COFFEY ENGINEERING, INC.

Preliminary SWQMP
PTS 653845
Villa Montana

13995 Mira Montana Drive
San Diego, CA 92014

APN 300-305-21-00

Prepared for:

Alejandro Rodrigo Garibay Lopez Negrete
Caminito Chiclayo
San Diego, CA 92128

And

The City of San Diego

09/15/2021

September 15, 2021

9666 Businesspark Avenue, Suite 210 San Diego, CA 92131 Phone: (858)831-0111 Fax: (858)831-0179

Table of Contents

1. **Project Description and Site Characteristics**

   This project proposes the new construction of a single-family residence, pool, deck, driveway, and miscellaneous hardscape (i.e. walkways, patio, etc.) and landscape features. The proposed construction activities will disturb 12,946 ft^2 (0.30 Acres) of area. This project proposes 6,941 ft^2 of newly added and/or replaced impervious area.

   There are no critical course sediment yield areas (CCSYA), multi-habitat planning areas (MHPA), or environmentally sensitive areas (ESA) present on the site. ArcGIS reference material has been provided in Appendix E of this report showing the nearest CCSYA, MHPA, and ESA in proximity to the project site.

2. **Project Location**

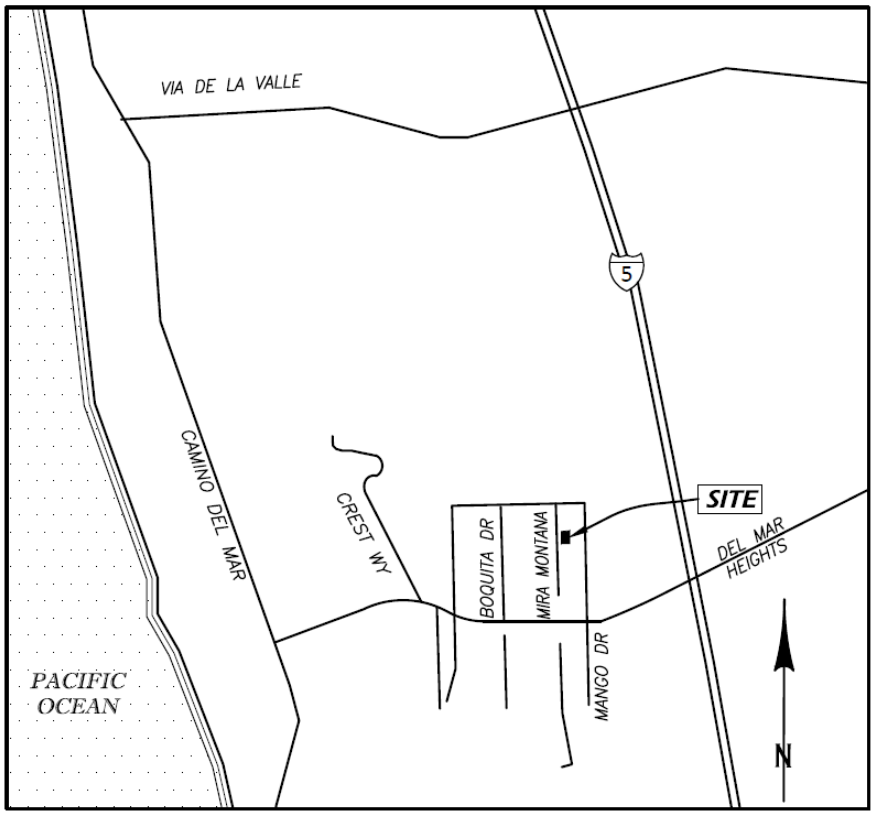


Figure 1: Vicinity Map

3. **Project Category Determination**

   This project has been categorized as a Priority Development Project (PDP) per the City of San Diego Storm Water Requirements Applicability Checklist. This project qualifies as a PDP per Item 4 in Part E because there is a proposed impervious area quantity of 6,941 ft^2 on a site that contains and proposes to disturb natural slopes with a grade of twenty-five percent (25%) or greater.

   Please refer to the Storm Water Requirements Applicability Checklist (Form DS-560) in Appendix A of this report.

4. **Proposed Drainage Patterns**

The proposed site is composed of multiple drainage management areas (DMAs) (DMA 'A', 'B').

DMA 'A' is composed of the development area, including the new building, deck and roof overhangs, and sidewalks. Storm water generated from Basin 'A' is conveyed to a bio-filtration area for storm water treatment. The biofiltration overflow structure discharges to a sump-pump that discharges through D-25 curb outlet on Mira Montana. DMA 'A' is calculated to generate approximately $Q_{(100)}$ =0.69 CFS of storm water runoff.

DMA 'B' is composed of a natural steep hillside, pervious wood deck area, staircase, and pool. The proposed wood deck area and staircase are not considered impervious. These areas will be constructed with open wood decking that will allow rainfall to pass through to the soil below. The wood, or similar decking, is used with soil below and can be considered permeable as it does not increase concentrated runoff. DMA 'B' is calculated to generate approximately $Q_{(100)}$ =0.16 CFS of storm water runoff.

5. **Infiltration Condition**

This project has been determined as a 'No Infiltration' condition. The proposed storm water facilities have been sized based on this design criteria.

Please refer to the Infiltration Feasibility Condition Letter provided by Christian Wheeler Engineering, Inc. in Appendix C of this report.

6. **Pollutant Control and Hydromodification Management Description**

The biofiltration areas were sized based on a 'No Infiltration' condition based on the recommendation provided by the soils engineer for reasons outlined in the Infiltration Feasibility Condition Letter in Appendix C of this report.

Storm water generated from DMA 'A' will be routed to a 758 ft^2 biofiltration area, 'BF-1'. BF-1 was sized to meet combined pollutant control and hydromodification requirements using the Project Clean Water BMP Sizing Spreadsheet (V3.1). Once the maximum ponding depth of 12-inches is reached, stormwater will enter the overflow control structure and will be tightlined to a proposed pump basin. The proposed on-site pump will discharge flows to the fronting street through a D-25 curb outlet.

The biofiltration area will have an orifice inside of the overflow control structure. The proposed biofiltration area will incorporate a 0.36-inch diameter orifice at the outlet pipe to meet flow attenuation requirements.

Please refer to the sizing calculations and worksheets in Appendix D of this report.

7. **Declaration of Responsible Charge**

I hereby declare that I am the Civil Engineer of work for this project, that I have exercised responsible charge over the design of the project as defined in section 6703 of the business and professions code, and that the design is consistent with current design.

I understand that the check of project drawings and specifications by the City of San Diego is confined to a review only and does not relieve me, as Engineer of Work, of my responsibilities for project design.

09/15/2021

Michael C. Kinnear
RCE 76785
Exp. 12-31-22

Date

Appendix A –Storm Water Requirements Checklist (Form DS-560)

City of San Diego
Development Services
1222 First Ave., MS-302
San Diego, CA 92101
(619) 446-5000

Storm Water Requirements Applicability Checklist

FORM
DS-560
November 2018

Project Address: 13995 Mira Montana Drive, San Diego, CA 92014	Project Number: 653845

SECTION 1. Construction Storm Water BMP Requirements:

All construction sites are required to implement construction BMPs in accordance with the performance standards in the Storm Water Standards Manual. Some sites are additionally required to obtain coverage under the State Construction General Permit (CGP)[1] , which is administered by the State Regional Water Quality Control Board.

For all projects complete PART A: If project is required to submit a SWPPP or WPCP, continue to PART B.

PART A: Determine Construction Phase Storm Water Requirements.

1. Is the project subject to California's statewide General NPDES permit for Storm Water Discharges Associated with Construction Activities, also known as the State Construction General Permit (CGP)? (Typically projects with land disturbance greater than or equal to 1 acre.)

   ☐ Yes; SWPPP required, skip questions 2-4 ☒ No; next question

2. Does the project propose construction or demolition activity, including but not limited to, clearing, grading, grubbing, excavation, or any other activity resulting in ground disturbance and/or contact with storm water?

   ☒ Yes; WPCP required, skip questions 3-4 ☐ No; next question

3. Does the project propose routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility? (Projects such as pipeline/utility replacement)

   ☐ Yes; WPCP required, skip question 4 ☐ No; next question

4. Does the project only include the following Permit types listed below?

   - Electrical Permit, Fire Alarm Permit, Fire Sprinkler Permit, Plumbing Permit, Sign Permit, Mechanical Permit, Spa Permit.
   - Individual Right of Way Permits that exclusively include only ONE of the following activities: water service, sewer lateral, or utility service.
   - Right of Way Permits with a project footprint less than 150 linear feet that exclusively include only ONE of the following activities: curb ramp, sidewalk and driveway apron replacement, pot holing, curb and gutter replacement, and retaining wall encroachments.

   ☐ Yes; no document required

Check one of the boxes below, and continue to PART B:

☐ If you checked "Yes" for question 1, **a SWPPP is REQUIRED. Continue to PART B**

☒ If you checked "No" for question 1, and checked "Yes" for question 2 or 3, **a WPCP is REQUIRED.** If the project proposes less than 5,000 square feet of ground disturbance AND has less than a 5-foot elevation change over the entire project area, a Minor WPCP may be required instead. **Continue to PART B.**

☐ If you checked "No" for all questions 1-3, and checked "Yes" for question 4 PART B **does not apply and no document is required. Continue to Section 2.**

1. More information on the City's construction BMP requirements as well as CGP requirements can be found at: www.sandiego.gov/stormwater/regulations/index.shtml

PART B: Determine Construction Site Priority

This prioritization must be completed within this form, noted on the plans, and included in the SWPPP or WPCP. The city reserves the right to adjust the priority of projects both before and after construction. Construction projects are assigned an inspection frequency based on if the project has a "high threat to water quality." The City has aligned the local definition of "high threat to water quality" to the risk determination approach of the State Construction General Permit (CGP). The CGP determines risk level based on project specific sediment risk and receiving water risk. Additional inspection is required for projects within the Areas of Special Biological Significance (ASBS) watershed. **NOTE:** The construction priority does **NOT** change construction BMP requirements that apply to projects; rather, it determines the frequency of inspections that will be conducted by city staff.

Complete PART B and continued to Section 2

1. ☐ **ASBS**

a. Projects located in the ASBS watershed.

2. ☐ **High Priority**

a. Projects that qualify as Risk Level 2 or Risk Level 3 per the Construction General Permit (CGP) and not located in the ASBS watershed.

b. Projects that qualify as LUP Type 2 or LUP Type 3 per the CGP and not located in the ASBS watershed.

3. ☐ **Medium Priority**

a. Projects that are not located in an ASBS watershed or designated as a High priority site.

b. Projects that qualify as Risk Level 1 or LUP Type 1 per the CGP and not located in an ASBS watershed.

c. WPCP projects (>5,000sf of ground disturbance) located within the Los Penasquitos watershed management area.

4. ☒ **Low Priority**

a. Projects not subject to a Medium or High site priority designation and are not located in an ASBS watershed.

SECTION 2. Permanent Storm Water BMP Requirements.

Additional information for determining the requirements is found in the Storm Water Standards Manual.

PART C: Determine if Not Subject to Permanent Storm Water Requirements.

Projects that are considered maintenance, or otherwise not categorized as "new development projects" or "redevelopment projects" according to the Storm Water Standards Manual are not subject to Permanent Storm Water BMPs.

If "yes" is checked for any number in Part C, proceed to Part F and check "Not Subject to Permanent Storm Water BMP Requirements".

If "no" is checked for all of the numbers in Part C continue to Part D.

1.	Does the project only include interior remodels and/or is the project entirely within an existing enclosed structure and does not have the potential to contact storm water?	☐ Yes	☒ No
2.	Does the project only include the construction of overhead or underground utilities without creating new impervious surfaces?	☐ Yes	☒ No
3.	Does the project fall under routine maintenance? Examples include, but are not limited to: roof or exterior structure surface replacement, resurfacing or reconfiguring surface parking lots or existing roadways without expanding the impervious footprint, and routine replacement of damaged pavement (grinding, overlay, and pothole repair).	☐ Yes	☒ No

PART D: PDP Exempt Requirements.

PDP Exempt projects are required to implement site design and source control BMPs.

If "yes" was checked for any questions in Part D, continue to Part F and check the box labeled "PDP Exempt."

If "no" was checked for all questions in Part D, continue to Part E.

1. **Does the project ONLY include new or retrofit sidewalks, bicycle lanes, or trails that:**
   - **Are designed and constructed to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas? Or;**
   - **Are designed and constructed to be hydraulically disconnected from paved streets and roads? Or;**
   - **Are designed and constructed with permeable pavements or surfaces in accordance with the Green Streets guidance in the City's Storm Water Standards manual?**

   ☐ Yes; PDP exempt requirements apply ☐ No; next question

2. Does the project ONLY include retrofitting or redeveloping existing paved alleys, streets or roads designed and constructed in accordance with the Green Streets guidance in the City's Storm Water Standards Manual?

   ☐ Yes; PDP exempt requirements apply ☐ No; project not exempt.

PART E: Determine if Project is a Priority Development Project (PDP).

Projects that match one of the definitions below are subject to additional requirements including preparation of a Storm Water Quality Management Plan (SWQMP).

If "yes" is checked for any number in PART E, continue to PART F and check the box labeled "Priority Development Project".

If "no" is checked for every number in PART E, continue to PART F and check the box labeled "Standard Development Project".

1.	**New Development that creates 10,000 square feet or more of impervious surfaces collectively over the project site.** This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.	☐ Yes	☒ No
2.	**Redevelopment project that creates and/or replaces 5,000 square feet or more of impervious surfaces on an existing site of 10,000 square feet or more of impervious surfaces**. This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.	☐ Yes	☒ No
3.	**New development or redevelopment of a restaurant.** Facilities that sell prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC 5812), and where the land development creates and/or replace 5,000 square feet or more of impervious surface.	☐ Yes	☒ No
4.	**New development or redevelopment on a hillside.** The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site) and where the development will grade on any natural slope that is twenty-five percent or greater.	☒ Yes	☐ No
5.	**New development or redevelopment of a parking lot that creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site).**	☐ Yes	☒ No
6.	**New development or redevelopment of streets, roads, highways, freeways, and driveways.** The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site).	☐ Yes	☒ No

7. **New development or redevelopment discharging directly to an Environmentally Sensitive Area.** The project creates and/or replaces 2,500 square feet of impervious surface (collectively over project site), and discharges directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands). ☐ Yes ☒ No

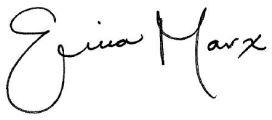
8. **New development or redevelopment projects of a retail gasoline outlet (RGO) that create and/or replaces 5,000 square feet of impervious surface.** The development project meets the following criteria: (a) 5,000 square feet or more or (b) has a projected Average Daily Traffic (ADT) of 100 or more vehicles per day. ☐ Yes ☒ No

9. **New development or redevelopment projects of an automotive repair shops that creates and/or replaces 5,000 square feet or more of impervious surfaces.** Development projects categorized in any one of Standard Industrial Classification (SIC) codes 5013, 5014, 5541, 7532-7534, or 7536-7539. ☐ Yes ☒ No

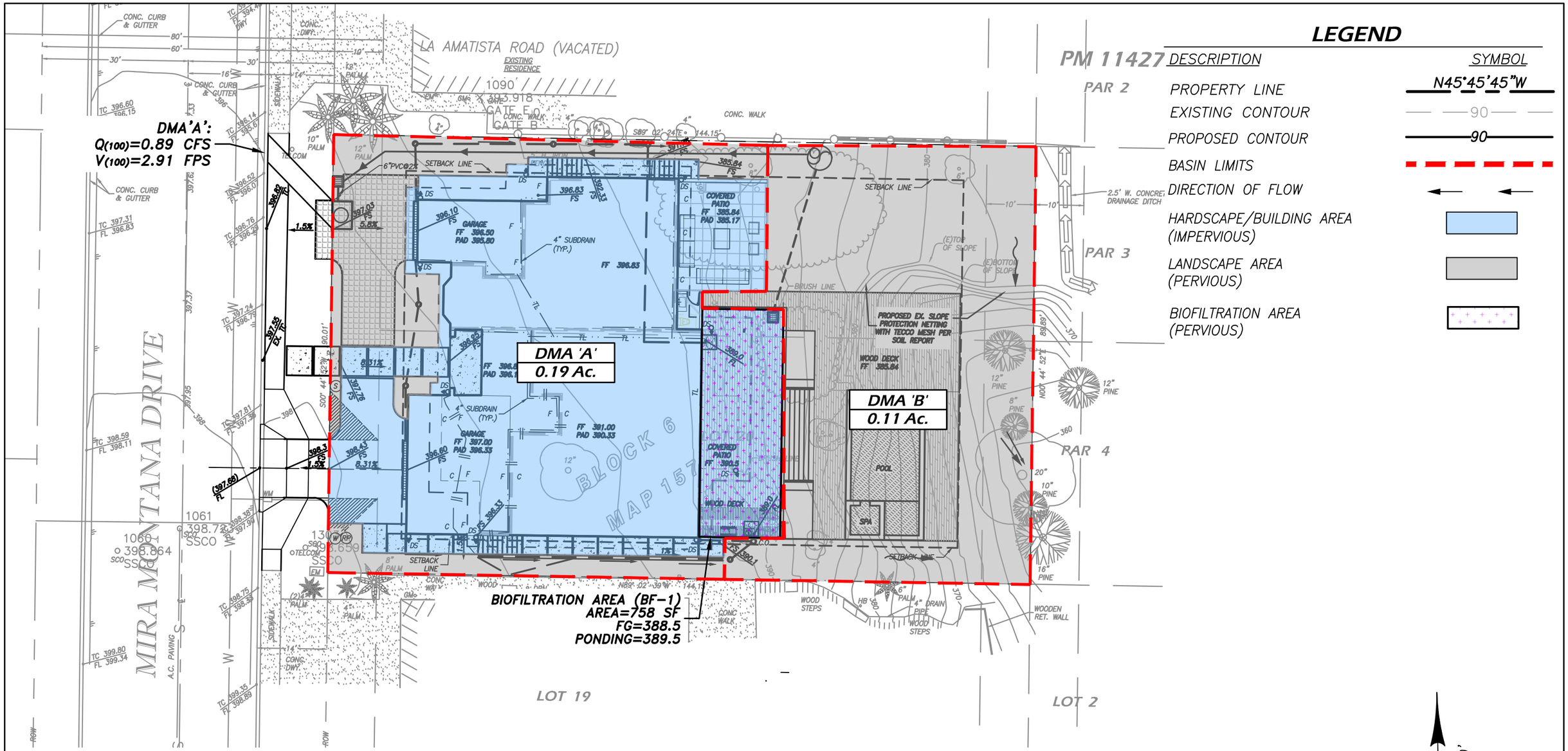
10. **Other Pollutant Generating Project.** The project is not covered in the categories above, results in the disturbance of one or more acres of land and is expected to generate pollutants post construction, such as fertilizers and pesticides. This does not include projects creating less than 5,000 sf of impervious surface and where added landscaping does not require regular use of pesticides and fertilizers, such as slope stabilization using native plants. Calculation of the square footage of impervious surface need not include linear pathways that are for infrequent vehicle use, such as emergency maintenance access or bicycle pedestrian use, if they are built with pervious surfaces of if they sheet flow to surrounding pervious surfaces. ☐ Yes ☒ No

PART F: Select the appropriate category based on the outcomes of PART C through PART E.

1. The project is **NOT SUBJECT TO PERMANENT STORM WATER REQUIREMENTS**. ☐
2. The project is a **STANDARD DEVELOPMENT PROJECT**. Site design and source control BMP requirements apply. See the Storm Water Standards Manual for guidance. ☐
3. The project is **PDP EXEMPT**. Site design and source control BMP requirements apply. See the Storm Water Standards Manual for guidance. ☐
4. The project is a **PRIORITY DEVELOPMENT PROJECT**. Site design, source control, and structural pollutant control BMP requirements apply. See the Storm Water Standards Manual for guidance on determining if project requires a hydromodification plan management ☒

Erica Marx, Agent	Engineering Designer
Name of Owner or Agent *(Please Print)*	Title
Signature 	10/02/2020 Date

Appendix B –Drainage Management Area (DMA) & Hydromodification Exhibits



LEGEND

DESCRIPTION	SYMBOL
PROPERTY LINE	N45°45'45"W
EXISTING CONTOUR	90
PROPOSED CONTOUR	90
BASIN LIMITS	
DIRECTION OF FLOW	
HARDSCAPE/BUILDING AREA (IMPERVIOUS)	
LANDSCAPE AREA (PERVIOUS)	
BIOFILTRATION AREA (PERVIOUS)	

SITE CHARACTERISTICS

- UNDERLYING HYDROLOGIC SOILS GROUP.....B
- APPROX. DEPTH TO GROUNDWATER.....> 20'
- EXISTING NATURAL HYDROLOGIC FEATURES.....N/A
- CRITICAL COURSE SEDIMENT YIELD AREAS.....NONE

DMA SUMMARY

DMA ID	AREA	BMP	TYPE	POC-ID
A	0.19 AC.	BF-1	BIOFILTRATION	POC-1
B	0.11 AC.	N/A	SELF-MITIGATING	N/A

N

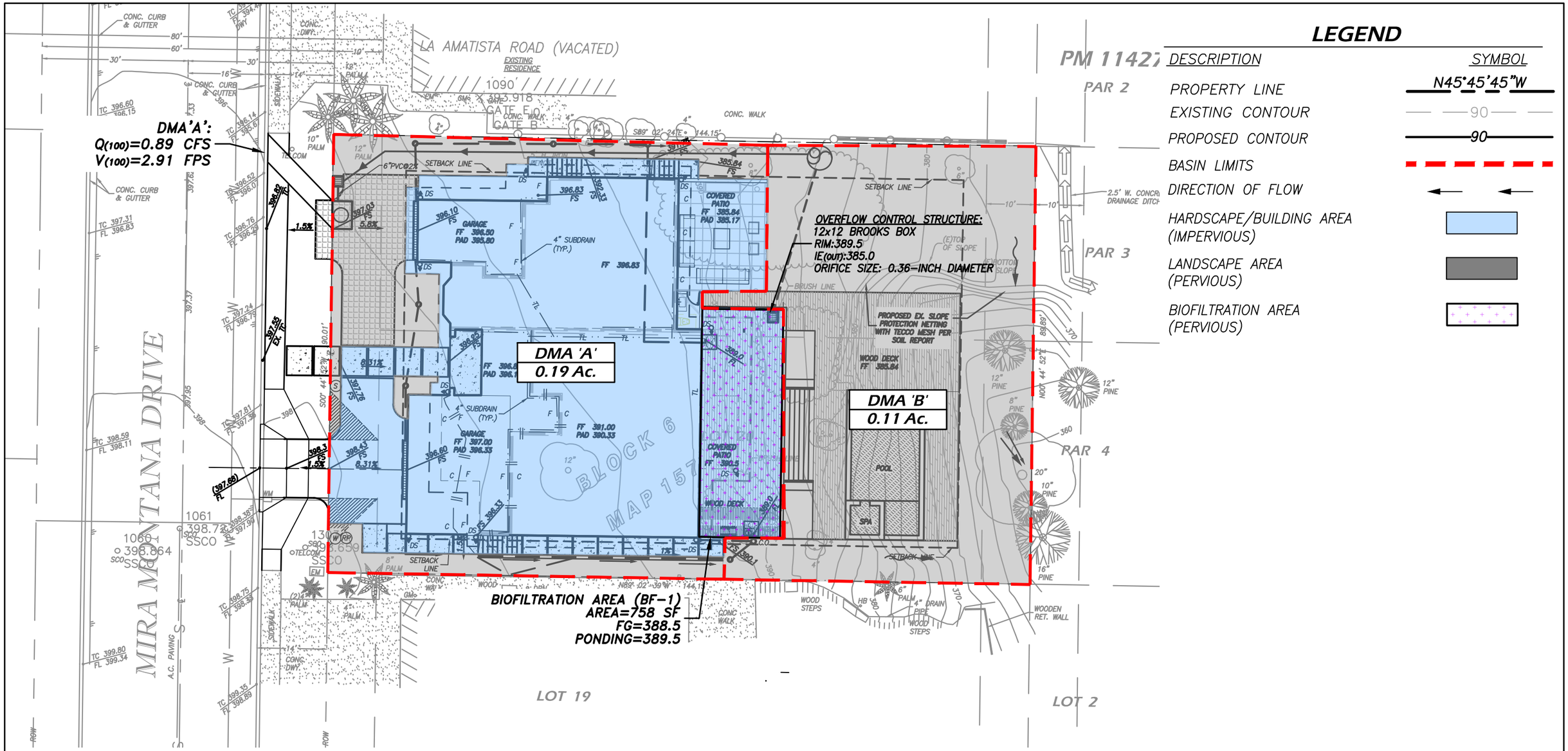
SCALE: 1"=20'

DRAINAGE MANAGEMENT AREA (DMA) EXHIBIT

PROPOSED CONDITIONS

VILLA MONTANA HOMES

COFFEY ENGINEERING, INC.



LEGEND

DESCRIPTION	SYMBOL
PROPERTY LINE	N45°45'45"W
EXISTING CONTOUR	90
PROPOSED CONTOUR	90
BASIN LIMITS	
DIRECTION OF FLOW	
HARDSCAPE/BUILDING AREA (IMPERVIOUS)	
LANDSCAPE AREA (PERVIOUS)	
BIOFILTRATION AREA (PERVIOUS)	

SITE CHARACTERISTICS

- UNDERLYING HYDROLOGIC SOILS GROUP.....B
- APPROX. DEPTH TO GROUNDWATER.....> 20'
- EXISTING NATURAL HYDROLOGIC FEATURES.....N/A
- CRITICAL COURSE SEDIMENT YIELD AREAS.....NONE

COFFEY ENGINEERING, INC.

HYDROMODIFICATION MANAGEMENT EXHIBIT

PROPOSED CONDITIONS

VILLA MONTANA HOMES

Appendix C –Infiltration Feasibility Condition Letter

CHRISTIAN WHEELER
ENGINEERING

October 8, 2020

Alejandro Garibay
c/o Alta Design Development
4445 Eastgate Mall, Suite 400
San Diego, California 92121

CWE 2200089.04

Subject: **Infiltration Feasibility Condition Letter**
Villa Montana Homes, 13995 Mira Montana Drive, San Diego, California

References: 1) Coffey Engineering, Inc., Tentative Plan, Site Plan/Preliminary Grading Plan, 13995 Mira Montana Drive, San Diego, California 92104, dated August 4, 2020
2) Christian Wheeler Engineering, "Report of Preliminary Geotechnical Investigation Villa Montana Homes, 13995 Mira Montana Drive, San Diego, California," CWE Report 2200089.02, dated March 27, 2020

Ladies and Gentlemen:

In accordance with your request, we have prepared this letter to address the feasibility of using infiltration as part of the storm water management for the proposed project. We were first requested to analyze the project for infiltration feasibility during the design phase.

SITE DESCRIPTION

The subject site consists of a vacant, rectangular-shaped lot located at 13995 Mira Montana Drive, San Diego, California. The property is bounded on the west by Mira Montana Drive, and is otherwise bounded by residential properties. Topographically, the western two-thirds of the site slopes gently to the east. A relatively natural inland bluff characterizes the southeastern portion of the site. This inland bluff, which is up to about 20 feet in height, descends to the southeasterly property line at inclinations ranging from about 2:1 (horizontal to vertical) to near vertical. The upper 5 to 8 feet of the bluff were observed to be near vertical and in areas overhanging. A cut slope descends off-site to the east along the easterly property line at an approximate inclination of 1.5:1 (horizontal to vertical) and has an overall estimated height of about 25 feet. According to the topographic survey, site elevations range from about 398 along the western property line to about 360 feet near the southeastern corner.

PROJECT DESCRIPTION

We understand that the subject project will consist of the construction of two two-story residential structures. It is anticipated that the proposed structures will be of wood-frame and masonry construction, supported by shallow foundations and will incorporate conventional on-grade concrete floor slabs. The structures will also incorporate a partially subterranean basement with retaining walls up to about 10 feet high. Exterior improvements will include a swimming pool, spas, associated flatwork, and wood decks. Depending on the proposed locations, the swimming pool, spas, and decks may be supported by a drilled, cast-in-place concrete pier foundation system. Grading to accommodate the proposed construction is expected to consist of cuts and fills up to approximately 10 feet and 5 feet from existing grade, respectively.

GEOTECHNICAL STUDIES

As part of our geotechnical investigation, our firm drilled two exploratory borings with a truck mounted drill rig to evaluate the subsurface soil conditions at the site and collect samples for laboratory testing. We also logged two exposures of the descending bluff. The approximate boring and slope log locations are shown on Plate Number 1 and presented in Appendix A. Our laboratory test results are presented in Appendix B.

GEOLOGIC SETTING AND SOIL DESCRIPTION: The subject site is located in the Coastal Plains Physiographic Province of San Diego County. Based upon the findings of our subsurface explorations and review of readily available, pertinent geologic and geotechnical literature, it was determined that the project area is underlain by topsoil and very old paralic deposits. These materials are described below in order of increasing age:

TOPSOIL: A topsoil layer extending to a maximum depth of about 2 feet from existing grade was found to underlie the flat-lying portion of site. As encountered in our explorations, the topsoil generally consisted of light brown, dry and moist, loose, silty sand with gravel (SM). The topsoil was judged to have a very low expansive potential (EI<20).

VERY OLD PARALIC DEPOSITS (Qvop): Quaternary-age very old paralic deposits underlie the topsoil to the maximum exploration depth of about 40 feet below existing grade. As encountered in our subsurface exploration, the very old paralic deposits consisted of orangish-brown and reddish brown, damp, silty sand with occasional gravel (SM). These materials were found to be medium dense to dense to a depth of about 3 feet and 6 feet below existing grade, in borings B-1 and B-2, respectively. Below said depth and in the slope, the very old paralic deposits were found to be very dense. The very old paralic deposits were judged to have a very low expansive potential (EI<20).

GROUNDWATER

No free groundwater or seepage was observed within any of our subsurface excavations.

HYDROLOGIC SOIL GROUP

Per the NCRS Web Soil Survey, the westerly approximately half of the site is mapped in the Hydrologic Soil Group named Carlsbad gravelly loam (CbC) and the easterly portion of the site is in Loamy alluvial land – Huerhuero complex (LvF3). Both of these map units have a hydrologic soil rating of B. Group B soils are expected to have a moderate rate of infiltration rate when thoroughly wet and a moderate rate of water transmission. Our subsurface explorations do not corroborate this rating. The underlying very old paralic deposits were found to be very dense and well cemented. From our experience very old paralic deposits with these characteristics typically have a very low rate of infiltration and water transmission. In our opinion these materials should have a hydrologic soil rating of D.

GEOLOGIC HAZARDS

SETTLEMENT AND VOLUME CHANGE: Settlement and volume change can occur when water is introduced below grade. Settlement refers to a condition when soils decrease in volume (i.e. hydro collapse, calcareous soils, consolidation or liquefaction. Based upon the soil conditions observed in our borings, the site is underlain by topsoil and very old paralic deposits. From our experience with projects in the vicinity of the site we anticipate that the very old paralic deposits will be subject to hydro collapse if storm water is infiltrated on-site.

SLOPE STABILITY: Infiltration of water has the potential to increase the risk of failure of nearby slopes. The existing slopes at the site are considered stable from a geotechnical perspective in their current configuration. However, the introduction of water is anticipated to create a moderate risk of slope instability. As such, we recommend that infiltration BMPs be set back at least 50 feet from natural slopes (<25%) and at least a distance of 1.5H from the fill slopes where H is the height of the fill slope. The setbacks must be measured from the closest horizontal radial distance from the surface edge (at the overflow elevation) of the BMP. The setbacks from the descending slopes at the subject site are delineated on attached Plate No.1.

CONCLUSIONS

Potential infiltration restrictions have been identified at the subject site. These restrictions include the potential for hydro consolidation and the sloping topography at the site.

- The site is underlain by very old paralic deposits. The referenced geotechnical report recommends that the existing topsoil and weathered very paralic deposits be removed and replaced as compacted fill. Although we have found that the very old paralic deposits are generally suitable to support the proposed residential structures and associated improvements, we anticipate that wetting the soil through infiltration could result in settlement that would be considered detrimental to the buildings and site surface improvements.
- The steep inland bluff which encompasses the easterly portion of the site is up to about 20 feet high, and descends to the southeasterly property line at inclinations ranging from about 2:1 (horizontal to vertical) to near vertical. The upper 5 to 8 feet of the bluff were observed to be near vertical and in areas overhanging. Provided care is taken to reduce disturbance to this bluff and minimize, to the greatest extent possible, the amount of water that is introduced to the bluff (either by irrigation, infiltration, or surface drainage), the bluff should continue to perform in a similar manner as it has for the last few decades.
- In our opinion the setbacks from the descending bluff and the potential for hydro consolidation will make infiltration at the site infeasible.

Based on these conditions, it is our opinion that the site should be considered infeasible for infiltration and that the project should be considered to possess a "No Infiltration" condition in accordance with Appendix C of the 2018 Storm Water Standards.

If you have any questions regarding this letter, please do not hesitate to contact this office. This opportunity to be of professional service is sincerely appreciated.

Respectfully submitted,

CHRISTIAN WHEELER ENGINEERING

Daniel J. Flowers, C.E.G. #2685

CERTIFIED ENGINEERING GEOLOGIST
DANIEL J. FLOWERS
No. 2686
STATE OF CALIFORNIA

Daniel B. Adler, RCE #36037

REGISTERED PROFESSIONAL ENGINEER
DANIEL B. ADLER
C 36037
EXP. 6/30/22
CIVIL
STATE OF CALIFORNIA

Shawn C. Caya, R.G.E #2748

REGISTERED PROFESSIONAL ENGINEER
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STATE OF CALIFORNIA

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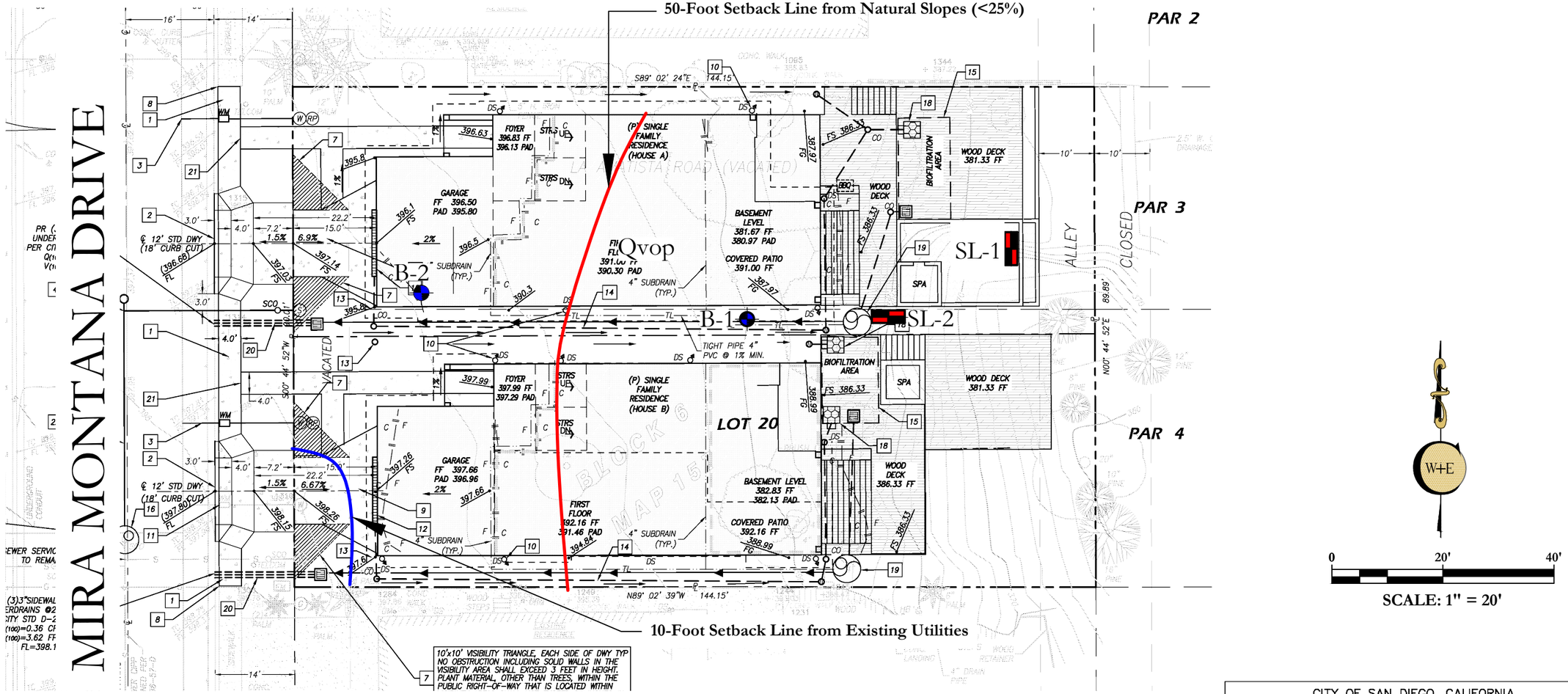


SCALE: 1" = 20'

CWE LEGEND	
B-2	Approximate Boring Location
SL-2	Approximate Slope Log Location
Qvop	Very Old Paralic Deposits
	50-Foot Setback Line from Natural Slopes (<25%)
	10-Foot Setback Line from Existing Utilities
	*Note: Residual Soils Not Mapped

CITY OF SAN DIEGO, CALIFORNIA

CDP, PDP, and Tentative Map

VILLA MONTANA HOMES

13995 Mira Montana Drive
San Diego, CA 92014

REVISIONS	ORIGINAL
	08/04/20

SITE PLAN / PRELIMINARY GRADING PLAN — C.1

DRAWN BY: DTK
CHECKED BY: JSC

SHEET 1 OF __

SITE PLAN AND GEOTECHNICAL MAP

VILLA MONTANA HOMES
13995 MIRA MONTANA
SAN DIEGO, CALIFORNIA

DATE:	OCTOBER 2020	JOB NO.:	2200089.04
BY:	SRD	PLATE NO.:	1

CHRISTIAN WHEELER ENGINEERING

Appendix A

Subsurface Explorations

LOG OF TEST BORING B-1

Date Logged:	2/20/20	Equipment:	B-53
Logged By:	DJF	Auger Type:	8 inch Hollow Stem
Existing Elevation:	390'	Drive Type:	140lbs/30 inches
Proposed Elevation:	±388'	Depth to Water:	Unknown

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk
SPT	Standard Penetration Test	DR	Drive Ring
ST	Shelby Tube		
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential	SD	Sample Density

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0			SM	**Topsoil:** Light brown, dry, loose, very fine- to medium-grained, SILTY SAND with abundant hematite nodules, porous.							
			SM	**Very Old Paralic Deposits (Qvop):** Orangish-brown, damp, dense, very fine- to medium-grained, SILTY SAND, highly weathered with abundant hematite nodules to 3'.	48	Cal		6.7	127.7		
5				Reddish-brown.	50/4"	Cal		8.0	130.3		
				Moist.	50/3"**	Cal*					
10											
15					50/3"	Cal		6.6	123.2		SA
20					50/6"**	Cal*					
				Increase in drilling effort at 21'.							
25					50/3"	Cal					
30											

Notes:

Symbol Legend

- ▽ Groundwater Level During Drilling
- ▼ Groundwater Level After Drilling
- ⁘ Apparent Seepage
- * No Sample Recovery
- ** Non-Representative Blow Count (rocks present)

VILLA MONTANA HOMES
13995 MIRA MONTANA
SAN DIEGO, CALIFORNIA

DATE:	MARCH 2020	JOB NO.:	2200089.02
BY:	SRD	APPENDIX:	A-1

CHRISTIAN WHEELER ENGINEERING

LOG OF TEST BORING B-1

Date Logged:	2/20/20	Equipment:	B-53
Logged By:	DJF	Auger Type:	8 inch Hollow Stem
Existing Elevation:	390'	Drive Type:	140lbs/30 inches
Proposed Elevation:	±388'	Depth to Water:	Unknown

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk
SPT	Standard Penetration Test	DR	Drive Ring
ST	Shelby Tube		
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential	SD	Sample Density

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
30			SM	**Very Old Paralic Deposits (Qvop):** Reddish-brown, damp, dense, very fine- to medium-grained, SILTY SAND, highly weathered with abundant hematite nodules to 3'.	50/6"	Cal					
35					50/5"	Cal					DS
40					50/3"	Cal		6.8	115.2		
				Boring terminated at 41 feet. No groundwater or seepage encountered.							
45											
50											
55											
60											

Notes:

Symbol Legend

- ▽ Groundwater Level During Drilling
- ▼ Groundwater Level After Drilling
- ⁘ Apparent Seepage
- * No Sample Recovery
- ** Non-Representative Blow Count (rocks present)

VILLA MONTANA HOMES
13995 MIRA MONTANA
SAN DIEGO, CALIFORNIA

DATE:	MARCH 2020	JOB NO.:	2200089.02
BY:	SRD	APPENDIX:	A-2

CHRISTIAN WHEELER ENGINEERING

LOG OF TEST BORING B-2

Date Logged:	2/20/20	Equipment:	B-53
Logged By:	DJF	Auger Type:	8 inch Hollow Stem
Existing Elevation:	394'	Drive Type:	140lbs/30 inches
Proposed Elevation:	±395'	Depth to Water:	Unknown

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk
SPT	Standard Penetration Test	DR	Drive Ring
ST	Shelby Tube		
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential	SD	Sample Density

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0			SM	**Topsoil:** Light brown, moist, loose, very fine- to medium-grained, SILTY SAND with abundant hematite nodules.							SA
			SM	**Very Old Paralic Deposits (Qvop):** Orangish-brown, damp, medium dense, very fine- to medium-grained, SILTY SAND, highly weathered to 4' with hematite nodules, porous.	21	Cal		5.7	116.9		SA MD SO4 DS
5				Reddish-brown, dense.	36	Cal					
				Moist, very dense.							
					50/2"	Cal		5.2	111.3		
10											
					50/6"	Cal		7.2	120.3		
15				Boring terminated at 14.5 feet. No groundwater or seepage encountered.							
20											
25											
30											

Notes:

Symbol Legend

- ▽ Groundwater Level During Drilling
- ▼ Groundwater Level After Drilling
- ⁹⁹ Apparent Seepage
- * No Sample Recovery
- ** Non-Representative Blow Count (rocks present)

VILLA MONTANA HOMES
13995 MIRA MONTANA
SAN DIEGO, CALIFORNIA

DATE:	MARCH 2020	JOB NO.:	2200089.02
BY:	SRD	APPENDIX:	A-3

CHRISTIAN WHEELER ENGINEERING

LOG OF SLOPE SL-1

Date Logged:	2/20/20	Equipment:	Hand tools
Logged By:	DJF	Auger Type:	N/A
Existing Elevation:	378	Drive Type:	N/A
Proposed Elevation:	Unknown	Depth to Water:	Unknown

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk
SPT	Standard Penetration Test	DR	Drive Ring
ST	Shelby Tube		
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential	SD	Sample Density

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0			SM	**Topsoil:** Light brown, dry, loose, very fine- to medium-grained, SILTY SAND with hematite nodules and animal burrows.							
			SM	**Very Old Paralic Deposits (Qvop):** Reddish-brown, damp, very dense, very fine- to medium-grained, SILTY SAND, massive. Near-vertical exposure.							
5											
				Terminated slope log at toe of erosional exposure.							
10											
15											
20											
25											
30											

Notes:

Symbol Legend

- ▽ Groundwater Level During Drilling
- ▼ Groundwater Level After Drilling
- ⁘ Apparent Seepage
- * No Sample Recovery
- ** Non-Representative Blow Count (rocks present)

VILLA MONTANA HOMES
13995 MIRA MONTANA
SAN DIEGO, CALIFORNIA

DATE:	MARCH 2020	JOB NO.:	2200089.02
BY:	SRD	APPENDIX:	A-4

CHRISTIAN WHEELER ENGINEERING

LOG OF SLOPE SL-2

Date Logged:	2/20/20	Equipment:	Hand tools
Logged By:	DJF	Auger Type:	N/A
Existing Elevation:	384'	Drive Type:	N/A
Proposed Elevation:	Unknown	Depth to Water:	Unknown

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk
SPT	Standard Penetration Test	DR	Drive Ring
ST	Shelby Tube		
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential	SD	Sample Density

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0			SM	**Very Old Paralic Deposits (Qvop):** Reddish-brown, damp, very dense, very fine- to medium-grained, SILTY SAND, massive, well-cemented. Overhanging exposure.							
5				Terminated slope log at toe of erosional exposure.							
10											
15											
20											
25											
30											

Notes:

Symbol Legend

- ▽ Groundwater Level During Drilling
- ▼ Groundwater Level After Drilling
- ⁹⁹ Apparent Seepage
- * No Sample Recovery
- ** Non-Representative Blow Count (rocks present)

VILLA MONTANA HOMES
13995 MIRA MONTANA
SAN DIEGO, CALIFORNIA

DATE:	MARCH 2020	JOB NO.:	2200089.02
BY:	SRD	APPENDIX:	A-5

CHRISTIAN WHEELER ENGINEERING

Appendix B

Laboratory Test Results

Laboratory tests were performed in accordance with the generally accepted American Society for Testing and Materials (ASTM) test methods or suggested procedures. Brief descriptions of the tests performed are presented below:

a) **CLASSIFICATION:** Field classifications were verified in the laboratory by visual examination. The final soil classifications are in accordance with the Unified Soil Classification System and are presented on the exploration logs in Appendix A.

b) **MOISTURE-DENSITY: MOISTURE-DENSITY:** In-place moisture contents and dry densities were determined for selected soil samples in accordance with ATM D 2937. The results are summarized in the boring logs presented in Appendix A.

c) **MAXIMUM DENSITY & OPTIMUM MOISTURE CONTENT:** The maximum dry density and optimum moisture content of typical soils were determined in the laboratory in accordance with ASTM Standard Test D1557, Method A.

d) **DIRECT SHEAR:** Direct shear tests were performed on selected samples of the on-site soils in accordance with ASTM D3080.

e) **GRAIN SIZE DISTRIBUTION:** The grain size distribution of selected samples was determined in accordance with ASTM C136 and/or ASTM D422.

f) **SOLUBLE SULFATE CONTENT:** The soluble sulfate content of a selected sample was determined in accordance with California Test Methods 417.

LABORATORY TEST RESULTS

VILLA MONTANA HOMES

13995 MIRA MONTANA DRIVE

SAN DIEGO, CALIFORNIA

MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT (ASTM D1557)

Sample Location	**Boring B-2 @ 2'-6'**
Sample Description	Reddish-brown Silty Sand (SM)
Maximum Density	135.8 pcf
Optimum Moisture	7.1 %

DIRECT SHEAR (ASTM D3080)

Sample Location	**Boring B-1 @ 36'**	**Boring B-2 @ 2'-6'**	**Boring B-2 @ 5'**
Sample Type	Undisturbed	Remolded to 90%	Undisturbed
Friction Angle	34°	30°	31°
Cohesion	250 psf	200 psf	250 psf

GRAIN SIZE DISTRIBUTION (ASTM D422)

Sample Location	**Boring B-1 @ 15'-20'**	**Boring B-2 @ 0-2'**	**Boring B-2 @ 2'-6'**
Sieve Size	*Percent Passing*	*Percent Passing*	*Percent Passing*
¾"		100	100
½"		77	95
⅜"		68	91
#4		58	86
#8	100	57	83
#16	99	56	82
#30	87	50	71
#50	54	27	44
#100	33	18	31
#200	26	15	26

SOLUBLE SULFATES (CALIFORNIA TEST 417)

Sample Location	**Boring B-2 @ 2'-6'**
Soluble Sulfate	0.006 % (SO_4)

Appendix D –Calculations / Analysis

APPENDIX D.1

Tabular Summary of DMAs

Project Name: Villa Montana

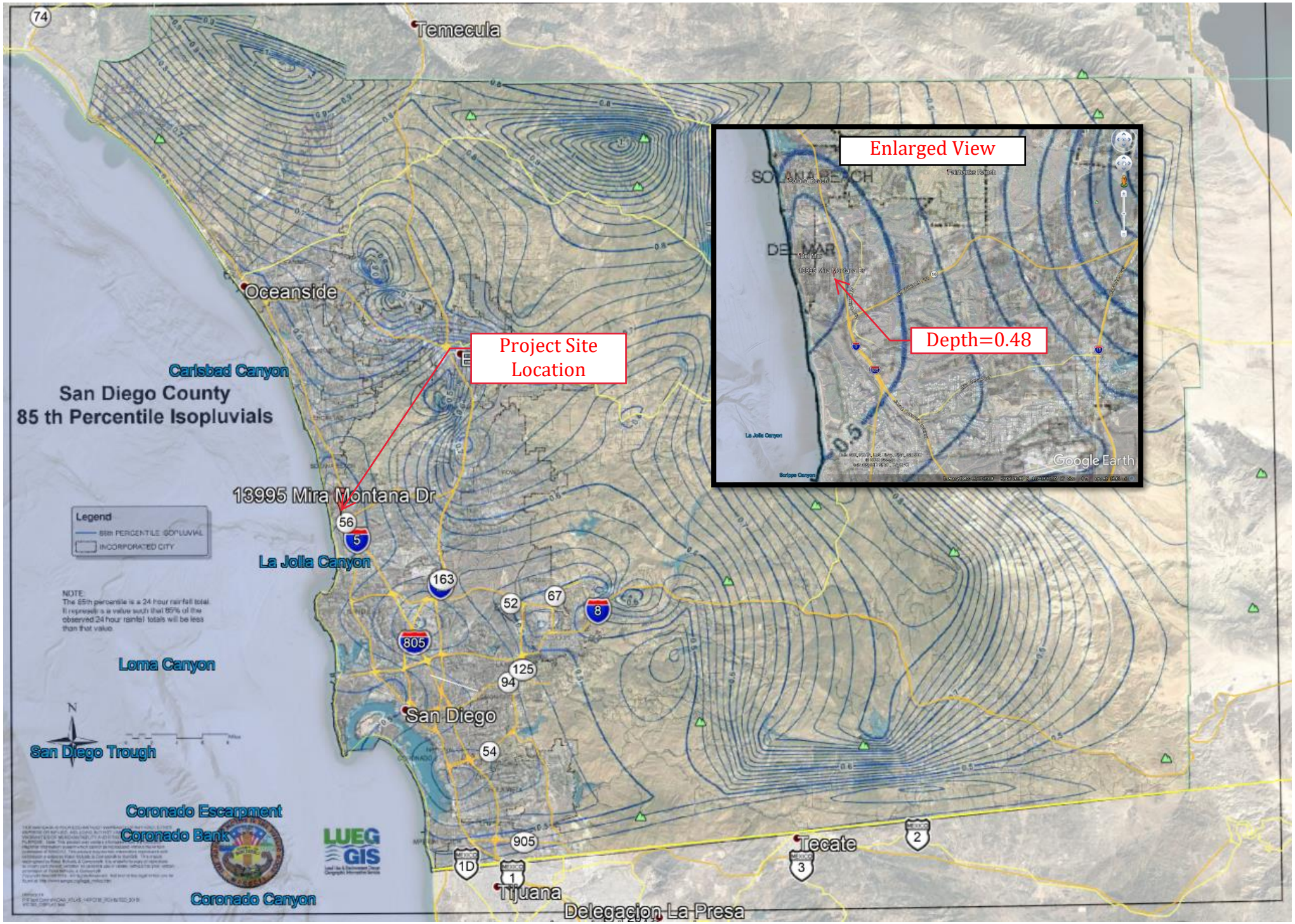
Tabular Summary of DMAs								Worksheet B-1	
DMA Unique Identifier	Area (acres)	Impervious Area (acres)	% Imp	HSG	*Area Weighted Runoff Coefficient	DCV (cubic feet)	Treated By (BMP ID)	Pollutant Control Type	Drains to (POC ID)
A	0.19	0.15	79%	B	0.73	242	BF-1	Biofiltration	POC-1
B	0.11	0	0%	B	0.14	N/A	N/A	Self-Mitigating	N/A
Summary of DMA Information (Must match project description and SWQMP Narrative)									
No. of DMAs	Total DMA Area (acres)	Total Impervious Area (acres)	% Imp		Area Weighted Runoff Coefficient	Total DCV (cubic feet)	Total Area Treated (acres)		No. of POCs
2	0.30	0.15	50%		0.50	242	0.19		1

Where: DMA = Drainage Management Area; Imp = Imperviousness; HSG = Hydrologic Soil Group; DCV= Design Capture Volume; BMP = Best Management Practice; POC = Point of Compliance; ID = identifier; No. = Number

**Area Weighted Runoff Coefficients calcuated based on Appendix B.1.1 of the City of San Diego BMP Manual (January 2018)*

APPENDIX D.2

Design Capture Volume (DCV) Calculations


Temecula
Oceanside
Carlsbad Canyon
San Diego County
85 th Percentile Isopluvials
Project Site Location
13995 Mira Montana Dr
La Jolla Canyon
Loma Canyon
San Diego Trough
Coronado Escarpment
Coronado Bank
Coronado Canyon
San Diego
Tijuana
Delegacion La Presa
Tecate
Enlarged View
Depth=0.48
Google Earth
Legend
85th PERCENTILE ISOPLUVIAL
INCORPORATED CITY
NOTE
The 85th percentile is a 24 hour rainfall total. It represents a value such that 85% of the observed 24 hour rainfall totals will be less than that value.
LUEG GIS

DMA-A

Worksheet B.2-1 DCV				
Design Capture Volume		**Worksheet B.2-1**		
1	85th Percentile 24-hr storm depth from Figure B.1-1	d=	0.48	inches
2	Area tributary to BMP(s)	A=	0.19	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.73	unitless
4	Tree well volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction	RCV=	0	cubic-feet
6	Calculate DCV =(3630 x C x d x A) - TCV - RCV	**DCV=**	**242**	**cubic-feet**

APPENDIX D.3

Pollutant Control + Hydromodification Sizing for BF-1A

The City of SAN DIEGO	Project Name	Villa Montana	
	BMP ID	BF-1	
Sizing Method for Pollutant Removal Criteria		**Worksheet B.5-1**	
1	Area draining to the BMP	8061	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.73	
3	85th percentile 24-hour rainfall depth	0.48	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	235	cu. ft.
BMP Parameters			
5	Surface ponding [6 inch minimum, 12 inch maximum]	6	inches
6	Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations	24	inches
7	Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area	12	inches
8	Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area	3	inches
9	Freely drained pore storage of the media	0.2	in/in
10	Porosity of aggregate storage	0.4	in/in
11	Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.)	0.007	in/hr.
Baseline Calculations			
12	Allowable routing time for sizing	6	hours
13	Depth filtered during storm [Line 11 x Line 12]	0.042	inches
14	Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)]	16.8	inches
15	Total Depth Treated [Line 13 + Line 14]	16.842	inches
Option 1 – Biofilter 1.5 times the DCV			
16	Required biofiltered volume [1.5 x Line 4]	353	cu. ft.
17	Required Footprint [Line 16/ Line 15] x 12	252	sq. ft.
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
18	Required Storage (surface + pores) Volume [0.75 x Line 4]	177	cu. ft.
19	Required Footprint [Line 18/ Line 14] x 12	126	sq. ft.
Footprint of the BMP			
20	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4)	0.03	
21	Minimum BMP Footprint [Line 1 x Line 2 x Line 20]	177	sq. ft.
22	Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21)	177	sq. ft.
23	Provided BMP Footprint	758	sq. ft.
24	Is Line 23 ≥ Line 22?	**Yes, Performance Standard is Met**	

BMP Sizing Spreadsheet V3.1			
Project Name:	Villa Montana Homes	Hydrologic Unit:	906.1
Project Applicant:	Alejandro Rodrigo Garibay Lopez Negrete	Rain Gauge:	Oceanside
Jurisdiction:	San Diego	Total Project Area:	12,946
Parcel (APN):	300-305-21-00	Low Flow Threshold:	0.1Q2
BMP Name:	BF-1	BMP Type:	Biofiltration
BMP Native Soil Type:	B	BMP Infiltration Rate (in/hr):	0.2

Areas Draining to BMP						HMP Sizing Factors	Minimum BMP Size
DMA Name	Area (sf)	Pre Project Soil Type	Pre-Project Slope	Post Project Surface Type	Area Weighted Runoff Factor (Table G.2-1)[1]	Surface Area	Surface Area (SF)
A	6,379	B	Moderate	Concrete	1.0	0.085	542
A	1,682	B	Moderate	Landscape	0.1	0.085	14
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
BMP Tributary Area	8,061					Minimum BMP Size	557
						Proposed BMP Size*	758

* Assumes standard configuration

Surface Ponding Depth	12.00	in
Bioretention Soil Media Depth	18.00	in
Filter Coarse	6.00	in
Gravel Storage Layer Depth	12	in
Underdrain Offset	3.0	in

Notes:

1. Runoff factors which are used for hydromodification management flow control (Table G.2-1) are different from the runoff factors used for pollutant control BMP sizing (Table B.1-1). Table references are taken from the San Diego Region Model BMP Design Manual, May 2018.

Describe the BMP's in sufficient detail in your PDP SWQMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.
Designated Staff have final review and approval authority over the project design.

This BMP Sizing Spreadsheet has been updated in conformance with the San Diego Region Model BMP Design Manual, May 2018. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V3.1			
Project Name:	Villa Montana Homes	Hydrologic Unit:	906.1
Project Applicant:	andro Rodrigo Garibay Lopez Neg	Rain Gauge:	Oceanside
Jurisdiction:	San Diego	Total Project Area:	12,946
Parcel (APN):	300-305-21-00	Low Flow Threshold:	0.1Q2
BMP Name	BF-1	BMP Type:	Biofiltration

DMA Name	Rain Gauge	Pre-developed Condition		Unit Runoff Ratio (cfs/ac)	DMA Area (ac)	Orifice Flow - $\%Q_2$ (cfs)	Orifice Area (in^2)
		Soil Type	Slope				
A	Oceanside	B	Moderate	0.391	0.146	0.006	**0.08**
A	Oceanside	B	Moderate	0.391	0.039	0.002	**0.02**

3.75	**0.007**	**0.10**	**0.36**
Max Orifice Head (feet)	**Max Tot. Allowable Orifice Flow (cfs)**	**Max Tot. Allowable Orifice Area (in^2)**	**Max Orifice Diameter (in)**

0.007	**0.007**	**0.10**	**0.360**
Average outflow during surface drawdown (cfs)	Max Orifice Outflow (cfs)	Actual Orifice Area (in^2)	Selected Orifice Diameter (in)

Drawdown (Hrs)	31.7

Appendix E –References

CRITICAL COURSE SEDIMENT YIELD AREAS (CCSYA)

MULTI HABITAT PLANNING AREA (MHPA)

ENVIRONMENTALLY SENSITIVE AREAS (ESA)

Map Scale: 1:2,350 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Diego County Area, California
Survey Area Data: Version 15, May 27, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 22, 2018—Aug 31, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CbC	Carlsbad gravelly loamy sand, 5 to 9 percent slopes	B	12.7	50.5%
CsD	Corralitos loamy sand, 9 to 15 percent slopes	A	1.6	6.4%
LvF3	Loamy alluvial land-Huerhuero complex, 9 to 50 percent slopes, severely eroded	B	10.8	43.1%
Totals for Area of Interest			**25.1**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and Equation B.1-2.

Equation B.1-2: Estimating Runoff Factor for Area

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

where:

C_x = Runoff factor for area X

A_x = Tributary area X (acres)

These runoff factors apply to areas receiving direct rainfall only. For conditions in which runoff is routed onto a surface from an adjacent surface, see Section B.2 for determining composite runoff factors for these areas.

Table B.1-1: Runoff factors for surfaces draining to BMPs – Pollutant Control BMPs

Surface	Runoff Factor
Roofs[1]	0.90
Concrete or Asphalt[1]	0.90
Unit Pavers (grouted)[1]	0.90
Decomposed Granite	0.30
Cobbles or Crushed Aggregate	0.30
Amended, Mulched Soils or Landscape[2]	0.10
Compacted Soil (e.g., unpaved parking)	0.30
Natural (A Soil)	0.10
Natural (B Soil)	0.14
Natural (C Soil)	0.23
Natural (D Soil)	0.30

[1]Surface is considered impervious and could benefit from use of Site Design BMPs and adjustment of the runoff factor per Section B.2.1.

[2]Surface shall be designed in accordance with SD-F (Amended soils) fact sheet in Appendix E

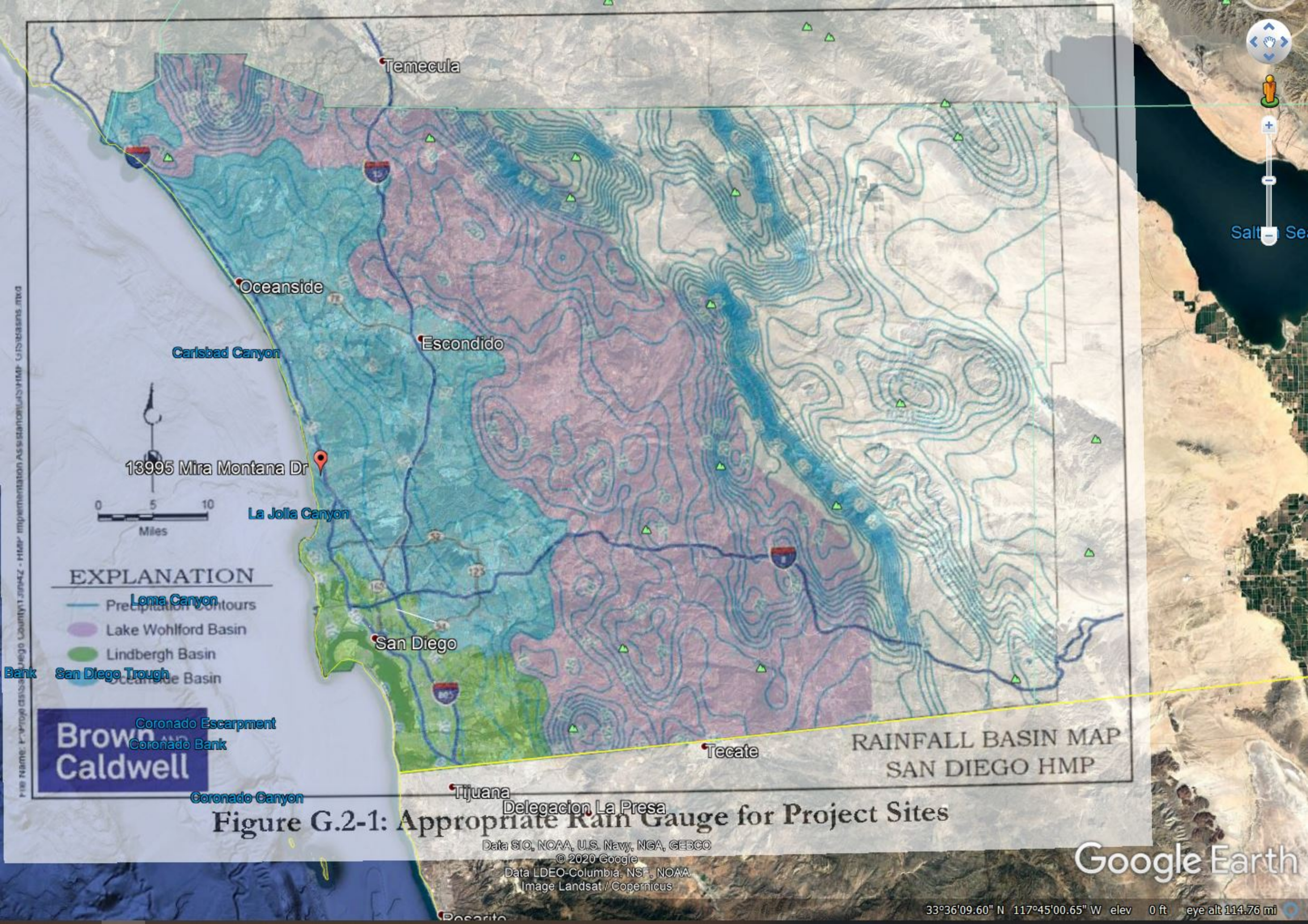


Figure G.2-1: Appropriate Rain Gauge for Project Sites