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May 18, 2016

Mr. Mark Khouli
MK Developers
1620 La Presa Avenue
Spring Valley, CA 91977

Project No. 0043-004-00
Document No. 16-0014

SUBJECT: GEOTECHNICAL INVESTIGATION
Proposed Single Family Residence
Lot 207, Almazon Street, Peñasquitos Glens #4
San Diego, California

Dear Mr. Khouli:

In accordance with your request, we have completed a geotechnical investigation for the proposed residence at Lot 207 Almazon Street in San Diego, California. Specific conclusions regarding site conditions and recommendations for earthwork construction and foundation design are presented in the following report. In general, no geotechnical constraints were apparent which would preclude the planned site development.

We appreciate this opportunity to provide professional services. If you have any questions or comments regarding this report or the services provided, please do not hesitate to contact us.

BELFAST ENGINEERING LLC

Anthony F. Belfast, PE 40333
Principal

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ANTHONY F. BELFAST
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Exp. 3-31-17
CIVIL
STATE OF CALIFORNIA

GEOTECHNICAL INVESTIGATION
PROPOSED SINGEL FAMILY RESIDENCE
LOT 207 ALMAZON STREET, PEÑASQUITOS GLENS #4
SAN DIEGO, CALIFORNIA

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SAN DIEGO, CALIFORNIA

1.0 INTRODUCTION

This report presents our geotechnical investigation for the proposed single family residence at Lot 207, Almazon Street in San Diego, California. The purpose of this investigation was to characterize the pertinent geotechnical conditions at the site, and to provide recommendations for the geotechnical aspects of earthwork construction and foundation design. The conclusions presented in this report are based on field exploration, laboratory testing, engineering analysis, and our previous experience in the site vicinity.

2.0 SCOPE OF SERVICES

The following services were provided to evaluate geotechnical impacts to the proposed development and provide recommendations for grading and foundation design,.

- A reconnaissance of the surface characteristics of the site and a review of available maps and reports relevant to the site conditions. Pertinent references are provided in Appendix A.
- A subsurface exploration consisting of two exploration trenches dug with a backhoe. Bulk samples of the soils at the exploration locations were collected for laboratory analysis. The approximate locations of the explorations are shown on the Geotechnical Plan, Figure 2. Logs of the explorations are presented in the figures of Appendix B.
- Laboratory testing of selected samples collected during the subsurface exploration. The laboratory test results are summarized in Appendix C.
- Assessment of general seismic conditions and geologic hazards affecting the site vicinity, and their likely impact on the project.
- Engineering analysis to make recommendations for site preparation, remedial earthwork, backfill, foundation design, soil bearing capacities, foundation settlement potential, slab design, soil reactivity, and site drainage and moisture protection.
- Preparation of this report summarizing our findings, conclusions and recommendations.

3.0 SITE DESCRIPTION

The project site consists of a rectangular-shaped parcel of approximately 0.66 acre in area, located on the north side of Almazon Street, east of Paymogo Street, in the Rancho Penasquitos community of San Diego. The location of the site is shown on the Site Location Map, Figure 1. It is described as Lot 207 of Tract 6982, Map 0006982, Peñasquitos Glens #4 (APN 313-180-05). The lot is approximately 69 feet in width and 417 feet long. The site slopes to the south with inclinations ranging from relatively level area at the south to slopes averaging approximately 2.7:1 (horizontal:vertical) over the majority of the site. Elevations range from approximately 685 feet at the south end to approximately 790 feet at the north end. The site configuration and topography are shown on the following Figure 2. The northerly hillside portion consists of a chaparral-covered area designated as Sensitive Biological Resource and Steep Hillside area and will remain undeveloped.

4.0 PROPOSED DEVELOPMENT

Only about the lower, level portion, (about 7,100 square feet) is planned for development. The elevation differential across that area is only about 7 feet, so little if any grading is anticipated. The planned structure will be two stories and of wood-frame construction, with on-grade slabs. The approximate building footprint of the proposed residence is shown on Figure 2.

5.0 GEOLOGY AND SUBSURFACE CONDITIONS

The project site is located within the Peninsular Ranges geomorphic province of California. This province, which stretches from the Los Angeles basin to the tip of Baja California, is characterized as a series of northwest trending mountain ranges separated by subparallel fault zones, and a coastal plain of subdued landforms. The mountain ranges are underlain primarily by Mesozoic metamorphic rocks that were intruded by plutonic rocks of the southern California batholith, while the coastal plain is underlain by subsequently deposited marine and nonmarine sedimentary formations. The area geology is shown on the following Figure 3.

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SITE LOCATION MAP

Figure 1

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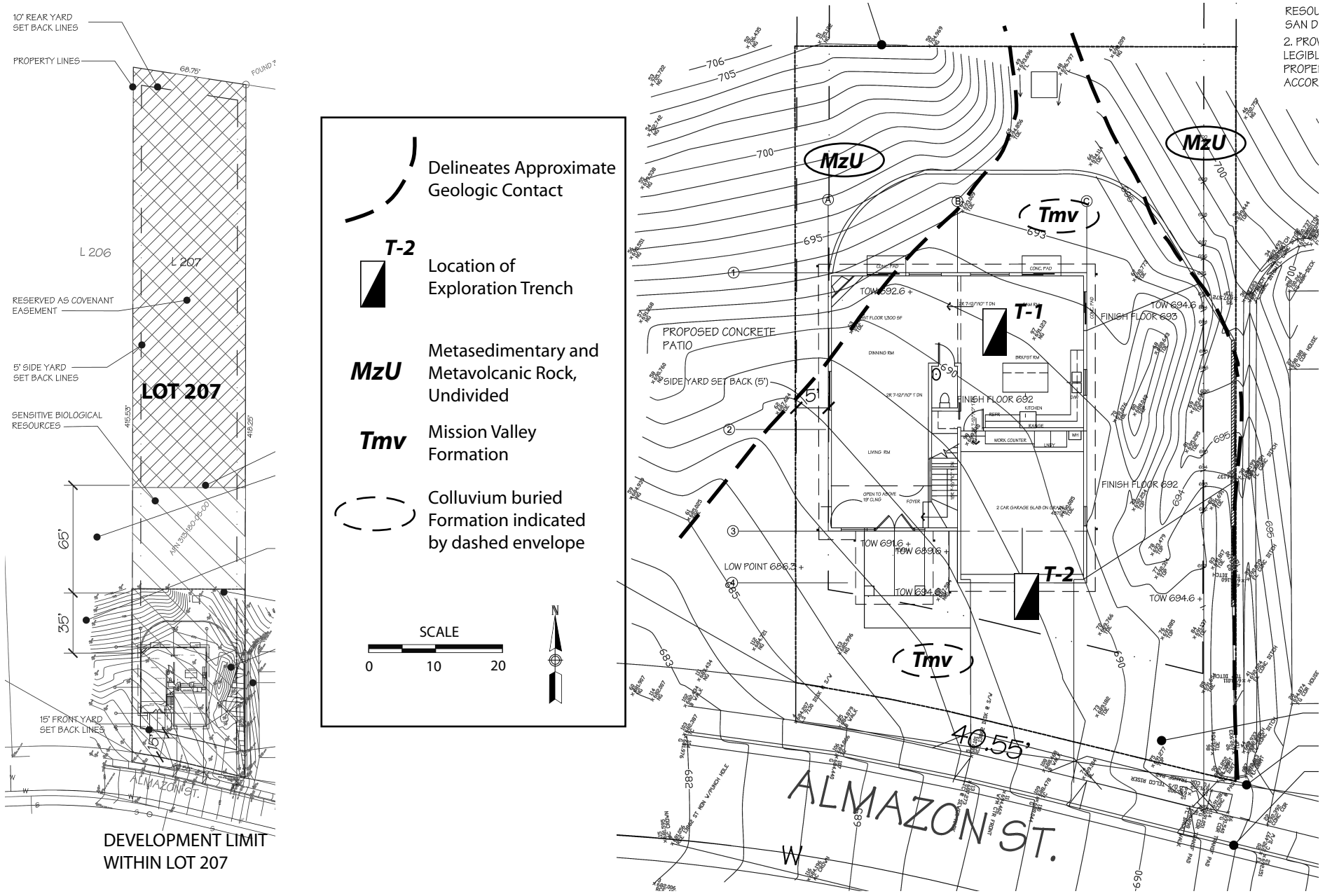

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GEOTECHNICAL PLAN

Figure 2

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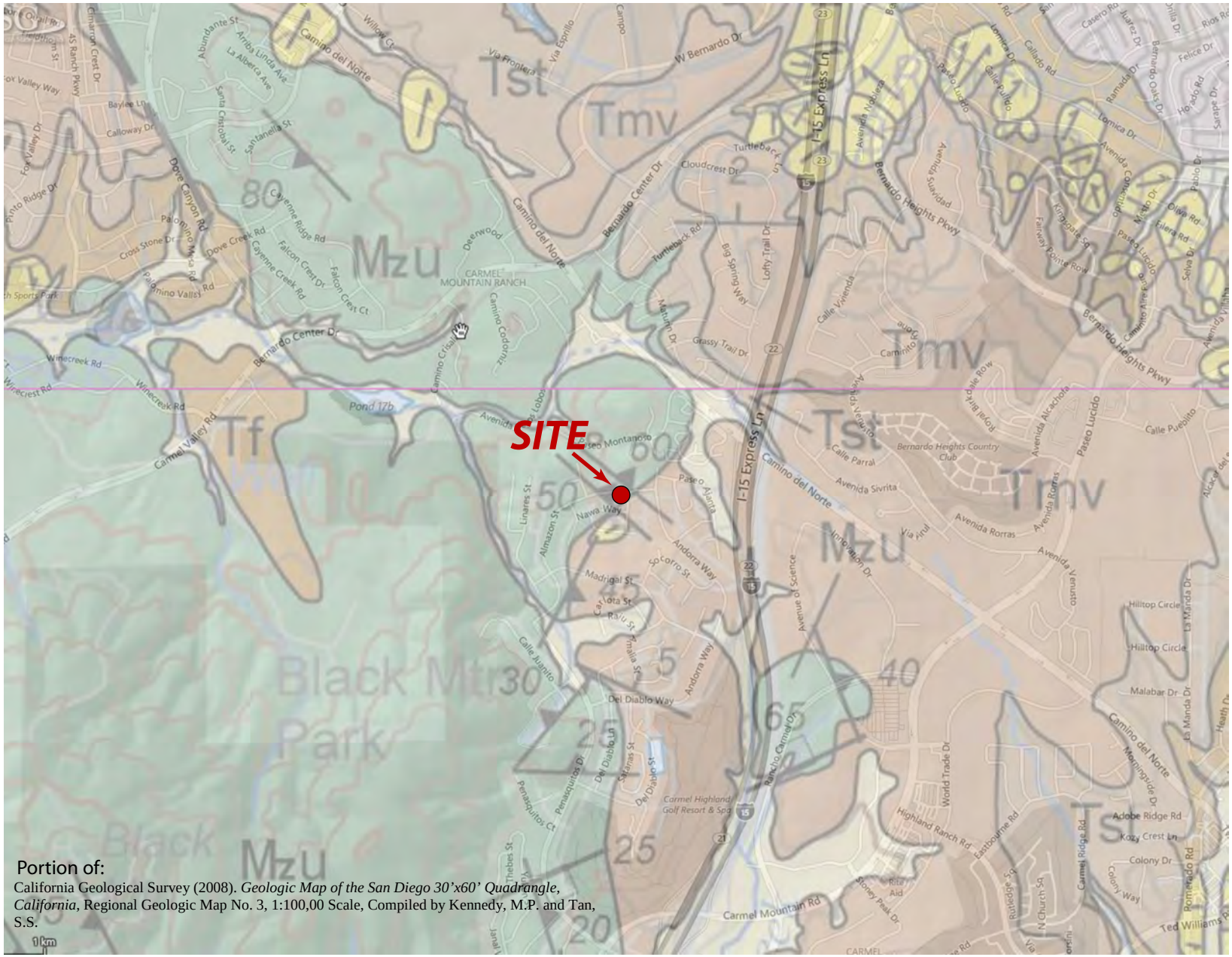

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GEOLOGIC MAP

Figure 3

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The site is located near the eastern boundary of the San Diego embayment and is at the contact between the Jurassic age Santiago Peak Volcanics (MzU), metasedimentary and metavolcanic rock, undifferentiated), and the Eocene age Mission Valley Formation (Tmv). This relation is shown on Figure 2. This Santiago Peak Volcanics generally consists of volcanic, volcanoclastic, and sedimentary rock that has been mildly metamorphosed. In the project area the rock consists primarily of dacite and andesite. The Mission Valley formation generally consists of light gray, soft, friable, fine to medium grained, marine and nonmarine sandstone.

The area of development is underlain almost entirely by the Mission Valley Formation. The location of two exploratory trenches completed for our investigation presented on the Exploration Location Plan, Figure 2. As encountered in the explorations, the Mission Valley Formation consists of light olive gray, moist, dense, clayey sand (weathered sandstone, Unified Soil Classification: SC). The formation is covered with two to four feet of colluvium (slope wash). The colluvium consists of moderate brown, dry to moist, loose to medium dense, clayey sand (SC). The colluvium was observed to be desiccated and fractured in the upper 2 feet.

Although the area of development is dominated by Mission Valley Formation, the extreme northeast corner of the planned building envelope appears to extend into the metavolcanic rock. This transition is addressed in ensuing portions of this report.

Groundwater was not encountered in the explorations and a groundwater table is not expected to influence the development. However, the fractured rock present in higher elevations of the site has the potential to channel groundwater during rainy periods and some seepage should be anticipated within those slopes.

6.0 GEOLOGIC HAZARDS

The subject site is not located within an area previously known for significant geologic hazards. Geologic hazards at the site will generally be associated with moderate ground shaking due to seismic events on distant active faults. Each of the various geologic hazards is described in greater detail below.

The site is located in Hazard Zone 53 of the City of San Diego *Seismic Safety Study, Geologic Hazards and Faults*. Zone 53 is characterized as sloping terrain with unfavorable geologic structure, and having low to moderate risk.

6.1 Ground Rupture

Ground rupture is the result of movement on an active fault reaching the surface. The subject site is not located within an Alquist-Priolo Earthquake Fault Zone. No evidence of active or potentially active faulting was encountered during our investigation. Consequently, ground rupture is not considered to be a substantial geologic hazard at the site.

6.2 Seismicity

The approximate centroid of the site is located at latitude 32.9963° north and longitude 117.0900° west. The Fault Location Map, Figure 4, shows the locations of known active faults within a 100 km radius of the site. Table 1 summarizes the properties of these faults based on the program EQFAULT and supporting documentation (Blake, 2000, modified 2003). According to the program EQSEARCH, 13 historical earthquakes of magnitude 5.0 or greater have occurred within 100 km of the site in the last 200 years.

Seismic design parameters for the site were determined in accordance with CBC 2013 and ASCE 7. These are provided in the Foundations section of this report. The short-term spectral design parameter, S_{DS} is 0.635. The associated design peak ground acceleration of the site is taken as 40% of S_{DS}, or 0.25g

FAULT LOCATION MAP

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FIGURE 4

SITE

100 km

NOTATIONS

Holocene fault displacement (during past 10,000 years) without historic record. Geomorphic evidence for Holocene faulting includes sag ponds, scarps showing little erosion, or the following features in Holocene age deposits: offset stream courses, linear scarps, shutter ridges, and triangular faceted spurs. Recency of faulting offshore is based on the interpreted age of the youngest strata displaced by faulting.

Late Quaternary fault displacement (during past 700,000 years). Geomorphic evidence similar to that described for Holocene faults except features are less distinct. Faulting may be younger, but lack of younger overlying deposits precludes more accurate age classification.

Quaternary fault (age undifferentiated). Most faults of this category show evidence of displacement sometime during the past 1.6 million years; possible exceptions are faults that displace rocks of undifferentiated Plio-Pleistocene age. See Bulletin 201, Appendix D for source data.

Late Cenozoic faults within the Sierra Nevada including, but not restricted to, the Foothills fault system. Faults show stratigraphic and/or geomorphic evidence for displacement of late Miocene and Pliocene deposits. By analogy, late Cenozoic faults in this system that have been investigated in detail may have been active in Quaternary time (Data from PG&.E, I993.)

Pre-Quaternary fault (older than 1.6 million years) or fault without recognized Quaternary displacement. Some faults are shown in this category because the source of mapping used was of reconnaissance nature, or was not done with the object of dating fault displacements. Faults in this category are not necessarily inactive.

0 10 20 30 40 50 60
SCALE (KM)

REFERENCES:
Reproduced with permission, Division of Mines and Geology, CD-ROM 2000-006 (2000), Digital Database of faults from the Fault Activity Map of California and Adjacent Areas. IBID (1994), Selected Faults in Northern Baja California, Offshore, and the Adjacent Southern California Area.

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FAULT[1]	DISTANCE TO SITE [KM]	ESTIMATED PEAK GROUND ACCELERATION[2]	MAXIMUM EARTHQUAKE MAGNITUDE[3,5]	ESTIMATED FAULT AREA[4] [CM^2]	SHEAR MODULUS[4] [DYNE/CM^2]	ESTIMATED SLIP RATE[4] [MM/YEAR]
Rose Canyon	20	0.19	7.2	9.10E+12	3.30E+11	1.50
Newport-Inglewood (Offshore)	36	0.23	7.6	2.41E+13	3.3E+11	3
Elsinore-Julian	38	0.12	7.1	1.13E+13	3.30E+11	5.00
Coronado Bank	42	0.13	7.6	2.41E+13	3.30E+11	3.00
Elsinore-Temecula	43	0.09	6.8	6.30E+12	3.30E+11	5.00
Earthquake Valley	52	0.06	6.5	3.00E+12	3.30E+11	2.00
Elsinore-Coyote Mountain	68	0.05	6.8	5.70E+12	3.30E+11	4.00
San Jacinto-Anza	74	0.06	7.2	1.62E+13	3.30E+11	12.00
San Jacinto-Coyote Creek	75	0.04	6.8	6.15E+12	3.30E+11	4.00
Elsinore-Glen Ivy	76	0.04	6.8	5.70E+12	3.30E+11	5.00
San Jacinto-San Jacinto Valley	84	0.04	6.9	7.56E+12	3.30E+11	12.00
Palos Verdes	85	0.05	7.1	1.25E+13	3.30E+11	3.00
San Jacinto - Borrego	87	0.03	6.6	3.48E+12	3.30E+11	4.00

1. Fault activity determined by Blake (2000), CDMG (1992), Wesnousky (1986), and Jennings (1994).

2. Median peak horizontal ground accelerations (in g's) from Sadigh et al (1997) for Rock Sites for the Maximum Earthquake Magnitude.

3. Moment magnitudes determined from CDMG (2003), Blake (2000), Wesnousky (1986) and Anderson (1984).

4. Estimated fault areas, shear moduli, and slip rates after fault data for EQFAULT and FRISKSP, Blake (2000).

5. The Maximum Earthquake Magnitude is the estimated median moment magnitude that appears capable of occuring given rupture of the entire estimated fault area.

6.3 Liquefaction

Liquefaction is a process in which soil grains in a saturated sandy deposit lose contact due to earthquakes or other sources of ground shaking. The soil deposit temporarily behaves as a viscous fluid; pore pressures rise, and the strength of the deposit is greatly diminished. The site is underlain be metavolcanic rock which is not susceptible to liquefaction.

6.4 Landslides and Lateral Spreads

Evidence of ancient landslides or lateral spread was not observed at the site during our field investigation. The site topography is a relatively moderate slope of metavolcanic rock. Accordingly, the potential for landslides or slope instabilities at the site is considered to be remote.

6.5 Tsunamis, Seiches, Flooding

Given the distance between the subject site and the coast, bodies of water, and reservoirs, damage due to seiches or tsunamis (seismically induced waves) is considered remote. The site is not located within FEMA flood areas.

7.0 CONCLUSIONS

It is our opinion that the proposed development is feasible from a geotechnical standpoint, provided that the recommendations in this report are implemented. The following list summarizes the likely conditions and constraints which affect the development.

- The Mission Valley Formation, which underlies the majority of the building footprint, is considered competent for support of foundations and slabs.

- The Santiago Peak Volcanics appear to underlie the extreme northwest corner of the planned structure. This creates a transition in the foundation area from hard rock to soil or weathered sandstone. Such transitions are not recommended because of the potential for adverse differential settlement.

- The Santiago Peak Volcanics are likely excavatable without the need for blasting, however sufficiently heavy equipment should be used.

- The Mission Valley Formation is estimated to be covered with approximately two to four feet colluvial soil. This material is considered prone to settlement and should be recompacted.

- Seasonal or periodic groundwater seepage should be anticipated in the hard rock forming the steeper portions of the site.

- There are no known active faults underlying the project site. Geologic hazards at the site would generally be associated with moderate ground shaking due to a seismic event located on a distant active fault. Such hazards are typically mitigated by structural design in general accordance with the applicable building codes.

- Based on laboratory testing of a sample retrieved, the prevailing soil is not anticipated to have an expansion in the low to moderate range. Foundation recommendations provided are intended to decrease the likelihood of detrimental effects of expansive heave.

- Laboratory testing of a selected sample indicates that soluble sulfate content is not in the range to be detrimental to normal concrete.

8.0 RECOMMENDATIONS

The remainder of this report presents recommendations regarding earthwork construction and design of the proposed foundations and improvements. These recommendations are based on empirical and analytical methods typical of the standard of practice in southern California. If these recommendations do not cover a specific feature of the project, please contact our office for amendments.

8.1 Plan Review

Foundation and grading plans should be reviewed by Belfast Engineering prior to construction. Substantial changes in the development may occur from the preliminary plans used for the investigation which may require additional evaluation, and could result in modifications to the recommendations provided in the following sections of the report.

8.2 Excavation and Grading Observation

Foundation and grading excavations should be observed by Belfast Engineering. During grading, Belfast Engineering should provide observation and testing services continuously. Such observations are considered essential to identify field conditions that differ from those anticipated by the preliminary investigation, to adjust designs to actual field conditions, and to determine that the grading is accomplished in general accordance with the recommendations of this report. Recommendations presented in this report are contingent upon Belfast Engineering performing such services. Our personnel should perform sufficient testing of fill and backfill during grading and improvement operations to support our professional opinion as to compliance with the compaction recommendations.

8.3 Earthwork

Grading and earthwork should be conducted in general accordance with the applicable grading ordinance and the requirements of the current California Building Code. The following recommendations are provided regarding specific aspects of the proposed earthwork construction. These recommendations should be considered subject to revision based on the conditions observed by our personnel during grading.

8.3.1 Site Preparation: Site preparation should include the removal of any debris or deleterious material from the site and preparation of the building area to produce relatively uniform foundation bearing conditions.

- Existing vegetation and soil containing vegetation and root mats, construction debris should be removed from the area to be developed and disposed of off-site.

- Existing colluvial soil within a perimeter of 5 feet outside the structural perimeters should be removed, exposing Mission Valley Formation, and stockpiled.. The excavation bottom should deepened if necessary as to not differ in elevation by more than two feet across the building footprint.

- If the northwest corner of the building area encounters hard rock, it should be over-excavated to the elevation of adjacent colluvial removal.

- The excavation bottom should be observed by the geotechnical consultant to confirm that competent materials are exposed. The excavations should then be brought to design grade with lifts of stockpiled soil, compacted as described in Section 8.3.4.

8.3.2 Excavation Characteristics: As previously discussed, the northwest corner of the building pad is likely to be underlain by hard rock of the Santiago Peak Volcanics. Excavation of this material is dependant upon the degree of fracturing and joint spacing. It is anticipated that excavations on the order of 15 feet could be made using a large excavator with ripping capability. During excavation, it is possible that localized, less fractured area could occur that may require an impact breaker. Mission Valley Formation should be excavatable with moderate excavation equipment such as a Case 580 backhoe.

8.3.3 Temporary Excavations: Excavations should conform to Cal-OSHA guidelines. Temporary slopes in the Santiago Peak Volcanics should be inclined no steeper than 0.25:1 (horizontal to vertical) for heights up to 10 feet. Higher temporary slopes or excavations that encounter seepage should be evaluated by the geotechnical consultant on a case-by-case basis during grading. The overlying colluvium and Mission Valley Formation should be laid back no steeper than

1½:1. After the excavations are made, the slopes should be raked free of any loose rocks.

8.3.4 Fill Compaction: All fill and backfill to be placed in association with site development should be accomplished at slightly over optimum moisture conditions using equipment that is capable of producing a uniformly compacted product. The minimum relative compaction is 90 percent of maximum density based on ASTM D1557. Sufficient observation and testing should be performed by the geotechnical consultant so that an opinion can be rendered as to the compaction achieved.

Imported fill sources should be observed prior to hauling onto the site to determine the suitability for use. In general, imported fill soils should have an expansion index less than 50 based on ASTM D4829. Samples of imported materials should be tested by Belfast Engineering in order to evaluate their appropriate engineering properties for the planned use. During grading operations, soil types may be encountered by the contractor which do not appear to conform to those discussed within this geotechnical report. The geotechnical consultant should be notified in order to evaluate the suitability of these soils for their proposed use.

8.3.5 Surface Drainage: Foundation and slab performance depends greatly on how well surface runoff drains from the site. This is true both during construction and over the entire life of the structure. The ground surface around structures should be graded so that water flows rapidly away from the structures without ponding. The surface gradient needed to achieve this may depend on the prevailing landscape. The project engineer should consider these aspects in design. The slope along the north site of the building pad should contain a swale designed to channel surface water away from the structure.

8.4 Foundations

The design of the foundations for the proposed structures should be performed by the project structural engineer, incorporating the following parameters. The foundation recommendations presented herein are considered to be generally consistent with methods typically used in southern California. Other alternatives may be available. They are only minimum criteria and should not be considered a structural design, or to preclude more restrictive criteria of governing agencies or the structural engineer.

8.4.1 Conventional Foundations: The following recommendations assume that the proposed foundations bear uniformly on compacted soil of the prepared building pad.

Allowable Bearing:	2,000 lbs/ft^2 (allow a one-third increase for short-term wind or seismic loads)
Minimum Footing Width:	12 inches
Minimum Footing Depth:	18 inches below lowest adjacent soil grade
Minimum Reinforcement:	Two No. 4 bars at both top and bottom in continuous footings.

8.4.2 Settlement: Total and differential settlement of the proposed structure from the proposed bearing loads is not expected to exceed three-quarters inch, and one-half of an inch, respectively.

8.4.3 Lateral Resistance: Lateral loads against the structure may be resisted by friction between the bottoms of footings and slabs and the supporting soil, as well as passive pressure from the portion of vertical foundation members embedded into compacted fill or formational material. A coefficient of friction of 0.35, and a passive pressure of 350 psf per foot of depth is recommended.

8.4.4 Seismic Design: The following seismic parameters may be used for the onsite soils in accordance with Section and Table 1613.5.2 (Site Class Definitions) of the CBC.

Site Class:	C	
Site Coefficients,	F_a:	1.031
	F_v:	1.439
Mapped MCE Spectral Accelerations,	S_S:	0.924
	S_1:	0.361
Adjusted MCE Spectral Accelerations,	S_{MS}:	0.952
	S_{M1}:	0.520
Design Spectral Accelerations,	S_{DS}:	0.635
	S_{D1}:	0.347

The associated peak ground acceleration (PGA) from the design spectrum may be taken as 40 percent of S_{DS} or 0.25g.

8.5 On-Grade Slabs

On-grade slabs should be designed by the project structural engineer. A modulus of subgrade reaction of 150 lb/in^3 may be assumed for elastic design. Building slabs should be at least 5 inches thick, and be reinforced with at least No. 3 bars on 18-inch centers, each way.

8.5.1 Moisture Protection for Slabs: Because the floor levels will be partially subgrade, and there is potential for some water seepage in the fractured rock, It is recommended that the slabs be underlain by 4 inches of minus 3/8-inch crushed rock or pea gravel. The rock should be covered with a vapor barrier such as 15-mil StegoWrap or similar product. The concrete should be placed directly over the barrier. All laps or seams should be overlapped a minimum of 6 inches, or as recommended by the manufacturer. The vapor membrane should be protected from puncture, and repaired per the manufacturer's recommendations (if damaged).

When placing concrete directly on an impervious membrane, it should be noted that finishing delays may occur. Care should be taken to assure that a low water to cement ratio is used (0.45), that the concrete is moist cured in accordance with ACI guidelines.

8.5.2 Exterior Slabs: Exterior slabs should be at least 4 inches thick. Crack control joints should be placed on a maximum spacing of 10 foot centers, each way, for slabs, and on 5 foot centers for sidewalks. The potential for long-term differential movements across the control joints may be reduced by using steel reinforcement. Typical reinforcement for exterior slabs would consist of 6x6 W2.9/W2.9 welded wire fabric placed securely at mid-height of the slab section.

8.5.3 Expansive Soils: The surficial soils observed during our investigation primarily consisted of silty sand with some clay having a very low expansion potential. The expansion index test results are shown in Figure C-1.

8.5.4 Reactive Soils: In order to assess the sulfate exposure of concrete in contact with the site soils, a sample was tested for water soluble sulfate content (see Figure C-1). Based on these test results, the site soils appear to have a negligible potential for sulfate attack based on commonly accepted criteria.

8.6 Retaining Walls:

Retaining walls should be designed by the project structural engineer, using the geotechnical parameters provided below. For design of retaining walls, the following soil parameters may be used. They assume that retaining walls will be backfilled with granular, free-draining materials with an expansion index of 20 or less.

The retaining wall planned along the easterly property line is anticipated to be founded in the Santiago Peak Metavolcanics. Footings in the rock may be designed for an allowable bearing capacity of 4,000 psf, a passive resistance of 500 psf per foot of depth, and a coefficient of friction of 0.45

Active Earth Pressure:	Equivalent fluid pressure of 25 pcf for level backfill or 35 pcf for 2:1 sloping backfill. Assumes walls are free to yield at the top at least 1% of the wall height (Factor of Safety = 1).
At-Rest Earth Pressure:	Equivalent fluid pressure of 45 pcf for level backfill or 55 pcf for 2:1 sloping backfill. Assumes walls are restrained (Factor of Safety = 1).

The above pressures assume no hydrostatic pressures or surcharge loads, which will increase the lateral pressures on the wall. Walls should contain an adequate subdrain to reduce hydrostatic forces as shown on Figure 5.

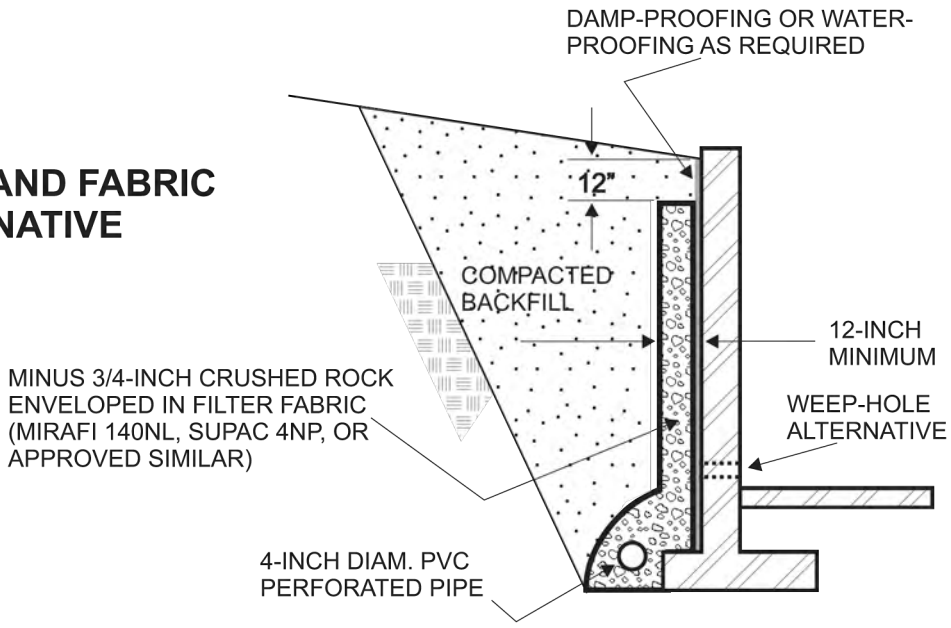
Backfilling retaining walls with expansive soils can increase lateral pressures well beyond the active or at-rest pressures indicated above. We recommend that retaining walls be backfilled with free-draining, cohesionless soil having an expansion index of 20 or less. The backfill area should include the zone defined by a 1:1 plane projected upward from the heel of the wall. Retaining wall backfill should be compacted to at least 90 percent relative compaction, based on ASTM D 1557 guidelines. Backfill should not be placed until walls have achieved adequate structural strength. Heavy compaction equipment which could cause distress to walls should not be used.

9.0 LIMITATIONS OF INVESTIGATION

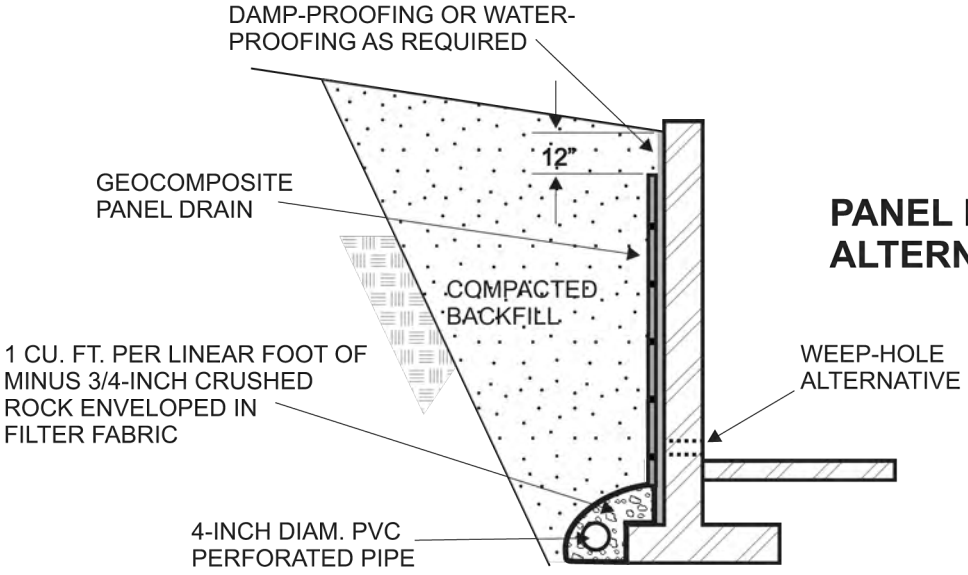
This investigation was performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in this or similar localities. No warranty, express or implied, is made as to the conclusions and professional opinions included in this report. This report is issued with the understanding that it is the responsibility of the owner, or of his representative, to ensure that the recommendations contained herein are brought to the attention of the necessary design consultants for the project and incorporated into the plans, and the necessary steps are taken to see that the contractors carry out such recommendations in the field.

The findings of this report are valid as of the present date. However, changes in the condition of a property can occur with the passage of time, whether due to natural processes or the work of

ROCK AND FABRIC ALTERNATIVE



PANEL DRAIN ALTERNATIVE



NOTES

1) Perforated pipe should outlet through a solid pipe to a free gravity outfall. Perforated pipe and outlet pipe should have a fall of at least 1%.
2) As an alternative to the perforated pipe and outlet, weep-holes may be constructed. Weep-holes should be at least 2 inches in diameter, spaced no greater than 8 feet, and be located just above grade at the bottom of wall.
3) Filter fabric should consist of Mirafi 140N, Supac 5NP, Amoco 4599, or similar approved fabric. Filter fabric should be overlapped at least 6-inches.
4) Geocomposite panel drain should consist of Miradrain 6000, J-DRain 400, Supac DS-15, or approved similar product.
5) Drain installation should be observed by the geotechnical consultant prior to backfilling.

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RETAINING WALL DRAIN

Figure 5
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man on this or adjacent properties. In addition, changes in applicable or appropriate standards of practice may occur from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

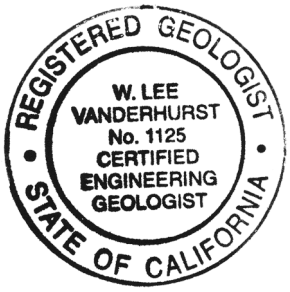
We appreciate this opportunity to be of continued professional service. Please feel free to contact the office with any questions or comments regarding this report, or the services we provided.

***

BELFAST ENGINEERING LLC

Anthony F. Belfast, P.E. 40333
Principal Engineer

W. Lee Vanderhurst, C.E.G. 1125
Associate



APPENDIX A

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California Geological Survey (2008). *Geologic Map of the San Diego 30'x60' Quadrangle, California*, Regional Geologic Map No. 3, 1:100,00 Scale, Compiled by Kennedy, M.P. and Tan, S.S.

Federal Emergency Management Agency, *National Flood Hazard Layer kmz*, version 3.0

International Conference of Building Officials (2013). California Building Code, Title 24.

APPENDIX B

SUBSURFACE EXPLORATION

Our field explorations consisted of excavating 2 exploratory test pits on May 11 and May 12, 2016 using a Case 580 backhoe with an 12-inch bucket. The test pits were excavated to depths up to about 6 feet below the existing ground surface. The approximate locations of the test pits are shown on Figure 2. Logs describing the subsurface conditions encountered are presented on the following Figure B-1 and B-2.

Bulk samples were obtained from the test pits at selected intervals. The approximate locations of the bulk samples are indicated on the logs with shading.

Test pit locations were established in the field by taping distances from landmarks shown on the plans provided and by pacing. The locations shown should not be considered more accurate than is implied by the method of measurement used. The lines designating the interface between soil units on the test pit logs are determined by interpolation and are therefore approximations. The transition between the materials may be abrupt or gradual. Further, soil conditions at locations between the test pits may be substantially different from those at the specific locations explored. It should be recognized that the passage of time can result in changes in the soil conditions reported in our logs.

LOG OF EXPLORATORY TRENCH T-1

Date Excavated: 5/11/16 Existing Elevation: 691
Logged by: afb Proposed Elevation: 692
Equipment Used: Case Backhoe

Symbol Explanation
- free groundwater
- perched or confined seepage
- bulk sample taken
- drive tube sample taken

DEPTH (FEET)	SAMPLE	UNIFIED SOIL CLASSIFICATION	DESCRIPTION	MOISTURE CONTENT	LAB TESTS
1	☒	SC	Colluvium: Moderate brown, dry to moist, loose to medium dense, clayey sand		
2					
3					
4					
5	☒	SC	Mission Valley Formation: Light olive gray, moist dense, clayey sand (weathered sandstone)		
6					
7			total depth: 6 feet		
8					
9					
10					
11					
12					
13					
14					
15					
16					

BELFAST ENGINEERING LLC

EXPLORATION TRENCH LOG

Project No. 0043-004-00
Document No 16-0014
Figure B-1

LOG OF EXPLORATORY TRENCH T-2

Date Excavated: 5/12/16 Existing Elevation: 688
Logged by: afb Proposed Elevation: 690
Equipment Used: Case Backhoe

Symbol Explanation
- free groundwater
- perched or confined seepage
- bulk sample taken
- drive tube sample taken

DEPTH (FEET)	SAMPLE	UNIFIED SOIL CLASSIFICATION	DESCRIPTION	MOISTURE CONTENT	LAB TESTS
1	☒	SC	Colluvium: Moderate brown, dry to moist, loose to medium dense, clayey sand		
2					
3	☒	SC	Mission Valley Formation: Light olive gray, moist dense, clayey sand (weathered sandstone)		sulfate expansion
4					
5					
6			total depth: 6 feet		
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

BELFAST ENGINEERING LLC

EXPLORATION TRENCH LOG

Project No. 0043-004-00
Document No 16-0014
Figure B-2

APPENDIX C

LABORATORY TESTING

Laboratory testing was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions and in the same locality. No warranty, express or implied, is made as to the correctness or serviceability of the test results, or the conclusions derived from these tests. Where a specific laboratory test method has been referenced, such as ASTM, Caltrans, or AASHTO, the reference applies only to the specified laboratory test method and not to associated referenced test method(s) or practices, and the test method referenced has been used only as a guidance document for the general performance of the test and not as a "Test Standard". A brief description of the tests performed follows.

Classification: Soils were classified visually according to the Unified Soil Classification System (USCS) as established by the American Society of Civil Engineers (ASCE). Visual classification was supplemented by laboratory testing of selected soil samples and classification in general accordance with the laboratory soil classification tests outlined in ASTM test method D2487. The resultant soil classifications are shown on the boring logs in Appendix B.

Expansion Index: The expansion potentials of selected soil samples were estimated in general accordance with the laboratory procedures outlined in ASTM test method D4829. The test results are summarized in Figure C-1. Figure C-1 also presents common criteria for evaluating the expansion potential based on the expansion index.

Sulfate Content: To assess the potential for reactivity with concrete, a selected soil sample was tested for water soluble sulfate. The sulfate was extracted from the soil under vacuum using a 10:1 (water to dry soil) dilution ratio. The extracted solution was tested for water soluble sulfate in general accordance with ASTM D516. The test results are presented in Figure C-1. Figure C-1 also presents common criteria for evaluating soluble sulfate content.

EXPANSION TEST RESULTS
(ASTM D4829)

SAMPLE	DESCRIPTION	EXPANSION INDEX
T-2 @ 2 ½ ‘	LIGHT OLIVE GRAY CLAYEY SAND	53

EXPANSION INDEX	POTENTIAL EXPANSION
0 to 20	Very low
21 to 50	Low
51 to 90	Medium
91 to 130	High
Above 130	Very High

CHEMISTRY TEST RESULTS
(ASTM D516, CTM 643)

SAMPLE	pH	RESISTIVITY [OHM-CM]	SULFATE CONTENT [%]	CHLORIDE CONTENT [%]
T-2 @ 2 ½ ‘			<0.01	

SULFATE CONTENT [%]	SULFATE EXPOSURE	SEVERITY ACI 318
0.00 to 0.10	Negligible	S0
0.10 to 0.20	Moderate	S1
0.20 to 2.00	Severe	S2
Above 2.00	Very Severe	S3

WATER QUALITY STUDY
FOR
ALMAZON 207

PREPARED
BY

Will Rogers & Associates

Will Rogers
Landscape Architect, 2745

March 25, 2017

WATER QUALITY STUDY

The project is located in Rancho Penasquitos in the City of San Diego. The project consists of two residential homes on lots 207 accessed by Almazon Street. The project is considered to be in steep hill sides and sensitive vegetation areas. It is anticipated that pollutants from a Housing Development will require low impact BMP's.

POLLUTANTS & CONDITIONS OF CONCERN:
Pollutants and Conditions of Concern are: Sediments, Nutrients, Trash & Debris, Oxygen Demanding Substances, Oil &Grease, Bacteria &Viruses and Pesticides. During the first rain of the season these pollutants will be treated with many Low Impact Best Management Practices, Source Control BMPs and Treatment Control BMPs

Low Impact Best Management Practices:
Design and implementation of the follow LID's provide control of the pollutants of concern:

1) The project is with Environmentally Sensitive Lands and will conserve 75% of the natural areas, preserve existing native trees and shrubs, and concentrate the development on the least environmentally sensitive portions of a site.

2) The project will minimize impervious footprint.
   (a) Increase building density by providing two stories above ground and one below
   (b) The project will construct walkways, trails, patios, and other low-traffic areas with permeable surfaces, such as pervious concrete, porous asphalt, unit pavers, and granular materials, where applicable
   (c) The project will construct sidewalks and drive way aisles to the minimum widths necessary, provided that public safety and a walkable environment so pedestrians are not compromised.
   (d) Minimize the use of impervious surfaces in the landscape design

3) Minimize Directly Connected Impervious Areas.
   (a) Due to the steepness of the site (grater than 25%) the rooftops will not drain into the landscape area as proposed in this BMP. It is not safe and appropriate and will cause damage or adverse impacts to any existing and proposed structures, slopes, pavements, or other features prior to discharging to the storm water conveyance system.
   (b) All but the drive way will into adjacent landscaping where it is safe and appropriate and will not cause damage or adverse impacts to any structures, slopes, pavements, or other features.
4) Minimize Soil Compaction in Landscape Areas.
   Prior to final landscape installation in areas disturbed due to construction and where landscaping will be placed, the subsoil's below the topsoil layer

shall be scarified at least 6 inches. If upper layers of topsoil exists or is imported, incorporate the upper or topsoil material to avoid stratified layers.

5) Soil Amendments.

Landscape topsoil improvements play a significant role in maintaining plant and lawn health plus improve the soil's capacity to retain moisture, which will reduce runoff from the water quality design storm and improve water quality. The San Diego Landscape regulations should be adhered to for landscaped areas.

6). Convey runoff

Safely convey runoff from the tops of slopes with concrete a v-ditch.

7). Vegetate slopes

Plant slopes with deep rooting native or drought tolerant vegetation.

8). Stabilize permanent slopes

Provide concrete v-ditches to capture and convey storm water.

9). Install energy dissipaters:

Provide riprap at the outlets of new storm drains, culverts, v- ditches and conduits to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.

Source Control BMPs:

1. The project shall <u>not</u> provide Outdoor Material Storage Areas. All materials shall be stored in the garage of each residence. To further reduce Pollution the following shall be applied:

(a) Materials with the potential to contaminate urban runoff shall be:

1) Placed in an enclosure such as, but not limited to, garage, cabinet, shed, or similar structure that prevents contact with rain, runoff or spillage to the storm water conveyance system; and
2) Hazardous materials shall be protected by secondary contamination with barriers such as berms, dikes, or curbs. The storage area shall be paved and sufficiently impervious to contain leaks and spills, and have a roof or awning to minimize direct precipitation within the secondary containment area.
3) Stamping or signage should be provided at each storm water conveyance inlet to educate the owners not to dispose of pollutants into the storm water conveyance system.

2. Design Trash Storage Areas to Reduce Pollution Introduction:

(a) Trash storage areas shall be:

(1) Enclosed with in the garage

(2) Contain attached lids on all trash containers that exclude rain.

3. Employ Integrated Pest Management Principles:

(a) The project shall integrated pest management program (IPM) as a ecosystem-based pollution prevention strategy. The program will focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation,

modification of cultural practices, and use of resistant plant varieties. Pesticides shall be used only after monitoring indicates they are needed according to established guidelines. Pest control materials shall be selected and applied in a manner that minimizes risks to human health, beneficial and non-target organisms, and the environment. The following guidelines shall be practiced:

1. Eliminate and/or reduce the need for pesticide use in the project design by planting pest-resistant or well-adapted plant varieties such as native plants, and
2 Discourage pests by modifying the site and landscaping design. Pollution prevention is the primary "first line of defense" because pollutants that are never used do not have to be controlled or treated (methods which are inherently less efficient), and
3. Distribute IPM educational materials to future site residents/tenants. Minimally, educational materials must address the following topics:
   (a) Keeping pests out of buildings and landscaping using barriers, screens, and caulking;
   (b) Physical pest elimination techniques, such as, weeding, squashing, trapping, washing, or pruning out pests;
   (c) Relying on natural enemies to eat pests;
   (d) Proper use of pesticides as a last line of defense. More information may be obtained at the UC Davis website (http://www.ipm.ucdavis.edu/WATER/U/index.html).

4. Use Efficient Irrigation Systems & Landscape Design:
   a. Employ rain shutoff devices to prevent irrigation during and after precipitation in accordance with City of San Diego landscape requirements.
   b. Design irrigation systems to each landscape area's specific water requirements.
   c. Use flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
5. Design New Buildings Fire Sprinklers Systems to enable Discharge to Sanitary Sewer:
   a. Fire sprinkler systems will be installed in both homes, lot 207. The design of fire sprinklers will provide operational maintenance and testing that will be contained and discharged to the sanitary sewer system.

Source Control BMP Checklist for Standard Projects			Form I-4
All development projects must implement source control BMPs SC-1 through SC-6 and. Refer to Chapter 4 and Appendix E of the BMP Design Manual for information to implement BMPs shown in this checklist. **Note: All selected BMPs must be shown on the construction plans.**			
Source Control Requirement	Applied[(1)]?		
SC-1 Prevention of Illicit Discharges into the MS4	☐ Yes	☐ No	☒ N/A
SC-2 Storm Drain Stenciling or Signage	☒ Yes	☐ No	☐ N/A
SC-3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☒ Yes	☐ No	☐ N/A
SC-4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☒ Yes	☐ No	☐ N/A
SC-5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☒ Yes	☐ No	☐ N/A
SC-6 BMPs based on Potential Sourcres of Runoff Pollutants			
On-site storm drain inlets	☒ Yes	☐ No	☐ N/A
Interior floor drains and elevator shaft sump pumps	☐ Yes	☐ No	☒ N/A
Interior parking garages	☒ Yes	☐ No	☐ N/A
Need for future indoor & structural pest control	☒ Yes	☐ No	☐ N/A
Landscape/Outdoor Pesticide Use	☒ Yes	☐ No	☐ N/A
Pools, spas, ponds, decorative fountains, and other water features	☐ Yes	☐ No	☒ N/A
Food service	☐ Yes	☐ No	☒ N/A
Refuse areas	☒ Yes	☐ No	☐ N/A
Industrial processes	☐ Yes	☐ No	☒ N/A
Outdoor storage of equipment or materials	☒ Yes	☐ No	☐ N/A
Vehicle/Equipment Repair and Maintenance	☐ Yes	☐ No	☒ N/A
Fuel Dispensing Areas	☐ Yes	☐ No	☒ N/A
Loading Docks	☐ Yes	☐ No	☒ N/A
Fire Sprinkler Test Water	☒ Yes	☐ No	☐ N/A
Miscellaneous Drain or Wash Water	☒ Yes	☐ No	☐ N/A
Plazas, sidewalks, and parking lots	☐ Yes	☐ No	☒ N/A
SC-6A: Large Trash Generating Facilities	☐ Yes	☐ No	☒ N/A
SC-6B: Animal Facilities	☐ Yes	☐ No	☒ N/A
SC-6C: Plant Nurseries and Garden Centers	☐ Yes	☐ No	☒ N/A
SC-6D: Automotive-related Uses	☐ Yes	☐ No	☒ N/A
Discussion / justification for **all** "No" answers shown above: Click or tap here to enter text.			

Site Design BMP Checklist for Standard Projects				Form I-5
All development projects must implement site design BMPs SD-1 through SD-8. Refer to Chapter 4 and Appendix E of the BMP Design Manual for information to implement BMPs shown in this checklist. **Note: All selected BMPs must be shown on the construction plans.**				
Site Design Requirement	Applied[1]?			
SD-1 Maintain Natural Drainage Pathways and Hydrologic Features	☒ Yes	☐ No	☐ N/A	
SD-2 Conserve Natural Areas, Soils, and Vegetation	☒ Yes	☐ No	☐ N/A	
SD-3 Minimize Impervious Area	☒ Yes	☐ No	☐ N/A	
SD-4 Minimize Soil Compaction	☒ Yes	☐ No	☐ N/A	
SD-5 Impervious Area Dispersion	☒ Yes	☐ No	☐ N/A	
SD-6 Runoff Collection	☒ Yes	☐ No	☐ N/A	
SD-7 Landscaping with Native or Drought Tolerant Species	☒ Yes	☐ No	☐ N/A	
SD-8 Harvesting and Using Precipitation	☐ Yes	☐ No	☒ N/A	
Discussion / justification for **all** "No" answers shown above: Click or tap here to enter text.				

[1] Answer for each source control and site design category shall be pursuant to the following:

- "Yes" means the project will implement the BMP as described in Chapter 4 and/or Appendix E of the BMP Design Manual. Discussion / justification is not required.
- "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.
- "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project has no outdoor materials storage areas). Discussion / justification may be provided.

Hydrology Study for

Khouli Residences
Lot 207
Map # 0006982
Almazon Street, San Diego CA

Prepared By
Bajoua Engineering Co
Civil & Structural Engineering Services
2442 Sawgrass Street, El Cajon CA, 92019
Tel (619) 244-9082
Fax (619) 447-2380

Date Prepared:
September 26, 2016

Date Revised:

_____

Prepared For
Mr. Mark Khouli

Project / Site Description:

This project provides for design and construction of one residence on lot 207; TR 6982, Map # 0006982, APN # 313-180-05-00. This is vacant lot and consists of almost rectangular shaped parcel of approximately **28,297 SF (28297 SF /43560 = 0.65 Acre**) located on **Almazon Street, San Diego CA.**

This lot is sloped toward Almazon Street. The storm water drains toward **Almazon Street,** in the South direction of lot as sheet flow, normal flow to existing counter lines. **Almazon Street** is currently developed with curb, gutter and sidewalks.

Proposed Development:

The proposed development consists of construction of two story-residence. The lot coverage will be mostly left as open space except for **7,345 SF (0.17 Acre; 26%** of the lot size) which will be used for the residence footprint and, yards and driveway. The open space area is 0.48 Acre. The new residence garage will be on slab, and the rest of the residence will be raised floor foundation as per foundation plan. The layout of this project is shown on the site plan.

Pre- Development and Post development conditions:

The discharge, Q, for Pre Development is 0.80 CFS

The discharge, Q, for Post Development is 1.03. CFS.

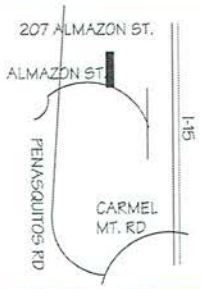
The discharge difference of 0.23 cfs is minor increase in the storm water flow rate into the street.

Riprap of 5 ft. x 5 ft. x 4 inch size rocks will be placed downstream of each vegetated swale. Riprap will be as transition media between the vegetated swale and the existing sidewalk. Discharge of 0.52 cfs is minor discharge and it will run as sheet flow over the side walk.

Reference:

City of San Diego Drainage Design Manual (City DM), 1984

VICINITY MAP:



DEVELOPMENT SUMMARY:

SCOPE OF WORK:
PROVIDE A NEW TWO LEVEL "CONTEMPORARY" STYLE HOMES CUT INTO THE HILLSIDE WITH MINIMAL IMPACT TO COMPLY WITH ENVIRONMENTALLY SENSITIVE LANDS REGULATIONS FOR STEEP HILL SIDES AND SENSITIVE BIOLOGICAL RESOURCES.

PROJECT DATA:

LEGAL : LOT 207 TR 6982, MAP 0006982	
LOT:	207 ALMAZON STREET
APN: LOT 207	313-180-0500
CONSTRUCTION TYPE:	TYPE V
OCCPANCY:	300/SF OR 8.5
ZONING DESIGNATION:	RS-1-14
HEIGHT:	35'
FRONT YARD SET BACK	15'
SIDE YARD SET BACK	5'
REAR YARD SET BACK	10'
EXISTING USE:	VACANT LAND
PROPOSED USE:	SINGLE FAMILY HOME
AIRPORT OVERLAY:	MCAS MIRA MAR
GEOLOGIC HAZARD CATEGORY:	53 LOW TO MOD. RISK
LANDSCAPE AREA-	
STREET YARD LOT 207:	1,478.79 SF
PAVED AREA	406.67 SF
-PERCENTAGE OF HARDSCAPE:	27.5%
PROPOSED NEW RESIDENCE- LOT 207	
GARAGE GFA:	480 SF
1ST FLOOR GFA:	1,300 SF
2ND FLOOR GFA:	1,600 SF
TOTAL GROSS FLOOR AREA	3,380 SF
TOTAL LIVING SPACE:	2,900SF
TOTAL OUT DOOR PATIO SPACE	149 SF
(FAR= GFA/LOT)	
3,380SF/28,297SF=	0.12FAR

NOTES:
PRIOR TO ISSUANCE OF ANY CONSTRUCTION PERMIT THE OWNER/PERMITTEE SHALL SUBMIT A WATER POLLUTION CONTROL PLAN (WPCPO, THE WPCP SHALL BE PERPARED IN ACCORDANCE WITH THE GUIDELINES IN THE APPENDIX E OF THE CITY'S STORM WATER STANDARDS

SHEET INDEX:

SITE DEVELOPMENT PERMIT PACKAGE	
TITLE SHEET	SDP-1
SITE PLANS & PLOT PLAN	SDP-2
GRADING PLAN	SDP-3
STEEP HILLSIDE & SENSITIVE BIO SLOPE ANALYSIS	SDP-4
LANDSCAPE CONCEPT PLANS	SDP-5
BRUSH MANAGEMENT PLANS	SDP-6
NOTES LANDSCAPE & BRUSH MANG	SDP-7
BUILDING HEIGHT REQUIREMENTS	SDP-8
1ST CONCEPTUAL FLOOR PLANS	SDP-9
2ND CONCEPTUAL FLOOR PLANS	SDP-10
CONCEPTUAL ELEVATIONS	SDP-11
CONCEPTUAL CROSS SECTIONS	SDP-12
TOPOGRAPHIC SURVEY BY OTHERS	SDP-13

WRA
WILL ROGERS & ASSOCIATES
LANDSCAPE ARCHITECTURE
PLANNING & DESIGN
27315 Valley Center Road
Suite "A"
Valley Center CA 92082
760-703-9946
"CELEBRATING 33YRS OF EXCELLENCE"

ASSOCIATES:
BAJOUA ENGINEERING CO
CIVIL/ STRUCTURAL ENGINEERING
2442 SAWGRASS STREET
EL CAJON, CA 92019
619-244-9082

SEAL:

REVISIONS:
3-24-16 CLIENT SUBMITTAL
3-24-16 CITY SUBMITTAL

AGENCY:
THE CITY OF
SAN DIEGO
DEVELOPMENT
SERVICES DEPARTMENT
1222 FIRST AVENUE
SAN DIEGO, CA
92101-1454
1-619-446-5000

CLIENT:
MK DEVELOPERS INC.
1620 La Presa Ave.
Spring Valley, CA 91977

PROJECT NAME:
ALMAZON 207
RESIDENCE

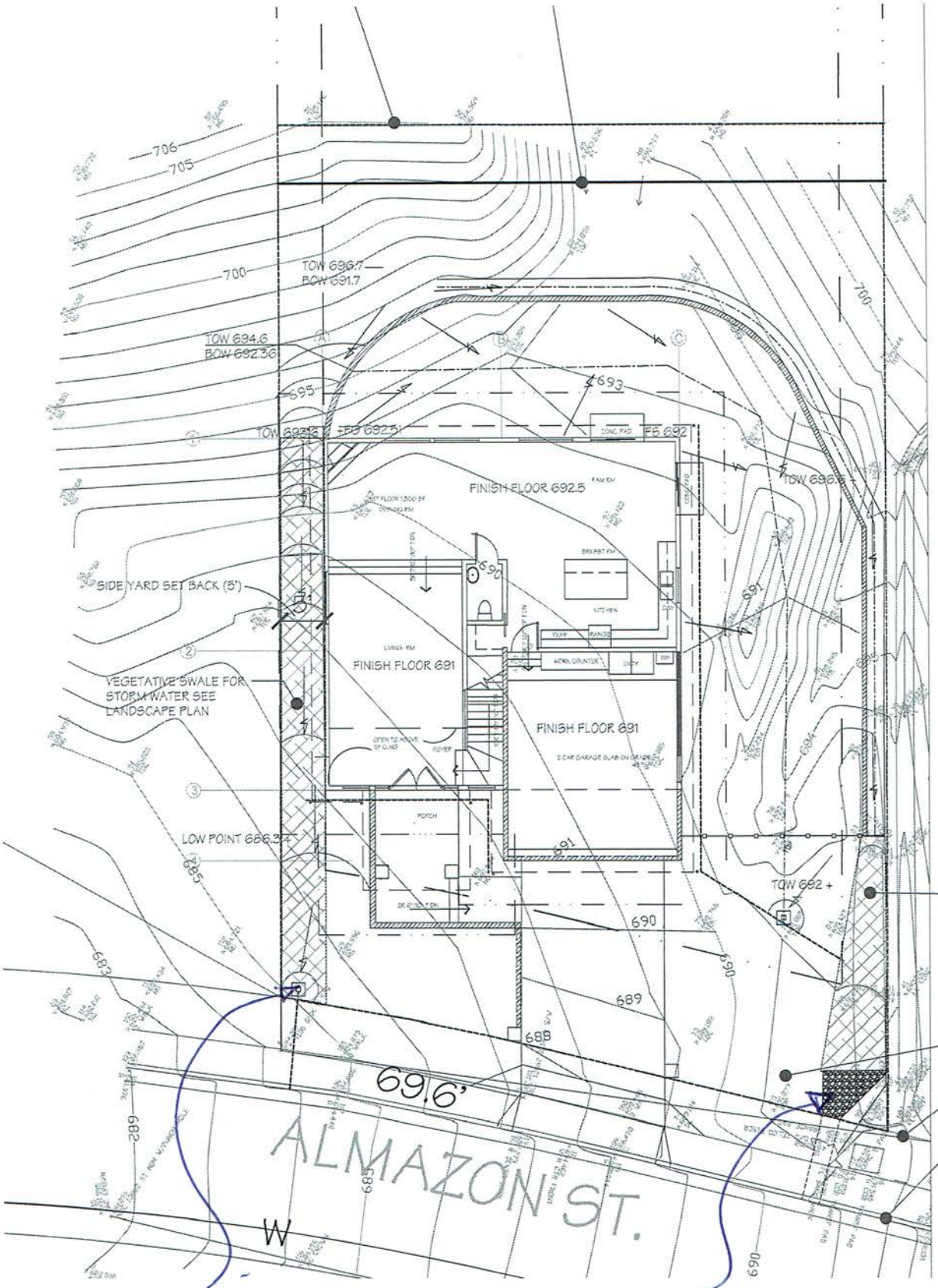
north
scale:1"=20'
date: 3/24/16
drawn by: WR

SDP-1

OF THIRTEEN

ON 207\ 2010-ALMAZON 207 SITE PLAN8-11-16.DWG

(4)



NOTES:

1. BIO REPORT- REFER TO FINAL BIOL RESOURCES REPORT ALMAZON STR SAN DIEGO, CA LDR NO. 6107 , APRII
2. PROVIDE BUILDING ADDRESS NUM LEGIBLE FROM THE STREET OR ROAI PROPERTY PER FHPS, POLICY P-006 ACCORDANCE WITH SDMC. SECTIONS

LE

- COVENANT EASEMENT
- LIMIT OF WORK LINE @ I
- LIMIT OF GRADING, INC
- PROPERTY LINE
- SET BACK LINES
- BRUSH MANAGEMENT
- PATIO RETAINING WALL
- BUILDING RETAINING W
- CB CATCH BASIN
- CONCRETE V- DITCH FO
- PROPOSED CONTOUR LI
- EXISTING CONTOUR LIN
- BOULDERS
- EXISTING SEWER
- EXISTING WATER METE
- EXISTING TELEPHONE
- EXISTING STREET LIGH
- EXISTING WATER LINE
- 5 FOOT HEIGHT MEASI
- FLOW LINE

EG	EXISTING GRADE
FF	FINISH FLOOR
FG	FINISH GRADE
FS	FINISH SURFACE
TR	TOP OF RIDGE @ ROOF
TW	TOP OF WALL

"THIS PROJECT MUST COMPL MAXIMUM HEIGHT OF THE ST FEET MEASURED IN ACCORDA 131.0270"

SEE BUILDING ELEVATIONS A INFORMATION.

VEGETATIVE SWALE FOR STORM WATER SEE LANDSCAPE PLAN

VISIBILITY TRIANGLE (TYP)

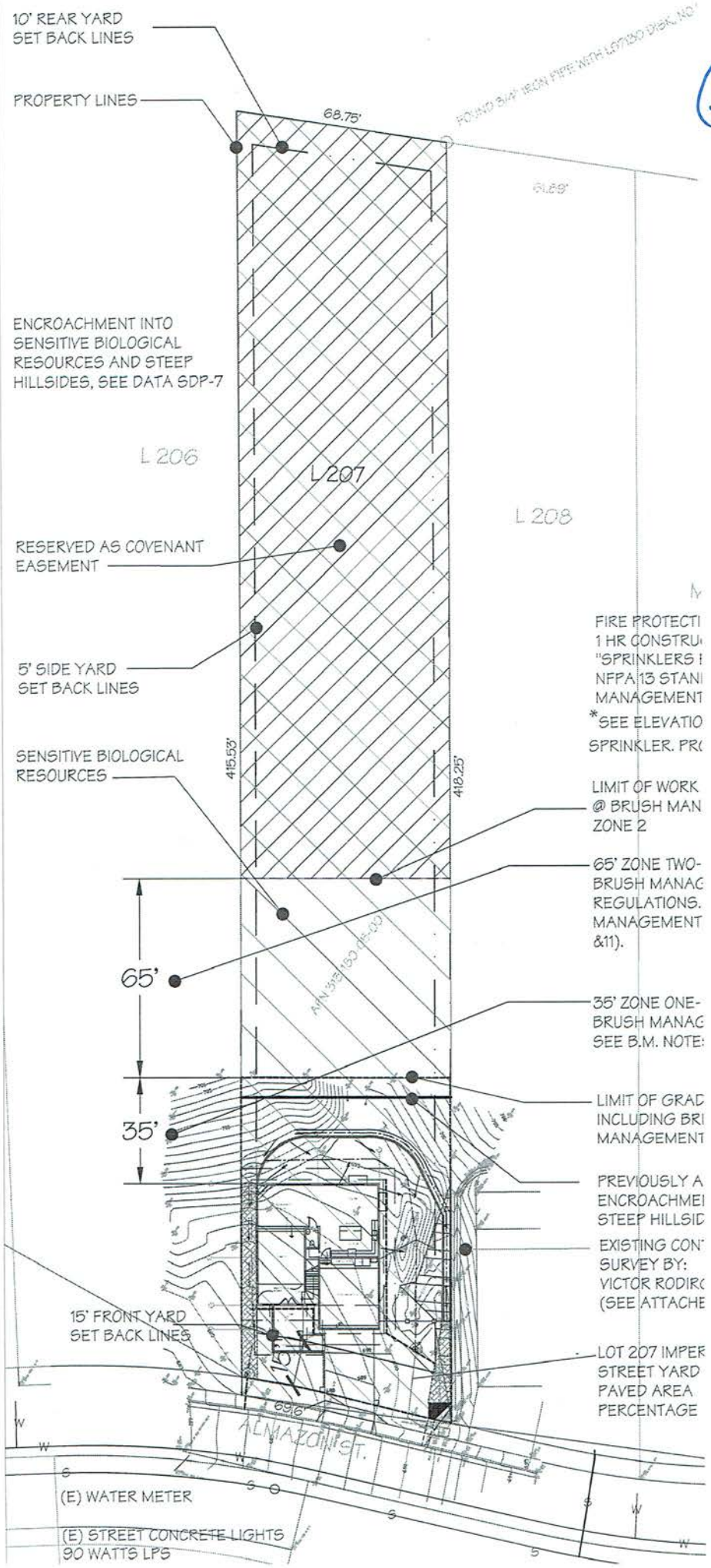
PROPOSED CONCRETE DRIVE WAY

(E)RIGHT OF WAY LINE

(E) CURB & GUTTER, 4'-6" SIDE WALK

Q = 0.52 cfs
V = 0.02 fps

Q = 0.52 cfs
V = 0.02 fps


10' REAR YARD
SET BACK LINES
PROPERTY LINES
68.75'
61.89'
ENCROACHMENT INTO
SENSITIVE BIOLOGICAL
RESOURCES AND STEEP
HILLSIDES, SEE DATA SDP-7
L 206
L 207
L 208
RESERVED AS COVENANT
EASEMENT
5' SIDE YARD
SET BACK LINES
SENSITIVE BIOLOGICAL
RESOURCES
415.53'
418.25'
65'
35'
15' FRONT YARD
SET BACK LINES
15'
69.16'
ALMAZAN CT.
(E) WATER METER
(E) STREET CONCRETE LIGHTS
90 WATTS LPS
FIRE PROTECTI
1 HR CONSTRU
"SPRINKLERS
NFPA 13 STAN
MANAGEMENT
*SEE ELEVATIO
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@ BRUSH MAN
ZONE 2
65' ZONE TWO-
BRUSH MANAG
REGULATIONS.
MANAGEMENT
&11).
35' ZONE ONE-
BRUSH MANAG
SEE B.M. NOTE
LIMIT OF GRAD
INCLUDING BR
MANAGEMENT
PREVIOUSLY A
ENCROACHME
STEEP HILLSID
EXISTING CON
SURVEY BY:
VICTOR RODIR
(SEE ATTACHE
LOT 207 IMPER
STREET YARD
PAVED AREA
PERCENTAGE

Project:	**Bajoua Engineering Co.** Lic # C45046 Structural & Civil Engineering Services 2442 Sawgrass Street, El Cajon, CA 92019 Tel 619-244-9082, Fax 619-447-2380 mikebajoua@sbcglobal.net	Page: 6
Designed by: **Mike Bajoua, P.E**		Project #:
Checked by:		Date: Revised:

LOT 207/Almazon Street

- Area of Lot 207 :

Lot Area = 28,297
= 0.65 Acre.

Residence Including Building, Yards & Driveway = 7345 S.F ≅ 0.170 Acre.

Rational Method :

Use Rational Method since the project is less than 0.5 Square Miles (per Appendix I of City of San Diego "Drainage Design Manual 1984"

$$Q = C I A$$

Q = is peak rate of flow (cfs)

C = runoff coefficient expressed as that % of rainfall which becomes surface runoff.

Project:	**Bajoua Engineering Co.** Lic # C45046 *Structural & Civil Engineering Services* *2442 Sawgrass Street, El Cajon, CA 92019* *Tel 619-244-9082, Fax 619-447-2380* *mikebajoua@sbcglobal.net*	Page: 7 -of-
Designed by: **Mike Bajoua, P.E**		Project #:
Checked by:		Date: Revised:

I = Average rainfall Intensity (in/hr) for storm duration equal Time of Concentration (T_c) of Contributing Drainage Area

A = The Drainage Area in Acres Tributary to Design Point

For T_c:

ΔE = 65'

L = 418 feet

T_c = 10 min (per Nomograph for T_c, page 84 C.D.M. City Design Manual.

I = (3.5) Inch/hr (per Appendix I-1, CDM page 83, Rainfall Intensity-Duration Frequency Curves)

Project:	**Bajoua Engineering Co.** Lic # C45046 *Structural & Civil Engineering Services* *2442 Sawgrass Street, El Cajon, CA 92019* *Tel 619-244-9082, Fax 619-447-2380* *mikebajoua@sbcglobal.net*	Page: 8 -of-
Designed by: **Mike Bajoua, P.E**		Project #:
Checked by:		Date: Revised:

(4) Pre Development Continues

A = 0.65 Acre

Q = CIA

= 0.35 X 3.5 X 0.65 = (0.80) cfs

where C = 0.35 for Undisturbed Natural Terrian (Table 3-1 County of San Diego Hydrology Manual).

Post Development Conditions:

Per conditions of Development Still 0.48 Acre (20,952 S.F) Shall Remain Covenant Easement

Graded Area = 0.65 Acre - 0.48 = 0.17 Acre or (7345 S.F).

Q = CIA

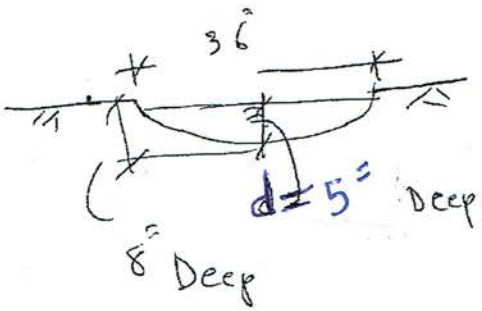
C = 0.45 → (Single Residential, per Table 2 of City of San Diego Drainage Design Manual P: 82).

Q = 0.45 X 3.5 in/hr X 0.65 Acre = (1.024) cfs

let use Two Grass Swale For the lot each will carry Q = $\frac{1.024}{2} \approx$ (0.52) cfs

Gass swale:
Cirular gass swale
Note: Assume cirular gass swale as a pipe Full flow
n = 0.25 for Vegetated swale
D = 3 ft
S = 0.155

R = A/P = 1/4 D = 0.75
V = Q/A



Free Board = 8 - 5.4
= 2.6"

Mannings Equation:

Q full = (1.49/n) x A* S^2 x R^.667

Q full = 13.69 cfs
V full = 1.94 fps
From Civil Engineering Manual by Michael Lindburg:

Appendix "C"

Q = 0.52 cfs → From Drainage Calcs.
Q/ Qfull 0.52 cfs/ 13.69 cfs 0.04

Then d/D = 0.16 ; d = 0.14 X D = 0.48"

d = 0.48" = 5.7" inch

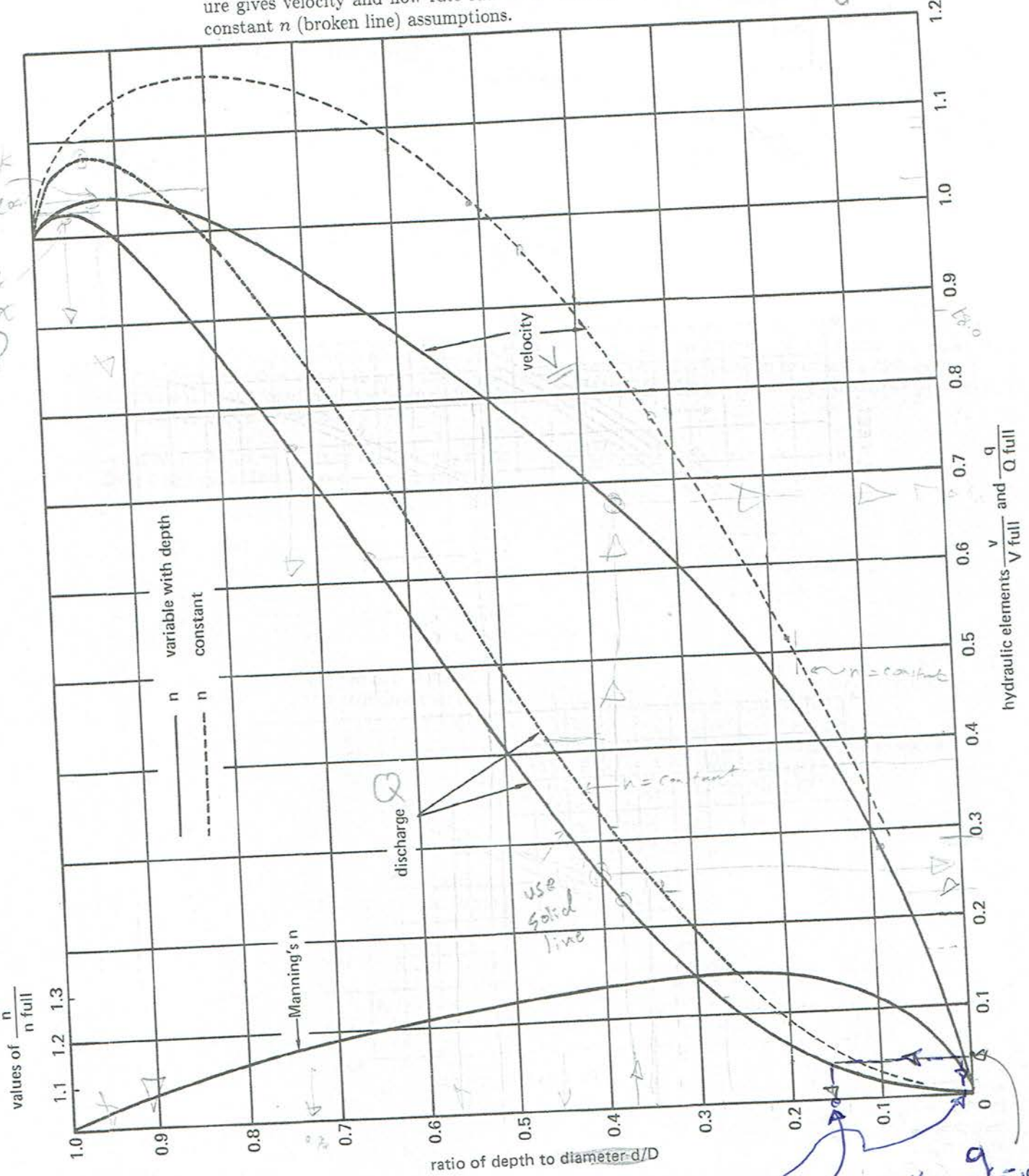
$\frac{V}{V_{Full}} = 0.01$

$V = 0.01\, V_{Full} = 0.01 \times 1.94$ fps

$V = 0.02$ fps

Appendix C: Circular Channel Ratios

Experiments have shown that n varies slightly with depth. This figure gives velocity and flow rate ratios for varying n (solid line) and constant n (broken line) assumptions.



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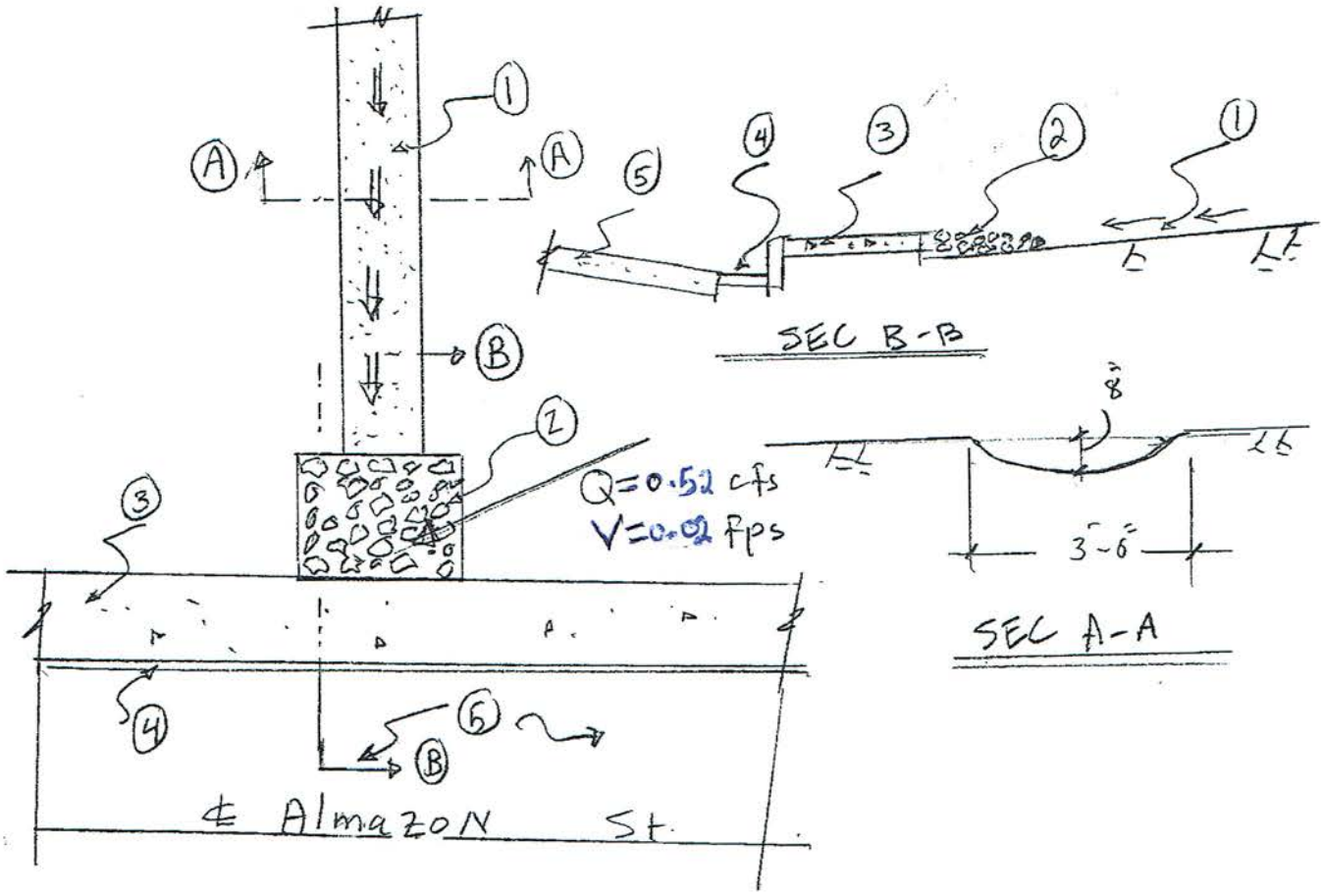


(1) (N) Vegetated Swale 3'6" wide x 8" Deep.

(2) (N) 5"x5"x4" Size Rip Rap.

(3) (E) Concrete Sidewalk.

(4) (E) Curb & gutter.

(5) (E) Pavement

APPENDIX I

RATIONAL METHOD

Watersheds Less than 0.5 Square Mile

Method of Computing Runoff

Use the Rational Formula Q = CIA where:

Q is the peak rate of flow in cubic feet per second.

C is a runoff coefficient expressed as that percentage of rainfall which becomes surface runoff.

I is the average rainfall intensity in inches per hour for a storm duration equal to the time of concentration (T_c) of the contributing drainage area.

A is the drainage area in acres tributary to design point.

(1) Runoff Coefficient, C

Appendix I-A lists the estimated coefficients for urban areas.

For urban areas select an appropriate coefficient for each type of land use from Table, 2, Appendix I-A. Multiply this coefficient by the percentage of the total area included in that class. The sum of the products for all land uses in San Diego County is the weighted runoff coefficient.

(2) Rainfall Intensity, I

Intensity - duration - frequency curves applicable to all areas within San Diego County are given in Appendix I-B.

(3) Time of Concentration, Tc

The time of concentration is the time required for runoff to flow from the most remote part of the watershed to the outlet point under consideration.

Methods of calculation differ for natural watersheds (non-urbanized) and for urban drainage systems. Also, when designing storm drain systems, the designer must consider the possibility that an existing natural watershed may become urbanized during the useful life of the storm drain system.

(a) Natural watersheds: Obtain T_c from Appendices I-C and I-D.

(b) Urban drainage systems: In the case of urban drainage systems, the time of concentration at any point within the drainage area is given by:

$$T_c = T_i + T_f \text{ where}$$

T_i is the inlet time or the time required for the storm water to flow to the first inlet in thesystem. It is the sum of time in overland flow across lots and in the street gutter.

T_f is the travel time or the time required for the storm water to flow in the storm drain from the most upstream inlet to the point in question.

Travel Time, T_f, is computed by dividing the length of storm drain by the computed flow velocity. Since the velocity normally changes at each inlet because of changes in flow rate or slope, total travel time must be computed as the sum of the travel times for each section of the storm drain.

The overland flow component of inlet time, T_i, may be estimated by the use of the chart shown in Appendix I-E. Use Appendix I-F to estimate time of travel for street gutter flow.

(14)

TABLE 2

RUNOFF COEFFICIENTS (RATIONAL METHOD)

DEVELOPED AREAS (URBAN)

Land Use	Coefficient, C Soil Type (1)
	D
Residential:	
Single Family	.55
Multi-Units	.70
Mobile Homes	.65
Rural (lots greater than 1/2 acre)	.45
Commercial (2) 80% Impervious	.85
Industrial (2) 90% Impervious	.95

NOTES:

(1) Type D soil to be used for all areas.

(2) Where actual conditions deviate significantly from the tabulated imperviousness values of 80% or 90%, the values given for coefficient C, may be revised by multiplying 80% or 90% by the ratio of actual imperviousness to the tabulated imperviousness. However, in no case shall the final coefficient be less than 0.50. For example: Consider commercial property on D soil.

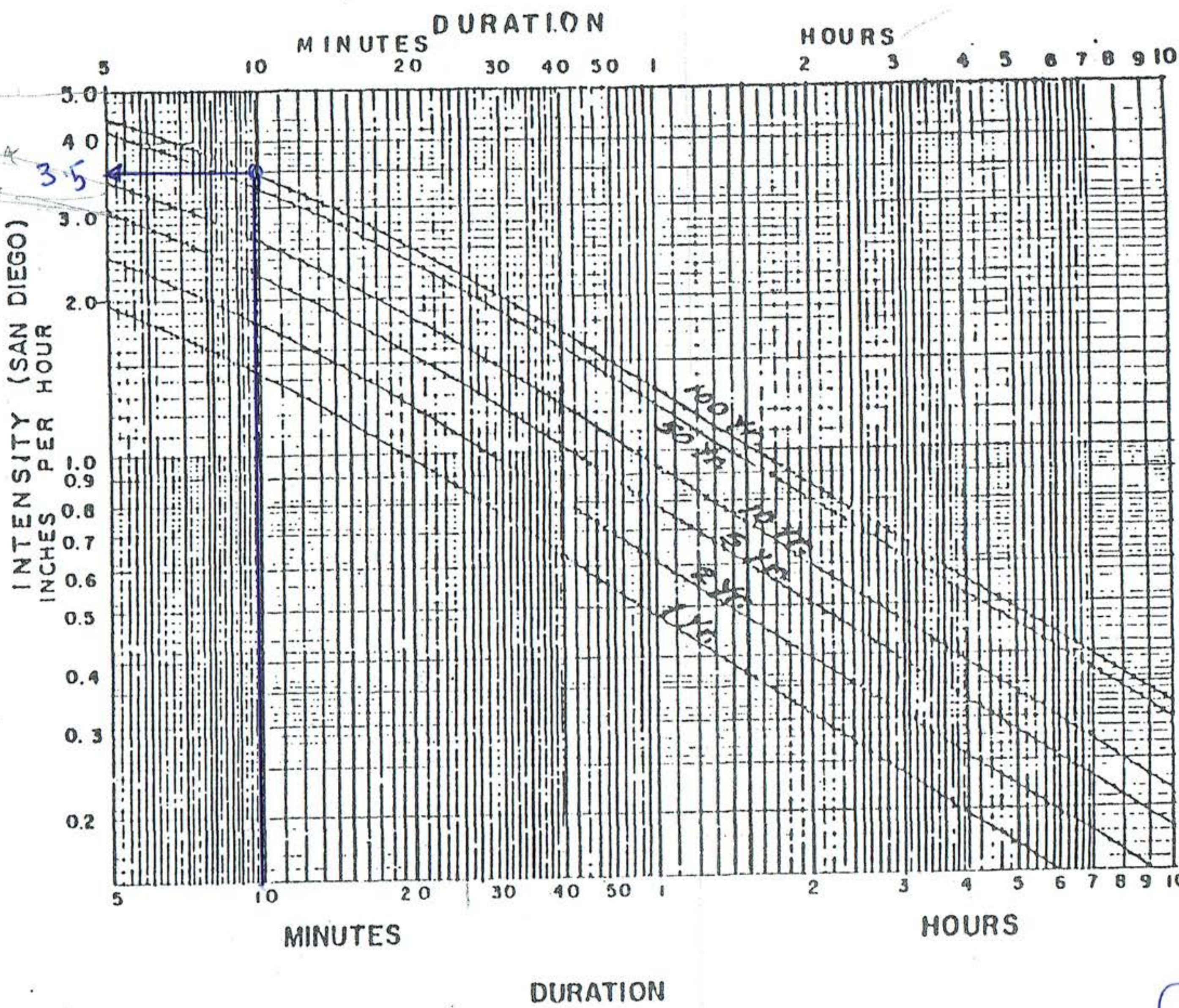
Actual imperviousness = 50%

Tabulated imperviousness = 80%

Revised C = $\frac{50}{80}$ x 0.85 = 0.53

ELEV.	FACTOR
0-1500	1.00
1500-3000	1.25
3000-4000	1.42
4000-5000	1.60
5000-6000	1.70
DESERT	1.25

To obtain correct intensity, multiply intensity on chart by factor for design elevation.



RAINFALL

INTENSITY - DURATION - FREQUENC

CURVES

for

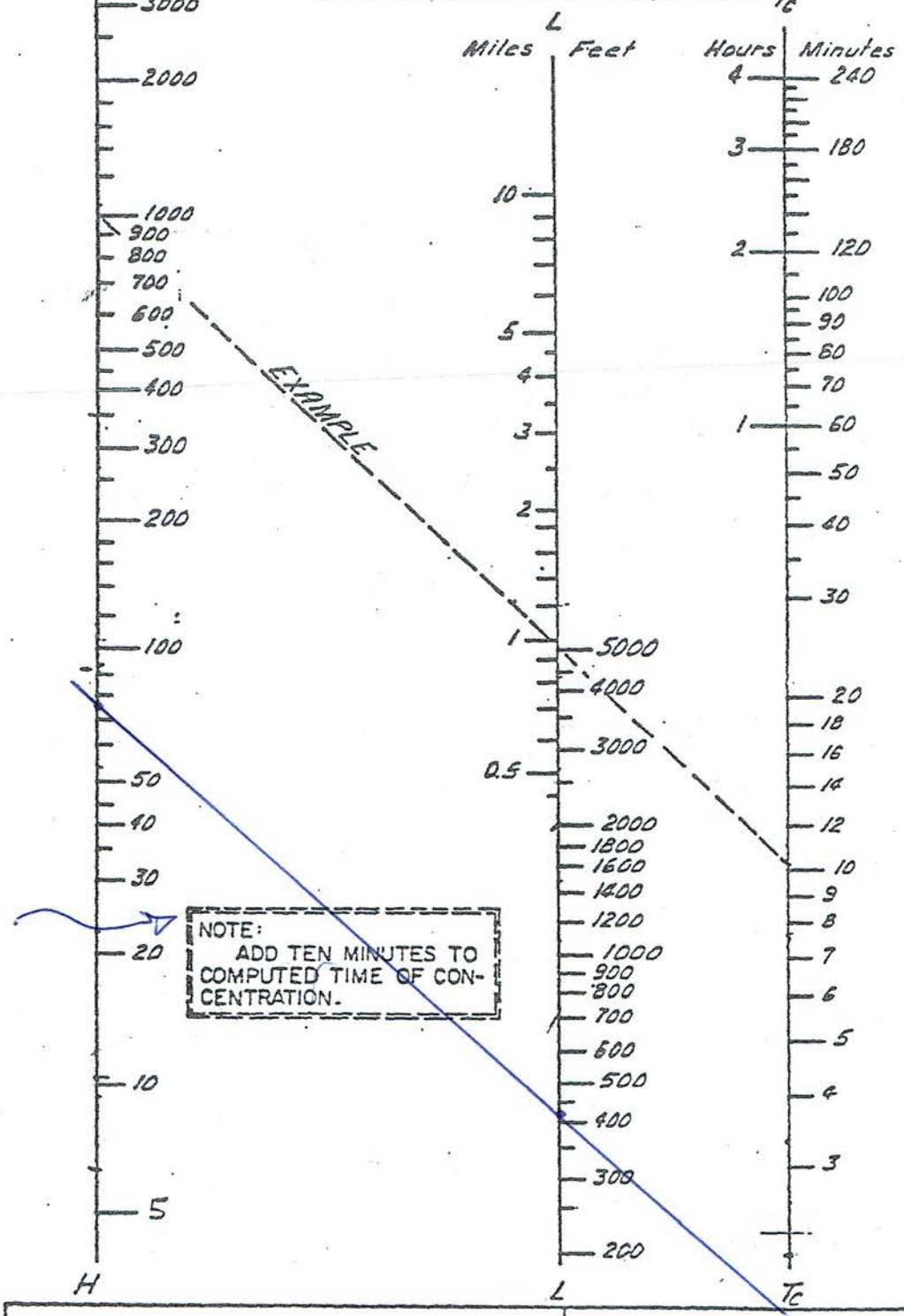
COUNTY OF SAN DIEGO

APPENDIX I-

EQUATION

$$T_c = \left(\frac{11.9L^3}{H}\right)^{.385}$$

T_c = Time of concentration (in hours)
L = Length of watershed (in miles)
H = Difference in elevation along effective slope line (See Appendix X-B) (in feet)



SAN DIEGO COUNTY DEPARTMENT OF SPECIAL DISTRICT SERVICES DESIGN MANUAL	NOMOGRAPH FOR DETERMINATION OF TIME OF CONCENTRATION (T_c) FOR NATURAL WATERSHEDS
APPROVED _____	DATE _____ APPENDIX

KLUTZ BIOLOGICAL
CONSULTING

March 13, 2017

Mr. Mark Khouli
27315 Valley Center Road
Escondido CA 92032

Subject: Biological Letter Report for 11470 Almazon Street (Lot 207), San Diego California. PTS NO. 479840

Dear Mr. Khouli:

Klutz Biological Consulting (KBC) is pleased to provide this general biological survey and letter report for 11470 Almazon Street (Lot 207), San Diego, California (Figure 1). It is understood the subject property (APN 313-180-05) is being considered for development. The property currently supports undeveloped land. The proposed development would include a residential building. Access to the single-family home would be from Almazon Street to the south. This letter summarizes the biological resources present within the property/project boundaries and the potential for the proposed project to impact sensitive biological resources.

The Almazon Residences project was previously analyzed under Mitigated Negative Declaration (MND) No. 6107. The previously certified Mitigated Negative Declaration originally conducted a field survey and prepared a biological report (Affinis 2003) that identified impacts to approximately 0.60 acre of coastal sage scrub (Tier II) within the footprint of the original project site. These impacts were proposed to occur across seven lots (205-211). Mitigation was identified that required the applicant to either acquire 0.60 acre of habitat within the City's MHPA or pay into the City Habitat Acquisition Fund.

It should be noted that the fulfillment of mitigation requirements for impacts to Coastal Sage Scrub pursuant to the MND are the responsibility of each lot owner prior to development.

Regulatory Setting

The project site is located within the City of San Diego and is subject to the City's Multiple Species Conservation Program (MSCP). Specifically, the project occurs within the Northern Area of the MSCP and is located outside of the City's Multiple Habitat Planning Area (MHPA). In addition, biological resources within the project site are subject to regulatory administration by the federal government, State of California, and City.

FEDERAL

MIGRATORY BIRD TREATY ACT

The MBTA (16 U.S. Code Sections 703-711) includes provisions for protection of migratory birds, including the non-permitted take of migratory birds. The MBTA regulates or prohibits taking, killing, possession of, or harm to migratory bird species listed in Title 50 Code of Federal Regulations Section 10.13. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, and many others (including those not sensitive or MSCP Covered species as described in Section 3.2.2.1, Sensitive Animal Species). Disturbance that causes nest destruction or abandonment and/or loss of reproductive effort (killing or abandonment of eggs or young) is considered a "take." The MBTA is an international treaty for the conservation and management of bird species that migrate through more than one country, and is enforced in the United States by the USFWS. The MBTA was amended in 1972 to include protection for migratory birds of prey (raptors). The project will comply with the MBTA.

STATE

California Fish and Game Code

Section 1600 of California Fish and Game Code requires a Stream Bed Alteration Agreement for any activity that would alter the flow, change or use any material from the bed, channel, or bank of any perennial, intermittent, or ephemeral river, stream, and/or lake (i.e., WS). Pursuant to California Fish and Game Code Section 3503, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Raptors and owls and their active nests are protected by California Fish and Game Code Section 3503.5, which states that it is unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird unless authorized by the CDFW. Section 3513 states that it is unlawful to take or possess any migratory non-game bird as designated in the MBTA. These regulations apply to avian species that include those not sensitive or MSCP Covered species as described in Section 3.2.2.1, Sensitive Animal Species, and require that construction activities associated with the proposed project in or adjacent to native habitat (particularly vegetation removal or construction near nests) be reduced or eliminated during critical phases of the nesting cycle unless surveys by a Qualified Biologist demonstrate that nests, eggs, or nesting birds will not be disturbed, subject to approval by CDFW and/or USFWS. The project will comply with the California Fish and Game Code Sections 3503 and 3503.5.

Survey Methods and Limitations

Andrew Borcher conducted a general survey of the property on August 25th, 2016 between 0800 and 1000. Conditions during the survey consisted of overcast skies, a temperature of

approximately 76 degrees Fahrenheit, and winds from 0 to 2 mph. The survey was conducted by slowly walking meandering transects within, and around the property, while recording all plants and wildlife species observed. A search of the California Natural Diversity Database (CNDDB, 2016) Poway and Escondido Quadrangles was also conducted to identify sensitive species known to occur in the general vicinity of the project site.

Although the entire project area was surveyed, some sensitive resources may not have been detected due to the duration and season of the survey event. Rare annual plants may not have been apparent, and any wildlife species that are not active during the day (e.g. strictly nocturnal), that are secretive in their habits, or that use the site only periodically may not have been detected during the survey

Survey Results

Physical Characteristics

The approximately 0.64-acre property is located at 11470 Almazon Street in the community of Rancho Penasquitos in the City of San Diego (Figure 2). Elevation on site ranges from 686 feet above mean sea level (amsl) on the southern border adjacent to Almazon Street to 790 amsl at the northern border at the top of the steep slope. The property is undeveloped supporting mostly natural vegetation with the exception of a disturbed area adjacent to Almazon where a storage crate is staged (Attachment A; Photographs). The property is bound by undeveloped land and a utility pole to the north, a residential property to the east, Almazon Street and residential development to the south, and undeveloped land.

Soils on the property are limited to San Miguel-Exchequer rocky silt loams (9 to 70% slopes) (Bowman 1973) (Figure 3). Soils from the San Miguel-Exchequer series are well-drained with high to very high runoff. These soils are found on mountain slopes.

Vegetation Communities

The study parcel contains two different landcover types including disturbed habitat and Diegan coastal sage scrub (Figure 4). Each of these landcover types are discussed in more detail below. A complete list of plants observed during the site visit is provided as Table 1.

Diegan Coastal Sage Scrub – Diegan coastal sage scrub consists predominantly of low- growing, aromatic, and generally soft-leaved shrubs. Diegan coastal sage scrub is a native plant community characterized by soft, low, aromatic, shrubs and subshrubs characteristically dominated by drought-deciduous species. This community typically occurs on sites with low moisture availability, such as dry slopes and clay-rich soils that are slow to release stored water. The representative species in this habitat type are California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), black sage (*Salvia mellifera*), and laurel sumac (*Malosma laurina*).

On site this landcover type is dominated by California sagebrush, black sage and Laural sumac. Other species observed included prickly pear (*Opuntia littoralis*), California buckwheat, and wild cucumber (*Marah macrocarpa*). Approximately 0.53-acre of Diegan coastal sage scrub occurs on the property. This habitat type extends both to the north, northeast, and west into the adjacent parcels.

Disturbed Habitat - Disturbed habitat is any land on which the native vegetation has been significantly altered by agriculture, construction, or other land-clearing activities, and the species composition and site conditions are not characteristic of the disturbed phase of a plant association. The portion of the property that is considered disturbed habitat is limited to flat area between the steep slope and Almazon Street. In addition to a large storage crate this area consists of bare ground and non-native vegetation. Non-native vegetation includes artichoke thistle (*Cynara cardunculus*) and tocalote (*Centaurea melitensis*). Approximately 0.11 acre of disturbed habitat occurs within the property.

Table 1 Plants Observed during the Site Visit

Family	Scientific Name	Common Name	Special Status
Anacardiaceae - Sumac family			
	Malosma laurina	Laural sumac	
Asteraceae – Sunflower family			
	Artemisia californica	California sagebrush	
	*Centaurea melitensis**	Tocalote	
	Cynara cardunculus	*Artichoke thistle*	
	Erigeron Canadensis	Horseweed	
	*Heterotheca grandiflora**	Telegraph weed	
Brassicaceae - Mustard family			
	*Hirschfeldia incana**	Short-pod mustard	
Cactaceae - Cactus family			
	Opuntia littoralis	Coastal prickly pear	
Cucurbitaceae – Cucumber family			
	Marah macrocarpa	Wild cucumber	
Euphorbiaceae – Spurge family			
	Croton setiger	Doveweed	
	Eophuribia sp.*	Spurge	
Lamiaceae – Mint family			
	Slavia mellifera	Black sage	
Poaceae – Grass family			
	*Avena barbata**	Slender wild oat	
	*Bromus madritensis**	Compact brome	
Polygonaceae - Buckwheat family			
	Eriogonum fasciculatum var. fasciculatum	California buckwheat	
Solanaceae - Nightshade family			
	*Nicotiana glauca**	Tree tobacco	
*= Non-native species			

General Wildlife Observations

Wildlife species observed during the general survey was limited to 12 bird species. Bird species detected included Anna's hummingbird (*Calypte anna*), spotted towhee (*Pipilo maculatus*), California towhee (*Melozone crissalis*), wrentit (*Chamaea fasciata*), red-shouldered hawk (*Buteo lineatus*), Lesser goldfinch (*Spinus psaltria*), Nuttell's woodpecker (*Picoides nuttallii*), California scrub-jay (*Aphelocoma californica*), mourning dove (*Zenaida doves*), California quail (*Callipepla californica*), Bewick's wren (*Thryomanes bewickii*), blue-gray gnatcatcher (*Polio caerulea*), woodrat (*Neotoma* sp.), and coyote (*Canis latrans*). These species are all common to the area and can be found in Diegan coastal sage scrub, as well as other natural habitats adjacent to urban areas.

Sensitive Plant and Wildlife Species

Sensitive biological resources are those defined as follows: (1) species that have been given special recognition by federal, state, or local conservation agencies and organizations due to limited, declining, or threatened population sizes; (2) species and habitat types recognized by local and regional resource agencies as sensitive; (3) habitat areas or plant communities that are unique, are of relatively limited distribution, or are of particular value to wildlife; (4) wildlife corridors and habitat linkages; and (5) those species covered under the City's Multiple Species Conservation Program (MSCP) plan.

Twenty-seven sensitive plants were identified by the CNDDB search as potentially occurring within the general project vicinity. Sensitive plants species detected by the literature search included San Diego thornmint (*Acanthimintha ilicifolia*), California adolphia (*Adolphia californica*), San Diego ambrosia (*Ambrosia pumila*), Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*), San Diego sagewort (*Artemisia palmeri*), Coutlter's saltbush (*Atriplex coulteri*), Encinitas baccharis (*Baccharis vanessae*), San Diego goldenstar (*Bloomeria clevelandii*), thread-leaved brodiaea (*Brodiaea filifolia*), Orcutt's brodiaea (*Brodiaea orcuttii*), wart-stemmed ceanothus (*Ceanothus verrucosus*), long-spinned spineflower (*Chorizanthe polygonoides* var. *longispina*), delicate clarkia (*Clarkia delicata*), summer holly (*Comarostaphylis diversifolia*), variegated dudleya (*Dudleya variegata*), Palmer's goldenbush (*Ericameria palmeri*), San Diego button celery (*Eryngium aristulatum*), San Diego barrel cactus (*Ferocactus viridescens*), San Diego marsh-elder (*Iva hayesiana*), Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*), willowy monardella (*Monardella viminea*), sea dahlia (*Leptosyne maritima*), Nuttall's lotus (*Lotus nuttallianus*), San Diego mesa mint (*Pogogyne abramsii*), Nuttall's scrub oak (*Quercus dumosa*), chaparral ragwort (*Senecio aphanactis*), and purple stemodia (*Stemodia durantifolia*). The majority of these species would have been observed if present (low potential to occur for perennial rare plant species). Annual species including brodiaea, clarkia, spineflower, pepper grass and thornmint are not expected due to lack of appropriate habitat (low potential to occur for annual rare plant species). The potential (none, low, medium, or high) for each species to occur onsite is detail further in Appendix B.

Twenty-six sensitive wildlife species were also identified by the CNDDB search as potentially occurring within the project vicinity. These species include Cooper's hawk (*Accipiter cooperii*), southern California rufous-crowned sparrow (*Aimophila ruficeps*), Bell's sage sparrow (*Amphispiza bellii*), pallid bat (*Antrozous pallidus*), orangethroat whiptail (*Aspidoscelis hyperythra*), burrowing owl (*Athene cunicularia*), San Diego fairy shrimp (*Branchinecta sandiegonensis*), coastal cactus wren (*Campylorhynchus brunneicapillus*), Dulzura pocket mouse (*Chaetodiphus californicus femoralis*), rosy boa (*Charina trivirgata*), red-diamond rattlesnake (*Crotalus ruber*), southwestern willow flycatcher (*Empidonax traillii*), western pond turtle (*Emys mamorata*), California horned lark (*Eremophila alpestris actia*), western mastiff bat (*Eumops pectoris californicus*), yellow-breasted chat (*Icteria virens*), western yellow bat (*Lasiurus xanthinus*), San Diego black-tailed jackrabbit (*Lepus californicus*), San Diego desert woodrat (*Neotoma lepida intemedia*), pocketed free-tailed bat (*Nytinomops femorosaccus*), coast horned lizard (*Phrynosoma blainvillii*), Coronado Island skink (*Plestiodon skiltonianus interparietalis*), California gnatcatcher (*Polioptila californica californica*), western spadefoot (*Spea hammondii*), two-striped garters snake (*Thamnophis hammondii*) and least Bell's vireo (*Vireo bellii pusillus*). Coastal California gnatcatcher, coast horned lizard, rosy boa, red-diamond rattlesnake, Coronado Island skink, and orange-throated whiptail lizard all have moderate potential to occur in coastal sage scrub. However, focused surveys for these species are not required within the MSCP, but outside of the Multiple Habitat Planning Area (MHPA). None of these species were detected during the survey. The remaining sensitive wildlife species have a low potential to occur onsite (Appendix B).

Jurisdictional Waters and Wetlands

Jurisdictional wetlands or waters do not occur within or adjacent to the property.

Multiple Species Conservation Program (MSCP)

The Multi-Habitat Planning Area (MHPA) is land that has been included within the City's Multiple Species Conservation Program's (MSCP) Subarea Plan for habitat conservation (City, March 1997). These areas have been determined to provide the necessary habitat quantity, quality and connectivity to support the future viability of San Diego's unique biodiversity and thus are considered to be a sensitive biological resource. Vegetation communities occurring within the MSCP study area have been divided into four tiers of sensitivity based on rarity and ecological importance. Tier I habitats, being the most sensitive, include southern foredunes, Torrey pine forest, coastal bluff scrub, maritime succulent scrub, maritime chaparral, native grasslands, and oak woodlands. Tier II includes coastal sage scrub and coastal sage scrub/chaparral. Tier IIIA includes mixed chaparral and chamise chaparral. Tier IIIB includes non-native grassland. Tier IV, the least sensitive classification, includes disturbed land, agriculture, and ornamental vegetation. In general, wetlands are considered highly sensitive habitats. Mitigation ratios are provided in the City Biological Guidelines (2012) for impacts to biological resources or vegetation communities and vary depending on the resource sensitivity (i.e., tier classification), and whether impacted resources are located within or outside of the MHPA.

The MHPA occurs approximately 0.25 mile west of the property. The property contains Tier II (coastal sage scrub) and Tier IV (disturbed habitat) landcover types that are outside of the City's MHPA (Figure 4). Impacts to Tier II landcover types will require mitigation. Impacts to Tier IV landcover types do not require mitigation.

Project Impact Analysis

Vegetation Communities

Direct Impacts

The proposed construction of a new residence at 11470 Almazon Street would impact Diegan coastal sage scrub and disturbed habitat (Figure 6). Brush Management Zone One (BMZ 1) extends 35 feet out from the structure towards flammable vegetation. Brush Management Zone Two (BMZ 2) extends 65 feet from BMZ 1 and will be comprised of native and/or naturalized vegetation. BMZ 2 impacts are considered impact neutral and will not require mitigation. Table 2 below details the project impacts to landcover types within the study parcel.

In 2003 the study parcel was analyzed as a part of a larger residential development project. This development project analyzed impacts to biological resources across seven different lots (205-211) (Affinis 2003). The results of the analysis concluded that the combined action would impact 0.60-acre of Diegan coastal sage scrub. To determine if the current project is consistent with the previous analysis, a GIS review was conducted to compare the two project footprints. It was determined that the previous project footprint would have impacted 0.03-acre (1,342 square feet) of Diegan coastal sage scrub and 0.11-acre (4,825 square feet) of disturbed habitat. These impacts included the previously proposed residence and brush management zone 1 (Figure 7). The currently proposed project would impact a larger portion of the Lot 207 extending the impact (footprint and BMZ1) approximately eight to twenty-five feet north of the original impact area. This would result in the combined loss of 0.05-acre (2,700 square feet) of Diegan coastal sage scrub and 0.11-acre of disturbed habitat (4,884 square feet) (Table 2). The revised BMZ 2 would impact an additional 0.10-acre of Diegan coastal sage scrub. However, per the City's Biological Guidelines (2012), BMZ 2 is impact neutral.

Table 2. Project Impacts

Habitat Type	Acres within the Property	Impacts (Site Plan – House & BMZ 1)	Impacts (BMZ 2) **
Diegan Coastal Sage Scrub (Tier II)	0.53-acre (23,086 square feet)	0.05-acre (2,070 square feet)	0.10-acre (4,302 square feet)
Disturbed Habitat (Tier IV)	0.11-acre (4,884 square feet	0.11-acre (4,884 square feet) *	0

*Tier IV impacts do not require mitigation, **Impacts within BMZ 2 are impact neutral and do not require mitigation

Sensitive Species

As detailed previously, no rare plant species were detected or are expected to occur within the study parcel. However, six sensitive wildlife species (coastal California gnatcatcher, coast horned lizard, rosy boa, red-diamond rattlesnake, Coronado Island skink, and orange-throated whiptail lizard) were determined to have potential to occur within the coastal sage scrub on the property. However, due to the projects location outside of the MHPA, focused surveys are not required as these species are covered species under the City's MSCP.

Jurisdictional Waters (Wetlands)

Impacts to jurisdictional wetlands and waters are not expected.

Mitigation

As proposed the project would impact a total of 0.26 acre of upland habitat. This includes 0.15-acre (0.11-acre disturbed habitat & 0.05 acre of Diegan coastal sage scrub) within the development footprint and BMZ 1. An additional 0.10 acre (0.10 acre of Diegan coastal sage scrub) of impacts will occur within BMZ 2. Impacts subject to mitigation (Tier II habitat within the development footprint & BMZ 1) equal 0.05-acre or 2,070 square feet. The project will be required to mitigate these impacts at a 1:1 ratio. At this ratio, 0.05 acres of mitigation will be required. Appropriate mitigation would be to pay into the City's Habitat Acquisition Fund (Fund #10571) at an amount determined by City Staff to be sufficient to accomplish mitigation. The mitigation for this project is consistent with the mitigation previously identified in the City's Mitigated Negative Declaration (MND) No. 6107 (City of San Diego 2013).

Although the potential exists for coastal California gnatcatcher, coast horned lizard, rosy boa, red-diamond rattlesnake, Coronado Island skink, and orange-throated whiptail lizard, impacts to potentially occupied habitat are located outside the City's MHPA. Therefore, impacts would not be considered significant and species specific mitigation requirements would not be required.

Conclusion and Recommendations

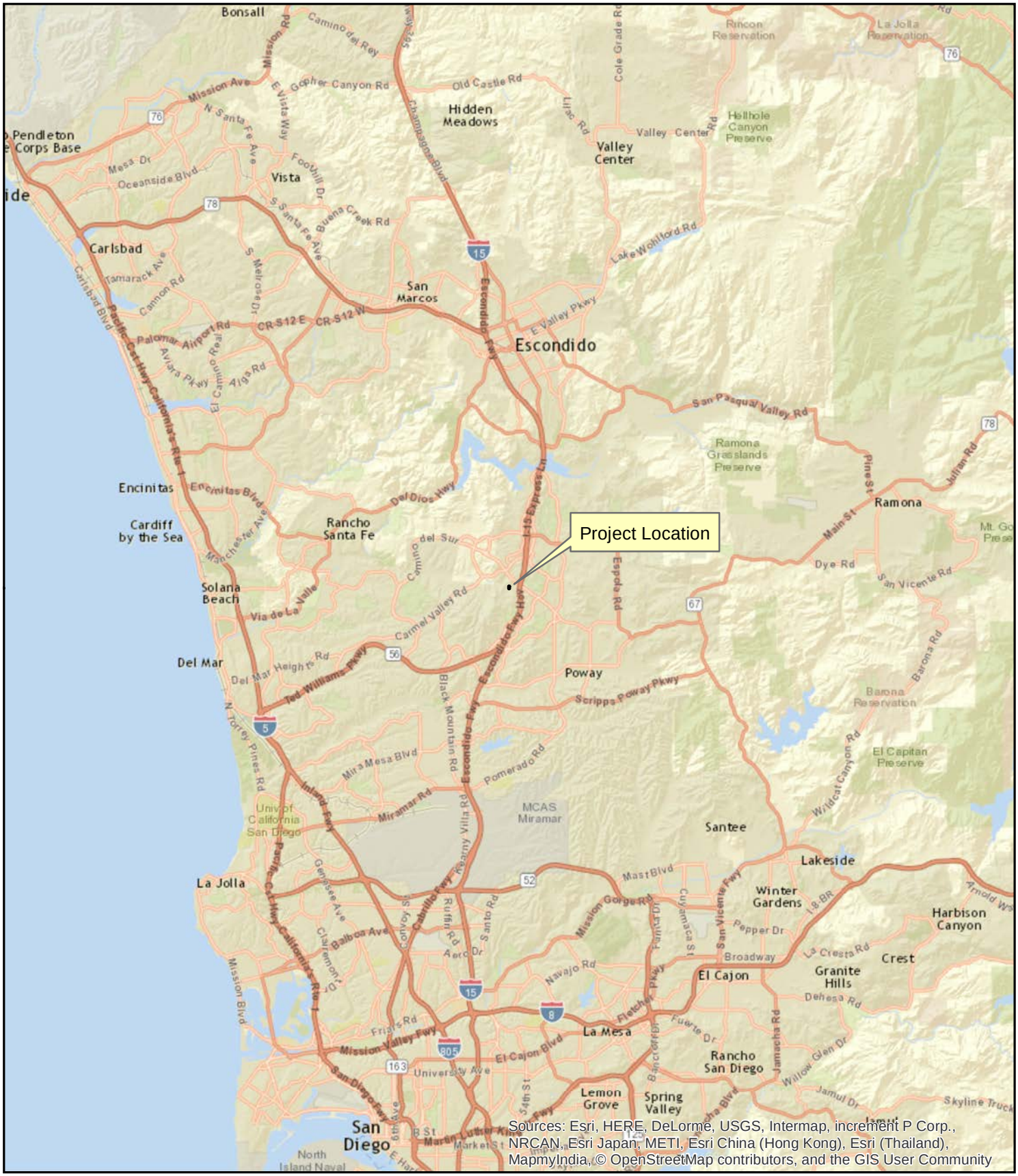
The project as currently proposed would not significantly impact any habitats or sensitive species that would require mitigation. All impacts to biological resources are below the City's California environmental Quality Act (CEQA) significance thresholds.

If you have questions regarding the analysis or conclusions presented herein, please contact me at (760) 492-3342.

Korey Klutz
Biologist

Attachments:

Figure 1 – Regional Location
Figure 2 – Project Location
Figure 3 – Soils
Figure 4 – Biological and Jurisdictional Resources
Figure 5 – MHPA
Figure 6 – Project Impacts
Figure 7 – Project Impacts Including Previous Footprint Analysis
Appendix A – Site Photographs



Almazon Street

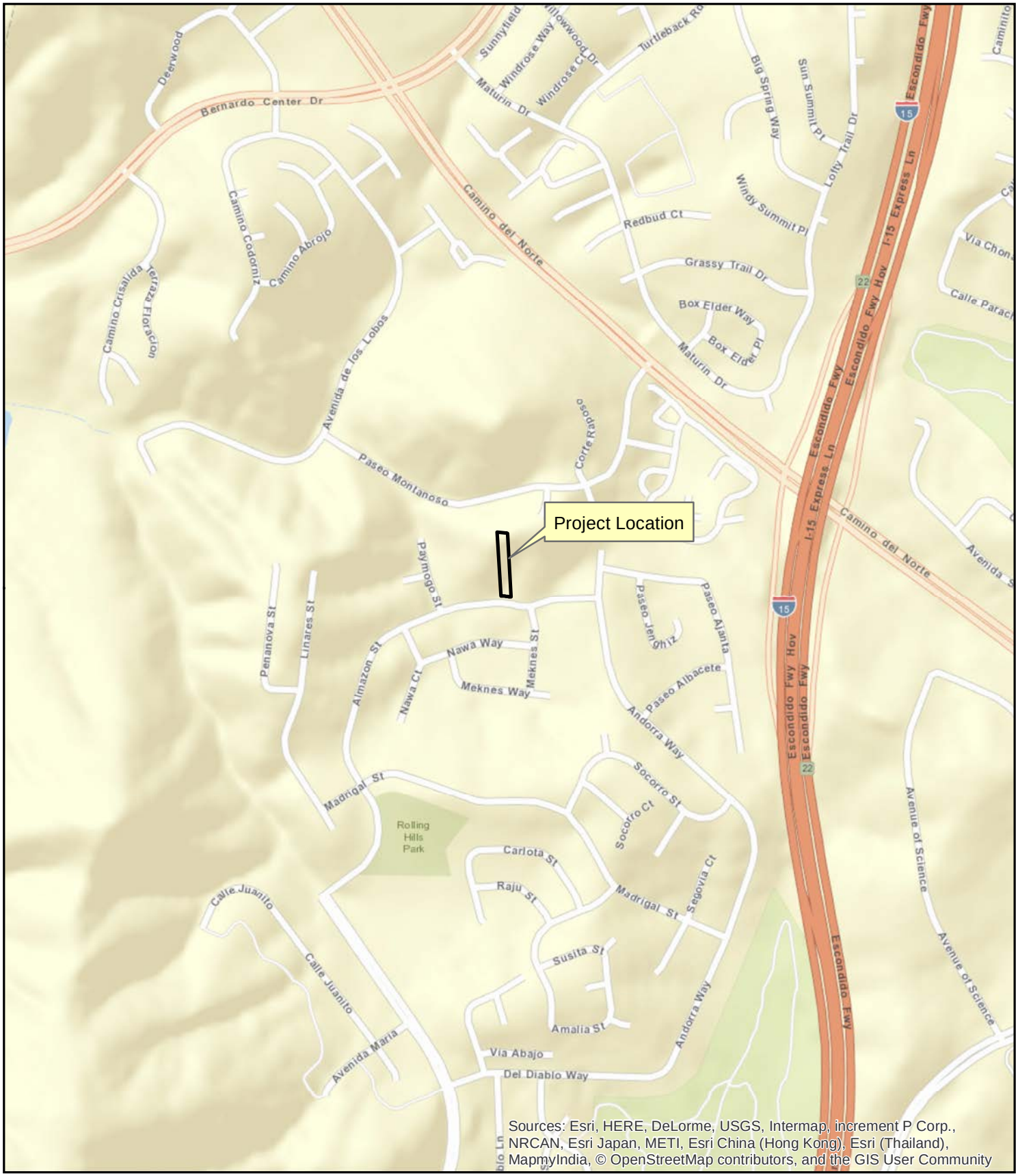
BORCHER Environmental Management

Date Printed: 8/26/2016	Author: Andrew
BEM\KBC\Almazon	

0 5 10
Miles

N

Figure 1
Regional Vicinity
11470 Almazon Street
San Diego, California



Almazon Street

BORCHER Environmental Management

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BEM\KBC\Almazon	

0 0.125 0.25
Miles

N

Figure 2
General Vicinity
11470 Almazon Street
San Diego, California

Almazon Street

BORCHER Environmental Management

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BEM\KBC\Almazon	

Parcel Boundary

Soil Type

- Diablo clay
- San Miguel-Exchequer rocky silt loams

0 125 250

Feet

N

Figure 3
Soil Type
11470 Almazon Street
San Diego, California

Almazon Street

BORCHER Environmental Management

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Parcel Boundary

Vegetation Community

Coastal Sage Scrub

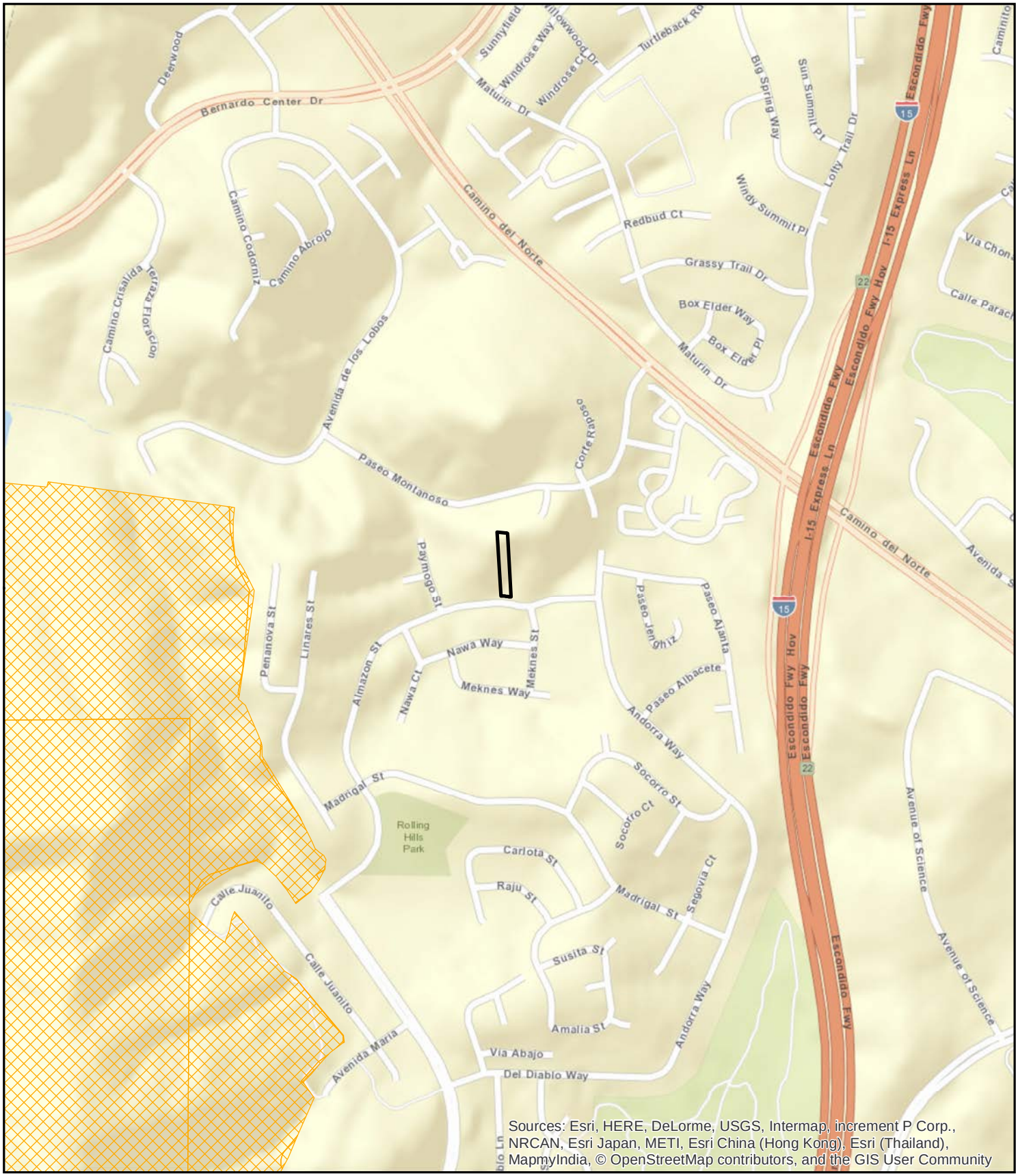
Disturbed Habitat

0 75 150

Feet

N

Figure 4
Vegetation Communities
11470 Almazon Street
San Diego, California



Almazon Street

BORCHER Environmental Management

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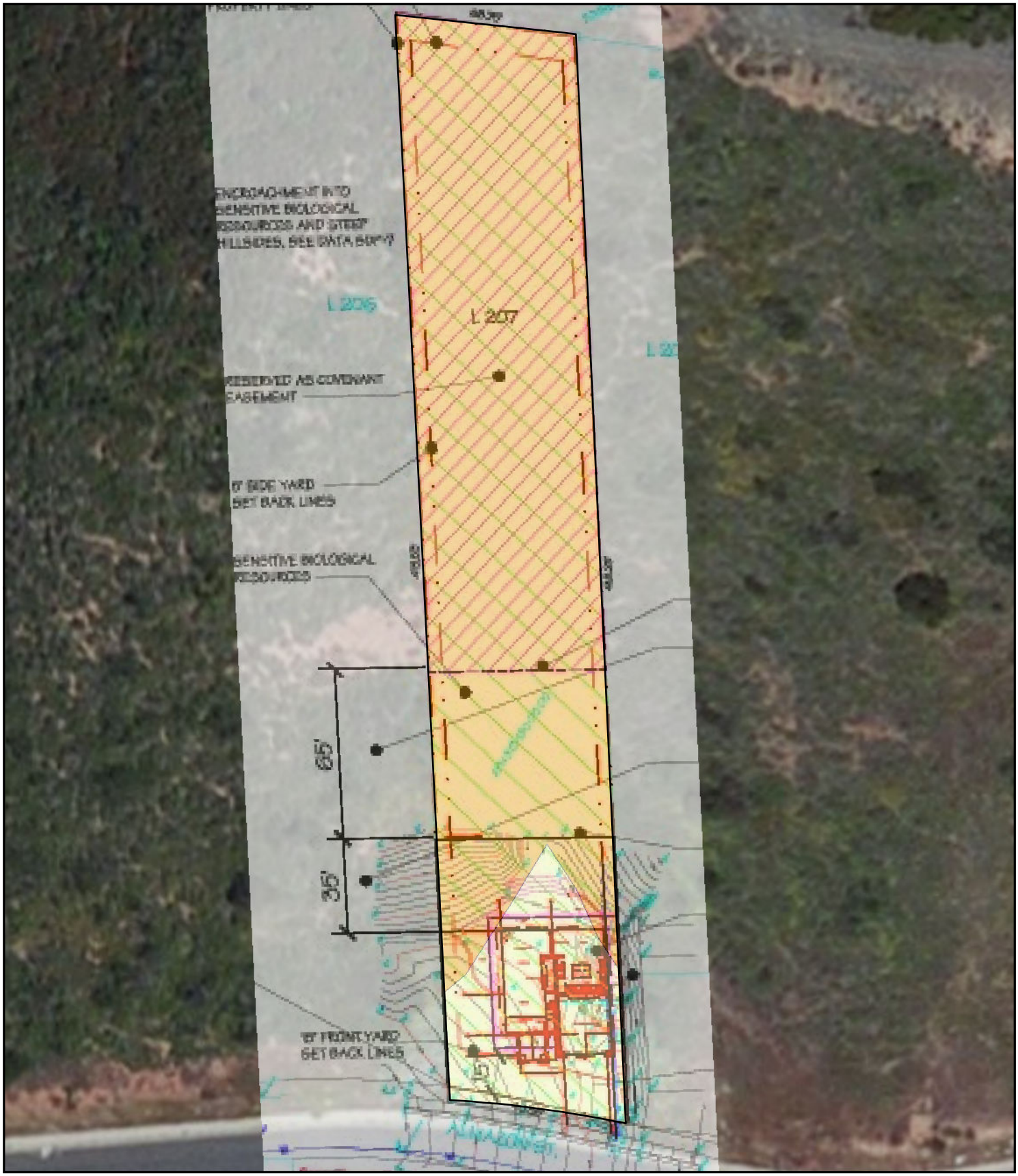
Multiple Habitat Planning Area (MHPA)

Parcel Boundary

0 500 1,000
Feet

N

Figure 5
MHPA
11470 Almazon Street
San Diego, California



APN 314-370-05

KLUTZ BIOLOGICAL CONSULTING

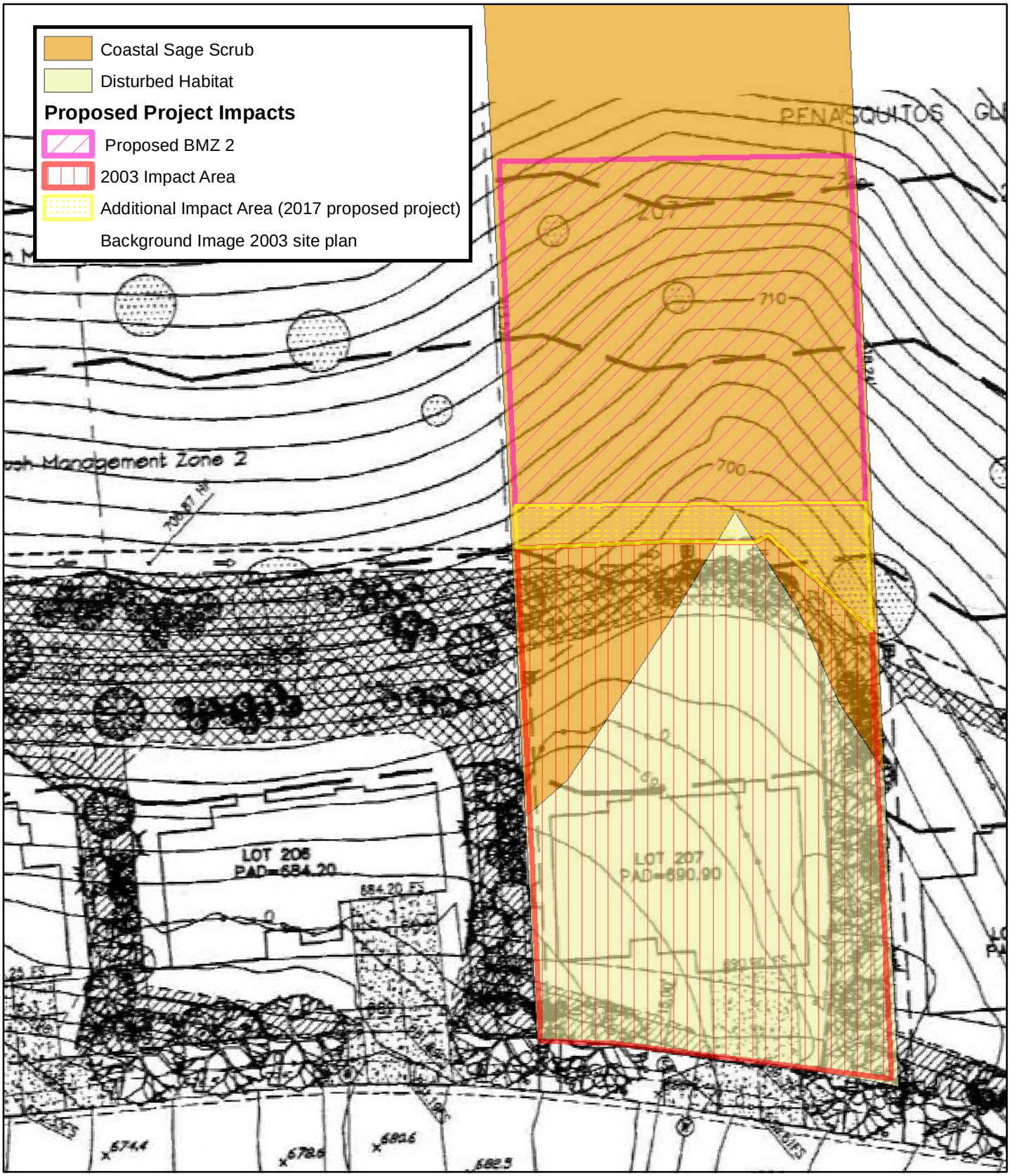
Date Printed: 9/26/2016	Author: Korey Klutz
\projects\lyon\larchmont	

Project/Parcel Boundaries
Coastal Sage Scrub
Disturbed Habitat

25 50
Feet

N

Figure 6
Project Impacts
11470 Almazon Street
San Diego, California



APN 314-370-05

KLUTZ BIOLOGICAL CONSULTING

25 50

Feet

N

Date Printed: 3/13/2017 | **Author: Korey Klutz**

\projects\lyon\larchmont

Figure 7
Project Impacts
Previously Analyzed Footprint
11470 Almazon Street
San Diego, California

Appendix B Special Status Species with Potential to Occur

Species	Status	Habitat	Comment
San Diego thornmint (Acanthomintha ilicifolia)	CRPR 2, FT, CE	Vernal Pools	Not detected. Low potential due to lack of suitable habitat onsite.
California adolphia (*Adolphia californica*)	CRPR 2	Coastal Sage Scrub	Not detected. Would have been detected during the field surveys. Not present.
San Diego ambrosia (*Ambrosia pumila*)	CRPR 1B, FE	Coastal Sage Scrub, edge of riparian habitats. Sandy soils.	Not detected. Low potential due to the lack of suitable soils.
Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*)	CRPR 1B, FE	Chaparral	Not Detected. Would have been detected during the field surveys. Not present.
San Diego sagewort (*Artemisia palmeri*)	CRPR 4	Coastal sage scrub, chaparral, coast live oak woodlands.	Not detected. Low potential, would have been detected during the field surveys. .
San Diego goldenstar (*Bloomeria clevelandii*)	CRPR 1B	Clay soils in grassland and coastal sage scrub.	Not detected. Low potential to occur due to the lack of suitable soils.
Thread leaved Brodiaea (*Brodiaea filifolia*)	CRPR 1B, FT, CE	Grasslands and scrub habitats. Clay or alkaline soils.	Not detected. Low potential to occur due to the lack of suitable soils.
Orcutt's Brodiaea (*Brodiaea orcuttii*)	CRPR 1B	Mesic habitats, including grasslands and scrub.	Not detected. Low potential to occur due to the lack of suitable mesic conditions
Wart-stemmed ceanothus (*Ceanothus verrucosus*)	CRPR 2	Southern maritime chaparral	Not detected. Low potential due to the lack of suitable habitat.
Long-spinned spineflower (*Chorizanthe diversifolia*),	CRPR 1B	Clay soils in scrub and chaparral habitats	Not detected. Low potential due to the lack of suitable soils.
Variegated dudleya (*Dudleya variegata*)	CRPR 1B	Clay soils in grassland and scrub habitats	Not detected. Low potential due to the lack of suitable soils.
Palmer's goldenbush (*Ericarmeria palmeri*)	CRPR 1B	Mesic conditions in chaparral scrub habitats	Not detected. Low potential due to the lack of suitable mesic conditions.
San Diego button celery (*Eryngium aristulatum*)	CRPR 1B, FE, CE	Vernal Pools	Not detected. Low potential due to the lack of suitable habitat.
San Diego barrel cactus (*Ferocactus viridescens*)	CRPR 2	Coastal Sage Scrub	Not detected. Low potential, would have been easily recognizable.
San Diego marsh-elder (*Iva hayesiana*)	CRPR 2	Marshes, swamps and playas	Not detected. Low potential, would have been easily recognizable.
Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*)	CRPR 4	Grasslands	Not detected. Low potential due to the lack of suitable habitat.
Willowy monardella (*Monardella viminea*)	CRPR 1B, FE, CE	Riparian scrub	Not detected. Low potential due to the lack of suitable habitat.

Species	Status	Habitat	Comment
Sea dahlia (*Leptosyne maritima*)	CRPR 2	Coastal bluff scrub	Not detected. Low potential due to the lack of suitable habitat.
Nuttall's lotus (*Lotus nuttallianus*)	CRPR 1B	Coastal dunes	Not detected. Low potential due to the lack of suitable habitat.
San Diego mesa mint (*Pogogyne ambramsii*)	CRPR 1B	Vernal Pools	Not detected. Low potential due to the lack of suitable habitat.
Nuttall's scrub oak (*Quercus dumosa*)	CRPR 2	Southern maritime chaparral	Not detected. Low potential due to the lack of suitable habitat.
Chaparral ragwort (*Senecio aphanactis*)	CRPR 1B	Gabbro soils	Not detected. Low potential due to the lack of suitable soils.
Purple stemodia (*Stemodia durantifolia*)	CRPR 2	Cobbly, alluvial streams	Not detected. Low potential due to the lack of suitable habitat.
Cooper's Hawk (*Accipiter cooperi*)	CDFW: WL	Woodlands (nesting)	Not detected. Low potential to occur.
Southern California rufous-crowned sparrow (*Aimophila ruficeps*)	CDFW: WL	Chaparral	Not detected. Moderate potential remains.
Pallid bat (*Antrozous pallidus*)	CDFW: SSC	Crack and crevices within trees and rocks	Not detected. Low potential to roost onsite.
Orangethroat whiptail (*Aspidoscelis hyperythra*)	CDFW: SSC	Chaparral and coastal sage scrub	Not detected. Moderate potential to occur onsite.
Burrowing owl (*Athene cunicularia*)	CDFW: SSC	Burrows in grasslands and coastal sage scrub.	Not detected. Low potential due to the lack of suitable burrow habitat.
San Diego fairy shrimp (*Branchinecta sandiegensis*)	FE	Vernal Pools	Not detected. Low potential due to the lack of suitable habitat.
Coastal cactus wren (*Campylorhynchus brunneicapillus*)	CDFW:SSC	Coastal scrub with cactus species (*Cylindropuntia and opuntia*).	Not detected. Low potential due to the lack of suitable habitat.
Dulzura pcket mouse (*Chaetodiphus californicus femoralis*)	CDFW:SSC	Chaparral and coastal sage scrub.	Not detected. Moderate potential to occur due to the presence of suitable habitat.
Rosy boa (*Charina trivirgata*)		Chaparral and coastal sage scrub.	Not detected. Moderate potential to occur due to the presence of suitable habitat.

Species	Status	Habitat	Comment
Red-diamond rattlesnake (*Crotalus ruber*)	CDFW:SSC	Chaparral and coastal sage scrub.	Not detected. Moderate potential to occur due to the presence of suitable habitat.
Southwestern willow flycatcher (*Empidonix traillii*)	FE, CE	Riparian forest and Riparian Woodland	Not detected. Low potential to occur due to the lack of suitable habitat.
Western pond turtle (*Emys mamorata*)	CDFW:SSC	Slow moving streams and ponds.	Not detected. Low potential to occur due to the lack of suitable habitat.
California horned lark (*Eremophila alpestris actia*)	CDFW:WL	Grasslands and bare ground in scrub and chaparral habitats.	Not detected. Moderate potential to occur due to the presence of suitable habitat.
Western mastiff bat (*Eumops pectoris californicus*)	CDFW:SSC	Lives in rocky areas and cliff faces. Roosts in cliff crevices and buildings.	Not detected. Low potential to occur due to the lack of suitable habitat.
Yellow-breasted chat (*Icteria virens*)	CDFW:SSC	Riparian habitats	Not detected. Low potential to occur due to the lack of suitable habitat.
Western yellow bat (*Lasiurus xantinus*)	CDFW:SSC	Primarily roosts in palm trees and other mature trees (*Populus fremontii*).	Not detected. Low potential to occur due to the lack of suitable habitat.
San Diego black-tailed jackrabbit (*Lepus californicus*)	CDFW:SSC	Scrublands.	Not detected. Moderate potential to occur due to the presence of suitable habitat.
San Diego desert woodrat (*Neotoma lepida intmedia*)	CDFW:SSC	Coastal sage scrub and chaparral. Often in rocky areas	Not detected. Moderate potential to occur due to the presence of suitable habitat.
Coat horned lizard (*Phrynosoma blainvillii*)	CDFW:SSC	Coastal sage scrub and chaparral.	Not detected. Moderate potential to occur due to the presence of suitable habitat.
Coronado Island skink (*Plestiodon skiltonianus interparietalis*)	CDFW:SSC	Coastal sage scrub and chaparral.	Not detected. Moderate potential to occur due to the presence of suitable habitat.
California gnatcatcher (*Polioptila californica californica*)	FT, CDFW:SSC	Coastal sage scrub	Not detected. Moderate potential to occur due to the presence of suitable habitat.

Species	Status	Habitat	Comment
Western spadefoot (*Spea hammondii*)	CDFW:SSC	Seasonal ponds and streams. Forages in upland habitats.	Suitable breeding habitat does not occur onsite.
Two-striped garters snake (*Thamnophis hammondii*)	CDFW:SSC	Riparian habitats	Not detected. Low potential to occur due to the lack of suitable habitat.
Least Bell's vireo (*Vireo bellii pusillus*)	FE, CE	Riparian scrub and riparian woodland habitats.	Not detected. Low potential to occur due to the lack of suitable habitat.
FE = Federally Endangered, CE = California Endangered, CDFW:SSC = State Species of Special Concern, CDFW:WL = Stae Watch List, CRPR = California Rare Plant Rank – CRPR 1B = Plants Rare, Threatened, or Endangered in California and Elsewhere, CRPR 2 = Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere			

Attachment A: Site Photographs (August 25, 2016)

Photo 1. View north from Almazon Street.

Photo 2. View north from within property.

Photo 3. View south from the northern property boundary.

Photo 4. View northeast from Almazon Street.