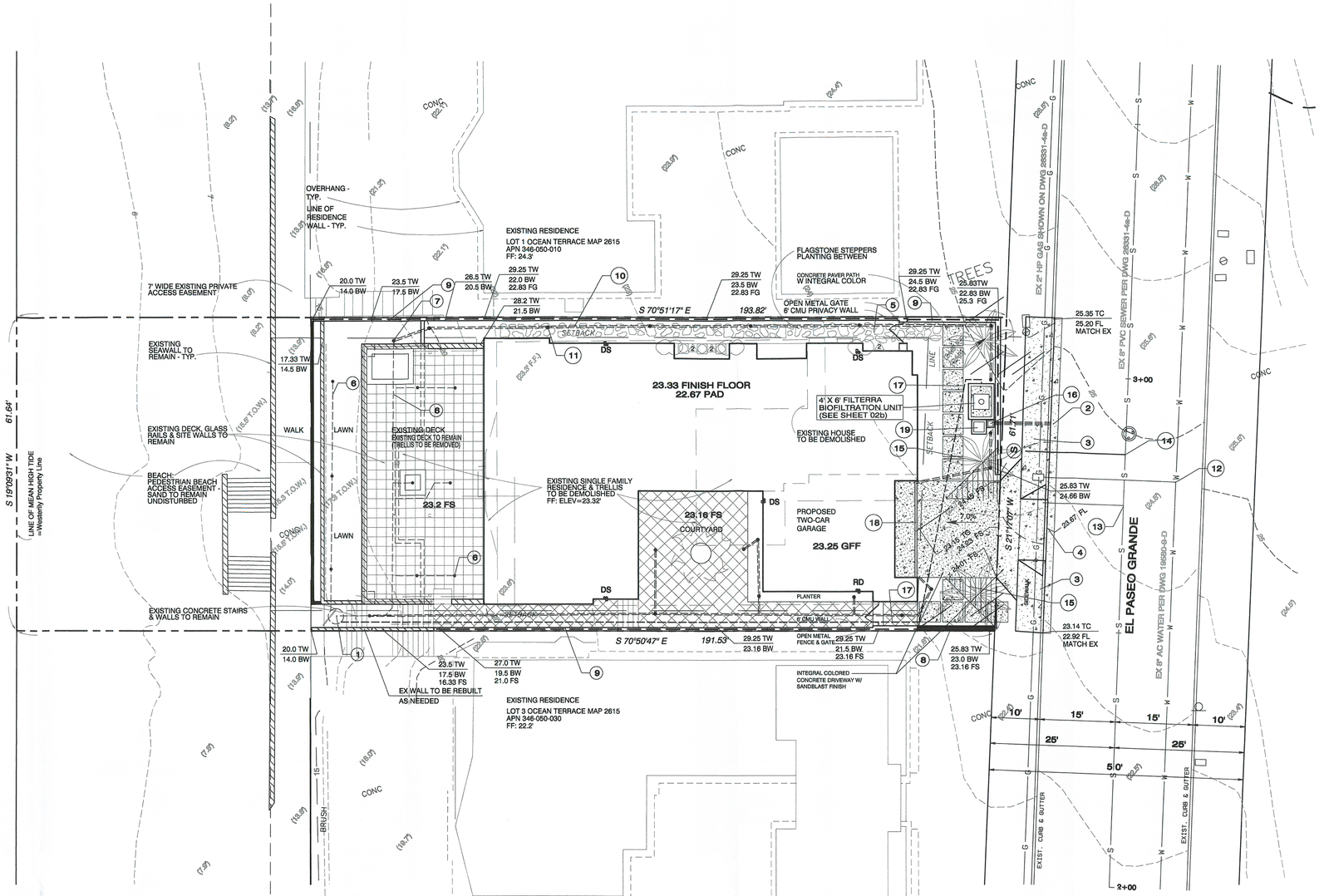
ATTACHMENT 4
COPY OF PLAN SHEETS SHOWING PERMANENT STORM WATER BMPS

This is the cover sheet for Attachment 4.



CONSTRUCTION NOTES

1. EX SUMP WITH PUMP TO CONVEY SITE RUNOFF TO FILTERRA UNIT
2. 2 - SIDEWALK UNDERDRAINS PER D-27
3. REMOVE EX CURB GUTTER AND DRIVWAYS FRONTING SITE AND REPLACE WITH NEW CURB, GUTTER AND SIDEWALK PER SDG 151 & SDG-155 AS SHOWN
4. PROPOSED 12' DRIVEWAY PER SDG-160
5. PERMEABLE PAVING (SEE LANDSCAPE PLAN)
6. EX DRAIN SYSTEM TO REMAIN
7. PROPOSED DRAIN SYSTEM TO JOIN EXISTING DRAIN SYSTEM
8. MASONRY SITE WALL
9. MASONRY RETAINING WALL
10. 4" AREA DRAIN (TYPICAL)
11. 4" PVC DRAIN
12. EX WATER SERVICE (PROTECT IN PLACE)
13. EX SEWER LATERAL. RELOCATE OUT OF PROPOSED DRIVEWAY
14. PROPOSED 4" SEWER LATERAL
15. VISIBILITY TRIANGLE. NOTHING GREATER THAN 36" IN HEIGHT ALLOWED IN THIS AREA.
16. 1212 GRAVITY CATCH BASIN
17. EX SUMP PUMP PRESSURE LINE TO FILTERRA UNIT
18. PROPOSED TRENCH DRAIN
19. PROPOSED 2424 CATCH BASIN WITH PUMP TO CONVEY RUNOFF FROM FILTERRA UNIT TO GRAVITY CATCH BASIN

LEGAL DESCRIPTION

LOT 2, OCEAN TERRACE, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF NO. 2615, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, JANUARY 20, 1950.

APN / ADDRESS

ASSESSOR'S PARCEL NUMBER: 346-050-02-00

ADDRESS: 8466 EL PASEO GRANDE
LA JOLLA. CA 92037

GRADING DATA

AREA OF SITE - 11,879 S.F. (0.273 AC)
AREA OF SITE TO BE GRADED - 6,253 SF (0.144 AC)
PERCENT OF SITE TO BE GRADED - 52.6%.
AMOUNT OF SITE WITH 25% SLOPES OR GREATER: AREA - 0SF,
PERCENT OF TOTAL SITE - 0%.
AMOUNT OF SITE WITH SLOPES THAT ARE SUBJECT TO ESL REGS. (LDC SEC. 143.0110): 0

AMOUNT OF SITE WITH ENCROACHMENT INTO STEEP SLOPES: 0 SF (0.0 AC)
PERCENT OF TOTAL SITE: 0%

AMOUNT OF CUT - 130 C.Y.
AMOUNT OF FILL - 180 C.Y.
AMOUNT OF IMPORT - 50 C.Y.
MAXIMUM HEIGHT OF FILL - 3: VERTICAL FILL
MAXIMUM FILL SLOPE RATIO NA
MAXIMUM FILL SLOPE HEIGHT: NONE

MAXIMUM HEIGHT OF CUT 2'
MAXIMUM HEIGHT OF CUT SLOPE - NA
MAXIMUM CUT SLOPE RATIO - 2:1

EARTHWORK IS APPROXIMATE

LENGTH OF SITE RETAINING WALLS - 258'
MAX HEIGHT OF SITE RETAINING WALL - 3' (PORTION OF WALL RETAINING)

NOTE:

PRIOR TO ISSUANCE OF ANY CONSTRUCTION PERMIT, THE OWNER/PERMITEE SHALL ENTER INTO A MAINTENANCE AGREEMENT FOR THE ONGOING PERMANENT BMP MAINTENANCE.

PRIOR TO ISSUANCE OF ANY CONSTRUCTION PERMIT, THE OWNER/PERMITEE SHALL INCORPORATE ANY CONSTRUCTION BEST MANAGEMENT PRACTICES NECESSARY TO COMPLY WITH CHAPTER 14, ARTICLE 2, DIVISION1 (GRADING REGULATIONS) OF THE SAN DIEGO MUNICIPAL CODE. INTO THE CONSTRUCTION PLANS OR SPECIFICATIONS.

PRIOR TO ISSUANCE OF ANY CONSTRUCTION PERMIT, THE OWNER/PERMITEE SHALL SUBMIT A WATER POLLUTION CONTROL PLAN (WPCP). THE WPCP SHALL BE PREPARED IN ACCORDANCE WITH THE GUIDELINES IN APPENDIX E OF THE CITY'S STORM WATER STANDARDS.

AN EMRA WILL BE REQUIRED FOR PRIVATE SIDEWALK UNDERDRAINS AND NON' STANDARD D/W APRON SURFACE (PEDESTRIAN PORTION) IN RIGHT OF WAY

RUNOFF WILL BE TREATED BY THE FILTERRA BIOFILTRATION UNIT BEFORE BEING CONVEYED OFFSITE, SEE SWQMP.

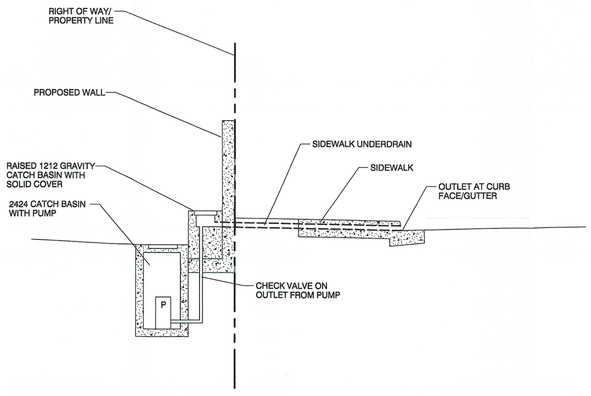
TOPOGRAHIC SURVEY PROVIDED BY K & S ENGINEERING, INC. PERFORMED IN DECEMBER 2003. SURVEY WAS UPDATED FOLLOWING ITS INITAL ISSUANCE.

THIS PROJECT WILL NOT DISCHARGE ANY STOR WATER RUNOFF DIRECTLY INTO THE LA JOLLA ASBS

NO ACCESS GATE SHALL SWING OPEN INTO THE EL PASEO GRANDE RIGHT OF WAY

SCALE: 1" = 10'

0 10 20 30 40



GRAVITY CATCH BASIN TO SIDEWALK UNDERDRAIN DETAIL

NOT TO SCALE

LEGEND

PROPERTY LINE		CONCRETE SURFACE	
EXISTING CONTOUR		DIRECTION OF DRAINAGE	
EXISTING OVERHEAD UTILITY	E E	PERMEABLE PAVING SURFACE (SEE LANDSCAPE PLAN)	
EXISTING GAS LINE	G G	DOWNSPOUT LOCATION	DS
EXISTING SEWER LINE	S S	EXISTING DRAIN SYSTEM	
EXISTING WATER LINE	W W	AREA DRAIN	
EX. SPOT ELEVATION	FS EL 27.0	PRESSURE LINE FROM SUMP TO FILTERRA	
PROPOSED SPOT ELEVATION	27.8 FS		
PROPOSED SITE WALL			
PROPOSED RETAINING WALL			
PVC DRAIN			
CATCH BASIN			
EX WALL, TO REMAIN			
PROPOSED 4" SEWER LATERAL			
PROPOSED 6" TRENCH DRAIN			

ANTONY K. CHRISTENSEN
RCE 54021
EXP. 12-31-17

JULY 27, 2016
Date

REGISTERED PROFESSIONAL ENGINEER — ANTONY K. CHRISTENSEN — No. 54021 — Exp. 12-31-17 — Civil — STATE OF CALIFORNIA

hayer architecture
445 Marine View Avenue
Suite 280
Del Mar, CA 92014
t858 792 2800
f858 792 2802
arch@hayerarchitecture.com

issue date:

revisions:

PREPARED BY

HAYER ARCHITECTURE
Contact: William S. Hayer
445 Marine View Avenue
Suite 280
Del Mar, CA 92014
(858) 792-2800
bhayer@hayerarchitecture.com

PROJECT CONSULTANTS

Civil Engineer:
CHRISTENSEN ENGINEERING
7888 Silverton Ave., Suite J
San Diego, CA 92126
(858) 271-9901

Geotechnical Engineer:
CONSTRUCTION TESTING & ENG.
1441 Montiel Road, Suite 115
Escondido, CA 92026
(760) 746-4955

Surveyor:
K & S ENGINEERING, INC.
7801 Mission Center Court, Suite 100
San Diego, CA 92108
(619) 296-5565

OVERLAY ZONES

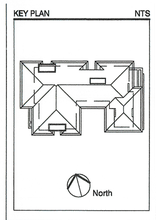
City Coastal Overlay Zone
Coastal Height Limit Overlay Zone
La Jolla Shores Planned District
La Jolla Community Plan
Beach Parking Impact Zone

APPROVALS:

PERMITS REQUIRED:

Coastal Development Permit
Site Development Permit

KEY PLAN NTS



PROJECT DATA

Construction:	VB Sprinklered
Occupancy:	R-3 S.F.R.
Code:	2013 Edition-C.R.C.
Zoning:	La Jolla Shores SF
No. of Stories:	2 Stories
Gross Site Area:	11,878.7 sf.
LDP Gross Area:	6,698 sf. 2
F.A.R.:	0.563 2
Geo Hazzard Area:	48 & 52
Landscape Area:	4,262 sf. 1

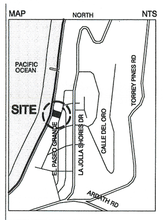
EXISTING BUILDING

Status:	To Be Demolished
Occupancy:	R-3 S.F.R.
Constructed:	1950 Non-Historic
Soil Condition:	Prev. Developed

ORIGINAL DATE: 10-15-2015

REVISIONS: 1 08-10-2016; 2 07-27-2016

MAP NORTH NTS



PROJECT ADDRESS
8466 El Paseo Grande
La Jolla, CA 92037

PROJECT OWNER
Joseph & Machelle Cardenas

ASSESSOR'S PARCEL NO.:
346-050-02-00

LEGAL DESCRIPTION:
LOT 2 OF OCEAN TERRACE, MAP 2615, CITY SAN DIEGO, COUNTY SAN DIEGO

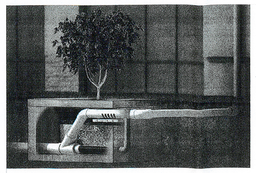
BENCHMARK:
City of San Diego Benchmark SBP at El Paseo Grande & Paseo del Ocaso Record from City of San Diego.
Elevation = 31.722 MSL
Datum: NGVD 1929

PROJECT NO:
No. PTS 445629

PROJECT NAME:
CARDENAS RESIDENCE

SHEET TITLE:
GRADING & DRAINAGE PLAN

SHEET NUMBER:
02a OF 9



filterra®
Bioretention Systems
CELEBRATING 10 YEARS

Filterra® Roofdrain Stormwater Treatment System

A Greenroof at Ground Level™

Filterra® Roofdrain System

The Filterra Roofdrain System treats piped in stormwater runoff from rooftops. Using bioretention filtration the system captures and immobilizes pollutants of concern such as: TSS, nutrients and metals.

Stormwater continues to flow through the media and into the underdrain system, where treated water is discharged. Higher flows bypass the bioretention treatment via an overflow/bypass pipe design.

Features and Benefits

Best Value for Rooftop Treatment.

- **compact size**
- **needs no external bypass**
- **easy installation**
- **simple maintenance**

Versatile.
Filterra Roofdrain can be used for:

- **new construction**
- **retrofits**
- **commercial or residential applications.**

Filterra Roofdrain can be placed:

- **At grade**
- **Above grade with effluent below grade to meet elevation challenges of high water tables**
- **Install next to or away from your building**

Maintenance. Maintenance is simple and safe (at ground level), and the first year is provided FREE with the purchase of every unit. The procedure is so easy you can perform it yourself.

Protection. The Filterra Roofdrain's hydraulic configuration was tested by the Colorado State University Hydraulics Laboratory.

Below grade treatment using Filterra Roofdrain avoids the slipping hazard liabilities of daylighted roofdrains during freezing weather.

Protect from erosion with Filterra's monolithic water tight design.

Expected Pollutant Removal

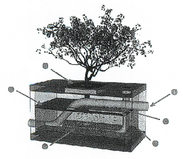
(Ranges Varying with Particle Size, Pollutant Loading and Site Conditions)

TSS Removal	85%
Phosphorus Removal	60% - 70%
Zinc Removal	> 66%
Copper Removal	>58%
Nitrogen Removal	43%
Oil & Grease	> 93%

*Total Petroleum Hydrocarbons

Information on the pollutant removal efficiency of the filter soil/plant media is based on third party lab and field studies.

Filterra media has been TAPE and TARP tested and approved.



1. Influent Pipe from Roof Leader
2. Pipe slots allow treatment flow to media surface
3. Erosion Control
4. Perforated Underdrain for Treatment Flows
5. Protective Mulch Layer
6. Cast Iron Tree Grate for Maintenance Access

filterra®
Bioretention Systems
CELEBRATING 10 YEARS

Filterra® Roofdrain Stormwater Treatment System

A Greenroof at Ground Level™

Design Guidelines

1) Use the Filterra Roofdrain Design Guidance as a reference available from design@filterra.com.

2) Select Filterra Roofdrain model according to your Regional Sizing Table, and according to the building's roof drainage area and associated roof drain pipe sizes.

3) Determine Filterra Roofdrain placement next to a building, or away from your building.

4) Ensure piping to and from Filterra Roofdrain system is free-draining at minimum 1% slope, or per local codes.

Placement Review

Because we want your project with Filterra to be a great success, we respectfully require that each Filterra Roofdrain project be reviewed by our placement/design staff. This review is mandatory, as proper placement ensures you of the most efficient and cost effective solution, as well as optimum performance and minimal maintenance

Proper Placement

1) Pipe flow of the Filterra Roofdrain System eliminates the cross-linear flow requirements necessary with standard Filterra.

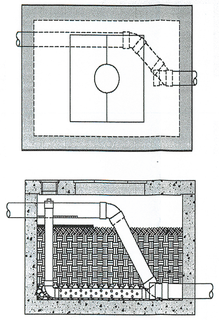
2) Filterra Roofdrain Systems should only receive piped in runoff.

3) Rooftop drainage should still be designed with emergency bypass relief prior to the Filterra Roofdrain System (e.g.: rooftop scuppers, etc.)

Always follow local plumbing codes for roof drainage requirements.

The Filterra System is not a substitute for rooftop overflow/bypass.

4) Send completed project information form along with plans to Filterra for placement and application review.



Filterra Roofdrain System
One pipe in, one pipe out, with internal high-flow bypass.

Western Region Support
34421 Rancho Viejo Blvd., Suite E-312
Yucaipa, CA 92399

Corporate Headquarters & Eastern Region Support
11552 Virginia Precast Road
Amherst, VA 24006

Toll Free: (866) 349-3455 • P: (804) 796-9400
E-mail: design@filterra.com • Web: www.filterra.com

Filterra® is protected by U.S. Patents #6,277,274, #6,569,321 & #7,425,481. Other patents pending.
©2011 by Filterra® Bioretention Systems. Filterra® is a division of Americast

FILTERRA BIOFILTRATION DETAILS

ANTONY K. CHRISTENSEN
RCE 54021
EXP. 12-31-17

JULY 27, 2016
Date

REGISTERED PROFESSIONAL ENGINEER
Antony K. Christensen
No. 54021
Exp. 12-31-17
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STATE OF CALIFORNIA

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issue date:

revisions:

hayer

PREPARED BY

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OVERLAY ZONES

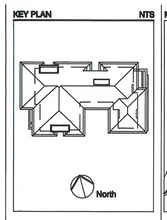
City Coastal Overlay Zone
Coastal Height Limit Overlay Zone
La Jolla Shores Planned District
La Jolla Community Plan
Beach Parking Impact Zone

APPROVALS:

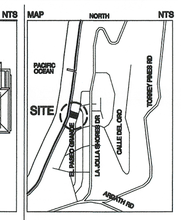
PERMITS REQUIRED:

Coastal Development Permit
Site Development Permit

KEY PLAN NTS



MAP NORTH NTS



PROJECT DATA

Construction:	VB Sprinklered
Occupancy:	R-3 S.F.R.
Code:	2013 Edition-C.R.C.
Zoning:	La Jolla Shores SF
No. of Stories:	2 Stories
Gross Site Area:	11,878.7 sf.
LDP Gross Area:	6,698 sf. ⚠
F.A.R.:	0.568 ⚠
Geo Hazzard Area:	1B & 2Z
Landscape Area:	4,282 sf. ⚠

EXISTING BUILDING

Status:	To Be Demolished
Occupancy:	R-3 S.F.R.
Constructed:	1960 Non-Historic
Soil Condition:	Prev. Developed

ORIGINAL DATE: 10-15-2015

REVISIONS:
⚠ 06-10-2016
⚠ 07-27-2016

PROJECT ADDRESS

8466 El Paseo Grande
La Jolla, CA 92037

PROJECT OWNER

Joseph & Machelle Cardenas

ASSESSORS PARCEL NO.:

346-050-02-00

LEGAL DESCRIPTION:

LOT 2 OF OCEAN TERRACE, MAP 2615, CITY SAN DIEGO, COUNTY SAN DIEGO

BENCHMARK:

City of San Diego Benchmark
SSP at
El Paseo Grande & Paseo del Ocaso Record from City of San Diego.
Elevation = 31.722 MSL'
Datum: NGVD 1929

PROJECT NO:

No. - PTS 445829

PROJECT NAME:

CARDENAS RESIDENCE

SHEET TITLE:

GRADING & DRAINAGE DETAILS

SHEET NUMBER:

02b OF 9

Use this checklist to ensure the required information has been included on the plans:

The plans must identify:

- ☐ Structural BMP(s) with ID numbers matching Form I-6 Summary of PDP Structural BMPs
- ☐ The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit
- ☐ Details and specifications for construction of structural BMP(s)
- ☐ Signage indicating the location and boundary of structural BMP(s) as required by the City Engineer
- ☐ How to access the structural BMP(s) to inspect and perform maintenance
- ☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
- ☐ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- ☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
- ☐ Recommended equipment to perform maintenance
- ☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management
- ☐ Include landscaping plan sheets showing vegetation requirements for vegetated structural BMP(s)
- ☐ All BMPs must be fully dimensioned on the plans
- ☐ When proprietary BMPs are used, site specific cross section with outflow, inflow and model number shall be provided. Broucher photocopies are not allowed.

ATTACHMENT 5
DRAINAGE REPORT

Attach project's drainage report. Refer to Drainage Design Manual to determine the reporting requirements.

Drainage Study
CARDENAS RESIDENCE

LOT 2, MAP NO. 2615
APN 346-050-02-00

Prepared for:
Joseph & Machelle Cardenas
8466 El Paseo Grande
La Jolla, CA 92037

Prepared by:
Christensen Engineering & Surveying
7888 Silverton Avenue, Suite "J"
San Diego, CA 92126
(858) 271-9901

PTS No. 445629

July 26, 2015
Revised June 10, 2016

Introduction

This project involves the demolition of the existing residence on Lot 2 of Map 2615 at 8466 El Paseo Grande (except for the existing deck and drainage improvements, including sump pump) and construction of a new residence and improvements.

The attached drainage area maps are from a topographic survey by K & S Engineering, Inc, prepared in December 2003. A small offsite area conveys runoff onsite while a small onsite area conveys runoff offsite. The majority of the site conveys runoff to the deck and landscaped area where it is collected and conveyed to an existing sump pump. From there it is pumped in a PCV pipe along the southerly boundary to an area near the easterly boundary where it terminates, above ground, and permits runoff to flow over the surface of the ground to El Paseo Grande. The remainder of the site conveys its runoff westerly. Following construction the same general pattern will persist with the offsite runoff now be maintained on the adjacent property northerly, The small area of onsite runoff that was previously conveyed to the southerly property will now be collected and conveyed to the existing sump pump. From there it will now be conveyed to a Filterra Biofiltration unit and then to catch basin with pump and to a gravity catch basin onsite and from there it will flow by gravity through a sidewalk underdrain to El Paseo Grande. The remainder of the site will continue to flow westerly.

The area of imperviousness remains nearly the same (6,019 sf pre-construction, 6,458 post-construction) before and after construction. The imperviousness changes from 50.7 % to 54.4%. A runoff coefficient of 0.63 was selected from the County of San Diego Hydrology Manual, Page 3-6 for 50% imperviousness and Soil Type "D".

Since the project is a priority project due to being located in a Water Quality Sensitive Area.

The Rational Method was used to calculate the anticipated flow for the 100-year storm return frequency event using the method outlined in the City of San Diego Drainage Design Manual.

Antony K. Christensen
RCE 54021 Exp. 12-31-17

06-10-16
Date

JN A2015-38

Calculations

1. *Intensity Calculation*

(From the City of San Diego Drainage Design Manual, Page 86)
Tc = Time of concentration

$Tc = (1.8\ (1.1-C)D^{1/2})/S^{1/3}$

Since the difference in elevation is 12' (26'-14') and the distance traveled is 158', S=7.6%. C = 0.63
Tc = 5.4 minutes.

From table on Page 83

I_{100} = 4.3 inches

2. *Coefficient Determination*

Pre-Construction and Post-Construction:

From Page 3-6 from the County Hydrology Manual with 50% imperviousness and Soil Type "D"

C= 0.63

Percent imperiousness
Pre Construction = 50.7%
Post-Construction = 54.4%

3. *Volume calculations*

Q = CIA

Areas of Drainage

The area of this study is set to the same location occupied by the proposed improvements because the rest of the area will remain unchanged and will not affect runoff. Runoff from the area

northerly of the site, conveyed to it by the 18" and 36" drain will not change.

Pre-Construction

Area offsite draining onsite	A = 0.004 Ac
Area onsite draining offsite southerly	B = 0.005 Ac
Area onsite draining to sump	C = 0.183 Ac
Area onsite draining westerly	D = 0.085 Ac

Post-Construction

Area onsite draining to sump	E = 0.188 Ac
Area onsite draining westerly	D = 0.085 Ac

Pre-Construction

Q_{100A} = (0.63) (4.3) (0.004)
Q_{100B} = (0.63) (4.3) (0.005)
Q_{100C} = (0.63) (4.3) (0.183)
Q_{100D} = (0.63) (4.3) (0.085)

Q_{100A} = 0.01 cfs
Q_{100B} = 0.01 cfs
Q_{100C} = 0.50 cfs
Q_{100D} = 0.23 cfs

Post-Construction

Q_{100E} = (0.63) (4.3) (0.188)
Q_{100D} = (0.63) (4.3) (0.085)

Q_{100E} = 0.51 cfs
Q_{100D} = 0.23 cfs

Water Quality Flow Rate

For Proprietary BMPs for treating impervious surface runoff flow rate use I = 0.2 in/hr and multiply Q by 1.5 to arrive at the flow rate to be treated.

$Q = C*I*A*(1.5)$

$Q_{WQX} = (0.63)\ (0.2)\ (0.188)\ (1.5)$

$Q_{WQX} = .036$ cfs

The 6 x4 Filterra unit is capable of conveying 0.055 cfs and so is adequate. The 4 x 4 unit is capable of conveying 0.037 cfs but the 6 x 4 unit is selected for this project to provide a factor of safety to treatment.

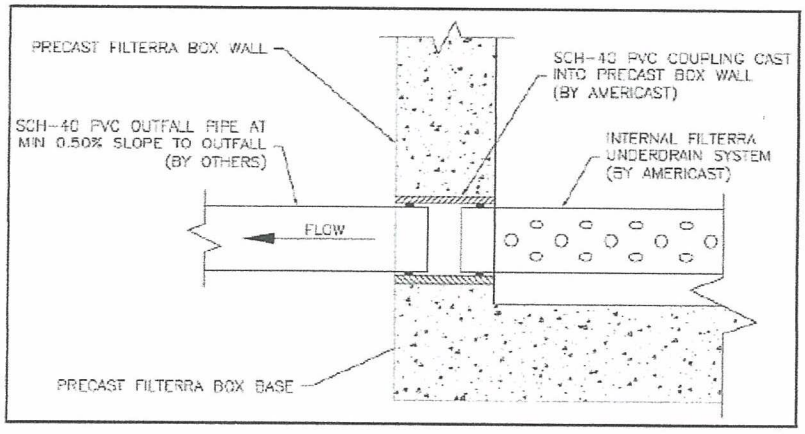
4. Discussion

Some offsite runoff that flows onto the site before construction will be retained on the neighboring property, from which it originates, following construction. A portion of the site that flows offsite, before construction will be retained onsite, following construction. The total runoff that flows from the site to El Paseo Grande before and after construction will remain unchanged. The flow to the west will remain unchanged. Following construction, runoff that currently is pumped from the existing sump is discharged onto the surface of property at the southeast corner. Following construction that discharge will be directed to a Filterra Biofiltration unit and then to a catch basin with pump that will convey the treated runoff to a gravity catch basin, that will allow it to flow to a sidewalk underdrain and then onto El Paseo Grande.

APPENDIX

Filterra® Piping Technical Details

Filterra® is supplied with an internal underdrain system that exits a wall in a perpendicular direction. Most efficient drainage is accomplished when the drain exits on the lower side of the Filterra®, i.e. nearest the overflow bypass. This is more important when using the larger sized Filterra® Systems.



Drawing DP1:
Section View through Filterra Precast Box Wall at Outfall Pipe Connection

All units are supplied with the drainage pipe coupling precast into the wall, at a depth of 3.50 feet (INV to TC). Drawing DP1 is a detail of the coupling. The coupling used is SCH-40 PVC.

Typically, a minimum slope of 0.5% is adequate to accommodate the flow of treated water from the Filterra®, but each site may present unique conditions based on routing of the outfall pipe (elbows). The pipe must not be a restricting point for the successful operation of Filterra®. All connecting pipes must accommodate freefall flow. Table 3 lists approved treatment sizing flow rates of the various size Filterra® units. A safety factor of at least two should be used to size piping from the Filterra based on these conservative approved treatment flow rates.

Table 3: Filterra Flow Rates & Pipe Details

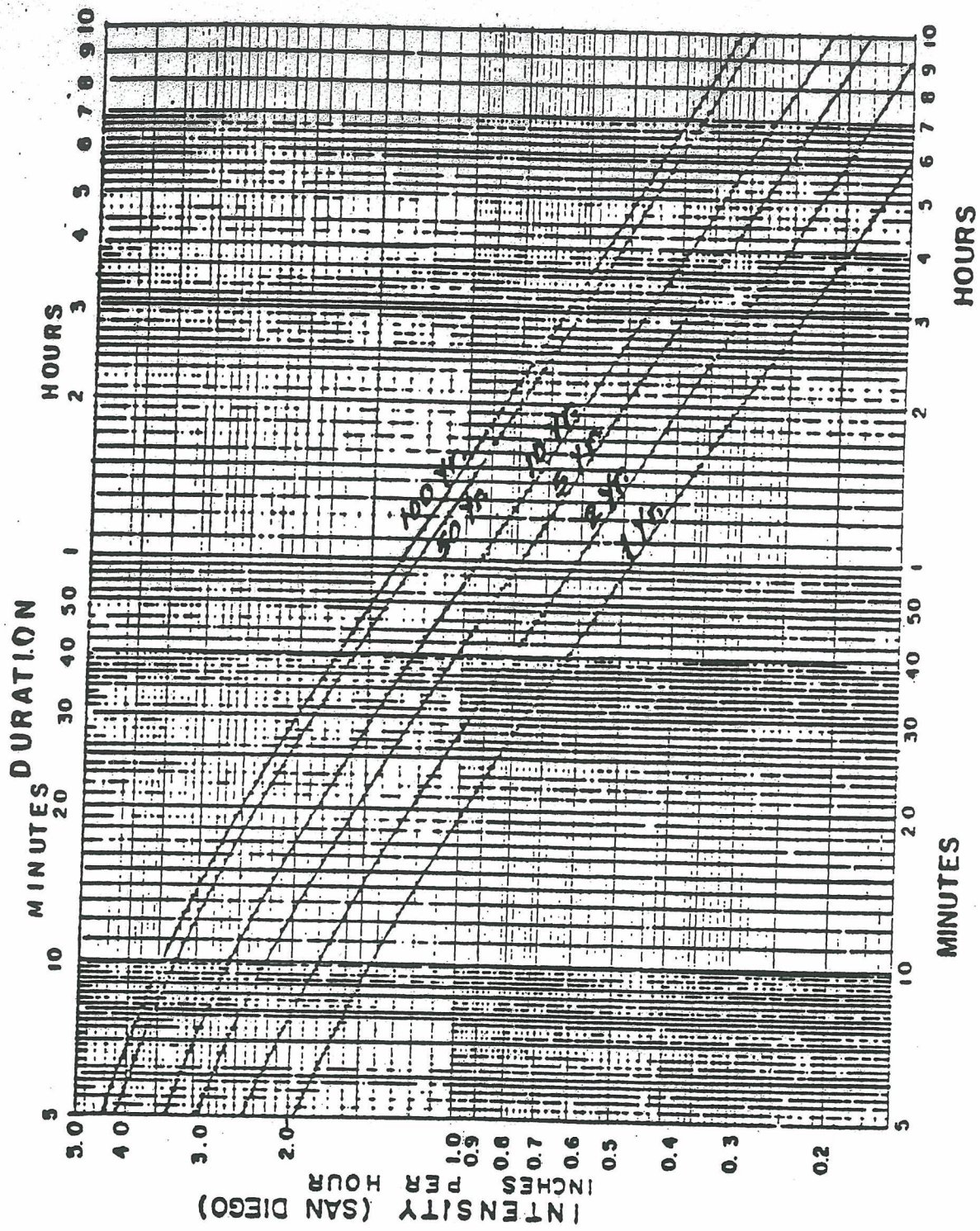
Important Note: Actual flow rate may be more than double rates below.

Filterra® Size (feet)	Expected Flow Rate (cubic feet/second)	Connecting Drainage Pipe
4x4	0.037	4" SCH-40 PVC
4 x 6 or 6 x 4	0.055	4" SCH-40 PVC
4x6.5 or 6.5x4	0.061	4" SCH-40 PVC
4 x 8 or 8 x 4	0.075	4" SCH-40 PVC
4x16 or 16x4	0.150	6" SCH-40 PVC
6 x 6	0.084	4" SCH-40 PVC
6 x 8 or 8 x 6	0.112	4" SCH-40 PVC
6 x 10 or 10 x 6	0.140	6" SCH-40 PVC
6 x 12 or 12 x 6	0.168	6" SCH-40 PVC
8x12 or 12x8	0.224	6" SCH-40 PVC
8x16 or 16x8	0.297	6" SCH-40 PVC
8x18 or 18x8	0.337	6" SCH-40 PVC
8x20 or 20x8	0.374	6" SCH-40 PVC

Table 3-1
RUNOFF COEFFICIENTS FOR URBAN AREAS

Land Use		Runoff Coefficient "C"				
			Soil Type			
NRCS Elements	County Elements	% IMPER.	A	B	C	D
Undisturbed Natural Terrain (Natural)	Permanent Open Space	0*	0.20	0.25	0.30	0.35
Low Density Residential (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Low Density Residential (LDR)	Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0.46
Low Density Residential (LDR)	Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.49
Medium Density Residential (MDR)	Residential, 4.3 DU/A or less	30	0.41	0.45	0.48	0.52
Medium Density Residential (MDR)	Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	0.57
Medium Density Residential (MDR)	Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	0.60
Medium Density Residential (MDR)	Residential, 14.5 DU/A or less	50	0.55	0.58	0.60	0.63
High Density Residential (HDR)	Residential, 24.0 DU/A or less	65	0.66	0.67	0.69	0.71
High Density Residential (HDR)	Residential, 43.0 DU/A or less	80	0.76	0.77	0.78	0.79
Commercial/Industrial (N. Com)	Neighborhood Commercial	80	0.76	0.77	0.78	0.79
Commercial/Industrial (G. Com)	General Commercial	85	0.80	0.80	0.81	0.82
Commercial/Industrial (O.P. Com)	Office Professional/Commercial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (Limited I.)	Limited Industrial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (General I.)	General Industrial	95	0.87	0.87	0.87	0.87

*The values associated with 0% impervious may be used for direct calculation of the runoff coefficient as described in Section 3.1.2 (representing the pervious runoff coefficient, Cp, for the soil type), or for areas that will remain undisturbed in perpetuity. Justification must be given that the area will remain natural forever (e.g., the area is located in Cleveland National Forest).
DU/A = dwelling units per acre
NRCS = National Resources Conservation Service



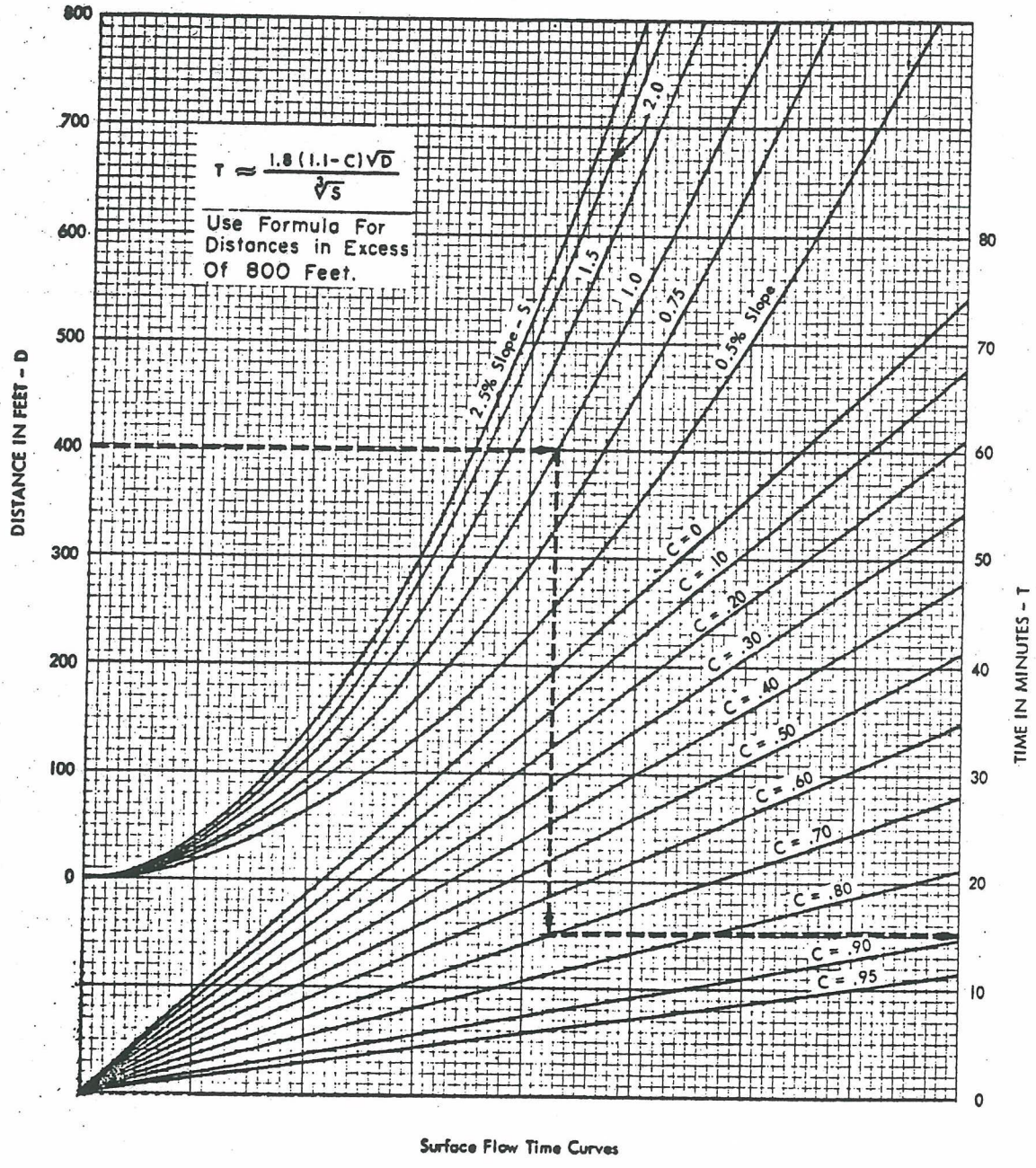
ELEV.	FACTOR
0–1500	1.00
1500–3000	1.23
3000–4000	1.42
4000–3000	1.60
3000–6000	1.70
DESERT	1.25

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

RAINFALL
INTENSITY - DURATION - FREQUENCY
CURVES
for
COUNTY OF SAN DIEGO

APPENDIX I

URBAN AREAS OVERLAND TIME OF FLOW CURVES



Surface Flow Time Curves

EXAMPLE:

GIVEN: LENGTH OF FLOW = 400 FT.
SLOPE = 1.0 %
COEFFICIENT OF RUNOFF C = .70

READ: OVERLAND FLOWTIME = 15 MINUTES

DRAINAGE AREA MAPS

PRE-DEVELOPMENT DRAINAGE AREA MAP

PRE-CONSTRUCTION DRAINAGE AREA MAP

AREA "D"
0.085

AREA "A"
0.004

AREA "C"
0.183

AREA "B"
0.005

8470
HT 15.4'

8462
HT 14.0'

HT 15.6'

TREES

CONC

OBSCURED

S 70°51'17" E 193.82'

S 70°50'47" E 191.53'

S 19°09'31" W 61.64'

S 21°17'07" W 61.71'

STAIRS

BRUSH

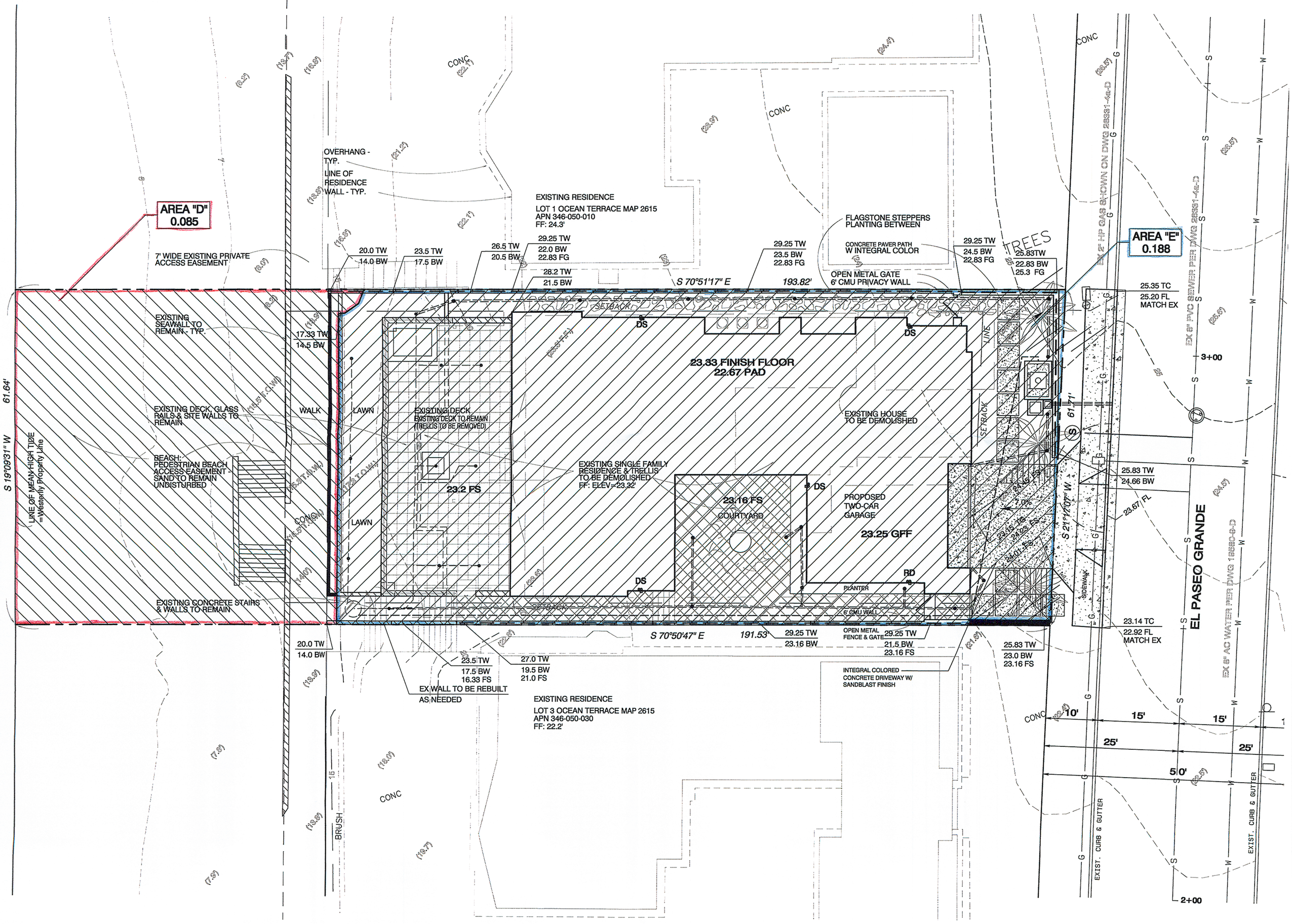
SHADOWS

GMW

EXIST. CURB & GUTTER

POST-DEVELOPMENT DRAINAGE AREA MAP

POST-CONSTRUCTION DRAINAGE AREA MAP



ATTACHMENT 6
GEOTECHNICAL AND GROUNDWATER INVESTIGATION REPORT

Attach project's geotechnical and groundwater investigation report. Refer to Appendix C.4 to determine the reporting requirements

Worksheet I-8 : Categorization of Infiltration Feasibility Condition

Categorization of Infiltration Feasibility Condition	Worksheet I-8		
Part 1 - Full Infiltration Feasibility Screening Criteria Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?			
Criteria	Screening Question	Yes	No
1	Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X
Provide basis: According to the NCRS superficial soil types in the project vicinity consists of Cr (Coastal Beaches), Corralitos loamy sand with 0 to 5 percent slopes (CsB), and Corralitos loamy sand with 5 to 9 percent slopes (CsC). These are all Type A soils with hydraulic conductivities ranging from 5.95 to 19.98 inches per hour. However, these soil types were not confirmed to be present in the near surface of the site based on our Geotechnical borings and laboratory analysis. Based on the boring logs, the soils consisted of previously placed fill material, Quaternary Slope Wash (Qsw) that consisted of loose to wet, silty to sandy Clay and sandy clayey Silt; Quaternary Old Paralic Deposits (previously mapped as Bay Point Formation), that consisted of a stiff to very stiff pedogencic argillic soil horizon (Qbp-Clay layer), a transitional unit between between Qsw and Qbp. There was an old beach sand layer at depth that is more characteristic to the NCRS soil types listed above. According to Appendix F, soils with >20% clay or >40% silt as documented at the site are typically not suitable for infiltration. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
2	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X
Provide basis: As shown on geologic cross-sections presented in the Faulting and Bluff Evaluation, dated February 12, 2015, and updated in Addendum 03, dated June 10, 2016; both prepared by Construction Testing & Engineering Inc., the fill and Quaternary Slope Wash material are underlain by an impermeable to low permeability argillic soil horizon. Perched groundwater was recognized above this layer within 7 to 10 feet of the surface. The argillic soil layer slopes to the west towards the beach and a series of retaining walls. Any infiltration of water is anticipated to mound and flow down gradient towards the retaining walls. This would result in saturated conditions beneath the structure and behind the retaining walls creating geotechnical hazards. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			

Worksheet I-8 Page 2 of 4			
Criteria	Screening Question	Yes	No
3	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		X
Provide basis: Infiltration rates are anticipated to be below 0.5 inches per hour, however any infiltration could increase the risk of storm water pollutants discharging to the public beach. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
4	Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		X
Provide basis: Infiltration rates are anticipated to be below 0.5 inches per hour, however any infiltration could increase the risk of storm water pollutants discharging to the public beach. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
Part 1 Result*	If all answers to rows 1 - 4 are "Yes" a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration If any answer from row 1-4 is "No", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design. Proceed to Part 2		Part 2

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings.

Worksheet I-8 Page 3 of 4			
Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?			
Criteria	Screening Question	Yes	No
5	Do soil and geologic conditions allow for infiltration in any appreciable rate or volume? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X
Provide basis: Infiltration at any rate will result in mounding above the argillic (clay) layer, and perched groundwater has already been identified within 10 feet of the existing surface. This is considered an unsuitable condition in Appendix F of the City of San Diego Guidelines for Geotechnical Reports. Also, the fine content of the underlying soils are also considered unsuitable according to Appendix F, as is the slopes along the beach front that are greater than 25% and are retained by retaining walls. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
6	Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X
Provide basis: Groundwater mounding would be increased above the clay layer and perched groundwater has already been documented to be within 10 feet of the existing surface. These conditions would create geotechnical hazards for the building and retaining wall foundations. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			

Worksheet I-8 Page 4 of 4			
Criteria	Screening Question	Yes	No
7	Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: As described above, infiltration of any amount would contribute to rising groundwater levels of the shallow perched groundwater conditions. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
8	Can infiltration be allowed without violating downstream water rights? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: N/A Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
Part 2 Result*	If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is Partial Infiltration. If any answer from row 5-8 is no, then infiltration of any volume is considered to be infeasible within the drainage area. The feasibility screening category is No Infiltration.	None	

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings

Construction Testing & Engineering, Inc.
Inspection | Testing | Geotechnical | Environmental & Construction Engineering | Civil Engineering | Surveying

June 10, 2016 CTE Project No. 10-12702G

C/O: Hayer Architecture
Attention: Mr. Greg Friesen
445 Marine View Ave, Suite 280
Del Mar, California 92014
Telephone: 858.792.2800 Via Email: gfriesen@hayerarchitecture.com

Subject: Addendum 03- Response to City of San Diego Cycle Review Comments Cycle Type 4 –Submitted (Multi-Discipline): LDR-Geology, for Proposed Cardenas Residence 8466 El Paseo Grande, La Jolla, California

References: At End of Document-Appendix A

Mr. Friesen:

Presented in this letter is our response to the City of San Diego, Cycle Type 4 (Multi-Discipline), LDR-Geology review for the proposed Cardenas Residence, located at 8466 El Paseo Grande, La Jolla, California. The numbers for the responses below correspond to the comments in the City letter, dated November 25, 2015. Comments 1 and 2 refer to project references and, therefore, no responses are required for these line items. Comments 3 through 11 are addressed herein. A copy of the City Cycle Issue comments is included as Appendix B.

In addition, as the Cycle Issues are multi-discipline, we have provided additional information characterizing the potential infiltration at the site. This information is intended to provide information for project team members to address Community Planning Group Cycle Issue Comment No. 9, and LDR-Engineering; Cycle Issue Comment No. 7.

1.0 CYCLE ISSUE COMMENT RESPONSES

Comment Issue No. 3: Submit the following document: Update Preliminary Geotechnical Recommendations, Cardenas Residence (formerly Lusardi Residence), 8466 El Paseo Grande, La Jolla California 92037, prepared by Construction Testing & Engineering, Inc., dated November 2, 2009 (their project no. 10-10144G).

Response: A copy of the above requested report is included as Appendix C.

Comment Issue No. 4: Submit the following document: Preliminary Geotechnical Recommendations, Proposed Lusardi Residence, 8466 El Paseo Grande, La Jolla California, 92037, prepared by Construction Testing & Engineering, Inc., dated March 24, 2006 (their project no. 10-8264G).

Response: A copy of the above requested report is included as an attachment to the "Update Preliminary Geotechnical Recommendations, Cardenas Residence (formerly Lusardi Residence), 8466 El Paseo Grande, La Jolla California 92037, prepared by Construction Testing & Engineering, Inc., dated November 2, 2009; Project no. 10-10144G", that is included in Appendix C herein.

Comment Issue No. 5: Submit an addendum geotechnical report or update letter that addresses the proposed development for the purpose of environmental review and the following:

Response: This response to comment letter serves as Addendum 03 to the Update Geotechnical Report, Proposed Cardenas Residence, 8466 El Paseo Grande, La Jolla California, 92037, prepared by Construction Testing & Engineering, Inc., dated September 11, 2015, (project no. 10-12702G).

Comment Issue No. 6: Provide a geologic /geotechnical map that shows the distribution of fill and surficial deposits and the proposed development.

Response: The attached Figure 2 is an updated geologic/geotechnical map that has incorporated the new proposed improvements, distribution of fill and surficial deposits, and the proposed development.

Comment Issue No. 7: Provide geologic/geotechnical cross sections updated to show the proposed development.

Response: The attached Figure 3a, b, c, and d, are updated geologic/geotechnical cross sections that have incorporated the new proposed improvements for the development.

Comment Issue No. 8: The project's geotechnical consultant should consider updating their description of site geology with respect to the current regional geologic mapping by Kennedy and Tan (2008).

Response: We have added a note on the figures to reflect the nomenclature change of the referenced geologic map units to be consistent with the current regional geologic mapping by Kennedy and Tan (2008). However, the map symbols on the map and sections have not been changed from Bay Point Formation to Quaternary Old Paralic Deposits in order to keep the figures consistent with previous reports and boring logs that were completed prior to the nomenclature change.

Comment Issue No. 9: The project's geotechnical consultant should reference the Tsunami Inundation Map for Emergency Planning, La Jolla Quadrangle, prepared by the California Emergency Management Agency, dated June 1, 2009 and indicate if there is a potential tsunami hazard for the site.

Response: The Tsunami Inundation Map for Emergency Planning, La Jolla Quadrangle, prepared by the California Emergency Management Agency, dated June 1, 2009, is attached as Figure 4. As shown on Figure 4, the tsunami hazard zone boundaries appear to be controlled, in part, by the existing sea wall along the beach front. However, given a tsunami event coupled with high tide storm conditions, it is possible that waves could flood the public access way and in severe cases, flood the lawn area of the residence. However, the main structure foundations are approximately 18 feet above sea level and are located approximately 45 feet outside of the designated hazard zone on the Tsunami Inundation Map. Based on these observations, we conclude that there is a low probability for a significant tsunami hazard at the site.

Comment Issue No. 10: Provide an updated conclusion regarding geologic hazards of the site and summarize any geologic hazards potentially impacting the proposed development.

Response: From review of the previous investigations and/or reports, it appears that geologic hazards at the site are primarily limited to those caused by violent shaking from earthquake generated ground motion waves, and potential differential settlement of the Quaternary undocumented fill and unsuitable Quaternary Slopewash soils at the site.

However, it is our professional opinion that these potential geologic hazards will be mitigated, provided the recommendations in the above referenced reports are incorporated into the design and construction of the project, and that grading and construction of site improvements are conducted in accordance with the 2013 California Building Code (CBC).

As discussed in response to Comment #9, there is generally a low probability for a significant tsunami hazard at the site, although wave run up could affect the public seawall and access way.

Comment Issue No. 11: Provide an updated conclusion regarding the suitability of the site for the proposed development.

Response: CTE concludes that the proposed development of the site is feasible from a geotechnical standpoint, provided the recommendations in the referenced project reports and addenda are incorporated into the design and construction of the project.

In addition, CTE has found the recommendations in the referenced reports to be in compliance with common geotechnical engineering practices and should be considered valid.

However, CTE reserves the right to further modify recommendations and/or provide additional recommendations based on the actual conditions encountered at the site during earthwork and/or construction.

2.0 INFILTRATION CHARACTERIZATION

It is our understanding, based on the City of San Diego's review comments from Community Planning Group Cycle Issue Comment No. 9 and LDR-Engineering; Cycle Issue Comment No. 7, that the proposed project is within a Water Quality Sensitive Area and is a Priority Development Project (PDP). Therefore, the project requires information per the Storm Water Standards, Part 1, BMP Design Manual, Appendix C, Section C.2 and Worksheet C.4-1. This addendum report provides information characterizing the infiltration potential at the site that can be used as an attachment to the Water Quality Technical Report as requested by Planning Group Cycle Issue Comment No. 9. A copy of Worksheet C.4-1 is included within Appendix D, and is summarized below.

Based on questions per Worksheet C.4-1 and CTE's previous geotechnical and Bluff Evaluation Reports, the site soils and site conditions have a number of unsuitable features pertaining to potential infiltration. These include soils greater than 20 percent clay and greater than 40 percent silt, shallow perched groundwater within 10 feet of the existing surface, slopes greater than 25%, and groundwater mounding creating geotechnical hazards to building foundations and retaining walls along the beach public access. As shown on the Worksheet C.4.1 it does not appear that the noted geologic conditions allow for infiltration in any appreciable rate or volume and, therefore, on-site infiltration is generally considered to be infeasible. The Work Sheet feasibility screening category is "No Infiltration".

This document is subject to the same limitations as the previous geotechnical documents prepared for the subject project. The opportunity to be of service is appreciated. If you have any questions, please do not hesitate to contact this office.

Respectfully submitted,

CONSTRUCTION TESTING & ENGINEERING, INC.

REGISTERED PROFESSIONAL ENGINEER
DANIEL T. MATH
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EXP.12/31/16
GEOTECHNICAL
STATE OF CALIFORNIA

PROFESSIONAL GEOLOGIST
MARTIN E. SIEM
No.2311
CERTIFIED ENGINEERING GEOLOGIST
Exp. 6/30/16
STATE OF CALIFORNIA

Dan T. Math, GE #2665
Principal Engineer

Martin E. Siem, CEG #2311
Certified Engineering Geologist

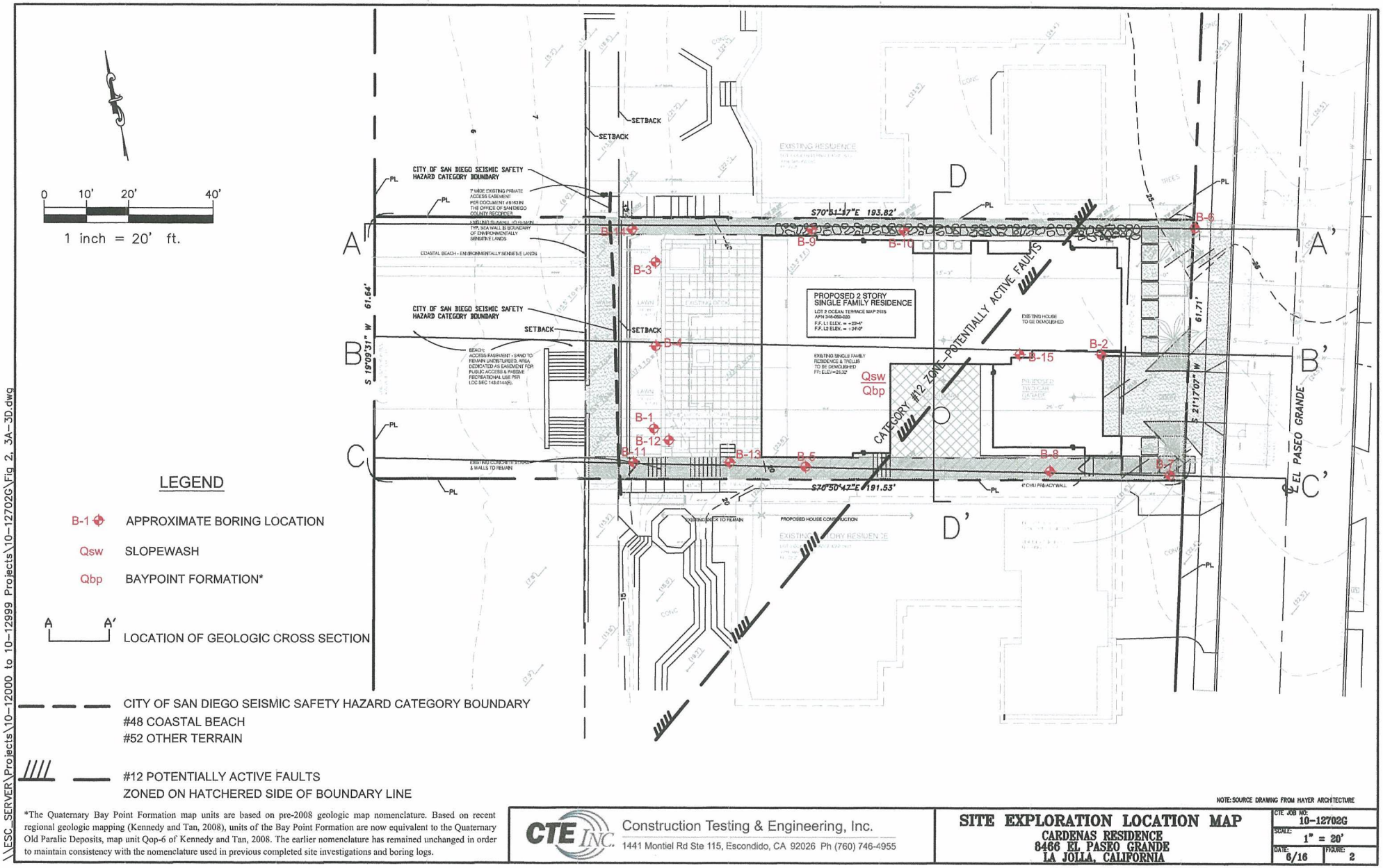
MES/DTM/JFL:nri

Figures:

Figure 1	Not Included
Figure 2	Geologic/Exploration Location Map (updated).
Figure 3 (a-d)	Updated Geologic/Geotechnical Cross Sections
Figure 4	Tsunami Inundation Map

Attachments:

Appendix A	References
Appendix B	City Comments
Appendix C	Update Preliminary Geotechnical Recommendations, Cardenas Residence (formerly Lusardi Residence), 8466 El Paseo Grande, La Jolla California 92037, prepared by Construction Testing & Engineering, Inc., dated November 2, 2009; Project No. 10-10144G; Including: Preliminary Geotechnical Recommendations, Proposed Lusardi Residence, 8466 El Paseo Grande, La Jolla California, 92037, prepared by Construction Testing & Engineering, Inc., dated March 24, 2006; Project No. 10-8264G.
Appendix D	Storm Water Standards, Part 1, BMP Design Manual, Appendix C, Worksheet C.4-1.



LEGEND

B-1 ◆ APPROXIMATE BORING LOCATION

Qsw SLOPEWASH

Qbp BAYPOINT FORMATION*

A A' LOCATION OF GEOLOGIC CROSS SECTION

CITY OF SAN DIEGO SEISMIC SAFETY HAZARD CATEGORY BOUNDARY
#48 COASTAL BEACH
#52 OTHER TERRAIN

#12 POTENTIALLY ACTIVE FAULTS
ZONED ON HATCHERED SIDE OF BOUNDARY LINE

*The Quaternary Bay Point Formation map units are based on pre-2008 geologic map nomenclature. Based on recent regional geologic mapping (Kennedy and Tan, 2008), units of the Bay Point Formation are now equivalent to the Quaternary Old Paralic Deposits, map unit Qop-6 of Kennedy and Tan, 2008. The earlier nomenclature has remained unchanged in order to maintain consistency with the nomenclature used in previous completed site investigations and boring logs.

NOTE: SOURCE DRAWING FROM HAYER ARCHITECTURE

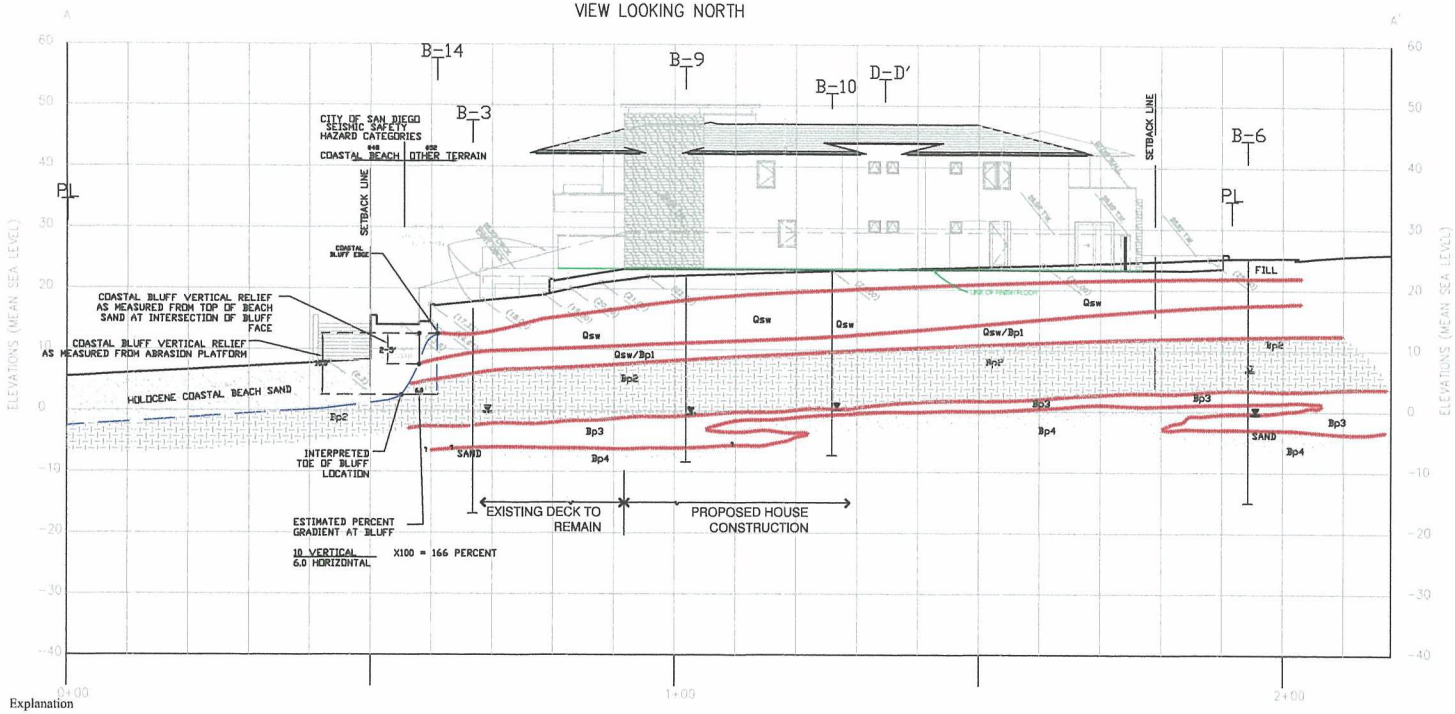
CTE INC. Construction Testing & Engineering, Inc.
1441 Montiel Rd Ste 115, Escondido, CA 92026 Ph (760) 746-4955

SITE EXPLORATION LOCATION MAP

CARDENAS RESIDENCE
8466 EL PASEO GRANDE
LA JOLLA, CALIFORNIA

CTE JOB NO:	10-12702G
SCALE:	1" = 20'
DATE:	6/16
FIGURE:	2

\\ESC_SERVER\Projects\10-12000 to 10-12999 Projects\10-12702G\Fig 2, 3A-3D.dwg



0 10' 20' 40'

1 inch = 20' ft.

Explanation

Fill: Consists of loose to medium stiff, reworked Quaternary Slope Wash as described below, with loose, silty sand, abundant organics, roots, topsoil form turf and planter areas, minor debris.

Quaternary Slope Wash (Qsw): consists of loose to stiff, moist to wet, yellowish -gray brown to yellowish - olive brown, slightly mottled, silty to sandy Clay, varying to sandy clayey Silt, with rootlets, locally developed pinhole structure, some carbonate near the upper contact, and occasional carbon fragments. The unit is massive with locally developed weak discontinuous laminations. Upper and lower contacts are gradational.

Unit 1 (Qsw/Bp1): consists of medium stiff to stiff, locally loose when saturated, moist to wet, dark gray brown, light brown, orange brown, black, variably mottled, sandy Clay with visually estimated medium to coarse grained sand percentages up 30 percent, scattered pebbles, abundant organics (carbon fragments and disseminated carbon) throughout. Upper contact is locally gradational to distinct, and the lower contact is gradational with Bp2.

Quaternary Bay Point Formation *

Unit 2 (Bp2): Bp2 consists of stiff to very stiff, locally hard, moist to wet, dark reddish brown, dark gray-brown, black, dark orange-brown, extensively mottled, silty to sandy Clay, with distinctive coarse-red sand grains throughout, scattered organics (carbon fragments, disseminated carbon, massive to moderate, subangular- blocky soil structure, with clay films Soil horizonation Btb to Btvb. Diffuse upper and lower contacts.

Unit 3 (Bp3): Bp3 consists appears to be a transitional unit between the overlying (Bp2) clay and sands of the underlying unit (Bp4). Bp3 is stiff to very stiff silty sandy Clay to medium dense clayey Sand, moist to wet, mottled brown, orange-brown, gray, with black, weaker soil structure than overlying unit Bp2, granular to massive, with locally moderate subangular-blocky soil structure.

Unit 4 (Bp4): Bp4 consists of a distinctive change in lithology from the clay and silt of the overlying units to medium dense to dense, wet, gray to black, fine-to coarse-grained silty to clayey Sand that grades downward into a poorly graded Sand with silt, abundant black mica. Unit is interpreted as a paleo-beach sand.

*The Quaternary Bay Point Formation map units are based on pre-2008 geologic map nomenclature. Based on recent regional geologic mapping (Kennedy and Tan, 2008), units of the Bay Point Formation are now equivalent to the Quaternary Old Paralic Deposits, map unit Qop-6 of Kennedy and Tan, 2008. The earlier nomenclature has remained unchanged in order to maintain consistency with the nomenclature used in previous completed site investigations and boring logs.

Gradation contact between mapped units.

Approximate location or inferred (?) location of geologic contacts

Zones of carbonate accumulation

Interpolated Natural Grade/ PreExisting Grade

Proposed Final grade

Perched groundwater observed

Groundwater at time of drilling

NOTE: SOURCE DRAWING FROM HAYER ARCHITECTURE

CTE INC. Construction Testing & Engineering, Inc.
1441 Montiel Rd Ste 115, Escondido, CA 92026 Ph (760) 746-4955

CROSS SECTION A-A'

CARDENAS RESIDENCE
8466 EL PASEO GRANDE
LA JOLLA, CALIFORNIA

CTE JOB NO: 10-12702G
SCALE: 1" = 20'
DATE: 6/16
FIGURE: 3A

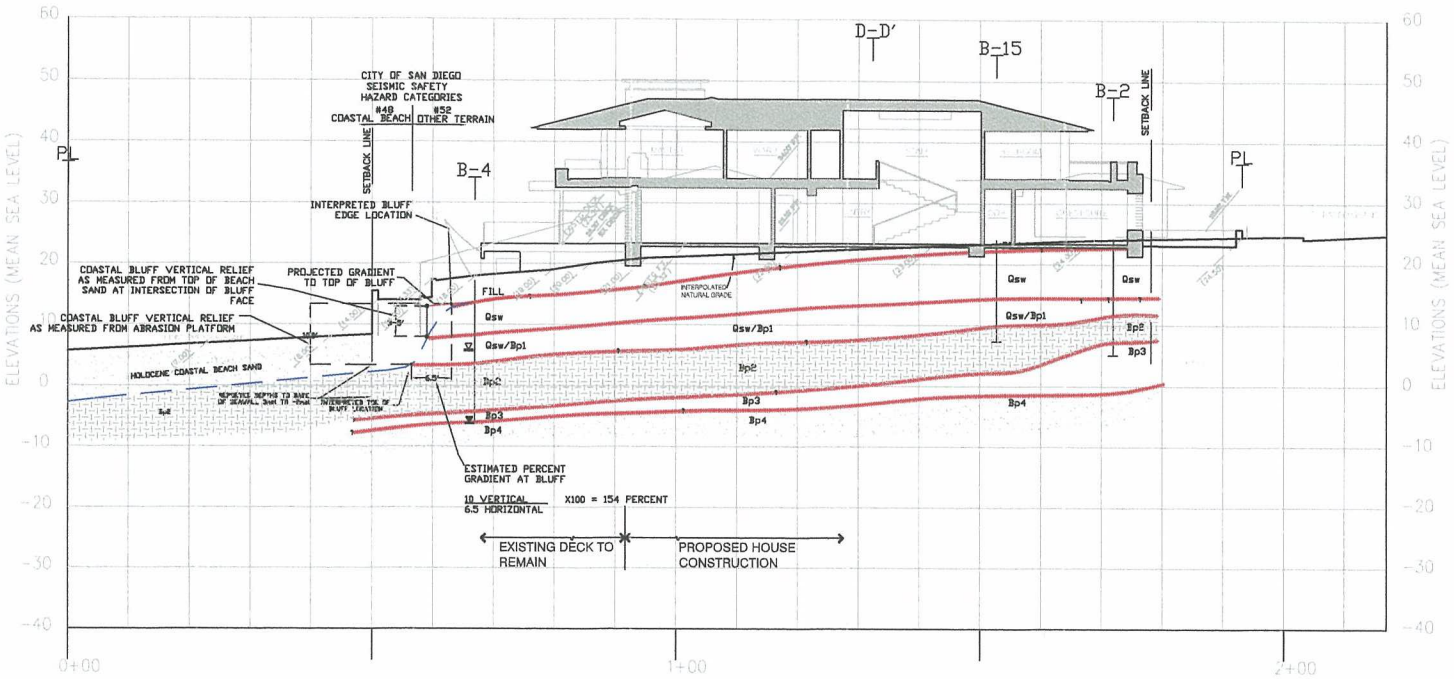
\\ESC_SERVER\Projects\10-12000 to 10-12999 Projects\10-12702G\Fig 2, 3A-3D.dwg

\\ESC_SERVER\Projects\10-12000 to 10-12999 Projects\10-12702G\Fig 2, 3A-3D.dwg

0 10' 20' 40'

1 inch = 20' ft.

VIEW LOOKING NORTH



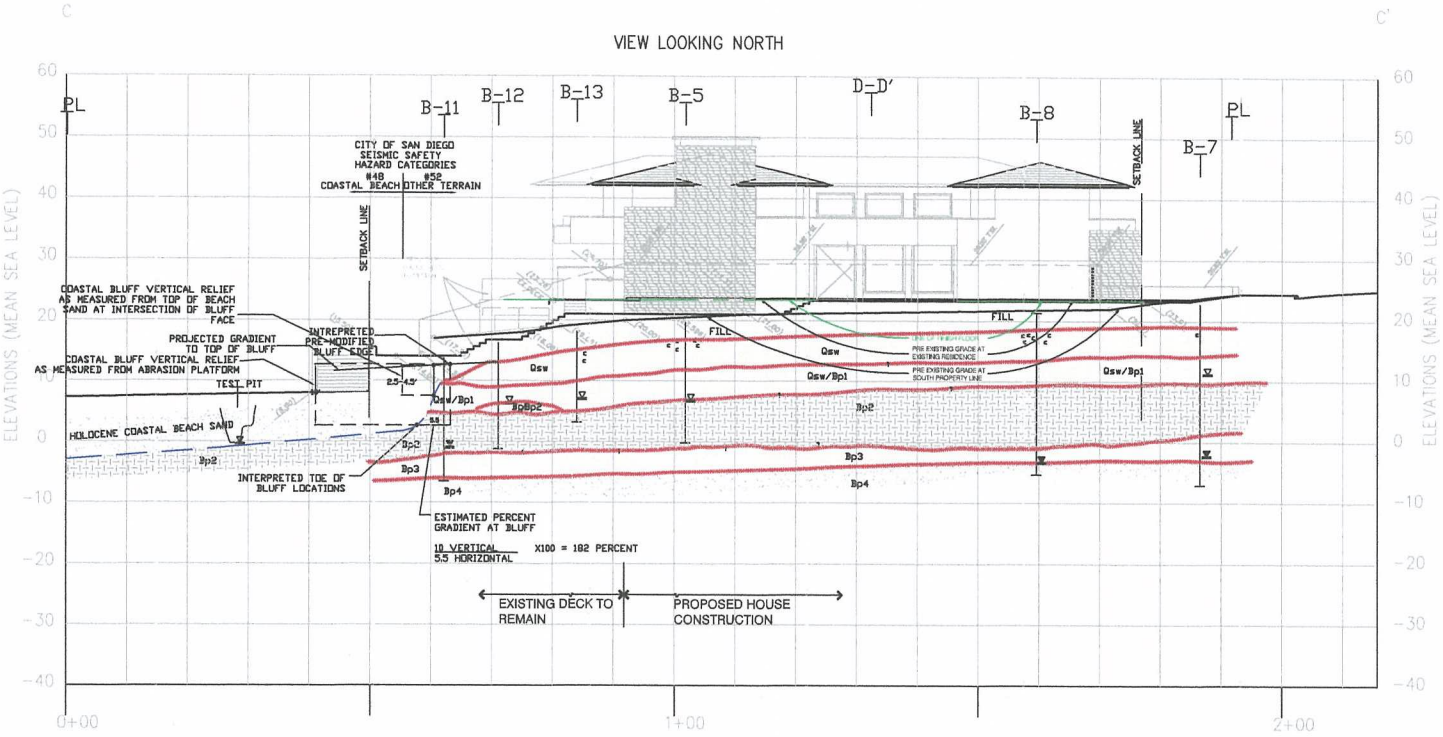
SEE FIGURE 3A FOR EXPLANATION

NOTE: SOURCE DRAWING FROM HAYER ARCHITECTURE

CTE INC. Construction Testing & Engineering, Inc. 1441 Montiel Rd Ste 115, Escondido, CA 92026 Ph (760) 746-4955	**CROSS SECTION B-B'** CARDENAS RESIDENCE 8466 EL PASEO GRANDE LA JOLLA, CALIFORNIA	CTE JOB NO: 10-12702G SCALE: 1" = 20' DATE: 6/16 FIGURE: 3B

0 10' 20' 40'

1 inch = 20' ft.



SEE FIGURE 3A FOR EXPLANATION

NOTE: SOURCE DRAWING FROM HAYER ARCHITECTURE

CTE INC. Construction Testing & Engineering, Inc.
1441 Montiel Rd Ste 115, Escondido, CA 92026 Ph (760) 746-4955

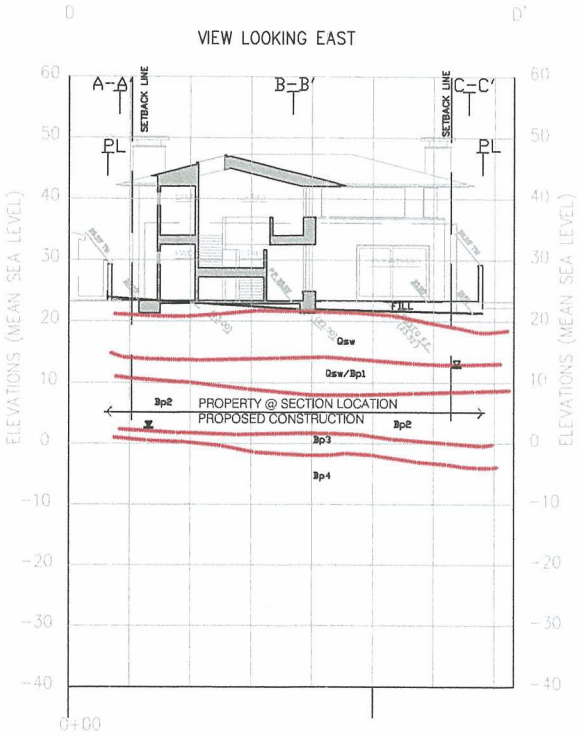
CROSS SECTION C–C'
CARDENAS RESIDENCE
8466 EL PASEO GRANDE
LA JOLLA, CALIFORNIA

CTE JOB NO:	10-12702G
SCALE:	1" = 20'
DATE: 6/16	FIGURE: 3C

\\ESC_SERVER\Projects\10-12000 to 10-12999 Projects\10-12702G\Fig 2, 3A-3D.dwg

0 10' 20' 40'

1 inch = 20' ft.



SEE FIGURE 3A FOR EXPLANATION

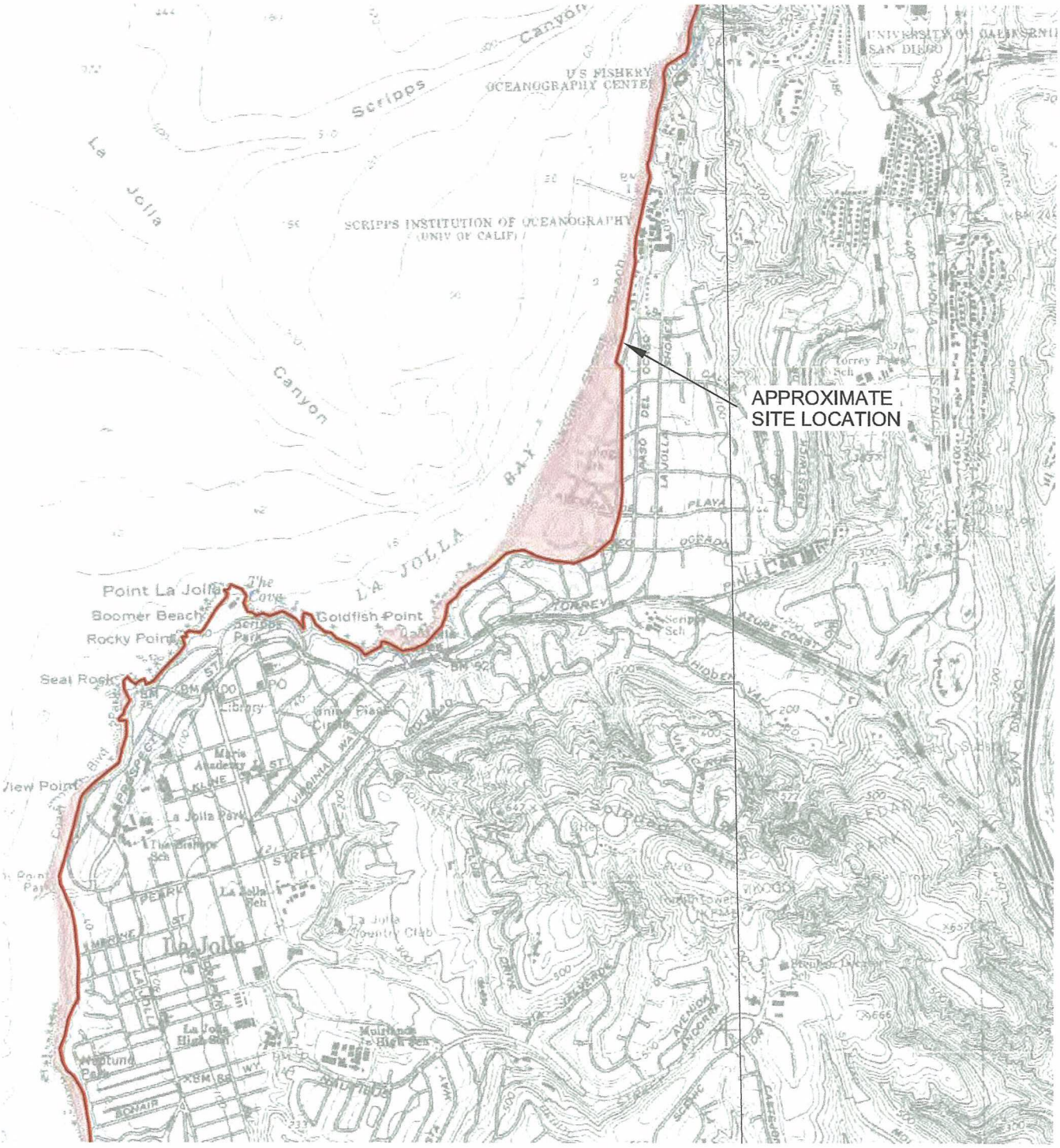
NOTE: SOURCE DRAWING FROM HAYER ARCHITECTURE

CTE INC. Construction Testing & Engineering, Inc.
1441 Montiel Rd Ste 115, Escondido, CA 92026 Ph (760) 746-4955

CROSS SECTION D-D'
CARDENAS RESIDENCE
8466 EL PASEO GRANDE
LA JOLLA, CALIFORNIA

CTE JOB NO:	10-12702G
SCALE:	1" = 20'
DATE: 6/16	FIGURE: 2

\\ESC_SERVER\Projects\10-12000 to 10-12999 Projects\10-12702G\Fig 2, 3A-3D.dwg



MAP EXPLANATION

Tsunami Inundation Line

Tsunami Inundation Area

TSUNAMI INUNDATION MAP FOR EMERGENCY PLANNING

State of California ~ County of San Diego

LA JOLLA QUADRANGLE

June 1, 2009

CTE INC. Construction Testing & Engineering, Inc.

1441 Montiel Rd Ste 115, Escondido, CA 92026 Ph (760) 746-4955

TSUMANI INUNDATION MAP

CARDENAS RESIDENCE
8466 EL PASEO GRANDE
LA JOLLA, CALIFORNIA

SCALE:	DATE:
NOT TO SCALE	6/16
CTE JOB NO.:	FIGURE:
10-12702G	4

\\ESC_SERVER\Projects\10-12000 to 10-12999 Projects\10-12702G\Fig 4 (Tsunami).dwg

APPENDIX A

REFERENCES

REFERENCES

1. Addendum 02 Update Geotechnical Report, Proposed Cardenas Residence 8466 El Paseo Grande La Jolla, California, 92037. Completed by Construction Testing & Engineering Inc., dated September 11, 2015. Project Number 10-12702G.

2. Addendum 01 to Updated Preliminary Geotechnical Recommendations Cardenas Residence (formally Lusardi Residence) 8466 El Paseo Grande La Jolla, California, 92037. Completed by Construction Testing & Engineering Inc., dated December 16, 2009. Project Number 10-10144G

3. Updated Preliminary Geotechnical Recommendations Cardenas Residence (formally Lusardi Residence) 8466 El Paseo Grande La Jolla, California, 92037. Completed by Construction Testing & Engineering Inc., dated November 2, 2009. Project Number 10-10144G. City of San Diego-Development Services Project Number 191344

4. Faulting and Bluff Geologic Evaluation Proposed Lusardi Residence 8466 El Paseo Grande, La Jolla, California. Completed by Construction Testing & Engineering Inc., dated February 12, 2007. Project No. 10-8264G

5. Preliminary Geotechnical Investigation Proposed Lusardi Residence 8466 El Paseo Grande, La Jolla, California. Completed by Construction Testing & Engineering Inc., dated March 24, 2006. Project No. 10-8264G

APPENDIX B

CITY OF SAN DIEGO CYCLE ISSUES

CYCLE TYPE 4-SUBMITTED (MULTI_DISCIPLINE): LDR-GEOLOGY, DATED NOVEMBER 15, 2015

Cycle Issues

THE CITY OF SAN DIEGO
Development Services Department
1222 First Avenue, San Diego, CA 92101-4154

L64A-003A

Review Information

Cycle Type:	4 Submitted (Multi-Discipline)	**Submitted:**	10/20/2015	Deemed Complete on 10/20/2015
Reviewing Discipline:	LDR-Geology	**Cycle Distributed:**	10/20/2015	
Reviewer:	Quinn, Jim	**Assigned:**	10/22/2015	
	(619) 446-5334	**Started:**	10/22/2015	
	jpquinn@sandiego.gov	**Review Due:**	11/18/2015	
Hours of Review:	2.50	**Completed:**	11/25/2015	**COMPLETED LATE**
Next Review Method:	Submitted (Multi-Discipline)	**Closed:**	03/22/2016	

- The review due date was changed to 02/11/2016 from 11/23/2015 per agreement with customer
- The reviewer has indicated they want to review this project again. Reason chosen by the reviewer: New Document Required.
- We request a 2nd complete submittal for LDR-Geology on this project as: Submitted (Multi-Discipline).
- The reviewer has requested more documents be submitted.
- Your project still has 11 outstanding review issues with LDR-Geology (all of which are new).
- Last month LDR-Geology performed 77 reviews, 87.0% were on-time, and 77.1% were on projects at less than < 3 complete submittals.

445629-4 (11/25/2015)

References

Cleared?	Issue Num	Issue Text
☐	1	Addendum 02 Update Geotechnical Report, Proposed Cardenas Residence, 8466 El Paseo Grande, La Jolla, California 92037, prepared by Construction Testing & Engineering, Inc., dated September 11, 2015 (their project no. 10-12702G) Addendum 01 to Updated Preliminary Geotechnical Recommendations, Cardenas Residence (formally Lusardi Residence), 8466 El Paseo Grande, La Jolla, California 92037, prepared by Construction Testing & Engineering, Inc., dated December 16, 2009 (their project no. 10-10144G) (New Issue)
☐	2	Faulting and Bluff Geologic Evaluation, Proposed Lusardi Residence, 8466 El Paseo Grande, La Jolla, California, prepared by Construction Testing & Engineering, Inc., dated February 12, 2015 (their project no. 10-8264G) Proposed Site Plan, Cardenas Residence, 8466 El Paseo Grande, La Jolla, CA 92037, prepared by Hayer Architecture, dated October 15, 2015 (New Issue)

Comments

Cleared?	Issue Num	Issue Text
☐	3	Submit the following document: Updated Preliminary Geotechnical Recommendations, Cardenas Residence (formally Lusardi Residence), 8466 El Paseo Grande, La Jolla, California 92037, prepared by Construction Testing & Engineering, Inc., dated November 2, 2009 (their project no. 10-10144G) (New Issue)
☐	4	Submit the following document: Preliminary Geotechnical Investigation, Proposed Lusardi Residence, 8466 El Paseo Grande, La Jolla, California, prepared by Construction Testing & Engineering, Inc., dated March 24, 2006 (their project no. 10-8264G) (New Issue)
☐	5	Submit an addendum geotechnical report or update letter that addresses the proposed development for the purposes of environmental review and the following: (New Issue)
☐	6	Provide a geologic/ geotechnical map that shows the distribution of fill and surficial deposits and the proposed development. (New Issue)
☐	7	Provide geologic/ geotechnical cross sections updated to show the proposed development. (New Issue)

For questions regarding the 'LDR-Geology' review, please call Jim Quinn at (619) 446-5334. Project Nbr: 445629 / Cycle: 4

Cleared?	Issue Num	Issue Text
☐	8	The project's geotechnical consultant should consider updating their description of site geology with respect to current regional geologic mapping by Kennedy and Tan (2008). (New Issue)
☐	9	The project's geotechnical consultant should reference the Tsunami Inundation Map for Emergency Planning, La Jolla Quadrangle, prepared by the California Emergency Management Agency, dated June 1, 2009 and indicate if there is a potential tsunami hazard for the site. (New Issue)
☐	10	Provide an updated conclusion regarding geologic hazards of the site and summarize any geologic hazards potentially impacting the proposed development. (New Issue)
☐	11	Provide an updated conclusion regarding the suitability of the site for the proposed development. (New Issue)

Worksheet C.4-1: Categorization of Infiltration Feasibility Condition

Categorization of Infiltration Feasibility Condition	Worksheet C.4-1

Part 1 - Full Infiltration Feasibility Screening Criteria
Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
1	Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X

Provide basis: According to the NCRS superficial soil types in the project vicinity consists of Cr (Coastal Beaches), Corralitos loamy sand with 0 to 5 percent slopes (CsB), and Corralitos loamy sand with 5 to 9 percent slopes (CsC). These are all Type A soils with hydraulic conductivities ranging from 5.95 to 19.98 inches per hour.

However, these soil types were not confirmed to be present in the near surface of the site based on our Geotechnical borings and laboratory analysis. Based on the boring logs, the soils consisted of previously placed fill material, Quaternary Slope Wash (Qsw) that consisted of loose to wet, silty to sandy Clay and sandy clayey Silt; Quaternary Old Paralic Deposits (previously mapped as Bay Point Formation), that consisted of a stiff to very stiff pedogencic argillic soil horizon (Qbp-Clay layer), a transitional unit between between Qsw and Qbp. There was an old beach sand layer at depth that is more characteristic to the NCRS soil types listed above.

According to Appendix F, soils with >20% clay or >40% silt as documented at the site are typically not suitable for infiltration.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

2	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X

Provide basis: As shown on geologic cross-sections presented in the Faulting and Bluff Evaluation, dated February 12, 2015, and updated in Addendum 03, dated June 10, 2016; both prepared by Construction Testing & Engineering Inc., the fill and Quaternary Slope Wash material are underlain by an impermeable to low permeability argillic soil horizon. Perched groundwater was recognized above this layer within 7 to 10 feet of the surface. The argillic soil layer slopes to the west towards the beach and a series of retaining walls. Any infiltration of water is anticipated to mound and flow down gradient towards the retaining walls. This would result in saturated conditions beneath the structure and behind the retaining walls creating geotechnical hazards.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

Worksheet C.4-1 Page 2 of 4			
Criteria	Screening Question	Yes	No
3	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		X
Provide basis: Infiltration rates are anticipated to be below 0.5 inches per hour, however any infiltration could increase the risk of storm water pollutants discharging to the public beach. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
4	Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		X
Provide basis: Infiltration rates are anticipated to be below 0.5 inches per hour, however any infiltration could increase the risk of storm water pollutants discharging to the public beach. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
Part 1 Result*	If all answers to rows 1 - 4 are "Yes" a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration If any answer from row 1-4 is "No", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design. Proceed to Part 2		Part 2

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings.

Worksheet C.4-1 Page 3 of 4			
Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?			
Criteria	Screening Question	Yes	No
5	Do soil and geologic conditions allow for infiltration in any appreciable rate or volume? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X
Provide basis: Infiltration at any rate will result in mounding above the argillic (clay) layer, and perched groundwater has already been identified within 10 feet of the existing surface. This is considered an unsuitable condition in Appendix F of the City of San Diego Guidelines for Geotechnical Reports. Also, the fine content of the underlying soils are also considered unsuitable according to Appendix F, as is the slopes along the beach front that are greater than 25% and are retained by retaining walls. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
6	Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X
Provide basis: Groundwater mounding would be increased above the clay layer and perched groundwater has already been documented to be within 10 feet of the existing surface. These conditions would create geotechnical hazards for the building and retaining wall foundations. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			

Worksheet C.4-1 Page 4 of 4			
Criteria	Screening Question	Yes	No
7	Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: As described above, infiltration of any amount would contribute to rising groundwater levels of the shallow perched groundwater conditions. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
8	Can infiltration be allowed without violating downstream water rights? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: N/A Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
Part 2 Result*	If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is Partial Infiltration. If any answer from row 5-8 is no, then infiltration of any volume is considered to be infeasible within the drainage area. The feasibility screening category is No Infiltration.	NONE	

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings