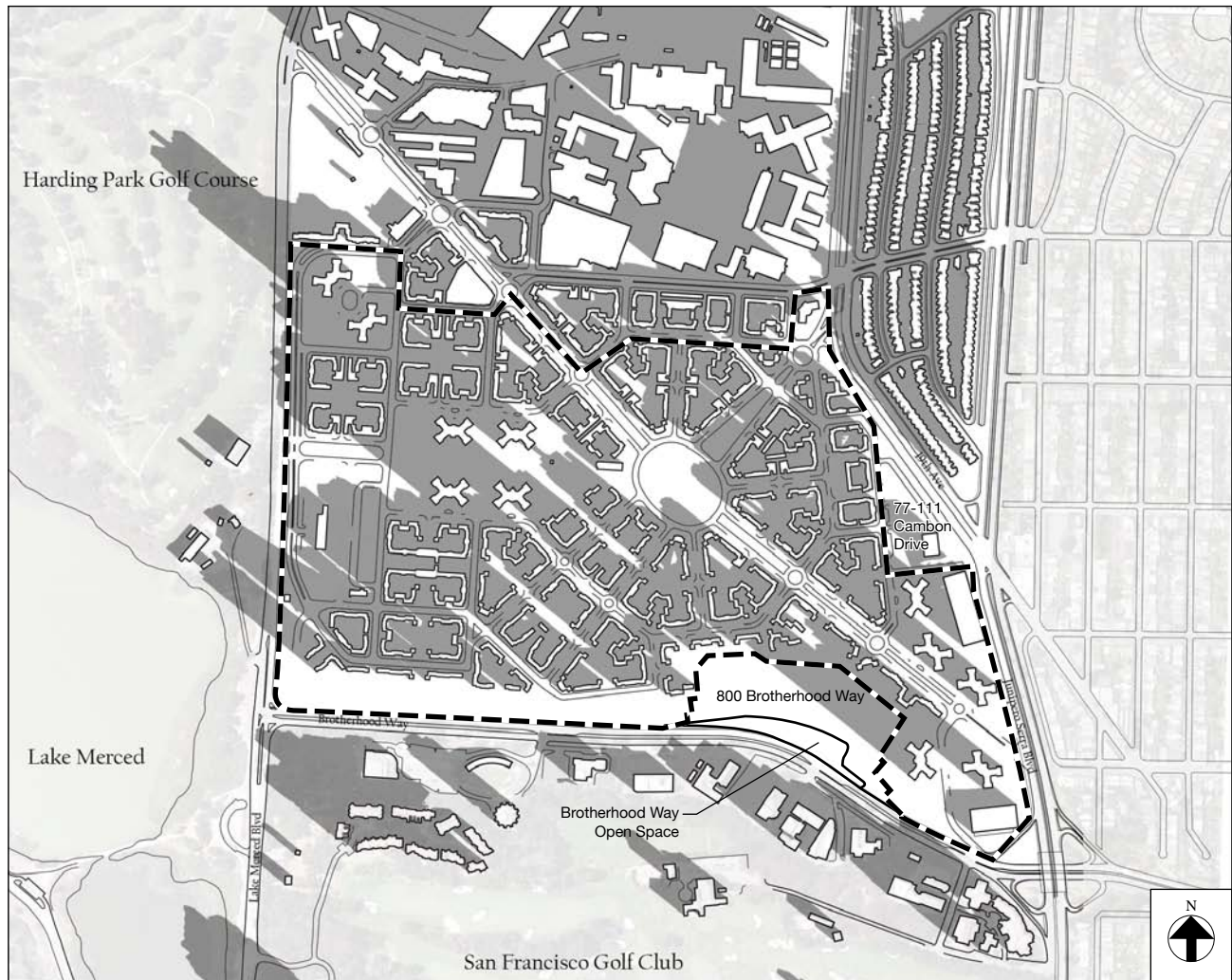
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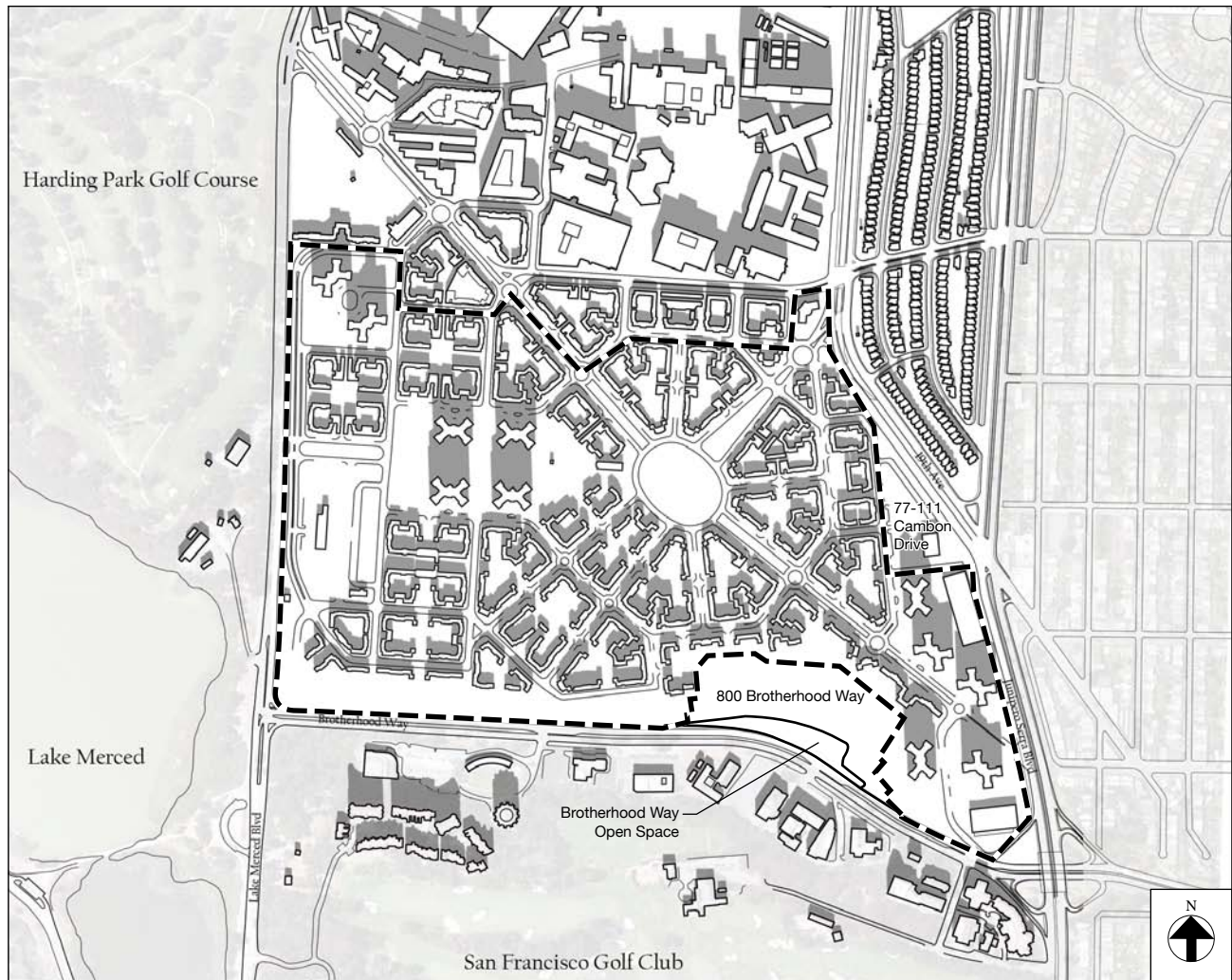
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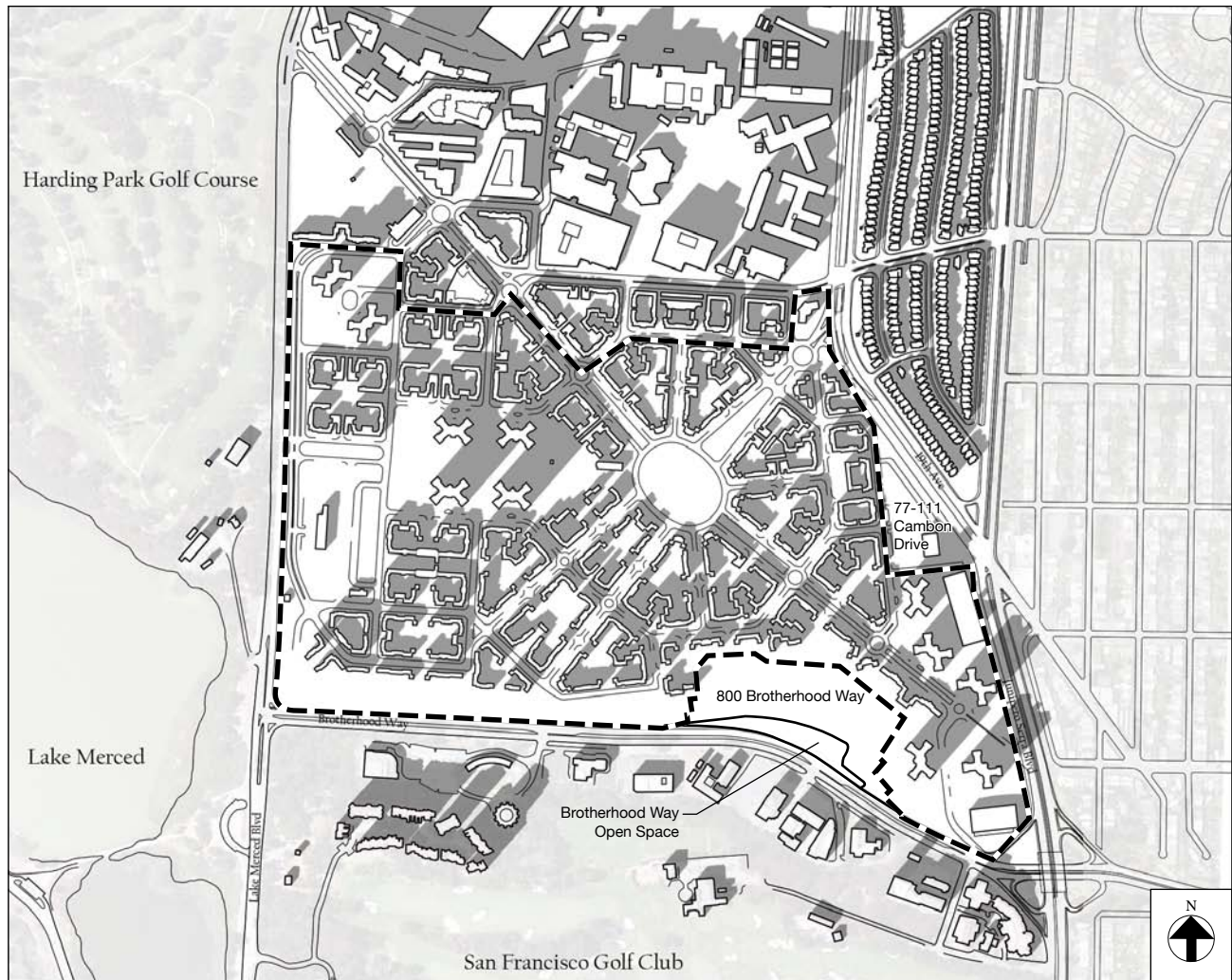
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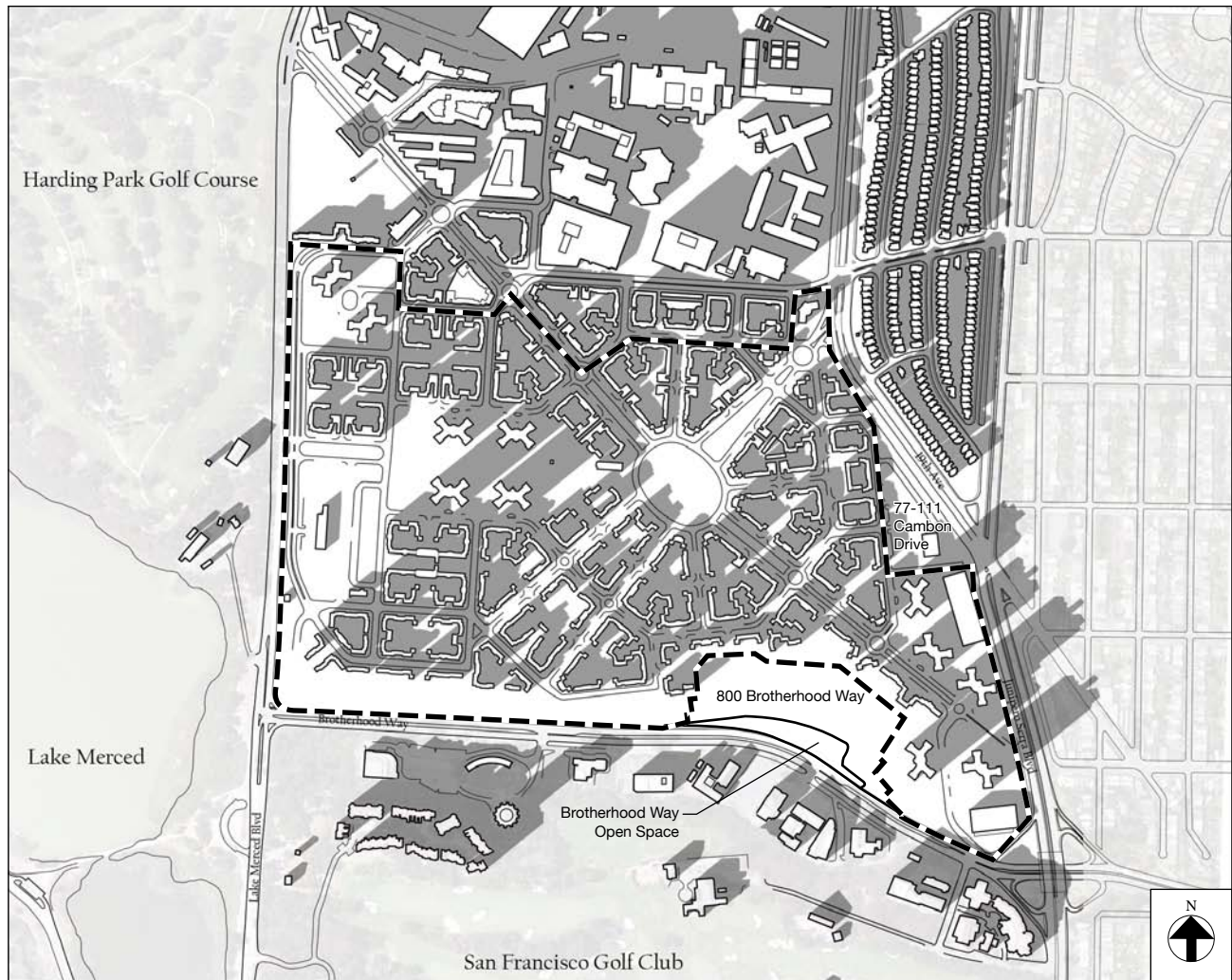
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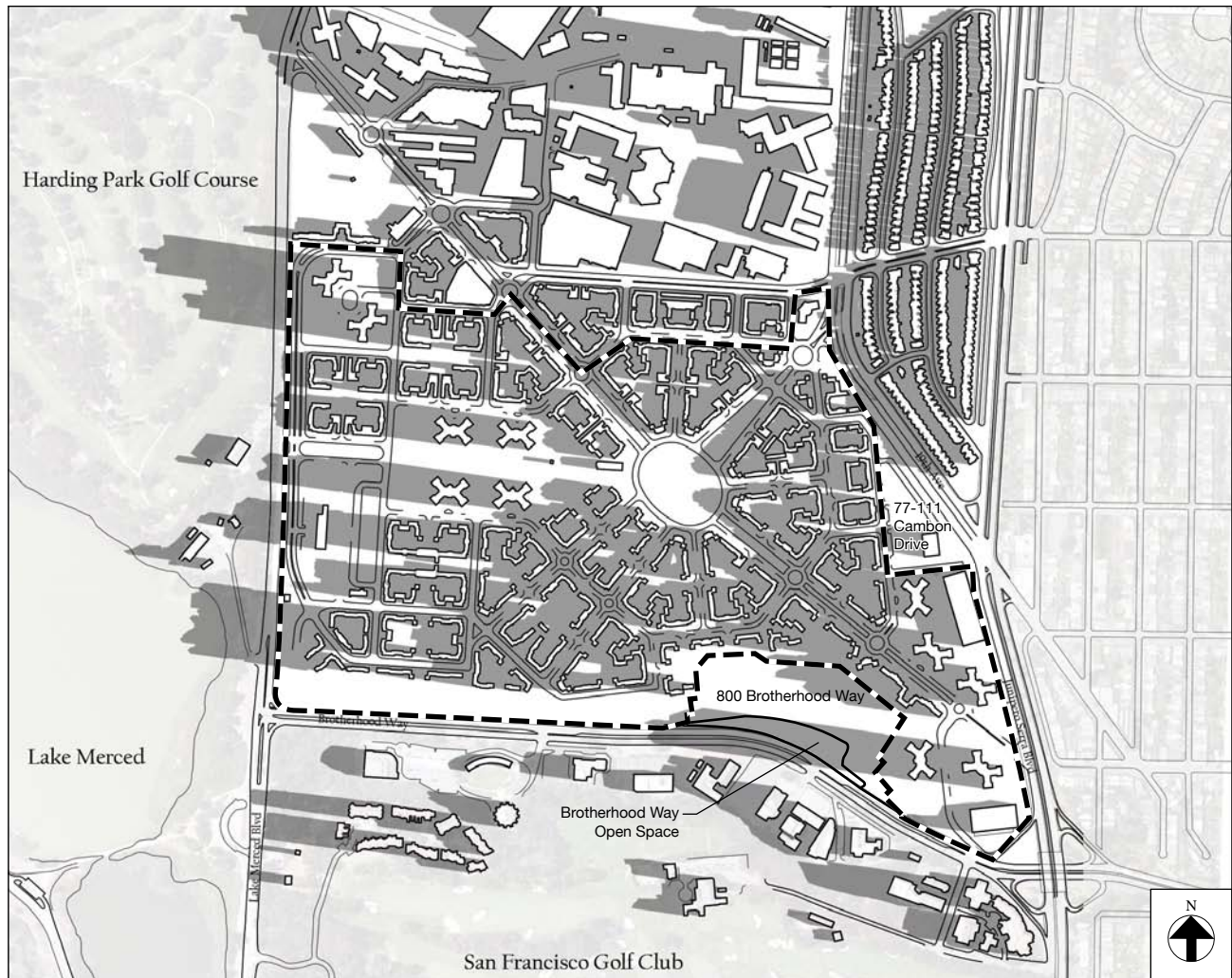
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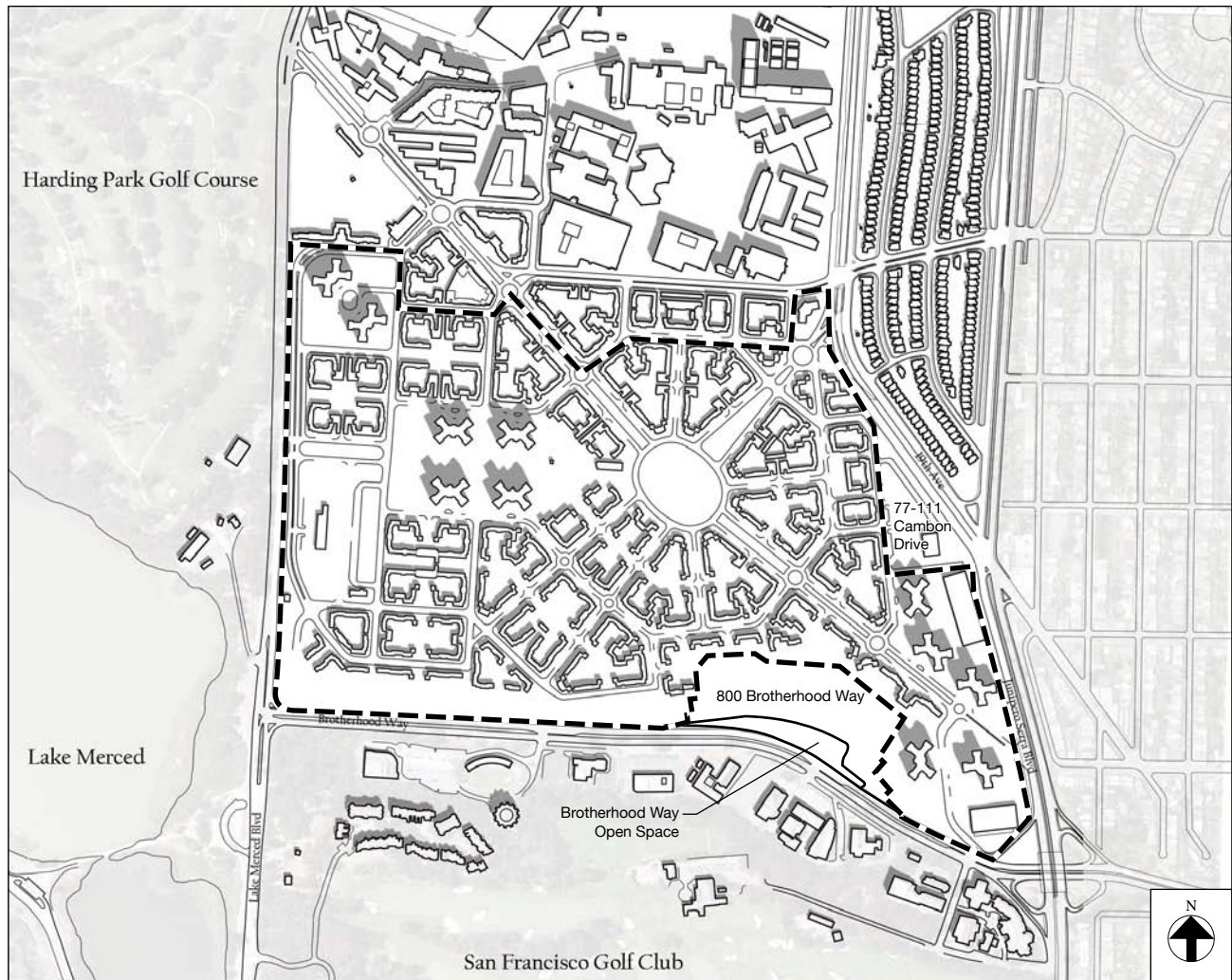


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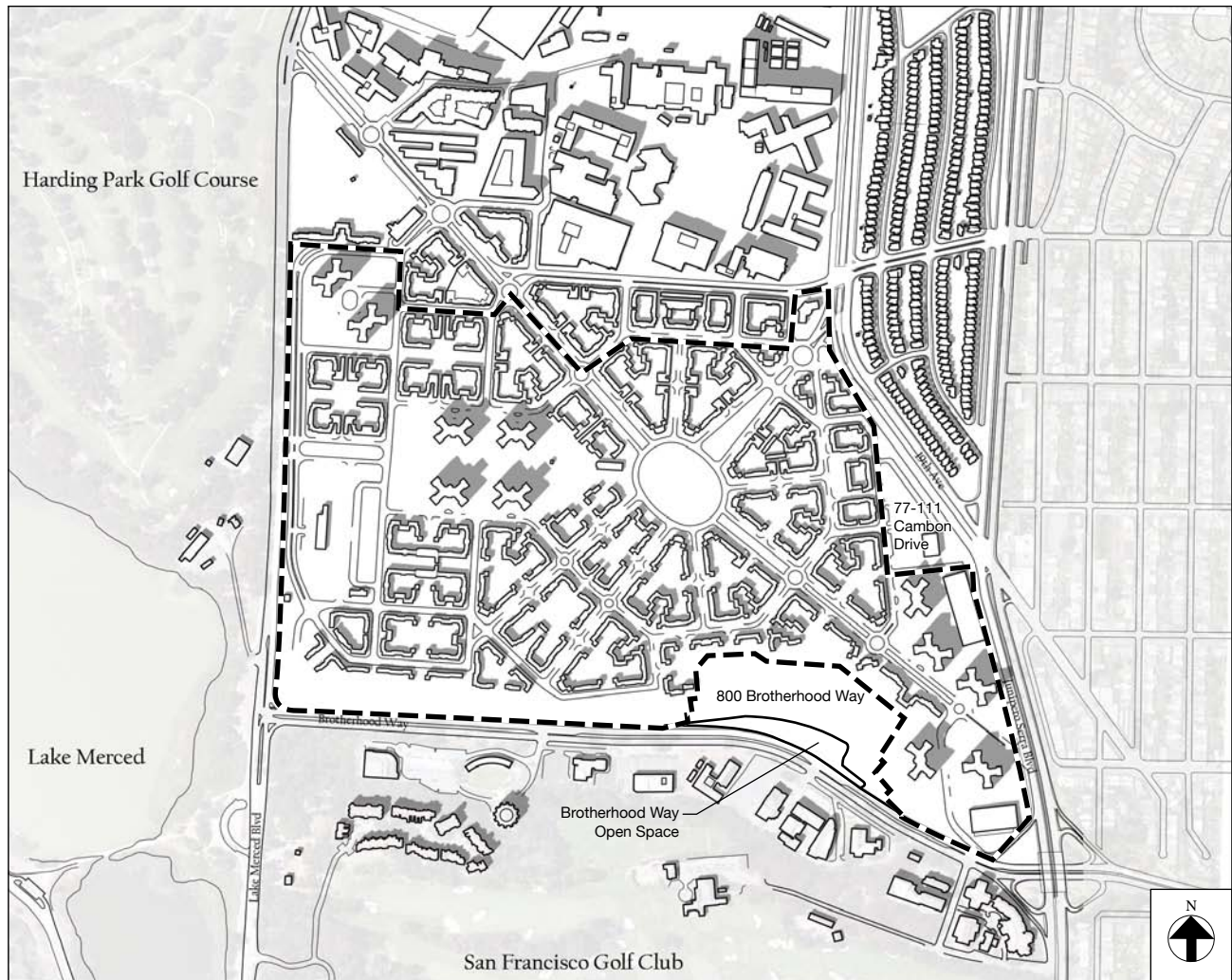
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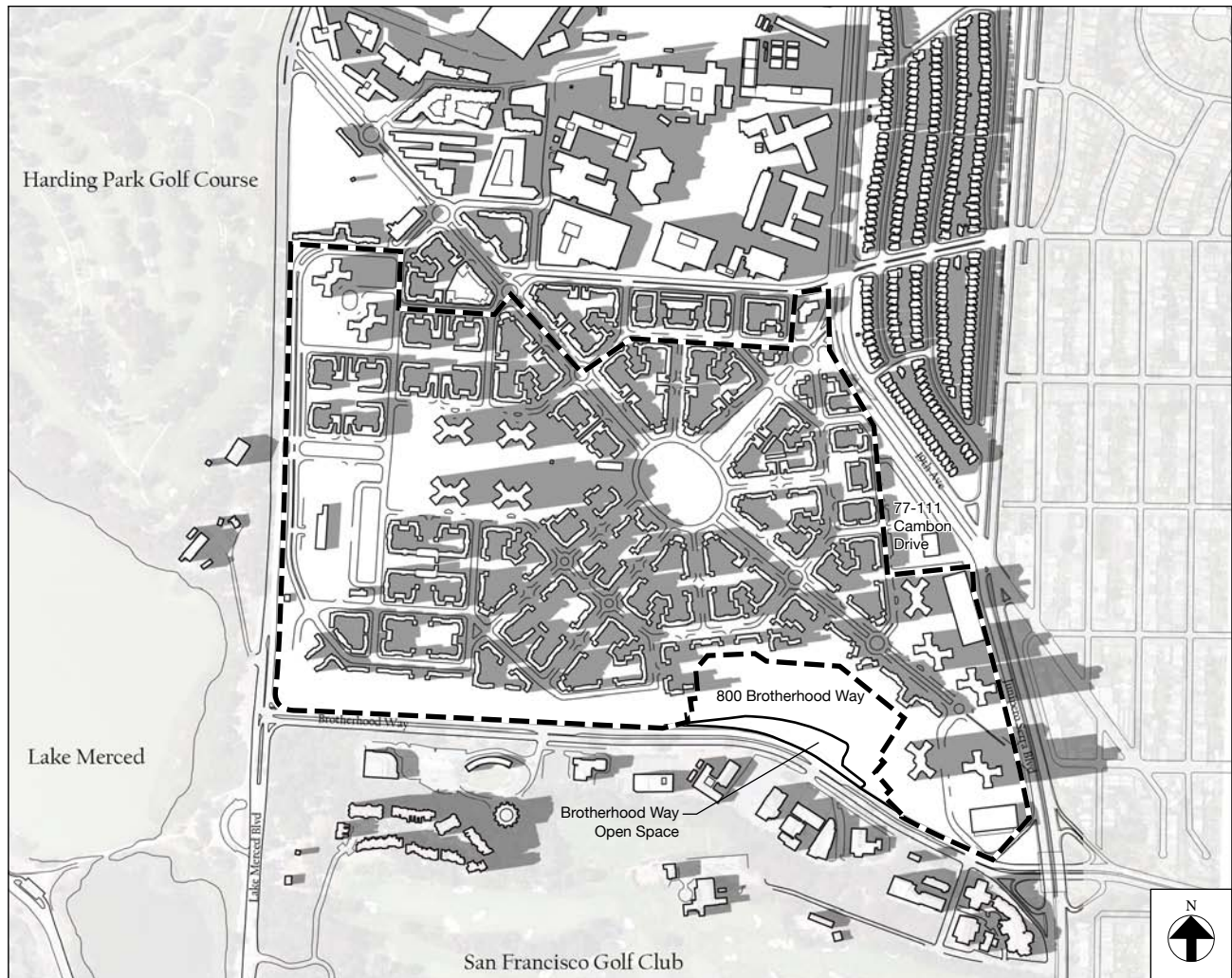
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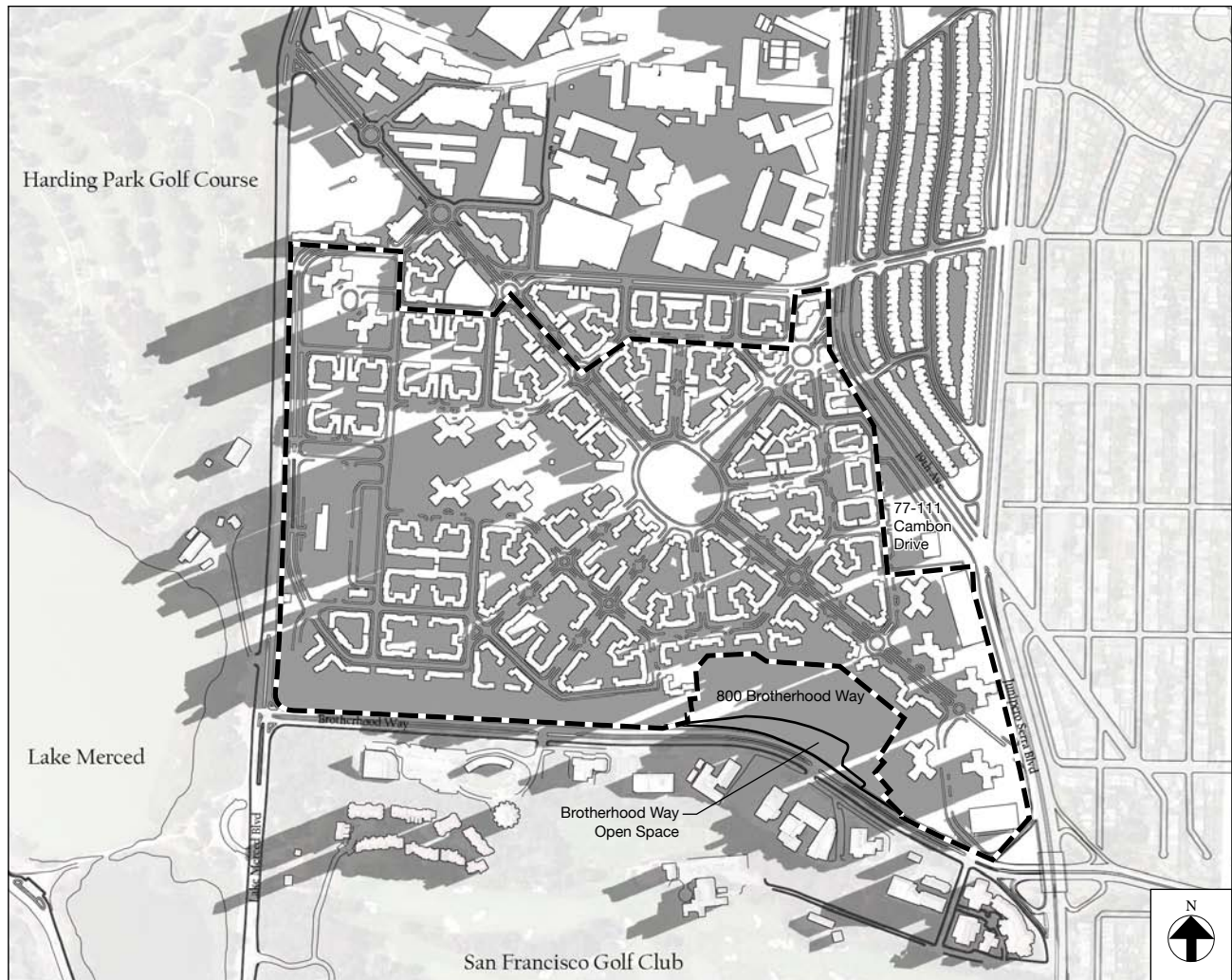
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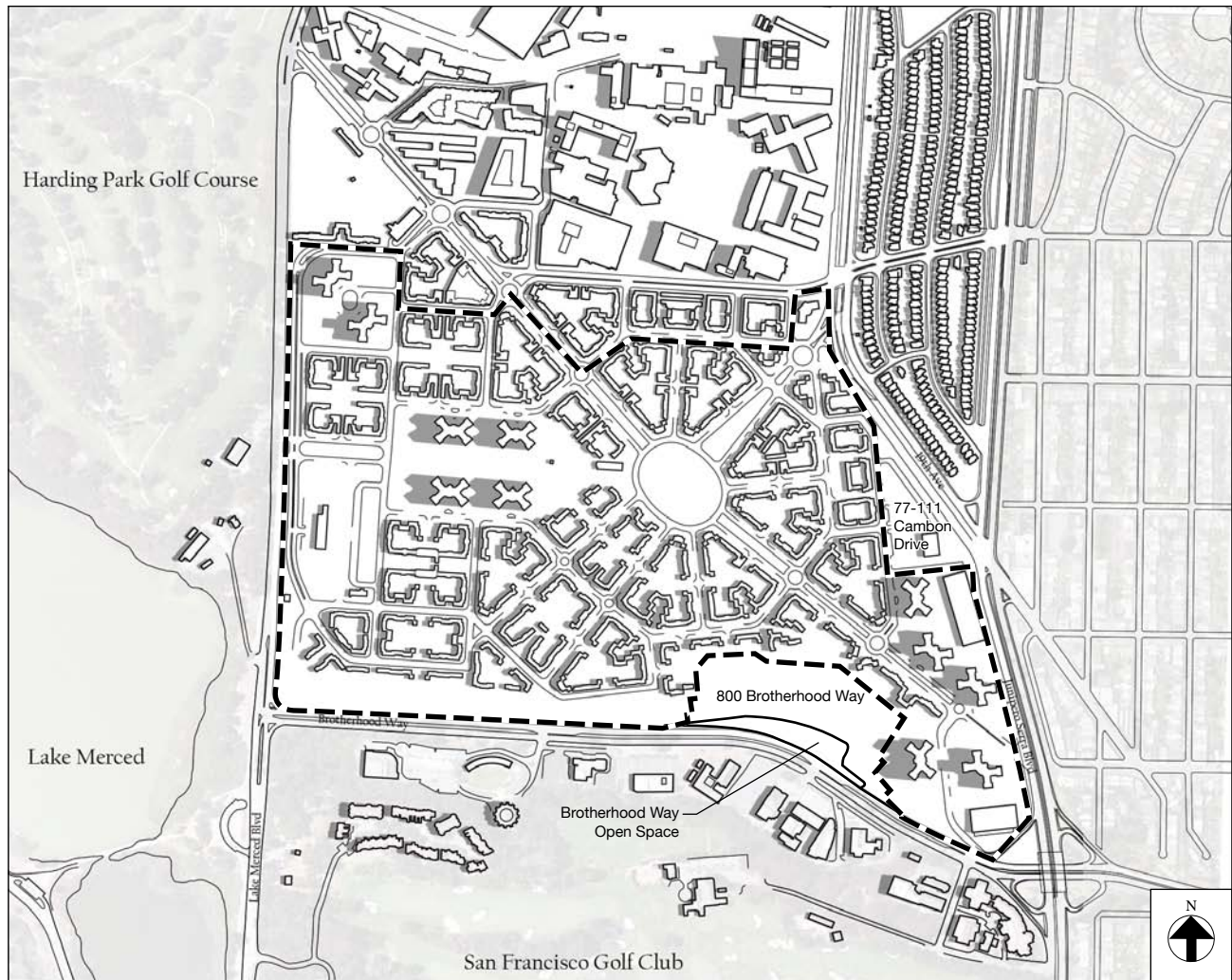
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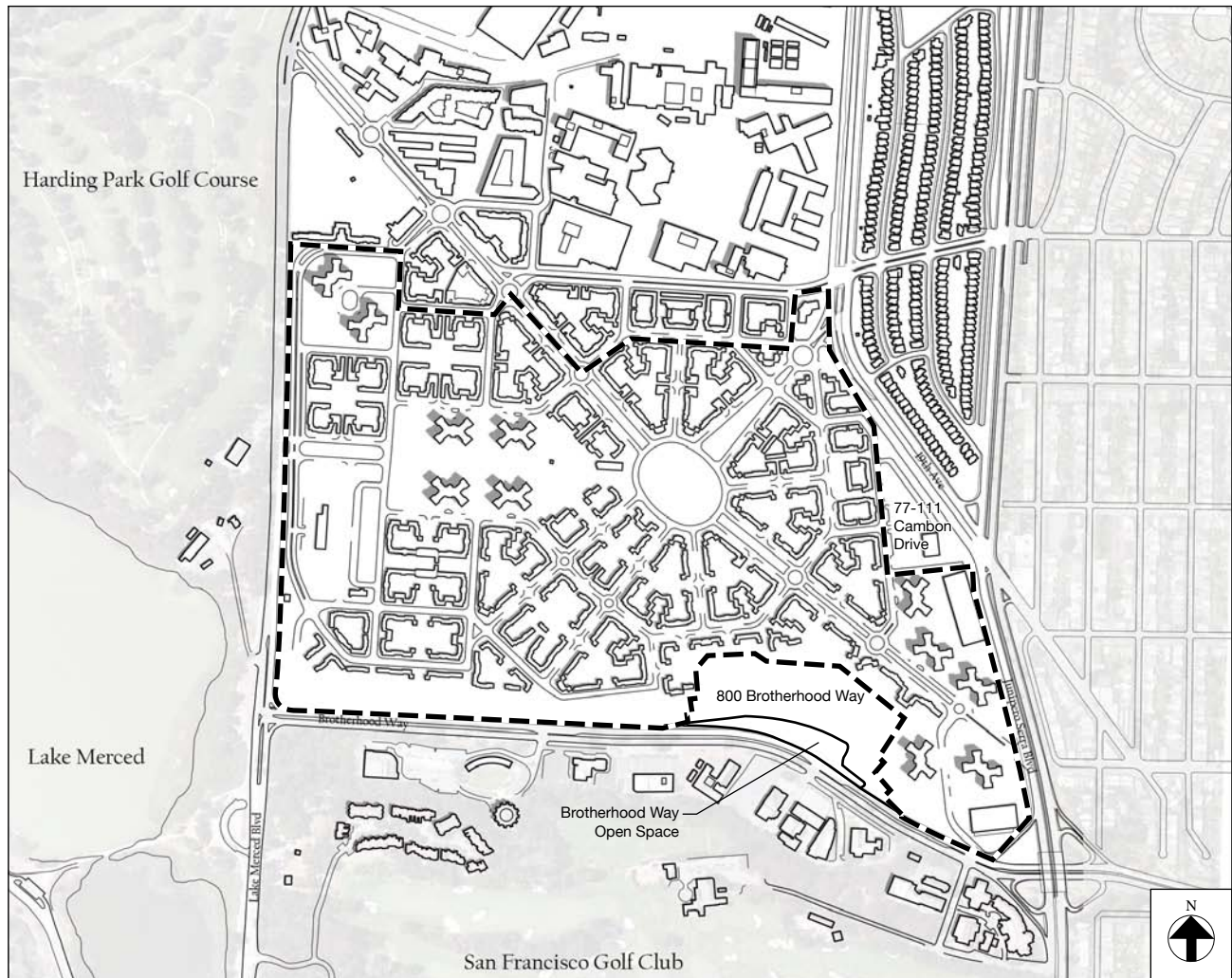
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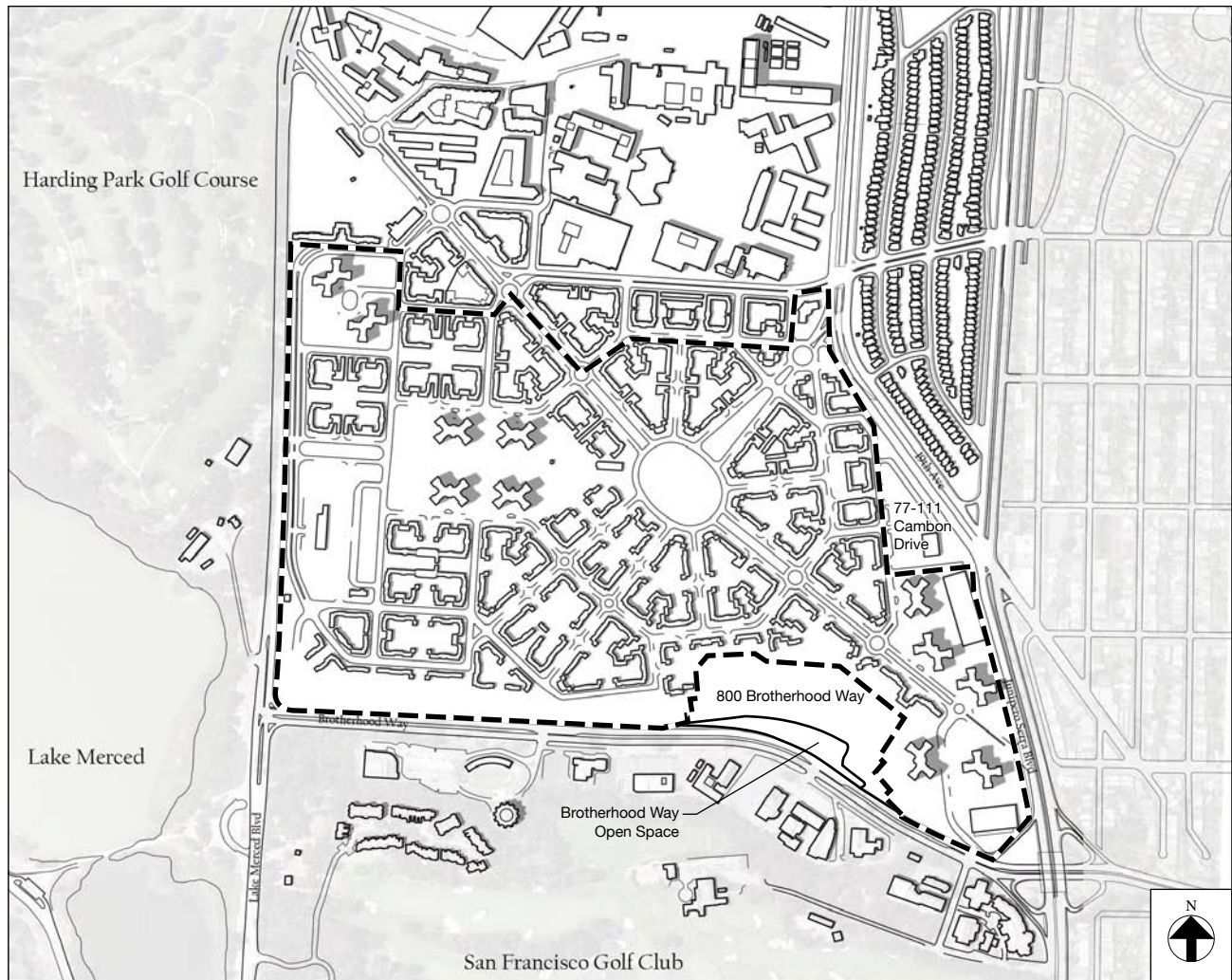
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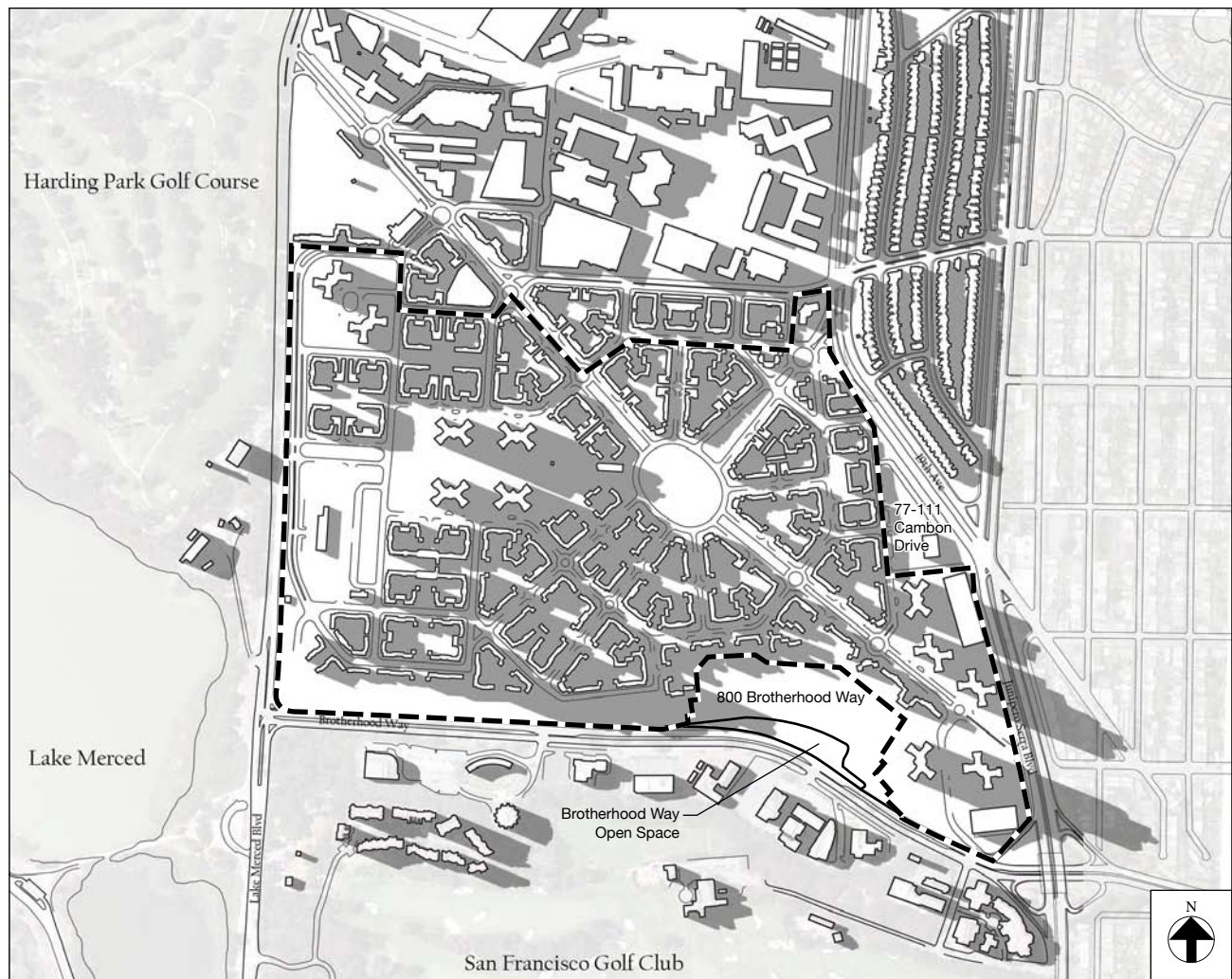
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## IMPACTS

### SIGNIFICANCE CRITERIA

The Planning Department's Initial Study Checklist Form provides a framework of topics to be considered in evaluating a project's impacts under CEQA. Implementation of a project could have a potentially significant impact related to shadow if the project were to:

- I.a Affect, in an adverse manner, the use of any park or open space under the jurisdiction of or designated for acquisition by the Recreation and Park Commission;
- I.b Create new shadow in a manner that substantially affects outdoor recreation facilities or other public areas

### IMPACT EVALUATION

The shadow fan<sup>27</sup> indicates that shadow from the Proposed Project could not reach the following Recreation and Park Commission properties: Aptos Playground, Brooks Park, Brotherhood Chester Mini-Park, Brotherhood Head Mini-Park, Junipero Serra Playground, Lakeview & Ashton Mini-Park, Merced Heights Playground, Ocean View Playground and Recreation Center, Randolph Bright Mini-Park, and Rolph Nicol Park. On this basis, further discussion of these open spaces is not necessary.

In addition, the shadow fan indicates that shadow from the Proposed Project could not reach Fort Funston or the private Olympic Country Club. On this basis, further discussion of these open spaces is not necessary.

Based on the shadow fan, the Planning Department determined that shadow from the Proposed Project could reach Lake Merced Park, including the Harding Park Golf Course.<sup>28</sup> Lake Merced Park is not under the jurisdiction of the Recreation and Park Commission and is not subject to the provisions of Section 295 of the Planning Code. However, for the purposes of this CEQA analysis, the potential shadow impacts on Lake Merced Park are discussed here.

The shadow fan indicates that shadow from the Proposed Project could potentially reach Peace Park on the north side of Brotherhood Way just west of Chumasero Drive. Peace Park is a publicly accessible open space that is not under the jurisdiction of the Recreation and Park

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<sup>27</sup> The shadow fan is available for review at the Planning Department, 1650 Mission Street, Suite 400, in the files for Case No. 2008.0021.

<sup>28</sup> Although Lake Merced Park, including the Harding Park Golf Course, is managed by the Recreation and Park Department through an interdepartmental agreement, Lake Merced Park is the property of the San Francisco Public Utilities Commission and subject to its jurisdiction.

Commission and thus not subject to Section 295 of the Planning Code. However, for the purposes of this CEQA analysis, the potential shadow impacts on Peace Park are discussed here.

The shadow fan indicates that shadow from the Proposed Project could potentially reach the San Francisco Golf Club on the south side of Brotherhood Way. The San Francisco Golf Club, a private recreation facility that is not open to the public, is not under the jurisdiction of the Recreation and Park Commission and thus not subject to Section 295 of the Planning Code. However, for the purposes of this CEQA analysis, the potential shadow impacts on the San Francisco Golf Club are discussed here.

The shadow diagrams prepared by CADP Associates confirmed that the Proposed Project would shadow Lake Merced Park, Peace Park, and the private San Francisco Golf Club, but would not shadow any of the other open spaces, recreation facilities, or parks identified in the Setting discussion.

**Impact WS-5: The Proposed Project and/or the proposed Special Use District would not adversely affect the use of any park or open space under the jurisdiction of the Recreation and Park Commission. (*No Impact*) (*Criterion I.a*)**

As described above, based on the shadow fan, the Planning Department determined that implementation of the Proposed Project and/or the proposed Special Use District would not create shadows that would reach any parks or open spaces under the jurisdiction of the Recreation and Park Commission. Therefore, the Proposed Project and/or the proposed Special Use District would not have shadow impacts on any parks or open spaces under the jurisdiction of the Recreation and Park Commission.

**Impact WS-6: The Proposed Project and/or the proposed Special Use District would not create new shadow in a manner that substantially affects outdoor recreation facilities or other public areas. (*Less than Significant*) (*Criterion I.b*)**

Lake Merced Park

Proposed Project Shadow

The Proposed Project would shadow the eastern edge of Lake Merced Park in the morning throughout the year. The affected areas of the park would include several fairways on the Harding Park Golf Course, several maintenance buildings, two parking lots, and the southeast corner of Lake Merced. As under the existing conditions, over the course of the year, shadows would begin one hour after sunrise and would move off the park at approximately 10:00 AM (see Figures V.I.27, V.I.28, V.I.32, V.I.33, V.I.37, V.I.38, V.I.42, and V.I.43). Project-related shadows on the park would cover an area that is approximately 12 acres larger than the area covered by shadows from existing buildings on the Project Site. Shadows from the Proposed Project would not reach Lake Merced Park at any other time of the day during the year.

The shadows from the Proposed Project would not substantially affect golfers at Harding Park Golf Course who are on the course prior to 10:00 AM, because the affected fairways (Nos. 12 and 13)<sup>29</sup> are not at the beginning of the course. By the time golfers reach these fairways, the shadows would likely have receded from the course. After 10:00 AM, these fairways would receive six to 10 hours of sunlight each day.

The Proposed Project would cast shadows on the southeast shoreline of Lake Merced in the morning during the spring, summer, and autumn. The wooded areas of the shoreline create existing shadows, and additional project-related building shadows on this wooded area of the shoreline would not substantially affect activities such as fishing, boating, or birdwatching. These activities do not require continuous access to direct sunlight. The hours just before and just after sunrise, when sunlight is minimal and shadows are longest, are often more desirable times for fishing and birdwatching than other times later in the day when there is more human activity to disturb wildlife. After the morning shadows have receded, this area of the shoreline would receive six to 10 hours of sunlight each day.

Shadows from the Proposed Project would not substantially affect the use of the maintenance buildings and parking lots.

Considering the amount of sunlight that would continue to reach Lake Merced Park throughout the year, the shadows from the Proposed Project would not be harmful to the growth or health of landscaping and vegetation. For all of the reasons noted above and because these areas are not subject to Section 295 of the Planning Code, the shadow impact on Lake Merced Park from the Proposed Project would be considered less than significant, and no mitigation measures are required.

#### Wind Turbines

The Proposed Project would include 51 wind turbines along the western edge of the Project Site. Each wind turbine would be approximately 100 feet tall and would cast a shadow along the eastern edge of Lake Merced Park in the morning throughout the entire year. The areas of the park affected by their shadows would include several fairways on the Harding Park Golf Course, several maintenance buildings, two parking lots, and the southeast corner of Lake Merced. The shadows would begin one hour after sunrise and would move off the park at approximately 10:00 AM (see Figures V.I.27, V.I.28, V.I.32, V.I.33, V.I.37, V.I.38, V.I.42, and V.I.43). Shadows from the wind turbines would not reach Lake Merced Park at any other time of the day during the year. Since the wind turbines would have small footprints and slender massing (a 1-meter-

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<sup>29</sup> Map of Harding Park Golf Course, available at <http://www.harding-park.com/layout9.asp?id=129&page=2816>, accessed March 25, 2010.

diameter [3.2-foot-diameter] pole capped by a 3-meter-diameter [9.84-foot-diameter] “blade”), their individual shadows would not cover large areas of the park.

The shadows from the wind turbines would not substantially affect golfers at Harding Park Golf Course who are on the course prior to 10:00 AM, because the affected fairways (Nos. 12 and 13) are not at the beginning of the course. By the time golfers reach these fairways, the shadows would likely have receded from the course. After 10:00 AM, these fairways would receive six to 10 hours of sunlight each day.

The wind turbines would cast shadows on the southeast shoreline of Lake Merced in the morning during the spring, summer, and autumn. The wooded areas of the shoreline create existing shadows, and additional wind turbine shadows on this wooded area of the shoreline would not substantially affect activities such as fishing, boating, or birdwatching. These activities do not require continuous access to direct sunlight. The hours just before and just after sunrise, when sunlight is minimal and shadows are longest, are often more desirable times for fishing and birdwatching than other times later in the day when there is more human activity to disturb wildlife. After the morning shadows from the wind turbines have receded, this area of the shoreline would receive six to 10 hours of sunlight each day.

Shadows from the wind turbines would not substantially affect the use of the maintenance buildings and parking lots.

Considering the amount of sunlight that would continue to reach Lake Merced Park throughout the year, the shadows from the wind turbines would not be harmful to the growth or health of landscaping and vegetation. For all of the reasons noted above and because these areas are not subject to Section 295 of the Planning Code, the shadow impact on Lake Merced Park from the wind turbines would be considered less than significant, and no mitigation measures are required.

#### Peace Park

##### *Proposed Project Shadow*

The Proposed Project would cast shadows on Peace Park in the morning during the spring, summer, and autumn and in the late afternoon and early evening during the summer. From early February until early November, the morning shadows would begin approximately one hour after sunrise and move off Peace Park by approximately 9:30 AM (see Figures V.I.27, V.I.28, V.I.32, V.I.33, V.I.37, V.I.38, V.I.42, and V.I.43). From early November until early February, the Proposed Project would not cast net new shadow on Peace Park at any time during the day. As under existing conditions, when the morning shadows begin, they would cover almost all of Peace Park before receding as the day progresses. The morning shadows cast by the Proposed Project would be very similar to the existing shadows. However, from mid-March until

mid-September, the morning shadows cast by the Proposed Project would cover a slightly larger area than that covered by shadows from existing buildings on the Project Site (see Figures V.I.27, V.I.37, and V.I.42).

From late May until mid-July, the evening shadows would occur during the last 15 to 30 minutes of the day. The evening shadows would fall on the western portion of Peace Park. The evening shadows cast by the Proposed Project would be very similar to the existing shadows. However, the evening shadows cast by the Proposed Project would cover approximately one-third of Peace Park, a slightly smaller area than that covered by the existing shadows from existing development on the Project Site (see Figure V.I.46). The existing hillside north of Peace Park would continue to shadow Peace Park in the morning and in the evening during the spring, summer, and autumn.

Although the Proposed Project would cast shadows on Peace Park, the shadows would occur at the beginning and the end of the day when there are typically very few people in the park and would not substantially affect the use of Peace Park. During the spring, summer, and autumn, Peace Park would receive eight to ten hours of sunlight each day. During the winter when the days are coldest and shortest, Peace Park would receive seven to eight hours of sunlight each day. On the winter solstice, which is the shortest day of the year, Peace Park would receive sunlight from 8:22 AM until 3:54 PM (see Figures V.I.32 through V.I.36). This amount of sunlight would be adequate and would not substantially affect the continued use of Peace Park for passive recreation. Considering the amount of sunlight that would continue to reach Peace Park throughout the year, the shadows from the Proposed Project would not be harmful to the growth or health of landscaping and vegetation. For these reasons and because Peace Park is not subject to Section 295 of the Planning Code, the shadow impact on Peace Park from the Proposed Project would be considered less than significant, and no mitigation measures are required.

#### Wind Turbines

The proposed wind turbines would not shadow this open space at any time during the year (see Figures V.I.27 through V.I.46).

#### San Francisco Golf Club

##### Proposed Project Shadow

The Proposed Project would shadow the northern edge of the private San Francisco Golf Club in the morning during the summer. The shadows would begin one hour after sunrise and move off the golf course approximately one hour later (see Figures V.I.42 and V.I.43). The affected area would include a vehicular access road, trees, and one of the practice greens on the golf course. The putting green is currently shadowed by existing trees to the east at the time when it would be shadowed by the Proposed Project.

Shadows from the Proposed Project would not substantially affect the use of the vehicular access road. The road is lined with trees and is shadowed throughout the day by the trees.

During the summer, the affected area of the private San Francisco Golf Club would receive approximately 11 hours of sunlight each day. During the rest of the spring, autumn, and winter, the affected area would receive seven to 10 hours of sunlight each day. Considering the amount of sunlight that would continue to reach the San Francisco Golf Club throughout the year, the shadows from the Proposed Project would not be harmful to the growth or health of landscaping and vegetation. For these reasons and because the private San Francisco Golf Club is not subject to Section 295 of the Planning Code, the shadow impact of the Proposed Project on the San Francisco Golf Club would be considered less than significant, and no mitigation measures are required.

#### Wind Turbines

The proposed wind turbines would not shadow the San Francisco Golf Club at any time during the year (see Figures V.I.27 through V.I.46).

#### On-Site Open Spaces

The Proposed Project would create new open spaces for the residents of the Project Site as well as publicly accessible open spaces. Since the Proposed Project would result in a substantial increase in the number of buildings exceeding two stories in height, the shadows patterns would be correspondingly greater than and substantially different from the existing shadow patterns. With buildings that would be taller and bulkier than what exists today, shadows from the Proposed Project would cover larger areas and occur for longer periods of time than under existing conditions.

A direct comparison between shadows on the existing open spaces and shadows on the proposed open spaces is not feasible, because the proposed open spaces would be substantially different from the existing open spaces in terms of location and size. For example, the Meadow would be reduced in area by one-third to one-half of its current area by the Proposed Project. Two 13-story towers would be constructed on what is now the west end of the Meadow, and two 13-story towers would be constructed on what is now the east end of the Meadow. A new north-south street would bisect the Meadow. The western portion of the Meadow would be surrounded by 13-story towers on three sides (north, west, and south), and the eastern portion of the Meadow would be surrounded by 13-story towers on three sides (north, east, and south). The remaining open area, particularly the eastern and western ends near the new proposed towers, would receive more shadow with the Proposed Project than under existing conditions.

Since the location and size of the Commons would remain the same, the Commons could serve as a general indicator of how on-site shadow patterns would change if the Proposed Project were implemented.

*The Commons*

From mid-March until late September, project-related morning shadows would begin approximately one hour after sunrise and move off the Commons between 11:00 AM and 12:00 PM, two to three hours later than the morning shadows under existing conditions. From late September until mid-March, the Commons would be shadowed throughout the day. Project-related morning shadows would cover approximately three-quarters of the Commons on the spring equinox (March 20 or 21), almost all of the Commons on the summer solstice (June 20 or 21), approximately three-quarters of the Commons on the autumn equinox (September 22 or 23), and approximately two-thirds of the Commons on the winter solstice (December 20 or 21) before receding as the day progresses (see Figures V.I.27, V.I.32, V.I.37, and V.I.42). In comparison, existing morning shadows cover approximately one-quarter of the Commons when they begin approximately one hour after sunrise (see Figures V.I.7, V.I.12, V.I.17, and V.I.22).

During late winter and early spring, project-related afternoon shadows would begin as early as 2:30 PM, approximately four hours earlier than the afternoon shadows under existing conditions. Around the summer solstice, project-related afternoon shadows would begin at approximately 5:00 PM, approximately two hours earlier than the afternoon shadows under existing conditions. During late summer and early autumn, project-related afternoon shadows would begin as early as 2:30 PM, approximately four hours earlier than the existing afternoon shadows. From late September until mid-March, the Commons would be shadowed throughout the day. During the last minute of the day, project-related evening shadows would reach their maximum area, covering almost all of the Commons on the spring equinox, the summer solstice, and the autumn equinox and approximately half of the Commons on the winter solstice (see Figures V.I.31, V.I.36, V.I.41, and V.I.46). In comparison, existing evening shadows cover approximately one-quarter of the Commons when they reach their maximum area at one hour before sunset (see Figures V.I.11, V.I.16, V.I.21, and V.I.26).

The Commons would be completely or mostly shadowed for 15 to 30 minutes at the beginning of the day during spring, summer, and autumn and for 15 to 30 minutes at the end of the day during spring, summer, and autumn. The Commons would be completely or mostly sunny from 10:00 AM until 3:00 PM throughout the year. Thus, depending on the season, the Commons would receive seven to 12 hours of sunlight each day. This amount of sunlight would be adequate and would not substantially affect the continued use of the Commons for passive recreation. Considering the amount of sunlight that would reach the Commons throughout the year, the shadows from the Proposed Project would not be harmful to the growth or health of landscaping

and vegetation, and the proposed landscaping would be selected to be suitable for the amount of shadow created by the Proposed Project. For these reasons and because the Commons is not subject to Section 295 of the Planning Code, the shadow impact on the Commons from the Proposed Project would be considered less than significant, and no mitigation measures are required.

#### Public Plazas

The Proposed Project would include two public plazas: one at the northeast corner of the Project Site and one east of and adjacent to Juan Bautista Circle (see Figure III.8: Proposed Open Space Plan, in Chapter III, Project Description).

The proposed public plaza at the northeast corner of the Project Site would be L-shaped. The proposed Muni light rail line would run diagonally (northeast-southwest) through the “spine” of the plaza, and a five-story, 50-foot-tall building is proposed for the “leg” of the plaza. Amenities would include benches, kiosks, and landscaping, and the plaza would be a prominent gateway to the Project Site.

Shadows from the Proposed Project would fall on portions of the southern half of the proposed plaza throughout the day during the entire year. The greatest amount of shadow would occur during the winter, and the least amount of shadow would occur during the summer. On September 21, the Proposed Project would shadow the southwest corner of the plaza beginning at one hour after sunrise. As the day progresses, the shadows would recede, but there would continue to be some shadows in the southwest corner of the plaza and along the southern edge of the plaza. After 3:00 PM, the shadows from the Proposed Project would begin to lengthen until they cover the southern portion of the plaza at one hour before sunset (see Figures V.I.27 through V.I.31). On December 21, the Proposed Project would shadow the southern portion of the plaza from one hour after sunrise until one hour before sunset (see Figures V.I.32 through V.I.36). The shadow patterns on March 21 would be almost identical to the shadow patterns on September 21 (see Figures V.I.37 through V.I.41)<sup>30</sup>. On June 21, the Proposed Project would shadow the southwest corner of the plaza beginning at one hour after sunrise. For most of the day, there would be minimal shadows on the plaza. After 3:00 PM, the shadows from the Proposed Project would begin to lengthen until they cover two small areas adjacent to the southern edge of the plaza (see Figures V.I.42 through V.I.46).

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<sup>30</sup> The sun’s position in the sky is symmetrical throughout the entire solar year. One half of the solar year begins on June 21 and ends on December 20, and the other half of the solar year begins on December 21 and ends on June 20. Each day in the first half of the solar year has an equivalent solar date in the second half of the solar year, with the spring and autumn equinoxes (March 20 or 21 and September 22 or 23, respectively) being equivalent solar dates. For this reason, the shadow patterns on March 21 would be almost identical to the shadow patterns on September 21.

The shadows from the Proposed Project would not substantially affect the use of the plaza. Although the plaza would be partially shadowed throughout the day during the entire year, it would receive eight to 12 hours of sunlight each day. Considering the amount of sunlight that would reach the plaza throughout the year, the shadows from the Proposed Project would not be harmful to the growth or health of landscaping and vegetation, and the proposed landscaping would be selected to be suitable for the amount of shadow created by the Proposed Project. For these reasons and because the plaza is not subject to Section 295 of the Planning Code, the shadow impact on the plaza from the Proposed Project would be considered less than significant, and no mitigation measures are required.

The proposed public plaza east of and adjacent to Juan Bautista Circle would be rectangular and oriented east-west. It would be bordered by Juan Bautista Circle on the west, a proposed 95-foot-high building on the north, a proposed new street on the east, and a proposed 95-foot-tall building on the south. Amenities would include benches, kiosks, and landscaping.

Shadows from the Proposed Project would fall on the plaza throughout the day during the entire year. The greatest amount of shadow would occur during the winter, and the least amount of shadow would occur during the summer. On September 21, the Proposed Project would shadow the entire plaza at one hour after sunrise. For the majority of the day, the southern portion of the plaza would remain in shadow. At one hour before sunset, there would be almost no shadow on the plaza (see Figures V.I.27 through V.I.31). On December 21, the Proposed Project would shadow most of the plaza except for the eastern end from one hour after sunrise until approximately 10:00AM. By noon, the entire plaza would be shadowed. At 3:00 PM, the Proposed Project would shadow the entire plaza except for the northwest corner. At one hour before sunset, the Proposed Project would shadow the entire plaza (see Figures V.I.32 through V.I.36). The shadow patterns on March 21 would be almost identical to the shadow patterns on September 21 (see Figures V.I.37 through V.I.41). On June 21, the Proposed Project would shadow the entire plaza at one hour after sunrise. For the majority of the day, there would be a small amount of shadow along the southern edge of the plaza. At one hour before sunset, the Proposed Project would shadow the northeast corner of the plaza (see Figures V.I.42 through V.I.46).

The shadows from the Proposed Project would not substantially affect the use of the plaza. Although the plaza would be partially shadowed throughout the day during the entire year, the plaza would receive eight to 10 hours of sunlight each day during the spring, summer, and autumn and three to four hours of sunlight each day during the winter when the days are coldest and shortest. This amount of sunlight would be adequate for the plaza to be used. Considering the amount of sunlight that would reach the plaza throughout the year, the shadows from the Proposed Project would not be harmful to the growth or health of landscaping and vegetation, and the proposed landscaping would be selected to be suitable for the amount of shadow created by

the Proposed Project. For these reasons and because the plaza is not subject to Section 295 of the Planning Code, the shadow impact on the plaza from the Proposed Project would be considered less than significant, and no mitigation measures are required.

### Playgrounds

The Proposed Project would include 24 playgrounds at various locations on the Project Site (see Figure III.8). The locations of the playgrounds have not been finalized. Thus, the locations of the playgrounds shown in Figure III.8 are representative only. If the Proposed Project were implemented, the locations of the proposed playgrounds could change.

The amount of shadow that falls on each playground would be determined by a number of factors: the location of the playground, its distance from nearby buildings, the configuration, height, and massing of those buildings, the time of day, and the time of year. In general, the greatest amount of shadow would fall on the playgrounds during the winter when the sun is at its lowest point in the sky, and the least amount of shadow would fall on the playgrounds during the summer when the sun reaches its highest point in the sky. During the spring, summer, and, autumn, most of the playgrounds would be at least partially shadowed throughout the day. At noon during the summer months, the fewest number of playgrounds would be shadowed. During the winter, all of the playgrounds would be at least partially shadowed throughout the day (see Figures V.I.27 through V.I.46).

Depending on the time of year and their locations, the proposed playgrounds could receive approximately three to six hours of sunlight each day, even during the winter when the days are coldest and shortest. This amount of sunlight would be adequate for the playgrounds to be used for active or passive recreation. Considering the amount of sunlight that would fall on the playgrounds throughout the year, the shadows from the Proposed Project would not be harmful to the growth or health of landscaping and vegetation, and the proposed landscaping would be selected to be suitable for the amount of available sunlight. For these reasons and because the proposed playgrounds are not subject to Section 295 of the Planning Code, the shadow impact on the proposed playgrounds from the Proposed Project would be considered less than significant, and no mitigation measures are required.

### Neighborhood Parks

The Proposed Project would include seven neighborhood parks at various locations on the Project Site (see Figure III.8). The locations of the parks have not been finalized. Thus, the locations of the parks shown in Figure III.8 are representative only. If the Proposed Project were implemented, the locations of the proposed parks could change.

As with the playgrounds, the amount of shadow that falls on each neighborhood park would be determined by the location of the park, its distance from nearby buildings, the configuration, height, and massing of those buildings, the time of day, and the time of year. In general, the greatest amount of shadow would fall on the parks during the winter when the sun is at its lowest point in the sky, and the least amount of shadow would fall on the parks during the summer when the sun reaches its highest point in the sky. During the spring, summer, and autumn, most of the parks would be at least partially shadowed throughout the day. During the winter, all of the parks would be at least partially shadowed throughout the day (see Figures V.I.27 through V.I.46).

Depending on the time of year and their locations, the neighborhood parks could receive approximately four to eight hours of sunlight each day, even during the winter when the days are coldest and shortest. This amount of sunlight would be ample for the neighborhood parks to be used for active or passive recreation. Considering the amount of sunlight that would fall on the neighborhood parks throughout the year, the shadows from the Proposed Project would not be harmful to the growth or health of landscaping and vegetation, and the proposed landscaping would be selected to be suitable for the amount of shadow created by the Proposed Project. For these reasons and because the proposed neighborhood parks are not subject to Section 295 of the Planning Code, the shadow impact on the proposed neighborhood parks from the Proposed Project would be considered less than significant, and no mitigation measures are required.

#### Organic Farm

The Proposed Project would include an organic farm on the south side of Gonzalez Drive, east of the proposed greenway and west of the proposed recreation building and playing fields (see Figure III.8). Residents of the Proposed Project would be able to plant and raise their own fruits and vegetables in the organic farm. Shadows from the Proposed Project would fall on the organic farm during the morning throughout the entire year. The shadows would begin one hour after sunrise and move off the organic farm between 10:00 AM and noon. The Proposed Project would also shadow the organic farm in the late afternoon and early evening during the spring, summer, and autumn but not during the winter (see Figures V.I.27 through V.I.46).

The shadows from the Proposed Project would not substantially affect the use of the organic farm. Climate, rather than the amount of sunlight, is a more critical factor in determining what types of fruits and vegetables can be grown successfully in a particular environment. The climate of the Project Site, which is cool and often foggy, particularly during the summer, prevents most fruits from being grown successfully. However, certain vegetables thrive in the cool climate that is characteristic of the Project Site. Although the Proposed Project would cast some shadows on the organic farm in the morning, late afternoon, and early evening throughout the year, it would receive six to eight hours of sunlight each day. This amount of sunlight would be adequate for successfully growing a variety of leafy green vegetables and root vegetables. For these reasons

and because the organic farm is not subject to Section 295 of the Planning Code, the shadow impact on the organic farm from the Proposed Project would be considered less than significant, and no mitigation measures are required.

#### Playing Fields

The Proposed Project would include playing fields for sports including but not limited to lacrosse, soccer, baseball, and softball on the south side of Gonzalez Drive, east of the proposed organic farm and the proposed recreation building (see Figure III.8). Throughout the entire year, the Proposed Project would shadow the playing fields in the late afternoon and early evening. During the summer, the Proposed Project would also shadow the playing fields in the early morning (see Figures V.I.27 through V.I.46).

The shadows from the Proposed Project would not substantially affect the use of the playing fields. Weather conditions, rather than the amount of sunlight, are more critical in determining whether a particular sport can be played outdoors. Football, rugby, and soccer can be and are often played under inclement weather conditions, but baseball games and tennis matches are canceled whenever it rains. All of these sports can be played outdoors even if the sun is obscured by clouds or fog. Although the Proposed Project would cast shadows on the playing fields in the morning, late afternoon, and early evening, they would receive eight to ten hours of sunlight each day. During the winter when the days are coldest and shortest, the playing fields would receive seven to eight hours of sunlight each day. On the winter solstice, which is the shortest day of the year, the playing fields would receive sunlight from 8:22 AM until 3:54 PM (see Figures V.I.32 through V.I.36). Considering the amount of sunlight that would reach the playing fields throughout the year, the shadows from the Proposed Project would not be harmful to the growth or health of landscaping and vegetation, and the proposed landscaping would be selected to be suitable for the amount of shadow created by the Proposed Project. For these reasons and because the playing fields are not subject to Section 295 of the Planning Code, the shadow impact on the playing fields from the Proposed Project would be considered less than significant, and no mitigation measures are required.

**Impact WS-7: The Proposed Project and/or the proposed Special Use District, when combined with other cumulative projects, would not adversely affect the use of any park or open space under the jurisdiction of the Recreation and Park Commission or create new shadow in a manner that substantially affects outdoor recreation facilities or other public areas. (*Less than Significant*) (*Criteria I.a and I.b*)**

For the analysis of cumulative shadow impacts, the following proposed development projects adjacent to the Project Site were considered: 800 Brotherhood Way, 77-111 Cambon Drive, and the 2007-2020 San Francisco State University Campus Master Plan (SFSUCMP). These adjacent

cumulative projects have the potential to combine with the Proposed Project to produce cumulatively considerable shadow impacts.

The proposed project at 800 Brotherhood Way, which is adjacent to and south of the Project Site, comprises the subdivision of the lot and the construction of 60 single-family homes and 61 two-unit buildings ranging in height from three stories to four stories. None of the proposed buildings would exceed a height of 40 feet.

The proposed project at 77-111 Cambon Drive, which is adjacent to and northeast of the Project Site, involves the demolition of two existing one-story commercial buildings and the construction of a mixed-use project ranging in height from two to four stories and containing approximately 200 dwelling units, 15,000 square feet of retail space, a fitness center and a club room, and underground parking for 248 vehicles and 61 bicycles.

San Francisco State University is adjacent to and north of the Project Site. In late 2007, the California State University Board of Trustees approved a proposal to increase enrollment. The 2007-2020 SFSUCMP proposes physical changes and improvements to the campus to address the increased enrollment. Some existing buildings and facilities would be upgraded and expanded, while others would be demolished and replaced. Some new buildings and facilities would be constructed. In total, these proposed physical improvements would result in the net addition of approximately 972,400 square feet and approximately 660 dwelling units to the campus. There would be 30 new buildings ranging in height from 50 to 100 feet.<sup>31</sup>

The proposed project at 800 Brotherhood Way, which is adjacent to and north of Peace Park, would shadow portions of Peace Park in the morning during the spring, summer, and autumn. In addition, it would shadow Peace Park in the late afternoon and early evening during the summer, but it would not shadow Peace Park at any time during the winter. Although the proposed project at 800 Brotherhood Way would shadow the same areas of Peace Park during the same times of day as would the Proposed Project, the cumulative shadow impacts would largely overlap and thus would not substantially affect the use or enjoyment of Peace Park. During the spring, summer, and autumn, Peace Park would receive eight to ten hours of sunlight each day. During the winter when the days are coldest and shortest, Peace Park would receive seven to eight hours of sunlight each day. On the winter solstice, which is the shortest day of the year, Peace Park would receive sunlight from 8:22 AM until 3:54 PM (see Figures V.I.32 through V.I.36). This amount of sunlight is ample and would not substantially affect the continued use of Peace Park for passive recreation.

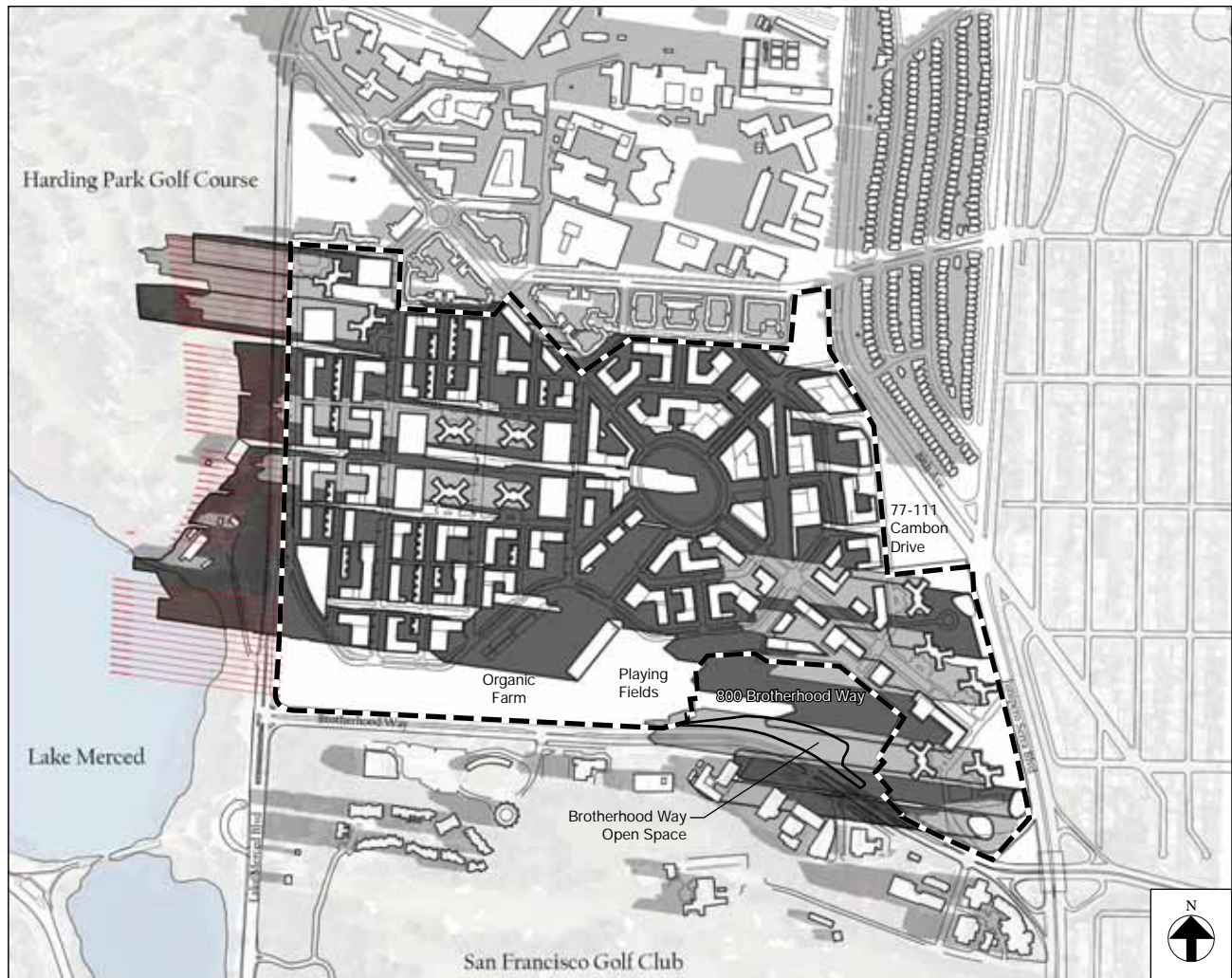
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<sup>31</sup> *San Francisco State University 2007-2020 Campus Master Plan*, Chapter 7. San Francisco State University Campus Master Plan website, [http://www.sfsumasterplan.org/masterplan\\_toc.html](http://www.sfsumasterplan.org/masterplan_toc.html), accessed April 21, 2010.

The proposed project at 77-111 Cambon Drive is approximately 0.5 mile east of Lake Merced Park, approximately 0.1 mile northeast of the Brotherhood Way open space, and approximately 0.2 mile northeast of the San Francisco Golf Club. Shadows from the proposed two- to four-story buildings on the Cambon Drive development site would not be long enough to reach any of these open spaces.

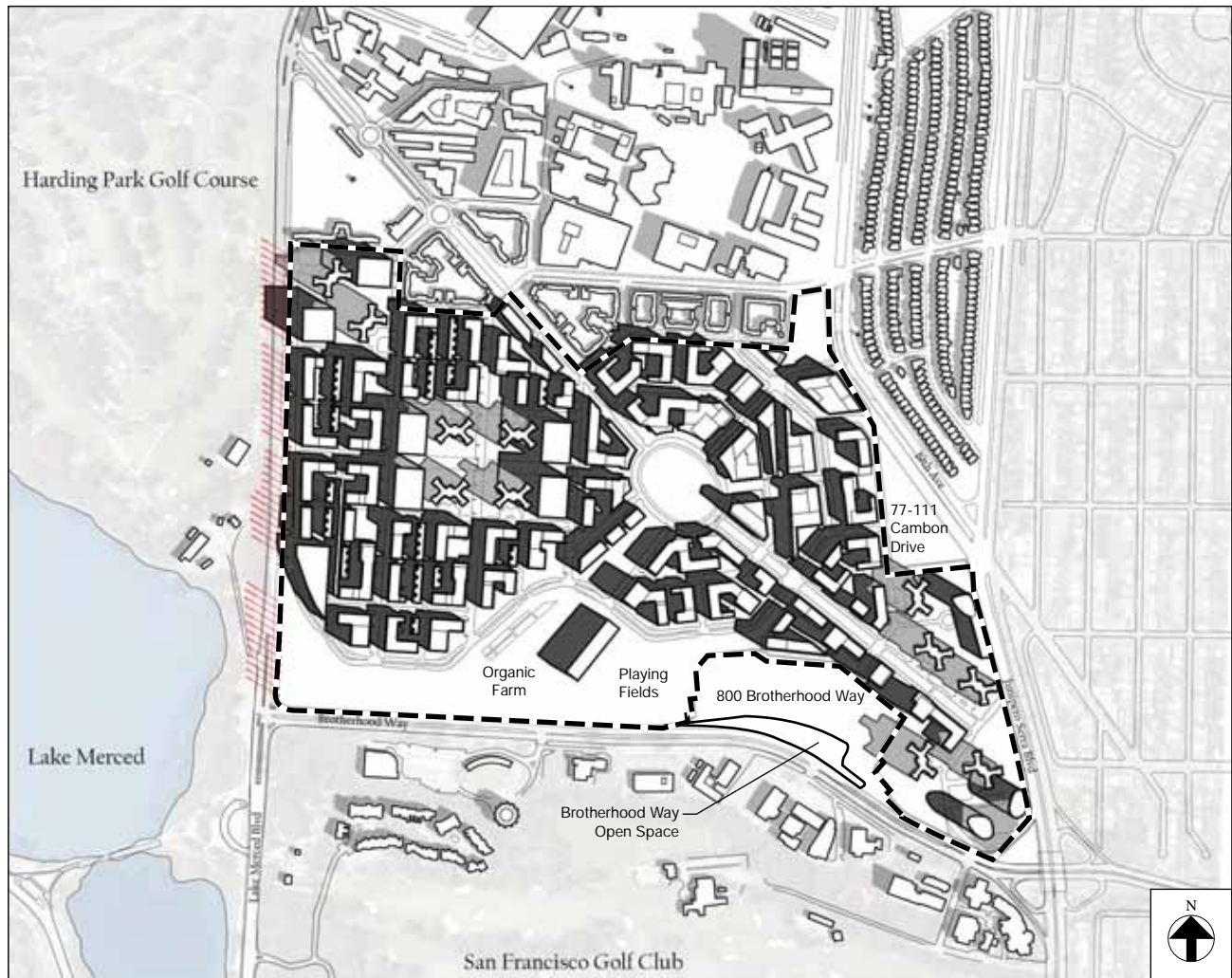
San Francisco State University is approximately 0.4 mile north of the Brotherhood Way open space and approximately 0.5 mile north of the private San Francisco Golf Club. Shadows from the 2007-2020 SFSUCMP project would not be long enough to reach either open space. The university is adjacent to and east of Lake Merced Park, and implementation of the 2007-2020 SFSUCMP could result in newly constructed buildings that have the potential to shadow the eastern edge of Lake Merced Park during the morning hours throughout the year. Since the university is north of the Project Site, potential shadows on Lake Merced Park from the 2007-2020 SFSUCMP project would fall to the north of potential shadows from the Proposed Project. Although the 2007-2020 SFSUCMP project and the Proposed Project would shadow Lake Merced Park during the same time of day (from one hour after sunrise until approximately 10:00 AM), they would not shadow the same areas of the park. The 2007-2020 SFSUCMP project would shadow one fairway in the northeast corner of Harding Park Golf Course. The shadow impact from the 2007-2020 SFSUCMP project would not substantially affect golfers who are on the course prior to 10:00 AM, because the fairway (No. 11) is not at the beginning of the course. By the time golfers reach this fairway, the shadows would likely have receded from the course. After approximately 10:00 AM, this fairway would receive six to ten hours of sunlight each day. For these reasons and because Lake Merced Park is not subject to Section 295 of the Planning Code, the 2007-2020 SFSUCMP project would have a less-than-significant shadow impact on Lake Merced Park.

For these reasons, the Proposed Project would not combine with the other cumulative projects to create cumulatively considerable shadow impacts on Peace Park, the private San Francisco Golf Club, or Lake Merced Park.



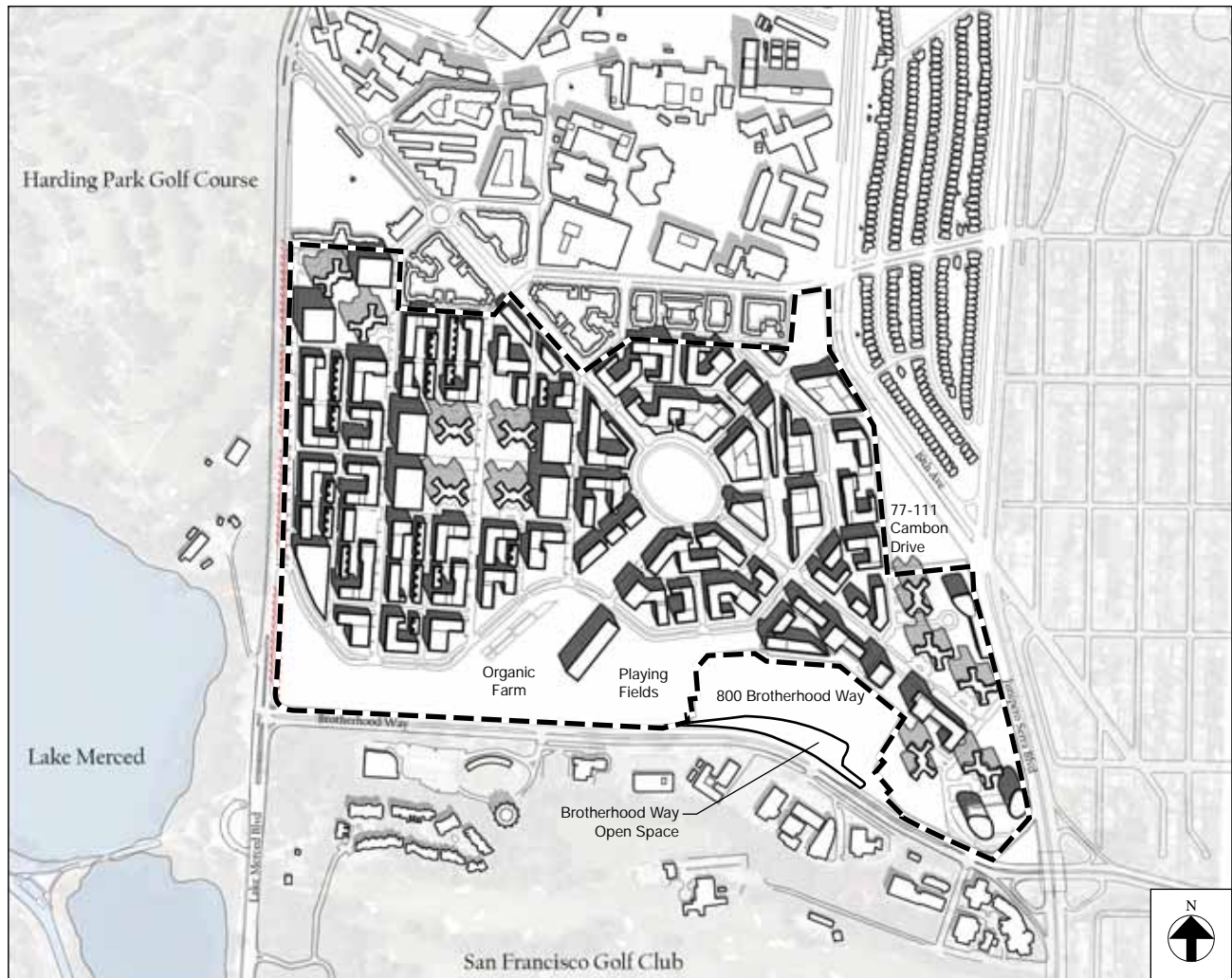
SOURCE: CADP Associates, Turnstone Consulting

FIGURE V.I.27: PROPOSED PARKMERCED PROJECT SHADOWS,  
SEPTEMBER 21, 7:56AM



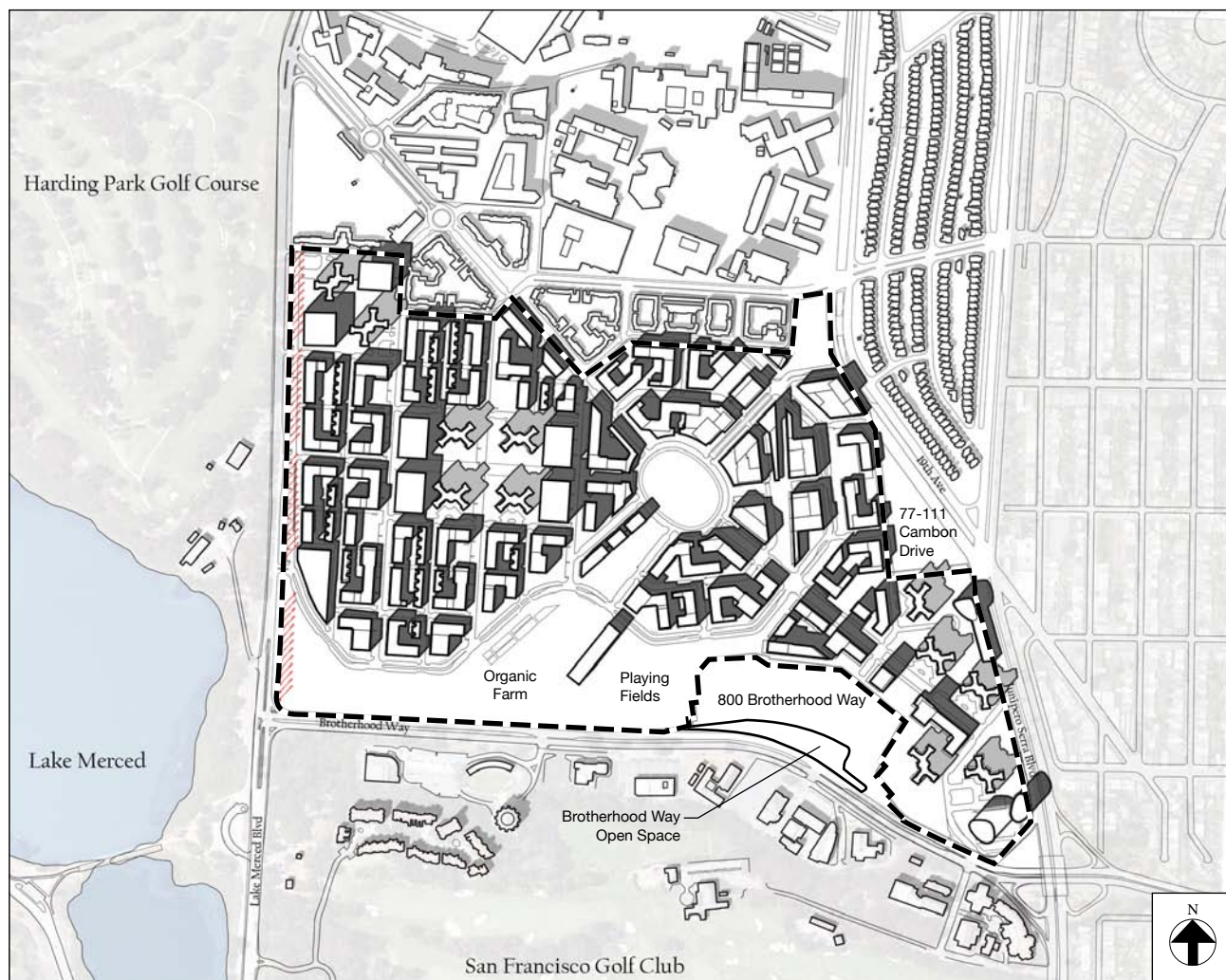
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- EXISTING SHADOWS
- NET NEW PROJECT SHADOWS
- NET NEW SHADOWS FROM WIND TURBINES
- - - PROJECT SITE BOUNDARY



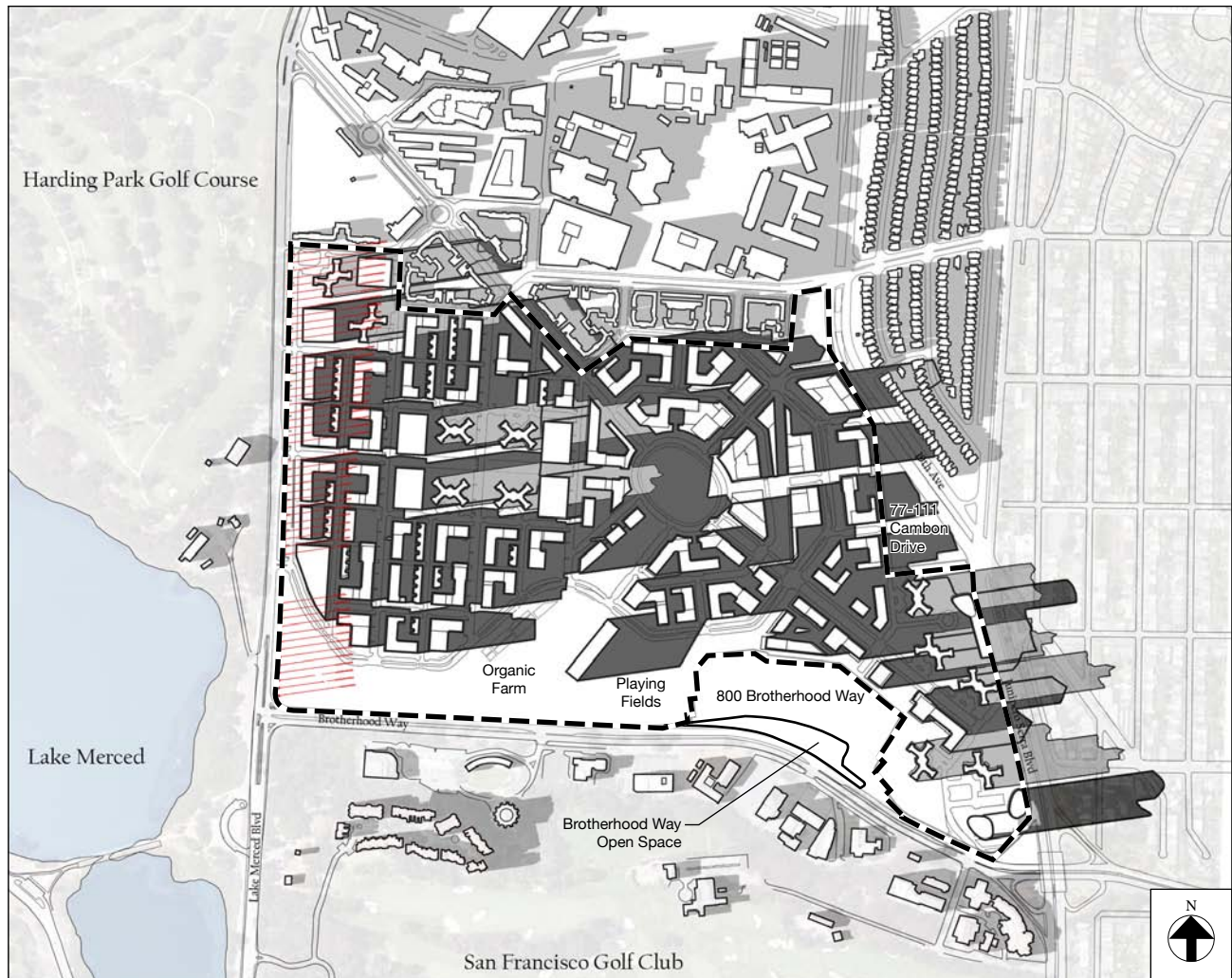
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- EXISTING SHADOWS
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- NET NEW SHADOWS FROM WIND TURBINES
- PROJECT SITE BOUNDARY



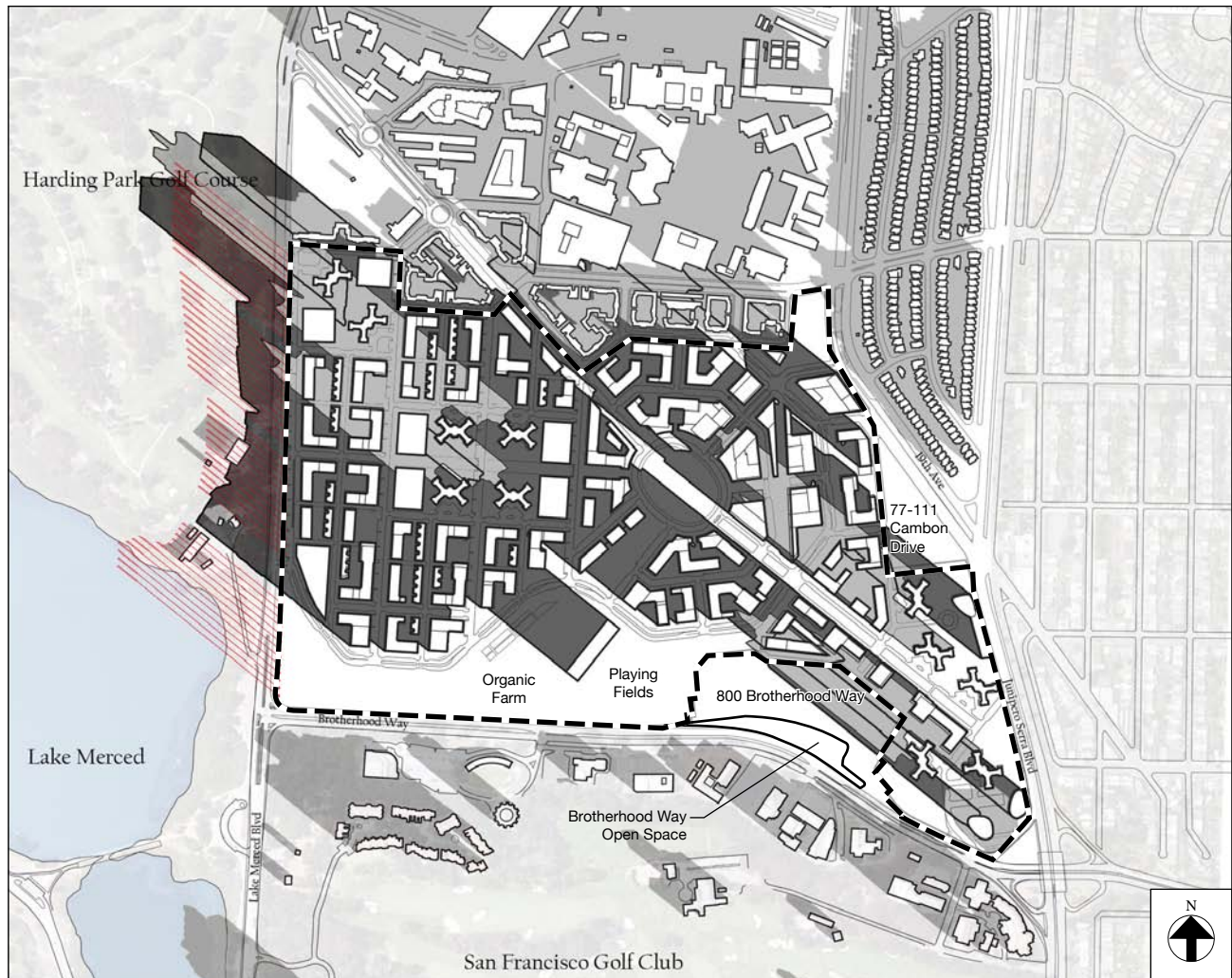
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- EXISTING SHADOWS
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- PROJECT SITE BOUNDARY



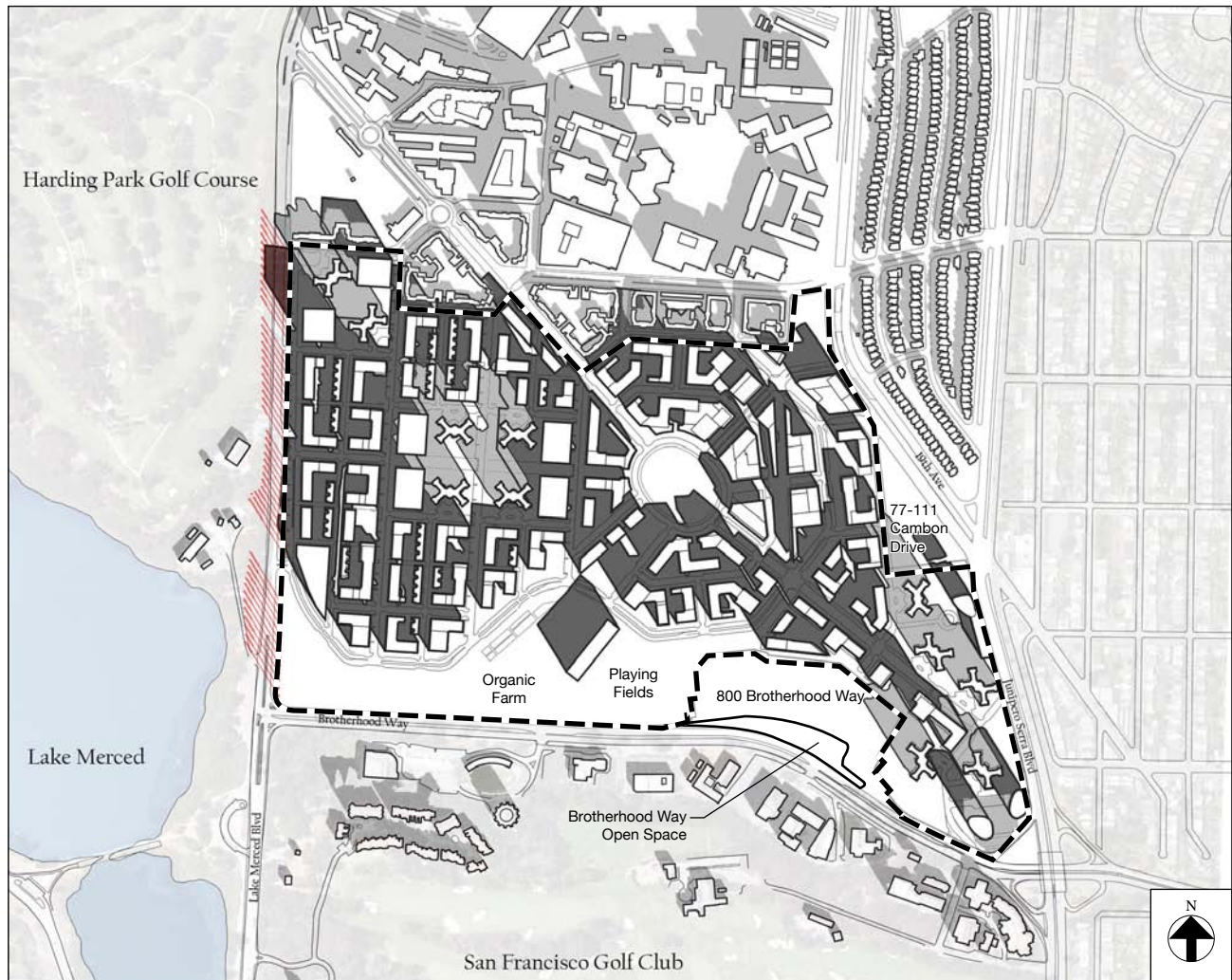
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- EXISTING SHADOWS
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- NET NEW SHADOWS FROM WIND TURBINES
- PROJECT SITE BOUNDARY



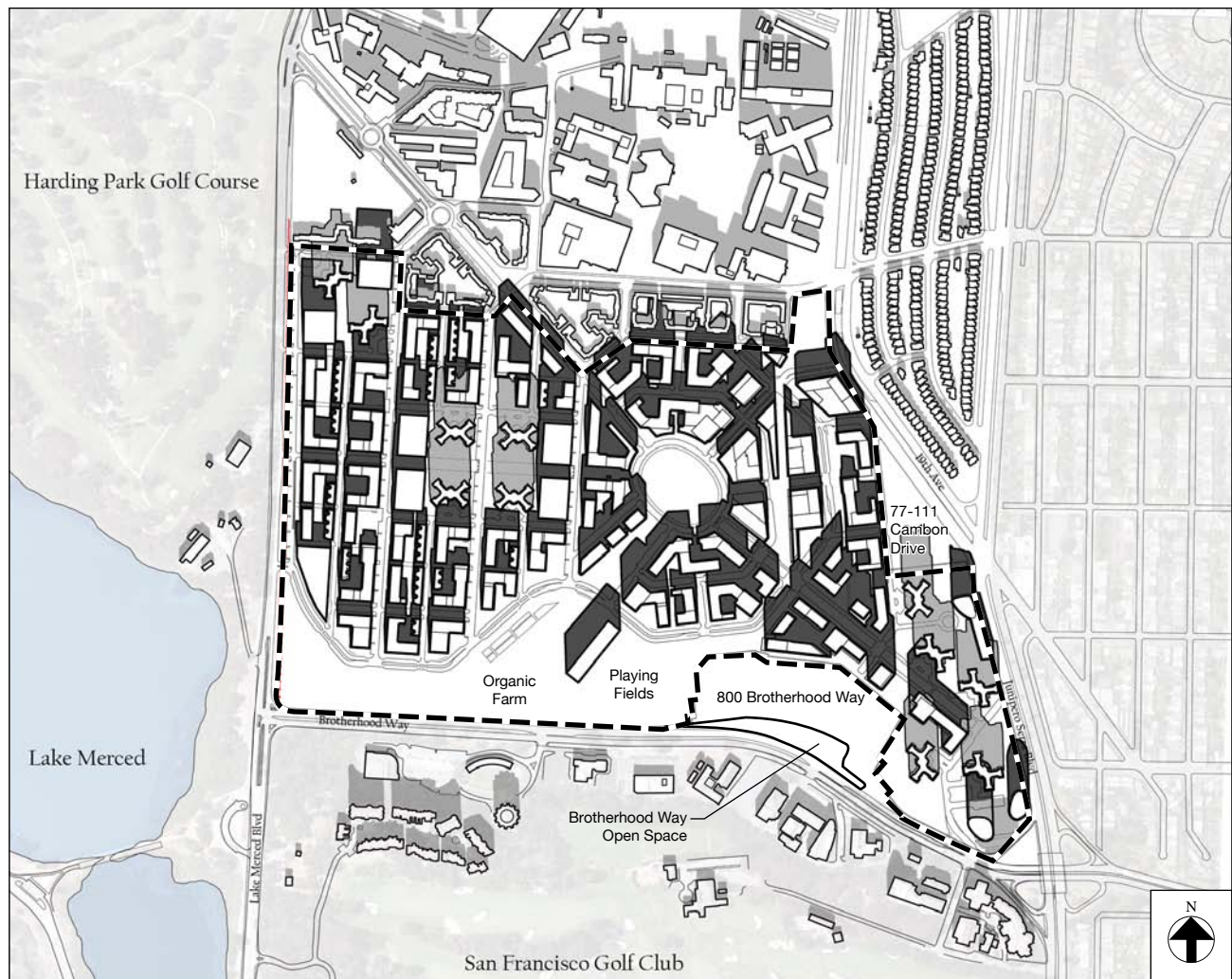
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- EXISTING SHADOWS
- NET NEW PROJECT SHADOWS
- NET NEW SHADOWS FROM WIND TURBINES
- PROJECT SITE BOUNDARY



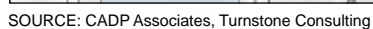
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- EXISTING SHADOWS
- NET NEW PROJECT SHADOWS
- NET NEW SHADOWS FROM WIND TURBINES
- PROJECT SITE BOUNDARY



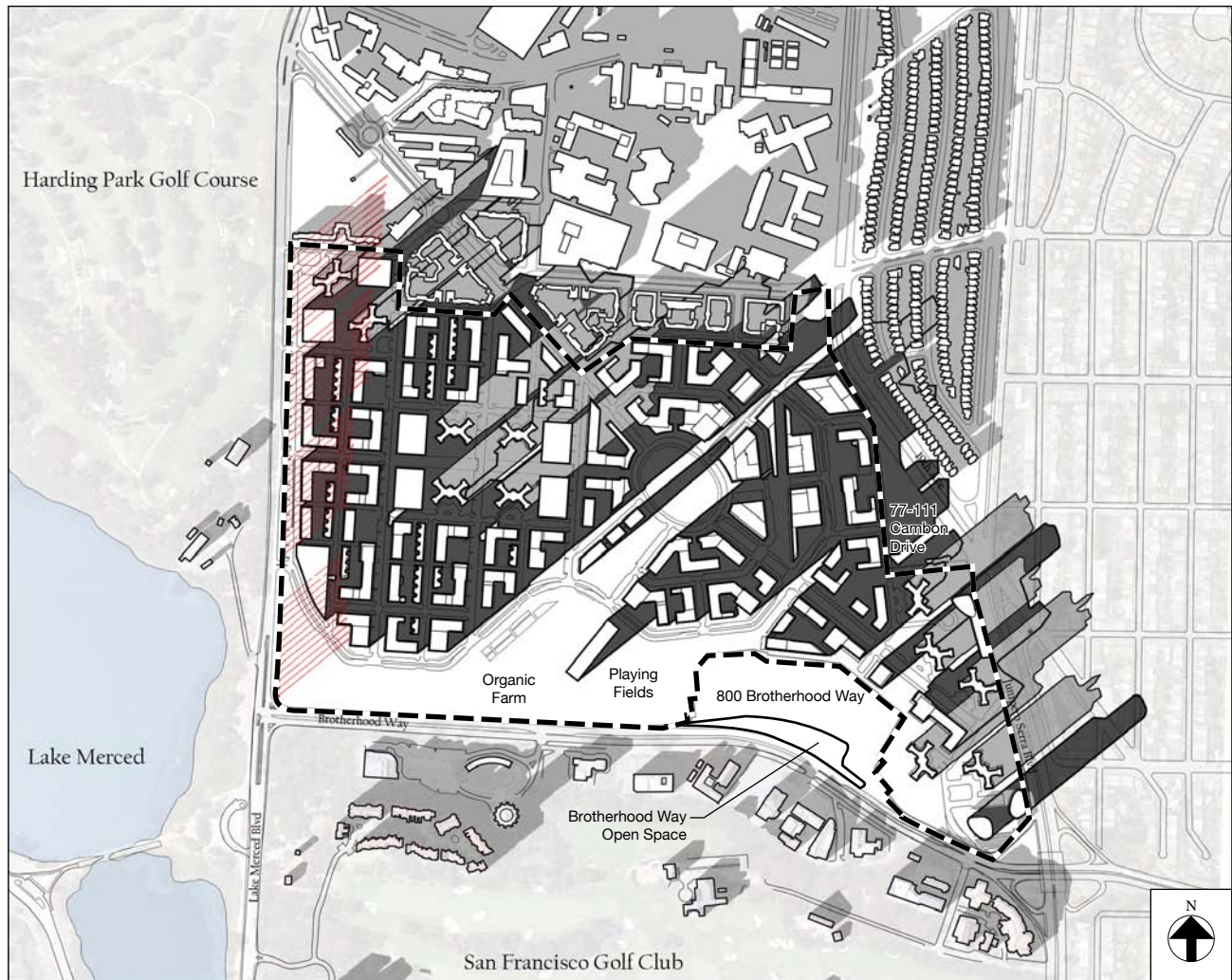
SOURCE: CADP Associates, Turnstone Consulting

- EXISTING SHADOWS
- NET NEW PROJECT SHADOWS
- NET NEW SHADOWS FROM WIND TURBINES
- PROJECT SITE BOUNDARY



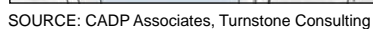
- PARKMERCED PROJECT**

V.I.70



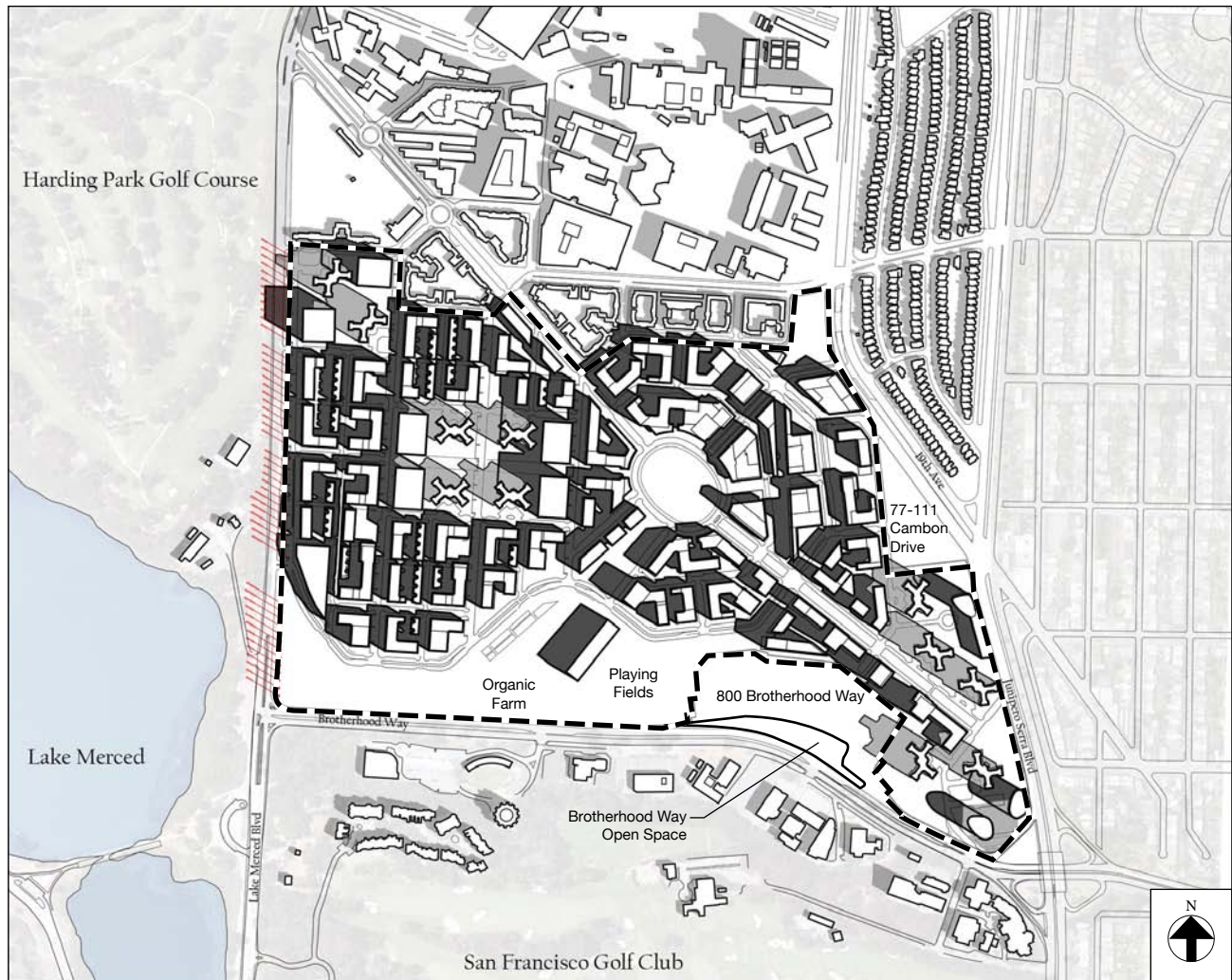
SOURCE: CADP Associates, Turnstone Consulting

- EXISTING SHADOWS
- NET NEW PROJECT SHADOWS
- NET NEW SHADOWS FROM WIND TURBINES
- PROJECT SITE BOUNDARY



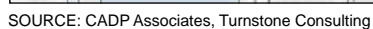
- PARKMERCED PROJECT**

V.I.72



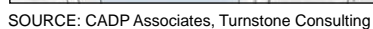
SOURCE: CADP Associates, Turnstone Consulting

- EXISTING SHADOWS
- NET NEW PROJECT SHADOWS
- NET NEW SHADOWS FROM WIND TURBINES
- PROJECT SITE BOUNDARY



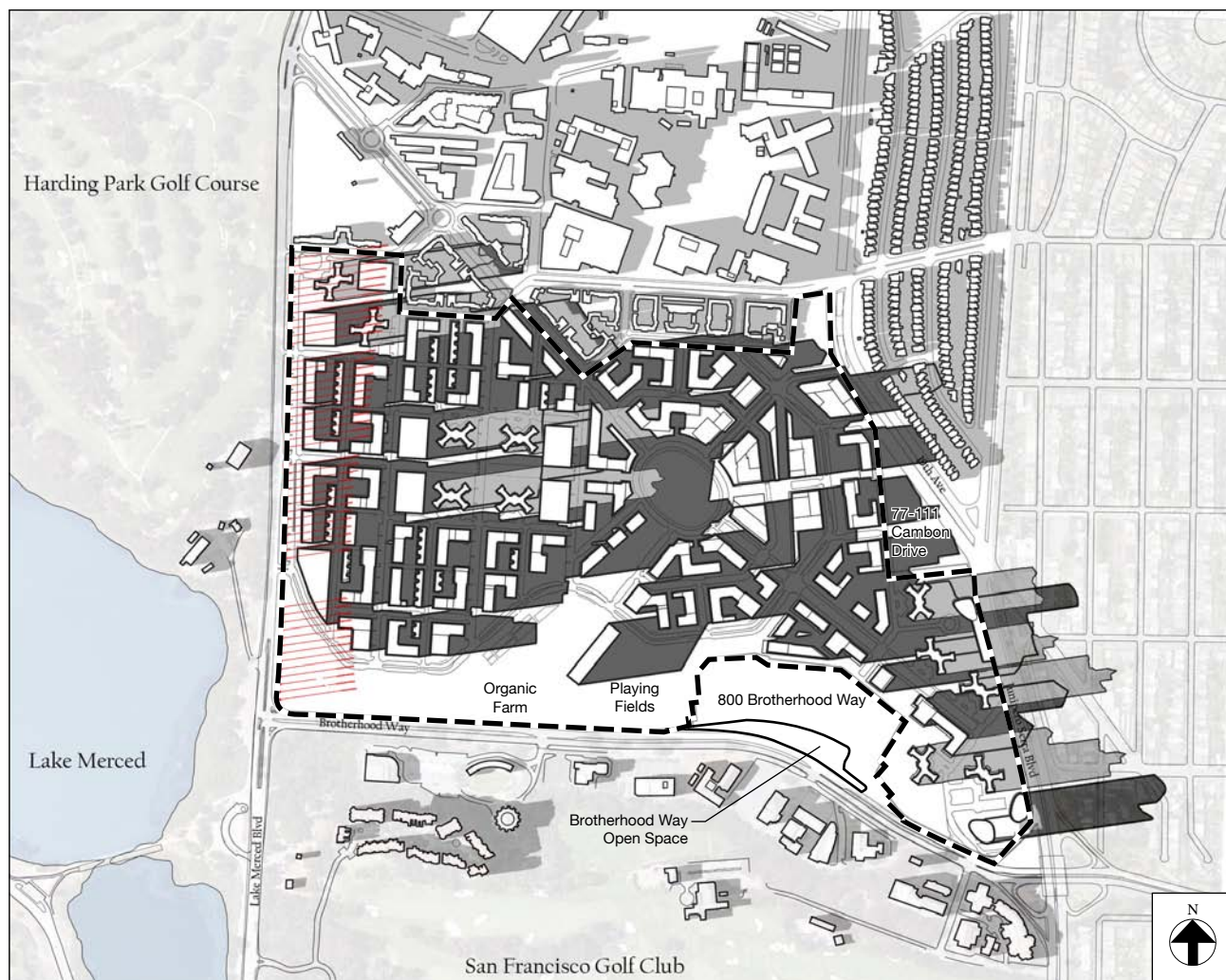
- PARKMERCED PROJECT**

V.I.74



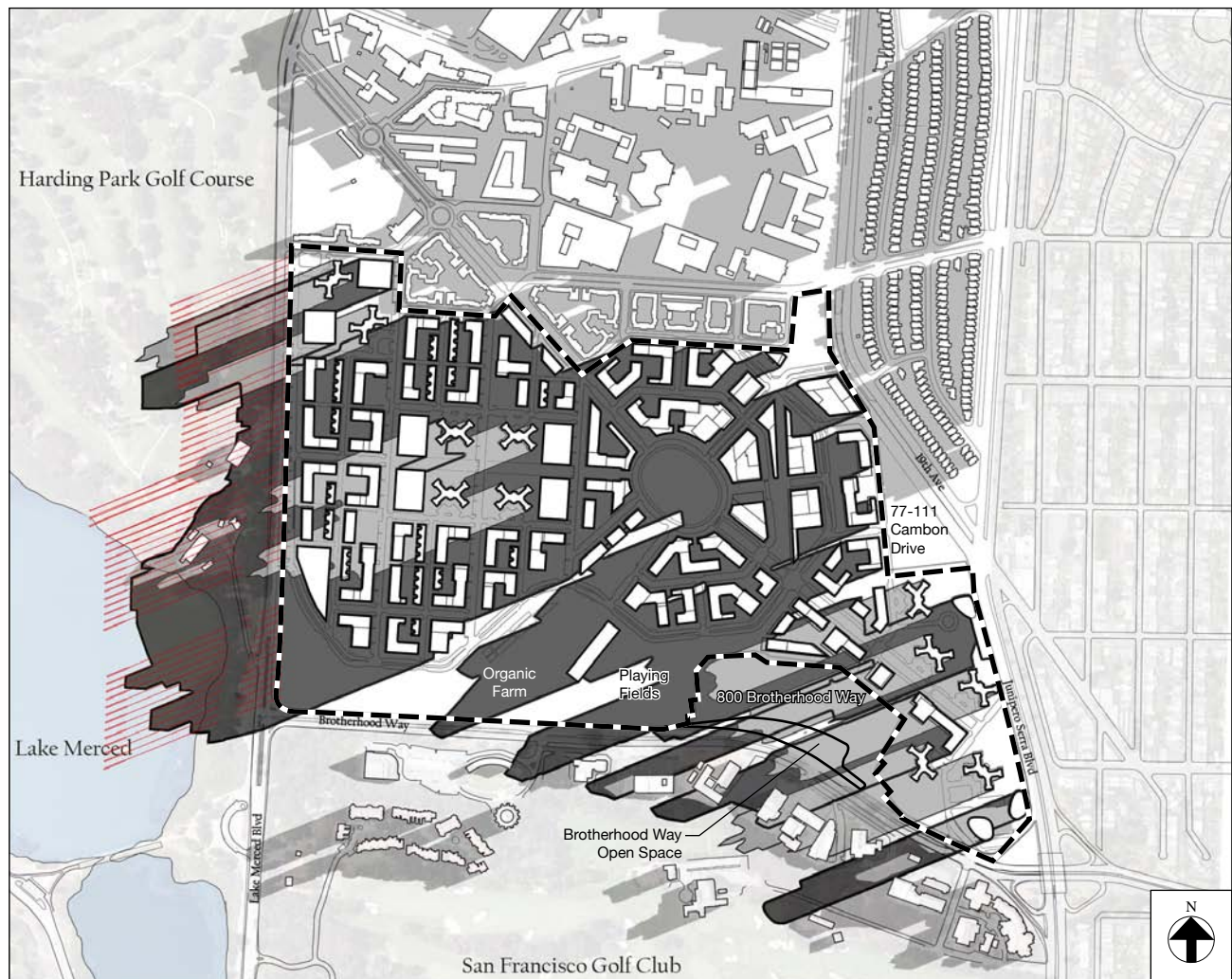
- PARKMERCED PROJECT**

V.I.75



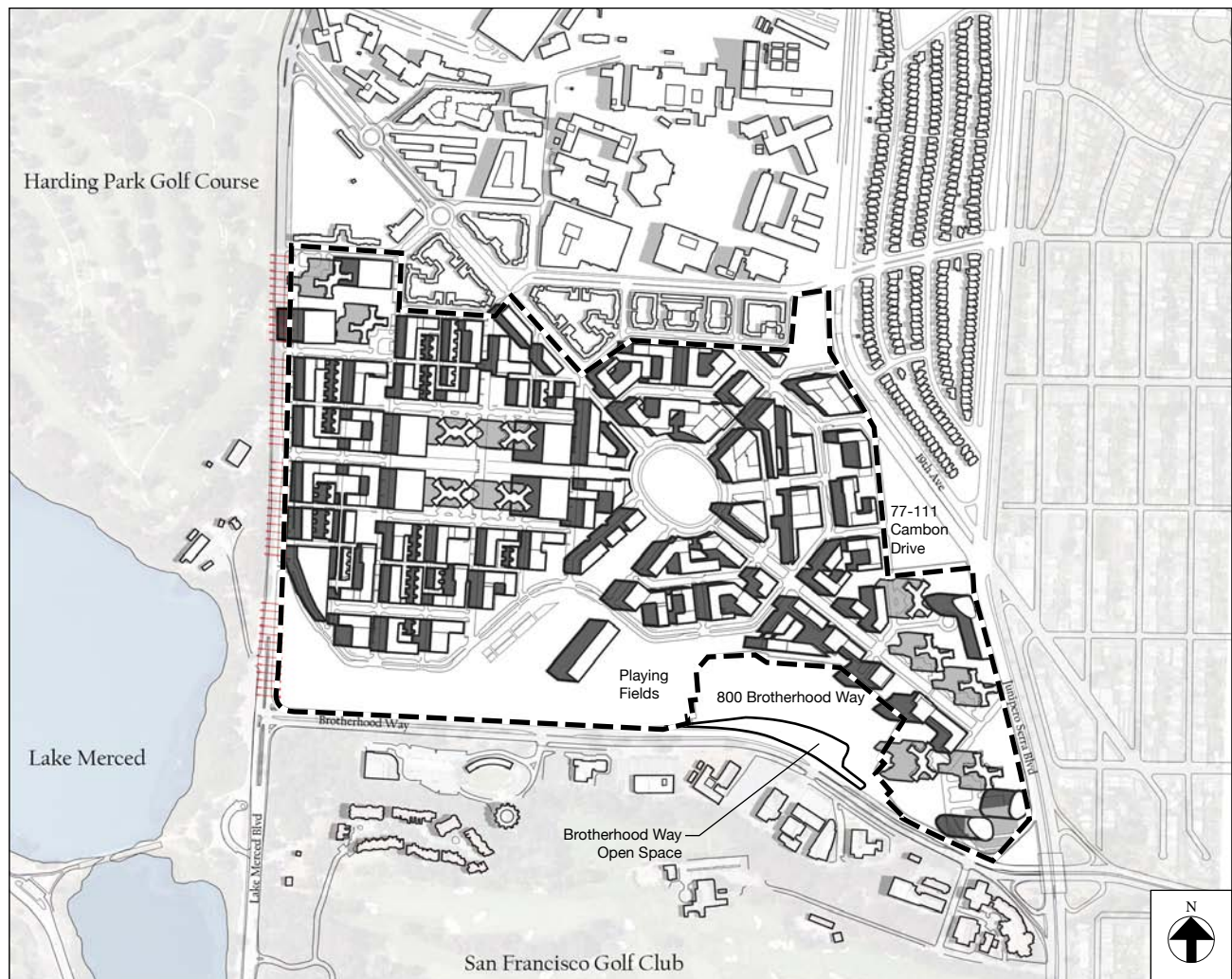
SOURCE: CADP Associates, Turnstone Consulting

- EXISTING SHADOWS
- NET NEW PROJECT SHADOWS
- NET NEW SHADOWS FROM WIND TURBINES
- PROJECT SITE BOUNDARY



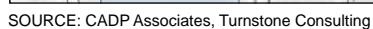
SOURCE: CADP Associates, Turnstone Consulting

FIGURE V.I.42: PROPOSED PARKMERCED PROJECT SHADOWS,  
JUNE 21, 6:48AM



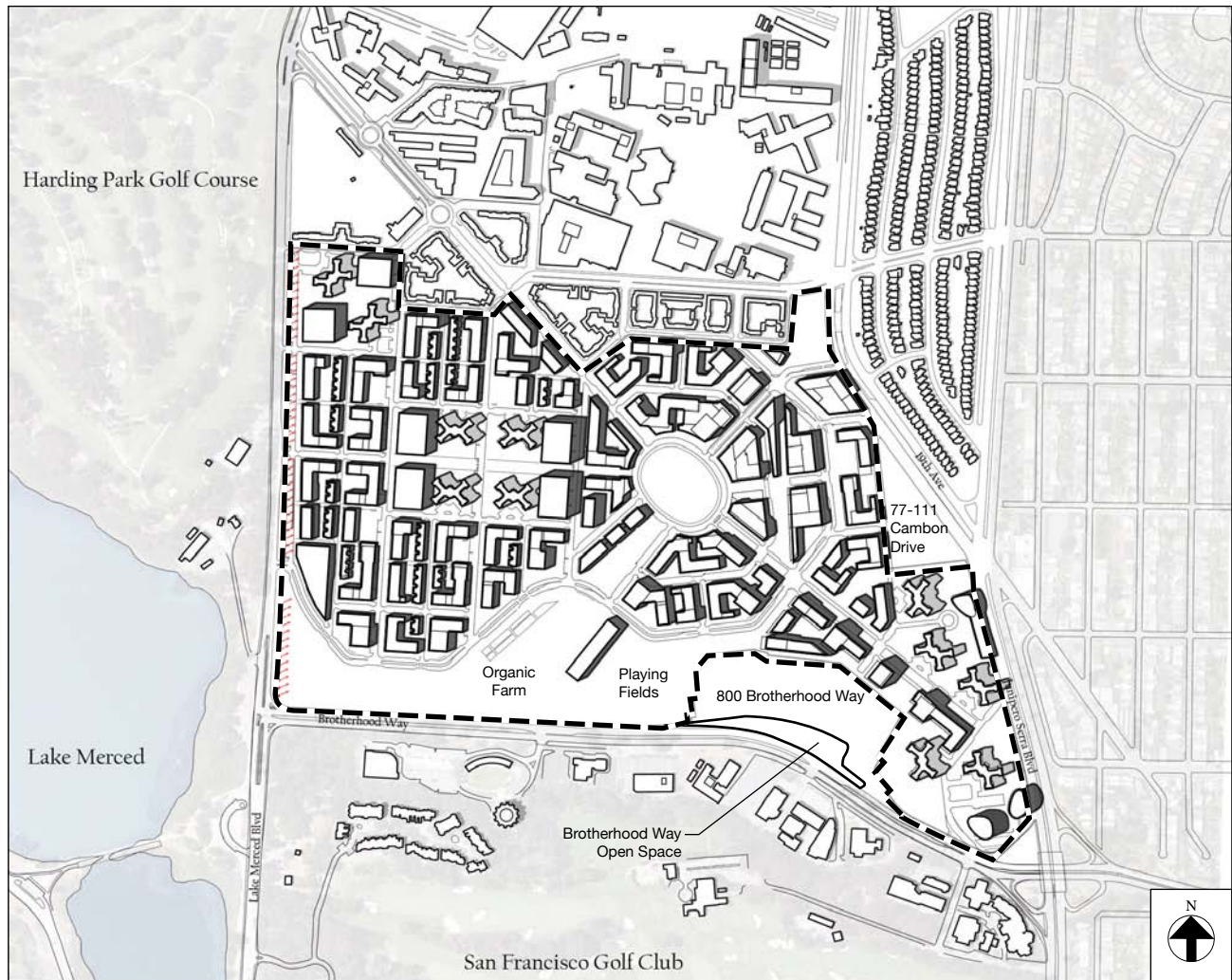
SOURCE: CADP Associates, Turnstone Consulting

- EXISTING SHADOWS
- NET NEW PROJECT SHADOWS
- NET NEW SHADOWS FROM WIND TURBINES
- PROJECT SITE BOUNDARY



- PARKMERCED PROJECT**

V.I.79

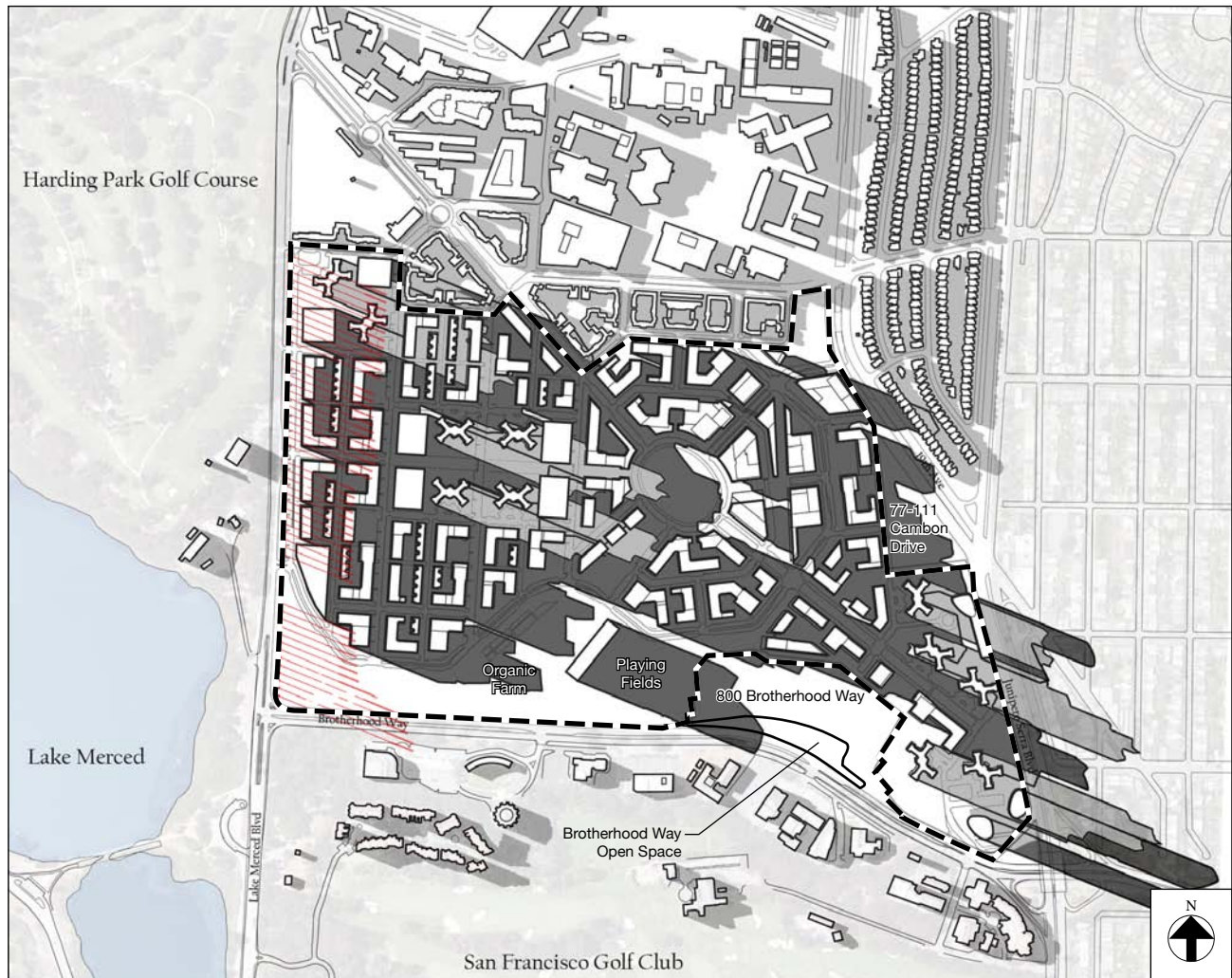


SOURCE: CADP Associates, Turnstone Consulting

- EXISTING SHADOWS
- NET NEW PROJECT SHADOWS
- NET NEW SHADOWS FROM WIND TURBINES
- PROJECT SITE BOUNDARY

PARKMERCED PROJECT

FIGURE V.I.45: PROPOSED PARKMERCED PROJECT SHADOWS,  
JUNE 21, 3:00PM



SOURCE: CADP Associates, Turnstone Consulting

FIGURE V.I.46: PROPOSED PARKMERCED PROJECT SHADOWS,  
JUNE 21, 7:35PM