PROGRAM EIR–LEVEL GEOTECHNICAL REPORT

UPTOWN, NORTH PARK, AND GREATER GOLDEN HILL PLANNING AREAS SAN DIEGO, CALIFORNIA

GEOCON
INCORPORATED

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

KLR PLANNING
SAN DIEGO, CALIFORNIA

JUNE 10, 2015
PROJECT NO. G1737-42-01

GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. G1737-42-01
June 10, 2015

KLR Planning
Post Office Box 882676
San Diego, California 92168

Attention: Ms. Karen Ruggels

Subject: PROGRAM EIR–LEVEL GEOTECHNICAL REPORT
UPTOWN, NORTH PARK, AND GREATER GOLDEN HILL PLANNING AREAS
SAN DIEGO, CALIFORNIA

Dear Ms. Ruggels:

In accordance with your request, we have prepared this report to provide soil and geologic information specific to the Uptown, North Park, and Greater Golden Hill Community Plan updates developed by the City of San Diego Planning Department. This information is for purposes of augmenting the Environmental Impact Report (EIR) for the proposed Community Plan Update. Information in this report is based on review of available published geotechnical reports in our files and previous subsurface geotechnical exploration on file with Geocon Incorporated. The accompanying report presents soil and geologic conditions superimposed over each Community Plan base map.

Should you have questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON INCORPORATED

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PROGRAM EIR–LEVEL GEOTECHNICAL REPORT

1. PURPOSE AND SCOPE

This report provides geologic hazard information pertinent to the study area. The study area generally consists of the portion of San Diego Mesa south of Interstate Highway 8, northeast of Interstate Highway 5, west of Interstate Highways 805 and 15, and north of State Highway 94, excluding Balboa Park and Old Town San Diego. The study area is subdivided into three community-planning areas: Uptown, North Park, and Greater Golden Hill. The study area for each of the community plan updates is shown on the Vicinity Map, Figure 1.

The purpose of this study was to identify site soil and geologic conditions and potential geotechnical constraints that might affect the proposed Community Plan Updates. More specifically, this program EIR-Level geotechnical report included the following:

- Identification of site soil conditions and general site geology;
- Review of available published geologic literature and maps, and geotechnical reports prepared for developments in the study area on file with Geocon Incorporated;
- Preparation of this report.

A list of published documents reviewed as part of this study is presented at the end of this report (see *List of References*). Geotechnical reports prepared by Geocon Incorporated for development of sites within the study areas were also reviewed, but are not shown on the *List of References* due to the large volume of documents. The recommendations presented herein are based on an analysis of the data obtained from our review of published reports and site-specific geotechnical reports available in our files and our understanding of the community plan update.

2. SITE DESCRIPTIONS

The planning areas consist of the generally flat San Diego Mesa incised by steep-sided canyons draining into Mission Valley and/or the San Diego Bay basin. Current land use in the subject areas consists of developed residential communities and commercial buildings, and undeveloped areas generally located on natural canyon hillsides and in canyon bottoms. Portions of the canyon slopes are comprised of both conforming (2:1 horizontal to vertical or flatter gradient slopes) and non-conforming slopes (steeper than 2:1) natural and manufactured slopes associated with existing development in the communities. Undeveloped areas support native and non-native grasses, herbs, and chaparral. Within developed areas the majority of structures are detached single-family residences and multi-story apartment buildings and condominiums. Most structures are 4 stories or

less. Structures greater than 4 stories are present in some areas. Residential and commercial areas also included paved streets and parks. Several schools, medical offices, and a hospital are also present.

3. PROPOSED UPDATE TO THE COMMUNITY PLAN

3.1 Uptown Community Plan

The Uptown Community Plan considers the portion of the San Diego Mesa generally south of Interstate 8, northeast of Interstate 5, west of Park Boulevard, and north of Balboa Park. The plan does not include Balboa Park or Old Town San Diego (see Figure 1).

The current land use generally consists of higher density development (mixed-use, commercial, medical, and employment districts) along the main transit corridors and lower densities (single-family neighborhoods) near the system of canyons. Of the three communities evaluated in this geotechnical report, the largest concentration of retail, hospitals, and medical support is in the Hillcrest Neighborhood.

The goals of the Uptown Community Plan update with respect to new development are as follows:

- Distribution of land uses that provide a range of goods and services, facilities, and activities;
- Appropriate residential densities for each neighborhood;
- Variety of housing types for all age, income, and social groups;
- Appropriate multi-family development;
- Opportunities for new medical and professional office developments;
- Commercial districts that benefit from residential density and multiple mobility options;
- Preservation of natural hillsides and canyons;
- Preservation of structures with historic significance;
- Revitalization of commercial districts;
- Active pedestrian-oriented commercial areas.

The proposed land use will consist of maintaining the low-population-density, single-family neighborhoods located outside of designated high-population-density, providing mixed-use development primarily along University Avenue, Washington Street, 4th Avenue, and 5th Avenue; and preserving open space and canyon areas. The proposed land use map is provided as Figure 2.

3.2 North Park Community Plan

The North Park Community Plan update considers the portion of the San Diego Mesa generally south of Interstate 8; east of Park Boulevard and Balboa Park; northeast of 32nd Street, Marlton Drive, Whaley Avenue; and west of Interstate 15. The plan area does not include Balboa Park (see Figure 1).

The current land use generally consists of higher density development (mixed-use, commercial, medical, and employment districts) located along the main transit corridors and lower densities (single-family neighborhoods) near the system of canyons. Many of the areas within the North Park Community Plan area are built out with very few remaining vacant parcels.

The goals of the North Park Community Plan update are as follows:

- Diversity of housing through new construction and the preservation of existing quality housing;
- Medium to high residential densities centrally located in the area between El Cajon Boulevard and University Avenue;
- New commercial and office facilities that provide a variety of goods, services and employment;
- Revitalization of North Park's business districts;
- Villages that include places to live and work with a lively, walkable, and unique atmosphere that builds upon existing neighborhoods;
- Buffer areas that minimize impacts between commercial and residential areas;
- Compatible development at the commercial/residential transition areas.

The proposed land use will consist of maintaining the low-population-density, single-family neighborhoods; maintaining higher residential densities along and between El Cajon Boulevard and University Avenue; adding new mixed-use development primarily along El Cajon Boulevard, University Avenue, and 30th Street; and preserving open space and canyon areas. The proposed land use map is provided as Figure 3.

3.3 Greater Golden Hill Community Plan

The Greater Golden Hill Community Plan update considers the portion of the San Diego Mesa generally south of Juniper Street and Russ Boulevard; east of 19th Street; west of 32nd Street, Marlton Drive, Whaley Avenue, and Interstate 15; and north of Highway 94. The plan does not include Balboa Park (see Figure 1).

The current land use is predominantly older residential (pre World War II) with commercial and institutional supporting uses. Vacant and underutilized residential sites for new development are limited. Commercial areas have some capacity to accommodate new developments, as well as continued re-use and adaptations of existing buildings.

The goals of the Greater Golden Hill Community Plan update specific to development are as follows:

- Incremental development and re-use of existing buildings;
- Mixed land uses;
- Variety of housing types for all age, income, and social groups;
- Maintain historic character and scale within single-family and low density neighborhoods,
- Multi-family development that does not detract from existing neighborhoods;
- Commercial districts with unique, local ambiance;
- Preservation of natural hillsides and canyons.

The proposed land use will consist of preserving single-family and low density neighborhoods; adding new clustered higher residential densities along the Broadway corridor; preservation of open space; revitalization of commercial districts with new development; and updating zoning regulations. Undeveloped canyons and hillsides will be preserved as open space. The proposed land use map is provided as Figure 4.

4. SOIL AND GEOLOGIC CONDITIONS

Based on review of published geologic documents and in-house geotechnical reports, the planning areas are underlain by four surficial soil deposits and three geologic formations. The surficial soils include artificial fill (unmapped), topsoil/colluvium, alluvium (unmapped), and very old terrace deposits (formerly Lindavista Formation). The geologic formations include San Diego Formation, Pomerado Conglomerate, and Mission Valley Formation. Geology of each planning area, based on Kennedy and Tan (2008), is shown on Figures 5, 6, and 7. The surficial soils and geologic formations are discussed below.

4.1 Artificial Fill (unmapped)

Artificial fill is likely present in many areas throughout the planning areas. As the location and extent of fills is unknown, they are not mapped on Figures 5 through 7. The location, extent, and suitability of the fill for support of planned new development will need to be determined during site specific geotechnical investigations. Artificial fills in older neighborhoods could possibly contain soils environmentally impacted by burn dumps, cesspools, etc.

4.2 Topsoil and Colluvium (unmapped)

Varying thickness of topsoil likely blankets the level portions of the planning areas. Colluvium is present on sloping and natural hillsides within the community plan areas. Topsoil and colluvium are generally soft, loose, and/or expansive and will typically require remedial grading in areas to receive additional fill and/or support for structures and improvements.

4.3 Alluvium (Qal)

Alluvial soils are mapped in canyon bottoms. These soils consist of soft sandy to silty clay and interfingers or grades with topsoil and slopewash along the outer edges of canyons. Depth of alluvial materials is anticipated to range from approximately 5 feet in smaller drainages to in excess of 20 feet in major drainages. The alluvial soils are typically compressible, can be expansive, and will require remedial grading to provide suitable support for fill placement and/or structural support. However, development within the canyon bottoms is unlikely based on the proposed land use.

4.4 Very Old Terrace Deposits (Qvop)

Pleistocene age very old terrace deposits (formerly Lindavista Formation) are present at the surface across most of the San Diego Mesa. The very old terrace deposits are described by Kennedy and Tan (2008) as poorly sorted, red brown, interfingered siltstone, sandstone, and conglomerate.

Reed (1991) describes a mudstone unit (proposed, therein, as the Normal Heights Mudstone member of the Lindavista formation) lying on top of the very old terrace deposits. The Normal Heights Mudstone typically ranges from a few feet thick to approximately 10 feet thick, or greater, in localized areas. This mudstone unit displays a "wide variation in structural performance." The mudstone is typically highly expansive. The presence of these highly expansive materials, especially if near finish proposed grades, requires special foundations for buildings to reduce the potential for excessive soil heave. The approximate location of the Normal Heights Mudstone within the Uptown and North Park Community Plan areas is shown on Figures 11 and 12. The Normal Heights Mudstone is absent from the Greater Golden Hill Community Plan area.

4.5 San Diego Formation (Tsd)

The Pliocene-age San Diego Formation is exposed on slopes along drainages within the community plan areas and underlies the very old terrace deposits within the communities. The San Diego Formation consists of dense, yellow-brown, fine- to medium-grained, poorly indurated micaceous sandstone. It is readily eroded and forms uniform slopes along the sides of narrow canyons in the study area. The San Diego Formation is typically massive, and is considered to be flat lying, and exhibits a favorable geologic structure for gross slope stability. Soils derived from this formation are low expansive and have relatively good shear strength characteristics and as such, can provide good capping materials for pads and higher strength soils for construction of fill slopes. Portions of the San Diego Formation are cohesionless and can erode readily where they are exposed on non-conforming slope faces.

4.6 Pomerado Conglomerate (Tp)

Tertiary-age Pomerado Conglomerate is mapped on the north-facing slopes primarily in the northern portions of the Uptown Community Plan area and the North Park Community Plan area. The Pomerado Conglomerate is typically a cobble conglomerate embedded in a silty to clayey sand soil matrix. The Pomerado Conglomerate is favorable for overall slope stability.

4.7 Mission Valley Formation (Tmv)

Tertiary-age Mission Valley Formation is exposed in the canyons and north-facing slopes in the northern portions of the Uptown Community Plan area and the North Park Community Plan area. The Mission Valley Formation is composed of light gray, friable, fine to medium grained sandstone with occasional cobble conglomerate tongues. The Mission Valley Formation is generally flat-lying or nearly horizontally bedded and is favorable for overall slope stability. It is unlikely that development will occur within the natural hillsides on the north side of the communities where the Mission Valley Formation is exposed.

5. GROUNDWATER

Near surface groundwater (less than 20 feet deep) is unlikely in geologic formations within the Uptown, North Park and Greater Golden Hill communities. Subsurface water may be present at depth in alluvial soils deposited in canyon drainage channels. Groundwater is not anticipated to be an adverse geologic condition as new development is expected to be generally on the top of the San Diego Mesa and not within the canyon bottoms.

6. GEOLOGIC HAZARDS – UPTOWN COMMUNITY PLAN AREA

6.1 Geologic Hazard Category

Review of the 2008 *City of San Diego Seismic Safety Study, Geologic Hazards and Faults* indicates the majority of the Uptown Community Plan area is mapped as Geologic Hazard Category 52. Category 52 is *other level areas, gently sloping to steep terrain, favorable geologic structure, low risk.* The northern boundary of the planning area is designated as Geologic Hazard Category 53, which is *level or sloping terrain, unfavorable geologic structure, low to moderate risk.* The south end is mapped within the "Downtown Special Fault Zone", Geologic Hazard Category 13. Figure 8 shows the Uptown Community Plan area boundary superimposed on the 2008 *City of San Diego Seismic Safety Study*.

6.2 Faulting

Review of published geologic literature indicates the Uptown Community Plan area is located on the east margin of the Rose Canyon Fault Zone (RCFZ). The RCFZ is characterized by a zone of north-trending, strike-slip faults, portions of which are deemed active by the State of California

The *City of San Diego Seismic Safety Study, Geologic Hazards and Faults* (2008) Grid Tiles 20 and 21 map faults crossing the northwestern portion of the planning area (see Figures 8 and 11). These faults are described as "potentially active, inactive, presumed inactive, or activity unknown". These faults have been named as the Old Town and Mission Bay fault segments of the Rose Canyon Fault Zone. Some researchers (Rockwell, 2010) deem faulting in Old Town, near the Mormon Battalion Historic Site and the Presidio Hills Golf Course, to be active.

Kennedy (1975) indicates the Old Town fault has vertically offset sediments approximately 100,000 years old by more than 20 meters, indicating late Quaternary activity. Typically, building set-backs are not required on potentially active or inactive faults. However, considering the proximity of these faults to the Rose Canyon fault, site-specific fault studies should be performed where development extends across the identified fault zones. Additionally, these faults are considered to have a potential for surface rupture, unless site specific studies demonstrate otherwise.

The southern portion of the Uptown Community Plan area south of Laurel Street is located within the City of San Diego Downtown Special Study Zone. Permitting of projects within the Downtown Special Study Zone will require a site-specific fault investigation be performed.

The nearest known active fault is the Rose Canyon Fault Zone, located approximately 0.9 miles to the west of the approximate centroid of the Community Plan area. For the purpose of this study, the centroid of the plan area is located at about latitude 32.747 north and longitude -117.168 west. Major earthquakes occurring on the Rose Canyon Fault Zone, or other regional active faults located in the southern California area, could subject the site to moderate to severe ground shaking.

Seismic hazard reduction with respect to faulting and seismicity is typically attained by building set-backs from active faults and proper implementation of existing building codes. Recommendations specific to development should be provided in site specific geotechnical investigations.

6.3 Seismicity

The site will be subjected to hazards caused by ground shaking during seismic events on regional active faults. Figure 14 shows the locations of known active faults within 80 kilometers of the Site.

According to the computer program *EZ-FRISK* (Version 7.62), six known active faults are located within a search radius of 50 miles from the approximate centroid on the Uptown Community Plan area. We used acceleration attenuation relationships developed by Boore-Atkinson (2008) NGA USGS2008, Campbell-Bozorgnia (2008) NGA USGS, and Chiou-Youngs (2007) NGA USGS 2008 in our analysis. The nearest known active fault is the Newport-Inglewood/Rose Canyon Fault, located approximately 0.9 miles west of the approximate centroid of the site and is the dominant source of potential ground motion. Table 6.3.1 lists the estimated maximum earthquake magnitude and peak ground acceleration for faults in relationship to the site location.

TABLE 6.3.1
DETERMINISTIC SEISMIC HAZARD PARAMETERS
UPTOWN COMMUNITY PLAN AREA

Fault Name	Distance from Site (miles)	Maximum Earthquake Magnitude (Mw)	Peak Ground Acceleration		
			Boore-Atkinson 2008 (g)	Campbell-Bozorgnia 2008 (g)	Chiou-Youngs 2007 (g)
Newport-Inglewood/ Rose Canyon Connected	0.9	7.5	0.49	0.41	0.56
Rose Canyon	0.9	6.9	0.47	0.41	0.53
Coronado Bank	13	7.4	0.23	0.18	0.22
Palos Verde/Coronado Bank Connected	13	7.7	0.25	0.19	0.25
Elsinore	41	7.85	0.14	0.09	0.12
Earthquake Valley	45	6.8	0.08	0.06	0.05

It is our opinion that projects within the Uptown Community Plan area could be subject to moderate to severe ground shaking in the event of an earthquake along any of the faults listed in Table 6.3.1 or other faults in the Southern California/Northern Baja California region.

We used the computer program *EZ-FRISK* to perform a probabilistic seismic hazard analysis. The computer program *EZ-FRISK* operates under the assumption that the occurrence rate of earthquakes on each mapped Quaternary fault is proportional to the faults slip rate. The program accounts for earthquake magnitude as a function of fault length, and site acceleration estimates are made using the earthquake magnitude and distance from the site to the rupture zone. The program also accounts for uncertainty in each of following: (1) earthquake magnitude, (2) rupture length for a given magnitude, (3) location of the rupture zone, (4) maximum possible magnitude of a given earthquake, and (5) acceleration at the site from a given earthquake along each fault. By calculating the expected accelerations from considered earthquake sources, the program calculates the total average annual expected number of occurrences of site acceleration greater than a specified value. We utilized

acceleration-attenuation relationships suggested by Boore-Atkinson (2008) NGA USGS, Campbell-Bozorgnia (2008) NGA USGS, and Chiou-Youngs (2008) in the analysis. Table 6.3.2 presents the site-specific probabilistic seismic hazard parameters including acceleration-attenuation relationships and the probability of exceedence.

TABLE 6.3.2
PROBABILISTIC SEISMIC HAZARD PARAMETERS
UPTOWN COMMUNITY PLAN AREA

Probability of Exceedence	Peak Ground Acceleration		
	Boore-Atkinson, 2008 (g)	Campbell-Bozorgnia, 2008 (g)	Chiou-Youngs, 2007 (g)
2% in a 50-Year Period	0.60	0.51	0.64
5% in a 50-Year Period	0.40	0.35	0.41
10% in a 50-Year Period	0.27	0.24	0.26

While listing peak accelerations is useful for comparison of potential effects of fault activity in a region, other considerations are important in seismic design, including frequency and duration of motion and soil conditions underlying the site. Seismic design of future structures would be evaluated in accordance with the 2013 California Building Code (CBC) guidelines or those currently adopted by the City of San Diego. Design in accordance with the CBC would avoid significant impacts to future structures to the extent possible.

6.4 Liquefaction Potential

Liquefaction typically occurs when a site is located in a zone with seismic activity, onsite soils are relatively cohesionless with relative densities less than about 70 percent, and groundwater within 50 feet of the surface. If these criteria are met, a seismic event could result in a rapid pore-water pressure increase from earthquake-generated ground accelerations thereby resulting in soil liquefaction. The potential for liquefaction and seismically-induced settlement occurring for the Uptown Community Plan area is low due to the very dense cemented condition of the geologic formations and lack of groundwater. No zones of potentially liquefiable soils are identified on the City of San Diego Hazard Map within the Uptown Community Plan area. Therefore, no impacts are anticipated.

6.5 Tsunamis and Seiches

The Uptown Community Plan area is not located near the ocean or downstream of any large bodies of water. Therefore, the risk associated with inundation by tsunamis or seiches is low. Therefore, no impacts are anticipated.

6.6 Subsidence

Based on the subsurface soil conditions encountered during our field investigation and the lack of groundwater extraction, the risk associated with ground subsidence hazard in the Uptown Community Plan area is low; and no impacts are anticipated.

6.7 Non-Conforming Slopes

Areas of known and potential, non-conforming slopes (i.e., slopes steeper than 2:1 horizontal to vertical) are shown on Figure 11. These areas are generally along the Interstate 5 and Interstate 8, in Reynard Canyon, Maple Canyon, Arroyo Drive, and Washington Street. Development within these areas could be impacted by either steep natural hillsides or oversteepened fill slopes. Development within existing slopes steeper than 2:1 is typically accomplished by: flattening or buttressing the slopes; set-back from the toe and top of slopes, constructing retaining walls or reinforcing the slope using soil nails, tie-back anchors, shear pins.

6.8 Landslides

No large landslides are mapped within the Uptown Community Plan area; however, small surficial instability could be present on steep slopes. Areas of known and potential, over-steepened, natural and constructed slopes, where surficial instability could occur, are shown on Figure 11.

6.9 Flooding

Based on review of the Federal Emergency Management Agency (FEMA) flood insurance rate map (FIRM), with the exception of some canyon drainages along the west side of the planning area, the planning area is not located within areas likely to flood. The risk associated with flooding hazard is within the Uptown Community Plan area is low. Flooding could occur within the canyon drainages, however, development within the canyon bottoms is unlikely, and therefore, no impact is anticipated.

6.10 Expansive Soil

The Normal Heights Mudstone (Reed 1991) is mapped along the northeastern side of the Uptown Community Plan area (see Figure 11). The mudstone can be highly expansive. The mudstone could range from a few feet thick to approximately 10 feet thick, or greater, in localized areas. The presence of highly expansive materials, especially if near finish proposed grade, is potentially damaging to foundations surface improvements such as sidewalks and pavements. Special measures will be necessary during design and construction to minimize the effects of expansive soil.

7. GEOLOGIC HAZARDS – NORTH PARK COMMUNITY PLAN AREA

7.1 Geologic Hazard Category

Review of the 2008 *City of San Diego Seismic Safety Study, Geologic Hazards and Faults,* indicates the majority of the North Park Community Plan area is mapped as Geologic Hazard Category 52. Category 52 is *other level areas, gently sloping to steep terrain, favorable geologic structure, low risk*. The northern boundary of the North Park Community Plan area is designated as Geologic Hazard Category 53, which is *level or sloping terrain, unfavorable geologic structure, low to moderate risk*. A small area at the southeast corner of the North Park Community Plan area along Interstate 15 is mapped as Geologic Hazard Category 32, *low potential for liquefaction, fluctuating groundwater, minor drainages*. Figure 9 shows the North Park Community Plan boundary superimposed on the 2008 *City of San Diego Seismic Safety Study*.

7.2 Faulting

Review of published geologic literature indicates the North Park Community Plan area is traversed by two, north/south trending faults, the Florida Canyon Fault and the Texas Street Fault. These faults extend along the western boundary of the planning area. The State of California deems these faults as Quaternary age. The *City of San Diego Seismic Safety Study, Geologic Hazards and Faults* (2008) Grid Tile 17 describes the faults as "potentially active, inactive, presumed inactive, or activity unknown". These faults are normal faults that bounding a down-dropped graben indicative of crustal extension. Movement on the faults diminishes to the north and is not evident beyond the northern edge of Mission Valley. Some researchers posit these faults are related to wrenching imposed by movement on the right-lateral, strike-slip Rose Canyon Fault (Rockwell, personal communication). Given the orientation of the faulting shown on Figures 8 and 11 for the Uptown Community Plan area, it is likely that these faults are right-lateral, strike-slip fault related to the Rose Canyon fault zone.

Typically, building set-backs are not required on inactive or potentially active faults. However, site specific fault studies may be required where development extends across these identified fault zones to determine if a fault set-back is warranted.

The nearest known active fault is the Rose Canyon Fault Zone, located approximately 2 miles to the west of the approximate centroid of the Community Plan area. For the purpose of this study, the centroid of the plan area is located at about latitude 32.746 north and longitude -117.130 west. Major earthquakes occurring on the Rose Canyon Fault Zone, or other regional active faults located in the southern California area, could subject the site to moderate to severe ground shaking.

Seismic hazard reduction with respect to faulting and seismicity is typically attained by building set-backs from active faults and proper implementation of existing building codes. Recommendations specific to development should be provided in site specific geotechnical investigations.

7.3 Seismicity

The site will be subjected to hazards caused by ground shaking during seismic events on regional active faults. Figure 14 shows the locations of known active faults within 80 kilometers of the Site.

According to the computer program *EZ-FRISK* (Version 7.62), six known active faults are located within a search radius of 50 miles from the approximate centroid on the North Park Community Plan area. We used acceleration attenuation relationships developed by Boore-Atkinson (2008) NGA USGS2008, Campbell-Bozorgnia (2008) NGA USGS, and Chiou-Youngs (2007) NGA USGS 2008 in our analysis. The nearest known active fault is the Newport-Inglewood/Rose Canyon Fault, located approximately 2 miles west of the approximate centroid of the site and is the dominant source of potential ground motion. Table 7.3.1 lists the estimated maximum earthquake magnitude and peak ground acceleration for faults in relationship to the site location.

TABLE 7.3.1
DETERMINISTIC SEISMIC HAZARD PARAMETERS
NORTH PARK COMMUNITY PLAN AREA

Fault Name	Distance from Site (miles)	Maximum Earthquake Magnitude (Mw)	Peak Ground Acceleration		
			Boore-Atkinson 2008 (g)	Campbell-Bozorgnia 2008 (g)	Chiou-Youngs 2008 (g)
Newport-Inglewood/ Rose Canyon Connected	2	7.5	0.40	0.37	0.48
Rose Canyon	2	6.9	0.36	0.36	0.43
Coronado Bank	15	7.4	0.22	0.16	0.20
Palos Verde/ Coronado Bank Connected	15	7.7	0.24	0.17	0.23
Elsinore	39	7.85	0.15	0.10	0.12
Earthquake Valley	43	6.8	0.09	0.06	0.04

It is our opinion that projects within the North Park Community Plan area could be subjected to moderate to severe ground shaking in the event of an earthquake along any of the faults listed in Table 7.3.1 or other faults in the Southern California/Northern Baja California region.

We used the computer program *EZ-FRISK* to perform a probabilistic seismic hazard analysis. The computer program *EZ-FRISK* operates under the assumption that the occurrence rate of earthquakes on each mapped Quaternary fault is proportional to the faults slip rate. The program accounts for earthquake magnitude as a function of fault length, and site acceleration estimates are made using the earthquake magnitude and distance from the site to the rupture zone. The program also accounts for uncertainty in each of following: (1) earthquake magnitude, (2) rupture length for a given magnitude, (3) location of the rupture zone, (4) maximum possible magnitude of a given earthquake, and (5) acceleration at the site from a given earthquake along each fault. By calculating the expected accelerations from considered earthquake sources, the program calculates the total average annual expected number of occurrences of site acceleration greater than a specified value. We utilized acceleration-attenuation relationships suggested by Boore-Atkinson (2008) NGA USGS, Campbell-Bozorgnia (2008) NGA USGS, and Chiou-Youngs (2007) NGA USGS 2008 in the analysis. Table 7.3.2 presents the site-specific probabilistic seismic hazard parameters including acceleration-attenuation relationships and the probability of exceedence.

TABLE 7.3.2
PROBABILISTIC SEISMIC HAZARD PARAMETERS
NORTH PARK COMMUNITY PLAN AREA

Probability of Exceedence	Peak Ground Acceleration		
	Boore-Atkinson, 2008 (g)	Campbell-Bozorgnia, 2008 (g)	Chiou-Youngs, 2007 (g)
2% in a 50-Year Period	0.52	0.47	0.55
5% in a 50-Year Period	0.36	0.33	0.37
10% in a 50-Year Period	0.26	0.23	0.25

While listing peak accelerations is useful for comparison of potential effects of fault activity in a region, other considerations are important in seismic design, including frequency and duration of motion and soil conditions underlying the site. Seismic design of future structures would be evaluated in accordance with the 2013 California Building Code (CBC) guidelines or those currently adopted by the City of San Diego. Design in accordance with the CBC would avoid significant impacts to future structures to the extent possible.

7.4 Liquefaction Potential

Liquefaction typically occurs when a site is located in a zone with seismic activity, onsite soils are relatively cohesionless with relative densities less than about 70 percent, and groundwater within 50 feet of the surface. If these criteria are met, a seismic event could result in a rapid pore-water pressure increase from earthquake-generated ground accelerations thereby resulting in soil liquefaction. The potential for liquefaction and seismically-induced settlement occurring for the North Park

Community Plan area is low across the majority of the area due to the very dense cemented condition of the geologic formations and lack of groundwater. Therefore, no impacts are anticipated.

One area of potentially liquefiable soils has been identified on the City of San Diego Hazard Map at the southeast corner of the planning area along the west side of Interstate 15 (see Figure 9). The area is identified as Hazard Map Symbol 32, Low Potential – fluctuating groundwater, minor drainages. Impacts related to liquefaction include ground failure, settlement, or lateral spreading. Site specific geotechnical investigations to evaluate liquefaction potential would be required in this area.

7.5 Tsunamis and Seiches

The North Park Community Plan area is not located near the ocean or downstream of any large bodies of water. Therefore, the risk associated with inundation by tsunamis or seiches is low. Therefore, no impacts are anticipated.

7.6 Subsidence

Based on the subsurface soil conditions encountered during our field investigation and the lack of groundwater extraction, the risk associated with ground subsidence hazard within the North Park Community Plan area is low; and no impacts are anticipated.

7.7 Non-Conforming Slopes

Areas of known and potential, non-conforming slopes (i.e., slopes steeper than 2:1 horizontal to vertical) are shown on Figure 12. These areas are generally located at the north end of the Site along the Interstate 8 and in the southeast corner of the Community Plan area. Development within these areas could be impacted by either steep natural hillsides or oversteepened fill slopes. Development within existing slopes steeper than 2:1 is typically accomplished by: flattening or buttressing the slopes; set-back from the toe and top of slopes, constructing retaining walls or reinforcing the slope using soil nails, tie-back anchors, shear pins.

7.8 Landslides

No large landslides are mapped within the North Park Community Plan area; however, small surficial instability could be present on steep drainage slopes. Areas of known and potential, over-steepened, natural and constructed slopes, where surficial instability could occur, are shown on Figure 12.

7.9 Flooding

Based on review of the Federal Emergency Management Agency (FEMA) flood insurance rate map (FIRM), with the exception of the drainage area at the southeast corner of the planning area near

Interstate 15, the planning area is not located within areas likely to flood. The risk associated with flooding hazard within the North Park Community Plan area is low and no impact is anticipated. Flooding could occur within the drainage area near Interstate 15; however, it is unlikely that development will occur in this area.

7.10 Expansive Soil

The Normal Heights Mudstone (Reed 1991) is mapped over much of the northern half of the North Park Community Plan area (see Figure 12). The mudstone can be highly expansive. The mudstone could range from a few feet thick to approximately 10 feet thick, or greater, in localized areas. The presence of highly expansive materials, especially if near finish proposed grade, is potentially damaging to foundations surface improvements such as sidewalks and pavements. Special measures will be necessary during design and construction to minimize the effects of expansive soil.

8. GEOLOGIC HAZARDS – GREATER GOLDEN HILL COMMUNITY PLAN AREA

8.1 Geologic Hazard Category

Review of the 2008 *City of San Diego Seismic Safety Study, Geologic Hazards and Faults*, indicates the majority of the Greater Golden Hill Community Plan area is mapped as Geologic Hazard Category 52. Category 52 is *other level areas, gently sloping to steep terrain, favorable geologic structure, low risk*. The west end is mapped within the downtown special fault zone, Geologic Hazard Category 13. A small area at the southeast corner adjacent to Interstate 15 is mapped as Geologic Hazard Category 32, *low potential for liquefaction, fluctuating groundwater, minor drainages*. Figure 10 shows the Greater Golden Hill Community Plan boundary superimposed on the 2008 *City of San Diego Seismic Safety Study*.

8.2 Faulting

Review of published geologic literature indicates the Greater Golden Hill Community Plan area is traversed by two, north/south trending faults, the Florida Canyon Fault and the Texas Street Fault. These faults extend along the western boundary of the planning area. The State of California deems these faults as Quaternary age. The *City of San Diego Seismic Safety Study, Geologic Hazards and Faults* (2008) Grid Tile 17 describes the faults as "potentially active, inactive, presumed inactive, or activity unknown".

These faults are normal faults that bound a down-dropped graben indicative of crustal extension. Movement on the faults diminishes to the north and is not evident beyond the northern edge of Mission Valley. Some researchers posit these faults are related to wrenching imposed by movement on the right-lateral, strike-slip Rose Canyon Fault (Rockwell, personal communication). Given the

orientation of the faulting shown on Figures 8 and 11 for the Uptown Community Plan area, it is likely that these faults are right-lateral, strike-slip fault related to the Rose Canyon fault zone.

Typically, building set-backs are not required on inactive or potentially active faults. However, site specific fault studies may be required where development extends across these identified fault zones to determine if a fault set-back is warranted.

The nearest known active fault is the Rose Canyon Fault Zone, located approximately 2 miles to the west of the approximate centroid of the Community Plan area. For the purpose of this study, the centroid of the plan area is located at about latitude 32.719 north and longitude -117.129 west. Major earthquakes occurring on the Rose Canyon Fault Zone, or other regional active faults located in the southern California area, could subject the site to moderate to severe ground shaking.

Seismic hazard reduction with respect to faulting and seismicity is typically attained by building set-backs from active faults and proper implementation of existing building codes. Recommendations specific to development should be provided in site specific geotechnical investigations.

8.3 Seismicity

The site will be subjected to hazards caused by ground shaking during seismic events on regional active faults. Figure 14 shows the locations of known active faults within 80 kilometers of the Site.

According to the computer program *EZ-FRISK* (Version 7.62), six known active faults are located within a search radius of 50 miles centered on the Greater Golden Hill Community Plan area. We used acceleration attenuation relationships developed by Boore-Atkinson (2008) NGA USGS2008, Campbell-Bozorgnia (2008) NGA USGS, and Chiou-Youngs (2007) NGA USGS 2008 in our analysis. The nearest known active fault is the Newport-Inglewood/Rose Canyon Fault, located approximately 2 miles west of the site and is the dominant source of potential ground motion. Table 8.3.1 lists the estimated maximum earthquake magnitude and peak ground acceleration for faults in relationship to the site location.

TABLE 8.3.1
DETERMINISTIC SEISMIC HAZARD PARAMETERS
GREATER GOLDEN HILL COMMUNITY PLAN AREA

Fault Name	Distance from Site (miles)	Maximum Earthquake Magnitude (Mw)	Peak Ground Acceleration		
			Boore-Atkinson 2008 (g)	Campbell-Bozorgnia 2008 (g)	Chiou-Youngs 2007 (g)
Newport-Inglewood/ Rose Canyon Connected	2	7.5	0.42	0.39	0.50
Rose Canyon	2	6.9	0.39	0.38	0.46
Coronado Bank	14	7.4	0.23	0.17	0.21
Palos Verde/ Coronado Bank Connected	14	7.7	0.25	0.18	0.24
Elsinore	40	7.85	0.14	0.09	0.12
Earthquake Valley	45	6.8	0.08	0.06	0.05

It is our opinion that projects within the Greater Golden Hill Community Plan area could be subject to moderate to severe ground shaking in the event of an earthquake along any of the faults listed in Table 8.3.1 or other faults in the Southern California/Northern Baja California region.

We used the computer program *EZ-FRISK* to perform a probabilistic seismic hazard analysis. The computer program *EZ-FRISK* operates under the assumption that the occurrence rate of earthquakes on each mapped Quaternary fault is proportional to the faults slip rate. The program accounts for earthquake magnitude as a function of fault length, and site acceleration estimates are made using the earthquake magnitude and distance from the site to the rupture zone. The program also accounts for uncertainty in each of following: (1) earthquake magnitude, (2) rupture length for a given magnitude, (3) location of the rupture zone, (4) maximum possible magnitude of a given earthquake, and (5) acceleration at the site from a given earthquake along each fault. By calculating the expected accelerations from considered earthquake sources, the program calculates the total average annual expected number of occurrences of site acceleration greater than a specified value. We utilized acceleration-attenuation relationships suggested by Boore-Atkinson (2008) NGA USGS, Campbell-Bozorgnia (2008) NGA USGS, and Chiou-Youngs (2007) NGA USGS 2008 in the analysis. Table 8.3.2 presents the site-specific probabilistic seismic hazard parameters including acceleration-attenuation relationships and the probability of exceedence.

TABLE 8.3.2
PROBABILISTIC SEISMIC HAZARD PARAMETERS
GREATER GOLDEN HILL COMMUNITY PLAN AREA

Probability of Exceedence	Peak Ground Acceleration		
	Boore-Atkinson, 2008 (g)	Campbell-Bozorgnia, 2008 (g)	Chiou-Youngs, 2008 (g)
2% in a 50-Year Period	0.54	0.48	0.58
5% in a 50-Year Period	0.37	0.33	0.39
10% in a 50-Year Period	0.26	0.23	0.26

While listing peak accelerations is useful for comparison of potential effects of fault activity in a region, other considerations are important in seismic design, including frequency and duration of motion and soil conditions underlying the site. Seismic design of future structures would be evaluated in accordance with the 2013 California Building Code (CBC) guidelines or those currently adopted by the City of San Diego. Design in accordance with the CBC would avoid significant impacts to future structures to the extent possible.

8.4 Liquefaction Potential

Liquefaction typically occurs when a site is located in a zone with seismic activity, onsite soils are relatively cohesionless with relative densities less than about 70 percent, and groundwater within 50 feet of the surface. If these criteria are met, a seismic event could result in a rapid pore-water pressure increase from earthquake-generated ground accelerations thereby resulting in soil liquefaction. The potential for liquefaction and seismically-induced settlement occurring for the Greater Golden Hill Community Plan area is low across the majority of the area due to the very dense cemented condition of the geologic formations and lack of groundwater.

One area of potentially liquefiable soils has been identified on the City of San Diego Hazard Map at the southeast corner of the planning area along the west side of Interstate 15 (see Figure 10). The area is identified as Hazard Map Symbol 32, Low Potential – fluctuating groundwater, minor drainages. Impacts related to liquefaction include ground failure, settlement, or lateral spreading. Site specific geotechnical investigations to evaluate liquefaction potential would be required in this area.

8.5 Tsunamis and Seiches

The Greater Golden Hill Community Plan area is not located near the ocean or downstream of any large bodies of water. Therefore, the risk associated with inundation by tsunamis or seiches is low.

8.6 Subsidence

Based on the subsurface soil conditions encountered during our field investigation and the lack of groundwater extraction, the risk associated with ground subsidence hazard within the Greater Golden Hill Community Plan area is low.

8.7 Non-Conforming Slopes

Areas of known and potential, non-conforming slopes (i.e., slopes steeper than 2:1 horizontal to vertical) are shown on Figure 13. These areas are generally located at the near the southeast corner of the of the Community Plan area. Development within these areas could be impacted by either steep natural hillsides or oversteepened fill slopes. Development within existing slopes steeper than 2:1 is typically accomplished by: flattening or buttressing the slopes; set-back from the toe and top of slopes, constructing retaining walls or reinforcing the slope using soil nails, tie-back anchors, shear pins.

8.8 Landslides

No large landslides are mapped within the Greater Golden Hill Community Plan area; however small surficial instability could be present on steep drainage slopes. Areas of known and potential, over-steepened, natural and constructed slopes, where surficial instability could occur, are shown on Figure 13.

8.9 Flooding

Based on review of the Federal Emergency Management Agency (FEMA) flood insurance rate map (FIRM), with the exception of the drainage area along Interstate 15 at the southeast corner of the planning area, the planning area is not located within areas likely to flood. The risk associated with flooding hazard within the Greater Golden Hill Community Plan area is low; therefore, no impact is anticipated. Flooding could occur within the drainage area adjacent to Interstate 15; however, it is unlikely that development will occur in this area.

9. CONCLUSIONS

9.1 Based on the results of our study, it is our opinion that the proposed updates to the Community Plans will not have direct or indirect significant environmental effects with respect to geologic hazards. We know of no geologic hazards present within the planning areas that can neither be avoided nor mitigated. In our opinion the proposed land uses are compatible with the known geologic hazards.

9.2 Site-specific geotechnical investigations will be required for certain City of San Diego geologic hazard categories mapped within the Community Plans. These include Hazard Categories 12, 13, 32, and 53.

9.3 Site specific fault investigations should be performed where development occurs within mapped fault traces in the northwest portion of the Uptown Community Plan to determine if a fault set-back is required. With respect to the Florida Canyon and Texas Street Faults mapped within the North Park and Greater Golden Hill Community Plans, site specific fault studies may also be needed to determine if a fault set-back is warranted where development extends across these identified fault zones. Site specific fault studies will also be required where development occurs within the Downtown Special Fault Zone (Hazard Category 13) in the Uptown and Greater Golden Hill Community Plan areas.

9.4 In the identified liquefaction zone in the North Park and Greater Golden Hill Community Plan areas, site specific geotechnical investigations will be required to evaluate the potential for liquefaction and to provide mitigation measures if a liquefaction potential exists.

9.5 Development within areas of non-conforming slopes could be impacted by either steep natural hillsides or oversteepened fill slopes. Development within areas of existing slopes steeper than 2:1 is typically accomplished by: flattening or buttressing the slopes; set-back from the toe and top of slopes, constructing retaining walls or reinforcing the slope using soil nails, tie-back anchors, shear pins. Recommendations for development within areas of non-conforming slopes will need to be presented in site specific geotechnical investigations.

9.6 Areas identified as being underlain by the Normal Heights Mudstone may need special design and construction measures to minimize the effects of expansive soil movement. Additionally, there is a potential for irrigation or seepage water to perch on the mudstone which may require drains to intercept seepage water. These areas are also not expected to be suitable for infiltration for storm water runoff. Geotechnical recommendations to

account for potential impacts from the mudstone should be provided in site-specific geotechnical investigations.

9.7 Development within the planning areas would conform to standards and conditions set forth by the City of San Diego. New buildings and additions/modifications to existing structures would follow current building codes requirements. Conformance to these requirements will reduce potential impacts from seismic shaking, liquefaction and slope stability hazards to acceptable levels.

LIST OF REFERENCES

1. Boore, D. M., and Atkinson, G. M, (2007), *Boore-Atkinson NGA Ground Motion Relations for the Geometric Mean Horizontal Component of Peak and Spectral Ground Motion Parameters,* Report Number PEER 2007/01;

2. California Department of Conservation, Division of Mines and Geology (1996), *Probabilistic Seismic Hazard Assessment for the State of California*, Open File Report 96-08;

3. California Department of Conservation, Division of Mines and Geology (1997), *Guidelines for Evaluating and Mitigating Seismic Hazards in California,* , Division of Mines and Geology, Special Publication 117;

4. Campbell, K. W., Bozorgnia, Y. (2008), *NGA Ground Motion Model for the Geometric Mean Horizontal Component of PGA, PGV, PGD and 5% Damped Linear Elastic Response Spectra for Periods Ranging from 0.01 to 10 s,* Preprint of version submitted for publication in the NGA Special Volume of Earthquake Spectra, Volume 24, Issue 1, pages 139-171, February 2008;

5. Chiou, B. S. J., and Youngs, R. R.. (2008), *A NGA Model for the Average Horizontal Component of Peak Ground Motion and Response Spectra,* preprint for article to be published in NGA Special Edition for Earthquake Spectra;

6. City of San Diego (2008), *Seismic Safety Study, Geologic Hazards and Faults;*

7. Jennings, C. W. (1994), *Fault Activity Map of California and Adjacent Areas,* DMG Geologic Data Map No. 6, scale 1:750,000;

8. Kennedy, M.P. (1975), *Geology of the San Diego Metropolitan Area, California (Section A, Western San Diego Metropolitan Area- Del Mar, La Jolla, and Point Loma 7.5 minute quadrangles),* California Division of Mines and Geology Bulletin 200A;

9. Kennedy, M. P., *et.al.* (1975), *Character and Recency of Faulting San Diego Metropolitan Area, California,* DMG Special Report 123;

10. Kennedy, M. P., Clarke, S.H. (1999), *Analysis of Late Quaternary Faulting in San Diego Bay and Hazard to the Coronado Bridge,* DMG Open File Report 97-10A;

11. Kennedy, M. P., and Tan, S.S. (2008), *Geology of the San Diego 30'x60' Quadrangle, California,* CGS Regional Geologic Map No. 3;

12. Reed, L. D. (1990), *A New Upper Pleistocene Marine Sedimentary Unit, San Diego, California,* in Geotechnical Engineering Case Histories in San Diego County, San Diego Association of Geologists, p. 1-27;

13. Risk Engineering (2015), *EZ-FRISK, Version 7.65*;

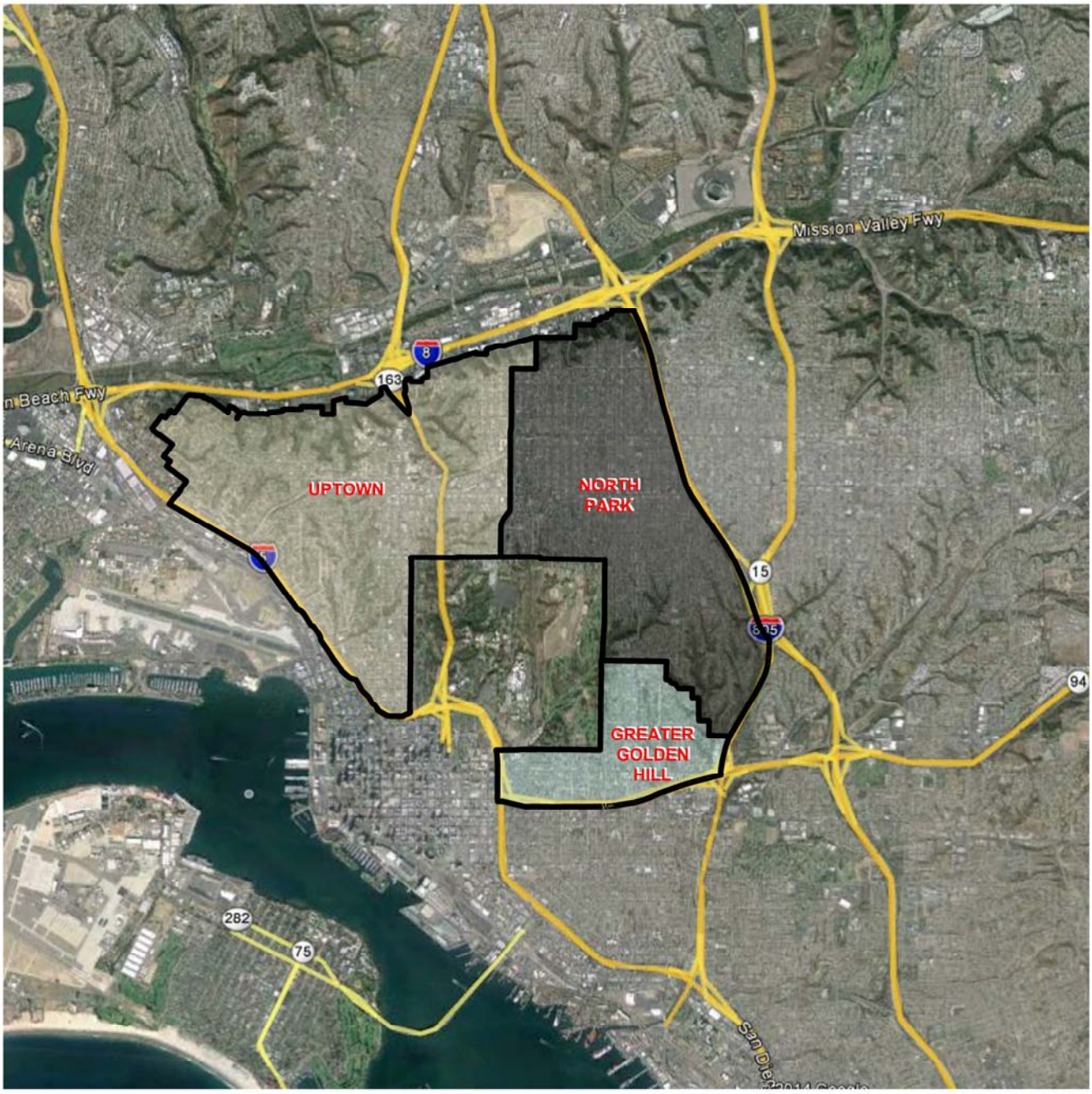
14. Rockwell, T.K. (2010), *The Rose Canyon Fault Zone* in Fifth International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, May 24-29, Paper No. 7.06c, 9pp;

LIST OF REFERENCES (Concluded)

15. Tan, S. S. (1995), Landslide Hazards in the Southern Part of the San Diego Metropolitan Area, San Diego County, California, DMG Open File Report 95-03;

16. Trieman, J. A. (1993), *The Rose Canyon Fault Zone, Southern California*, DMG Open File Report 93-02;

17. USDA, (1954), Aerial photographs.



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VICINITY MAP

UPTOWN, NORTH PARK, AND GREATER GOLDEN HILL COMMUNITY PLAN
SAN DIEGO, CALIFORNIA

DATE 06 - 10 - 2015	PROJECT NO. G1737 - 42 - 01	FIG. 1

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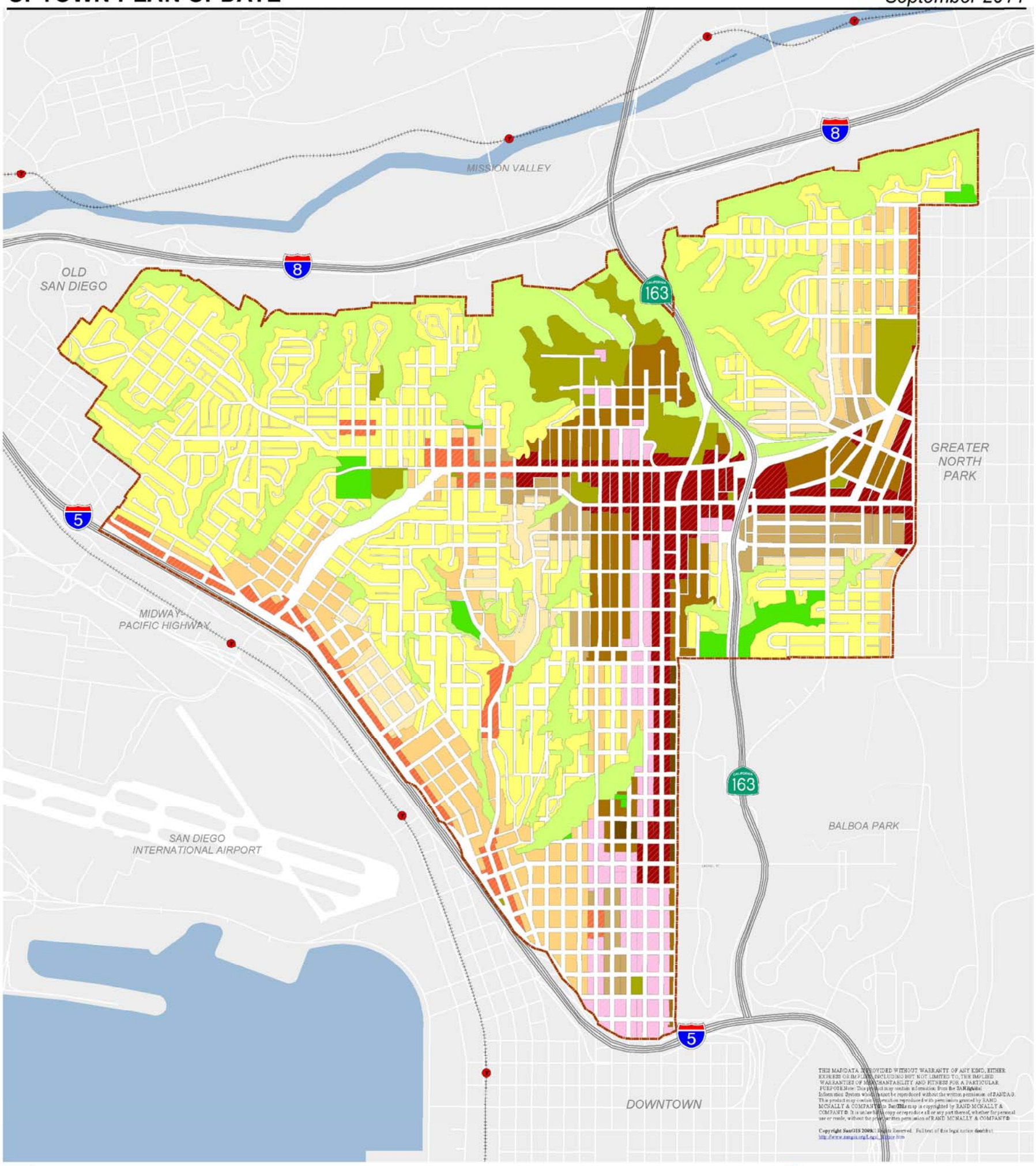
UPTOWN COMMUNITY PLAN
SAN DIEGO, CALIFORNIA

UPTOWN PLAN UPDATE

September 2014



LEGEND

Residential
- Residential - Low
- Residential - Low Medium
- Residential - Medium
- Residential - Medium High
- Residential - High
- Residential - Very High

Commercial, Employment, Retail, and Services
- Community Commercial - Residential Permitted
- Neighborhood Commercial - Residential Permitted
- Office Commercial - Residential Permitted

Institutional, and Public/Semi-Public Facilities
- Institutional

Park, Open Space, and Recreation
- Open Space
- Park

- Community Plan Boundary
- Light Rail

DRAFT

Proposed Land Use

N

0 400 800 1,600 Feet

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FIGURE 2
DATE 06 - 10 - 2015

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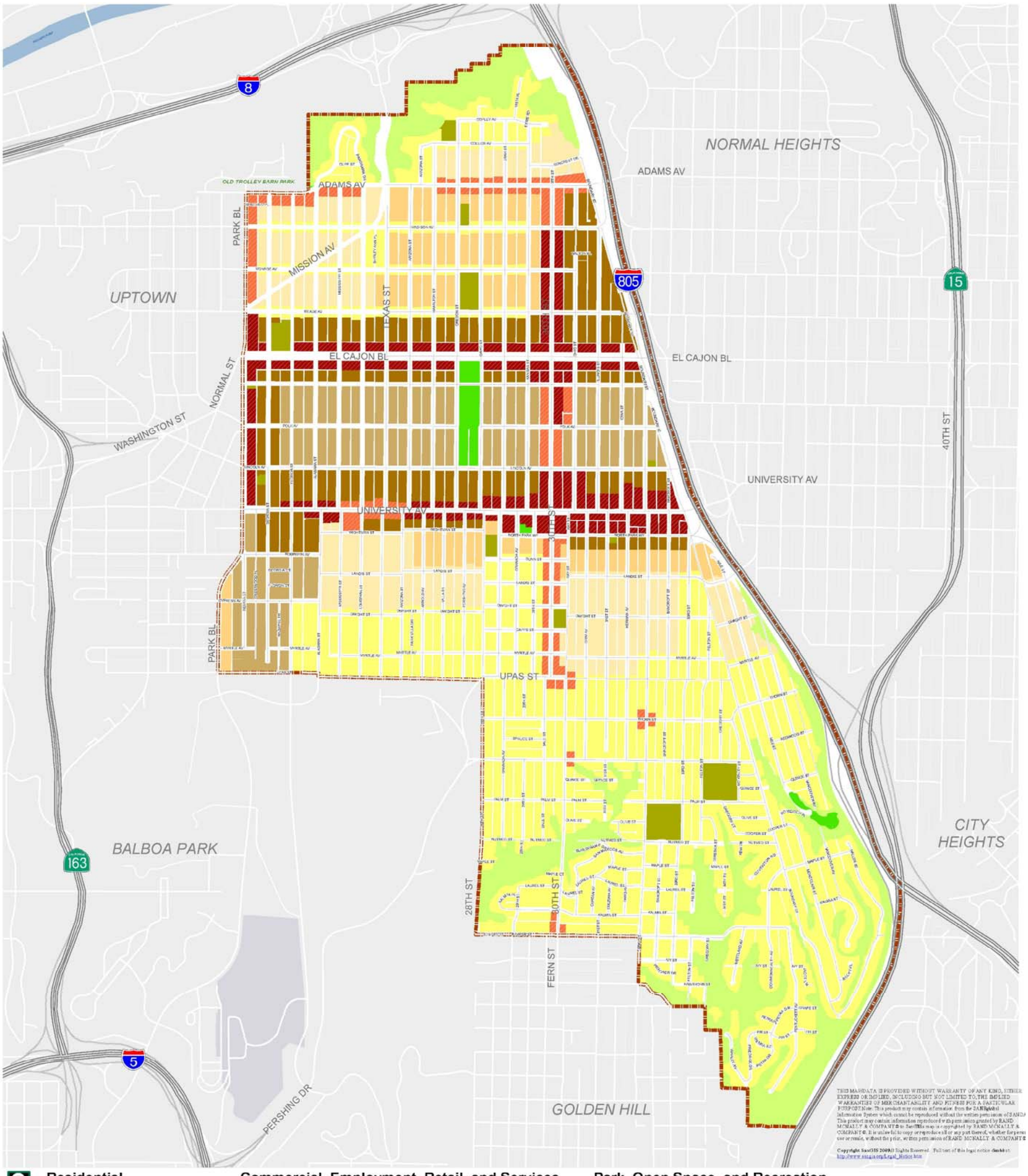
NORTH PARK COMMUNITY PLAN
SAN DIEGO, CALIFORNIA

NORTH PARK PLAN UPDATE

September 2014



LEGEND

Residential
- Residential - Low
- Residential - Low Medium
- Residential - Medium
- Residential - Medium High
- Residential - High

Commercial, Employment, Retail, and Services
- Community Commercial - Residential Permitted
- Neighborhood Commercial - Residential Permitted

Institutional, and Public/Semi-Public Facilities
- Institutional

Park, Open Space, and Recreation
- Open Space
- Park

Proposed Land Use DRAFT

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N

0 400 800 1,600 Feet

SanGIS

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FIGURE 3
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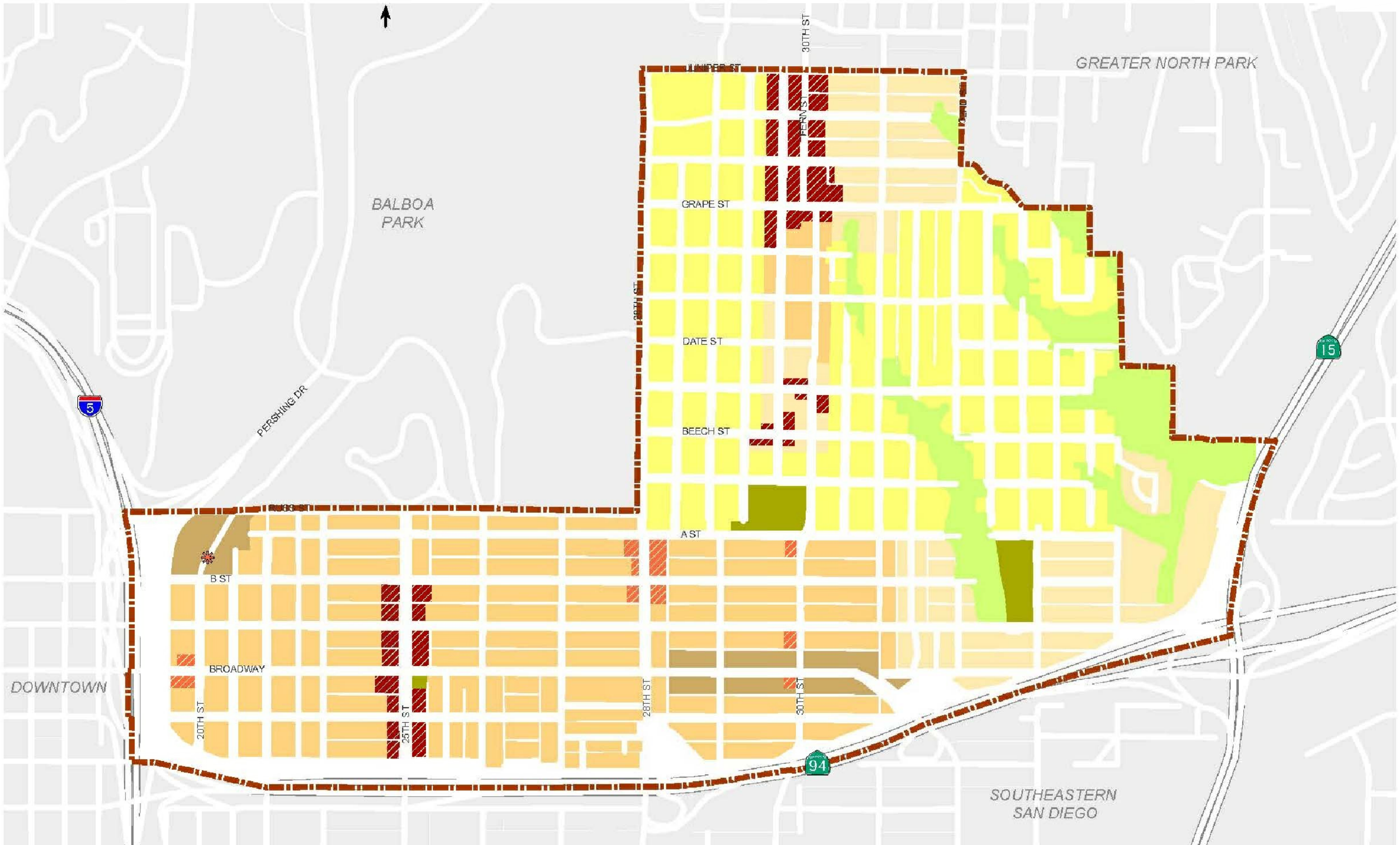
GOLDEN HILL PLAN UPDATE

December 2014

GREATER GOLDEN HILL COMMUNITY PLAN
SAN DIEGO, CALIFORNIA



LEGEND

Residential
- Residential - Low
- Residential - Low Medium
- Residential - Medium
- Residential - Medium High

Commercial, Employment, Retail, and Services
- Community Commercial - Residential Permitted
- Neighborhood Commercial - Residential Permitted
- Limited Commercial (See Land Use Element)

Institutional, and Public/Semi-Public Facilities
- Institutional

Park, Open Space, and Recreation
- Open Space
- Park

Proposed Land Use

DRAFT

0 400 800 1,600 Feet

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FIGURE 4

DATE 06 - 10 - 2015

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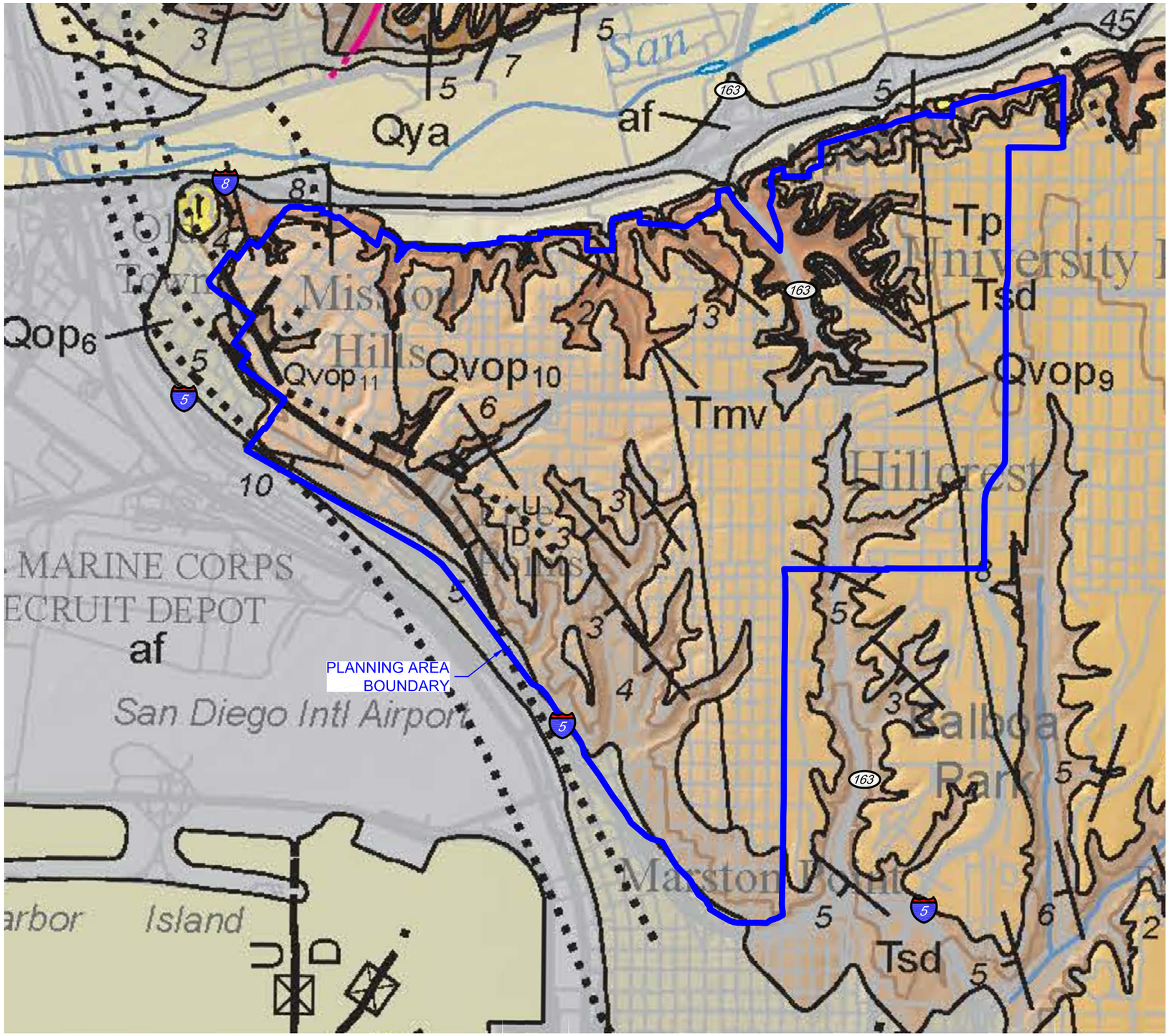
UPTOWN COMMUNITY PLAN
SAN DIEGO, CALIFORNIA



MAP UNITS

- af — Artificial fill (late Holocene)
- Qya — Young alluvial flood-plain deposits (Holocene and late Pleistocene)
- Qoa — Old alluvial flood-plain deposits, undivided (late to middle Pleistocene)
- Qop — Old paralic deposits, undivided (late to middle Pleistocene)
  - Qop_6
- Qvoa — Very old alluvial flood-plain deposits, undivided (middle to early Pleistocene)
- Qvop — Very old paralic deposits, undivided (middle to early Pleistocene)
  - $Qvop_7$
  - $Qvop_8$
  - $Qvop_9$
  - $Qvop_{10}$
  - $Qvop_{11}$

  Very Old Terrace Deposits

San Diego Formation (early Pleistocene and late Pliocene)
- Tsd - undivided
- Tsdcg - transitional marine and nonmarine pebble and cobble conglomerate
- Tsdss - marine sandstone

Pomerado Conglomerate (middle Eocene)
- Tpm - Miramar Sandstone Member

- Tmv — Mission Valley Formation (middle Eocene)
- Tst — Stadium Conglomerate (middle Eocene)

0' 1,000' 2,000' 3,000' 4,000'

SCALE 1"= 2,000'

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FIGURE 5
DATE 06 - 10 - 2015

GEOLOGIC MAP

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