

# **Storm Water Control Plan**

**Felker Street Apartments**  
***(Residential Development)***  
**150 Felker St., Santa Cruz, CA**  
**APN 008-181-23**

***Revised 06.17.22***

By:

C2G / Civil Consultants Group, Inc.  
4444 Scotts Valley Drive, Suite 6  
Scotts Valley, CA 95066  
(831) 438-4420

## Storm Water Control Plan

### I. Project Information

- a. Residential Development – Site Improvement Plans for “Felker Street Apartments”  
Application No. TBD  
APN 008-181-23  
150 Felker Street, Santa Cruz, CA 95060
- b. Attn:
- c. Project is not phased
- d. The project proposes to construct 1 new residential apartment building. There are 2 access points off of Felker Street and a parking garage on the ground level.

### II. Project Site Assessment Summary

- a. The site is located south of Highway 1 and approximately 550 feet west of Ocean Street Exit.
- b. Total Project Site Area = 17,436 S.F.
- c. Watershed management zone = 1
- d. Design storm intensity = 2.1 inches
- e. Geology and soil types.

**180—Watsonville loam, thick surface, 15 to 30 percent slopes**

#### **Map Unit Setting**

*National map unit symbol: h9g8  
Elevation: 20 to 1,200 feet  
Mean annual precipitation: 28 inches  
Mean annual air temperature: 57 degrees F  
Frost-free period: 245 to 275 days  
Farmland classification: Not prime farmland*

#### **Map Unit Composition**

*Watsonville and similar soils: 85 percent  
Minor components: 12 percent  
Estimates are based on observations, descriptions, and transects of the mapunit.*

#### **Description of Watsonville**

##### **Setting**

*Landform: Marine terraces  
Landform position (two-dimensional): Toeslope  
Landform position (three-dimensional): Tread  
Down-slope shape: Linear  
Across-slope shape: Linear  
Parent material: Alluvium*



**Typical profile**

*H1 - 0 to 18 inches: loam*  
*H2 - 18 to 39 inches: clay*  
*H3 - 39 to 63 inches: sandy clay loam*

**Properties and qualities**

*Slope: 15 to 30 percent*  
*Depth to restrictive feature: More than 80 inches*  
*Drainage class: Somewhat poorly drained*  
*Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)*  
*Depth to water table: More than 80 inches*  
*Frequency of flooding: None*  
*Frequency of ponding: None*  
*Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)*  
*Available water supply, 0 to 60 inches: Very low (about 2.9 inches)*

**Interpretive groups**

*Land capability classification (irrigated): 4e*  
*Land capability classification (nonirrigated): 4e*  
*Hydrologic Soil Group: D*  
*Ecological site: R014XD089CA - CLAYPAN*

- f. Hydrologic Considerations: The nearest hydrological resources to the site is San Lorenzo River approximately 500 feet west of the site;

Depth to bedrock exceeds 80 inches, and depth to seasonal high-water table is approximately 60 inches per the project's soils report.

- g. The existing site is developed (impervious) with a commercial building that will be removed. Existing trees are on the site that will need to be protected during construction.
- h. The site currently drains via sheet flow into the public storm drain system comprised of curb and gutter along Felker Street. The adjacent gutter flowlines are a minimum of 6-inches below the perimeter concrete walk, and the site slopes generally up from the back of curb, removing any possibility of runoff from the public Right-of-Way. At the back of the property there is a small pervious area drains onto the property.

No soil or groundwater contamination has been documented at the site. Structures on the site are limited to the existing buildings, curbs, fences, and asphalt parking area with associated concrete driveways. No public utilities cross the site, underground utilities are located within Felker Street, and electrical power is provided by overhead drop.

The site is zoned RM, Multiple Residence Medium-Rise, see City Zoning Map, provided as Attachment D. There are no known covenants associated with this site.

- i. Site constraints consist of very poor infiltrating soils (Refer to Ksat value noted above in Section II.e. and letter from Project Geotechnical Engineer in Attachment H), limited on grading around existing trees to remain and there is no public storm drain system to tie into along the frontage of the property.

### **III. Project Storm Water Performance Criteria and Drainage Management**

#### **a. Development Area and BMP Requirement Tier**

- i. The site encompasses 12,200 square feet (sf) of new and/or replaced impervious area, and is a Tier 2 multi-family project.
- ii. Proposed Development Area and Impervious Area:

Pre-project impervious surface area:	12,416 sf
Post-project impervious surface area:	12,200 sf
Amount of impervious surface area that will be replaced:	12,200 sf
Amount of new impervious surface area that will be created:	0 sf
Reduced Impervious Area Credit:	216 sf
New and Replaced Impervious Area:	12,200 sf
Net Impervious Area:	11,984 sf

The site is not located within the Urban Sustainability Area (USA), per the City of Santa Cruz USA Map; included as Attachment E. The site is surrounded by Major Roads and is within the Coastal Zone, as shown within the USA Map.

- b. Nine (9) Drainage Management Areas (DMAs) have been delineated for new construction on the site. Flow-through Planters are proposed for treating the new impervious area associated with the building. Due to very poor infiltrating soils, infiltration is not recommended for this site. In DMA H and I, pervious pavers have been proposed to provide an aesthetically appealing vehicular entrance and also reduce the overall replaced and/or created impervious area.

Self-Treating Area F and H have been designed to be in compliance with Chapter 6B of the City of Santa Cruz Stormwater Best Management Practices (BMP) manual and are shown on sheet C3.2 Stormwater, see Attachment A.

DMAs E, I and G are self-retaining areas to provide opportunity for runoff to infiltrate prior to leaving the site. These DMAs have designated depressed areas that allow ponding (approximately an inch and a half, due to poor site infiltration) with amended soil.

### **IV. Site Design and SCMs**

- a. Due to the new and/or replaced impervious area of 12,200 square feet proposed, this project falls within the Tier 2 Post-Construction BMP Requirements.
  - i. Tier 1 - Site Design and Runoff Reduction elements intended to control runoff from the site consist of the following:
    - 1. Disconnected downspouts that drain to landscape areas as detailed in Chapter 6B of the BMP manual.
    - 2. Disperse driveway runoff to landscape areas
    - 3. Implementation of pervious pavement

- ii. Tier 2 – Water Quality Treatment elements intended to treat stormwater from the site consist of the following:
  - 1. Implementation of raised Flow-through Planters to treat 85-percentile storm.

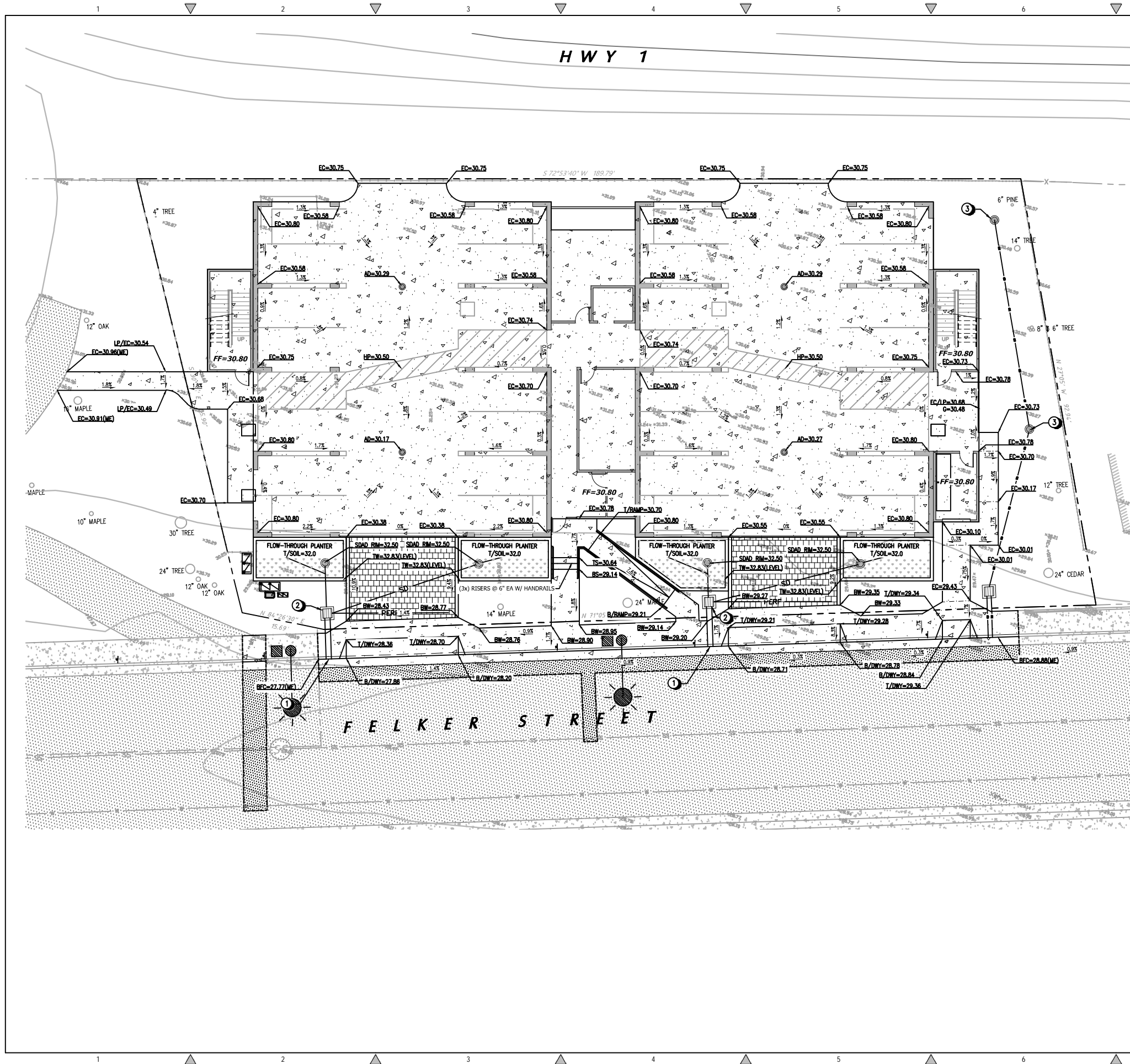
**V. BMP Operation and Maintenance Plan**

- a. Structural Storm Water Control Measures requiring maintenance are shown on sheet C3.2, provided in Attachment A, consisting of flow-through planters and pervious pavement.
- b. O&M procedures for the SCMs consist of monthly inspection and removal of trash or other deleterious materials; annual inspection and replacement of any removed soils or vegetation, replanting as required, and repair of any structural damage. O&M procedures for structural stormwater control measures consist of monthly inspection and removal of trash or other deleterious materials, replacement of any removed or damaged pavers. Annual inspections shall take place in September, prior to start of the rainy season. See Attachment F for specific requirements and maintenance checklist.
- c. Maintenance will be performed by the property owner, and will include both monthly and annual inspections, maintenance, and repair as needed of the SCMs.
- d. Signed Maintenance Agreement included as Attachment G.

## **Attachment A**

*-C3.1 Grading Plan*

*-C3.2 Stormwater Management Plan*




- GENERAL GRADING NOTES**
1. ALL AREAS TO RECEIVE FILL SHALL BE STRIPPED TO A DEPTH TO BE DETERMINED BY THE SOILS ENGINEER. ANY (E) A.C. OR P.C.C. PAVING SHALL BE SCARIFIED & REMOVED & SUBGRADE PREPARED & COMPACTED AS SHOWN IN THESE PLANS.
  2. ALL MATERIAL TO BE USED AS FILL WITHIN BUILDING PAD AREAS & PARKING OR DRIVEWAY AREAS TO BE FREE OF ALL VEGETATION & FOREIGN MATTER AND SHALL BE APPROVED BY THE SOILS ENGINEER.
  3. ALL BUILDING PADS TO BE COMPACTED TO 95% RELATIVE COMPACTION; DRIVEWAY & STREET AREAS TO BE COMPACTED TO 95% RELATIVE COMPACTION PER ASTM D1557-91.
  4. BUILDING PADS TO BE LEVEL SIDE-TO-SIDE, FRONT-TO-REAR, UNLESS OTHERWISE SHOWN.
  5. STRIPPINGS MAY BE PLACED IN PLANTING AREAS. ALL EXCESS STRIPPING SHALL BE HAULED OFF. PAVING DEBRIS SHALL BE HAULED OFF TO AN APPROVED DISPOSAL SITE.
  6. ALL WORK SHOWN OR NOTED IN THESE PLANS SHALL BE IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE SOILS ENGINEER, ALL LOCAL, STATE AND FEDERAL MINIMUM STANDARDS AND THE LATEST ADDITION OF THE UNIFORM BUILDING CODE.
  7. CONTRACTOR SHALL PROTECT ALL EXISTING SITE IMPROVEMENTS NOT IDENTIFIED FOR REMOVAL DURING CONSTRUCTION AND SHALL REPAIR ANY DAMAGE TO NEW CONDITION AT THEIR EXPENSE.
  8. CONTRACTOR SHALL VERIFY ALL EXISTING SITE CONDITIONS, SITE DIMENSIONS AND GRADES PRIOR TO THE START OF CONSTRUCTION.
  9. ALL GRADING AND RELATED WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARD REQUIREMENTS OF THE CITY OF SANTA CRUZ AND THE PROJECT'S CONDITIONS OF APPROVAL.
  10. GRADING SLOPES FOR BOTH CUT AND FILL SHALL NOT EXCEED 2(H):1(V) UNLESS OTHERWISE DIRECTED BY THE GEOTECHNICAL ENGINEER.
  11. ALL SOFTScape GRADES ADJACENT TO (N) BUILDINGS SHALL BE 8" (MIN.) BELOW FINISH FLOOR.
  12. CONTRACTOR SHALL GRADE TO ENSURE DRAINAGE FLOWS AWAY FROM NEW BUILDINGS

ABBREVIATIONS		LEGEND	
AB	AGGREGATE BASE	SD	STORM DRAIN
AC	ASPHALT CONCRETE	SDAD	STORM DRAIN AREA DRAIN
B/	BOTTOM OF ...	SDDI	STORM DRAIN DROP
BLDG	BUILDING	INLET	STORM DRAIN DROP INLET
BS	BOTTOM OF STAIR	SDMH	STORM DRAIN
BW	BACK OF WALK		MANHOLE
CONC	CONCRETE	T/	TOP OF ...
DWY	DRIVEWAY	TG	TOP OF GRATE
EC	EDGE OF CONCRETE	TS	TOP OF STAIR
EP	EDGE OF PAVEMENT	TW	TOP OF WALL
EL	ELEVATION	UG	UNDERGROUND
FF	FINISH FLOOR	W/	WITH
FL	FLOWLINE		
G	GROUND		
HP	HIGH POINT		
INV	INVERT ELEVATION		
LP	LOW POINT		
NG	NATURAL GROUND		
P.O.T.	PATH OF TRAVEL		
PL	PROPERTY LINE		
PVR	PERVIOUS PAVR		

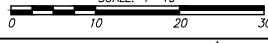
- STORM DRAIN NOTES:**
1. CURB DRAIN PER CITY OF SANTA CRUZ STD DRAWING 10
  2. V64 DROP INLET WITH OPEN BOTTOM
  3. 10" AREA DRAIN
- STORM DRAIN PIPE DATA:**
1. 45 LF OF 4" PERF PIPE @ 0.0% SLOPE
  2. 7 LF OF 6" HDPE PIPE @ 1.0% SLOPE
  3. 30 LF OF 6" HDPE PIPE @ 1.0% SLOPE
  4. 38 LF OF 6" HDPE PIPE @ 1.0% SLOPE


<u>EARTHWORK QUANTITIES</u>			
NOTE: THE EARTHWORK QUANTITIES SHOWN HEREON ARE EXCLUSIVE OF WALL FOOTINGS, EXISTING PAVEMENT REMOVAL AND OVER EXCAVATION AND RECOMPACTION, UTILITY TRENCH SPOILS & SOIL EXPANSION AND CONTRACTION FACTORS.			
ITEM	DESCRIPTION	CUT (cu yds)	FILL (cu yds)
1	EG VS. FG	60	375
NET VOLUME =			
315 CU.YDS. OF FILL			
THE ABOVE QUANTITIES ARE FOR INFORMATION PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE THE NECESSARY CUT AND FILL TO ACCOMPLISH FINISH GRADE SHOWN ON THESE PLANS.			



NORTH

SCALE: 1"=10'





USA NORTH 811  
Call 811 Before You Dig

REVISIONS	BY

**GRADING AND DRAINAGE**



REGISTERED PROFESSIONAL ENGINEER  
No. C 64561  
Exp. 6/30/23  
CIVIL  
STATE OF CALIFORNIA



C2G/CIVIL CONSULTANTS GROUP, INC.  
Engineers/Planners  
Santa Cruz, CA 95066  
831.438.4420

**SITE IMPROVEMENT PLANS**  
150 FELKER STREET  
SANTA CRUZ, CALIFORNIA 95060

Date: 11.05.2021  
Scale: 1" = 10'  
Drawn: JB/DD  
Job: 2013.01  
Sheet: C3.1  
or 10 Sheets

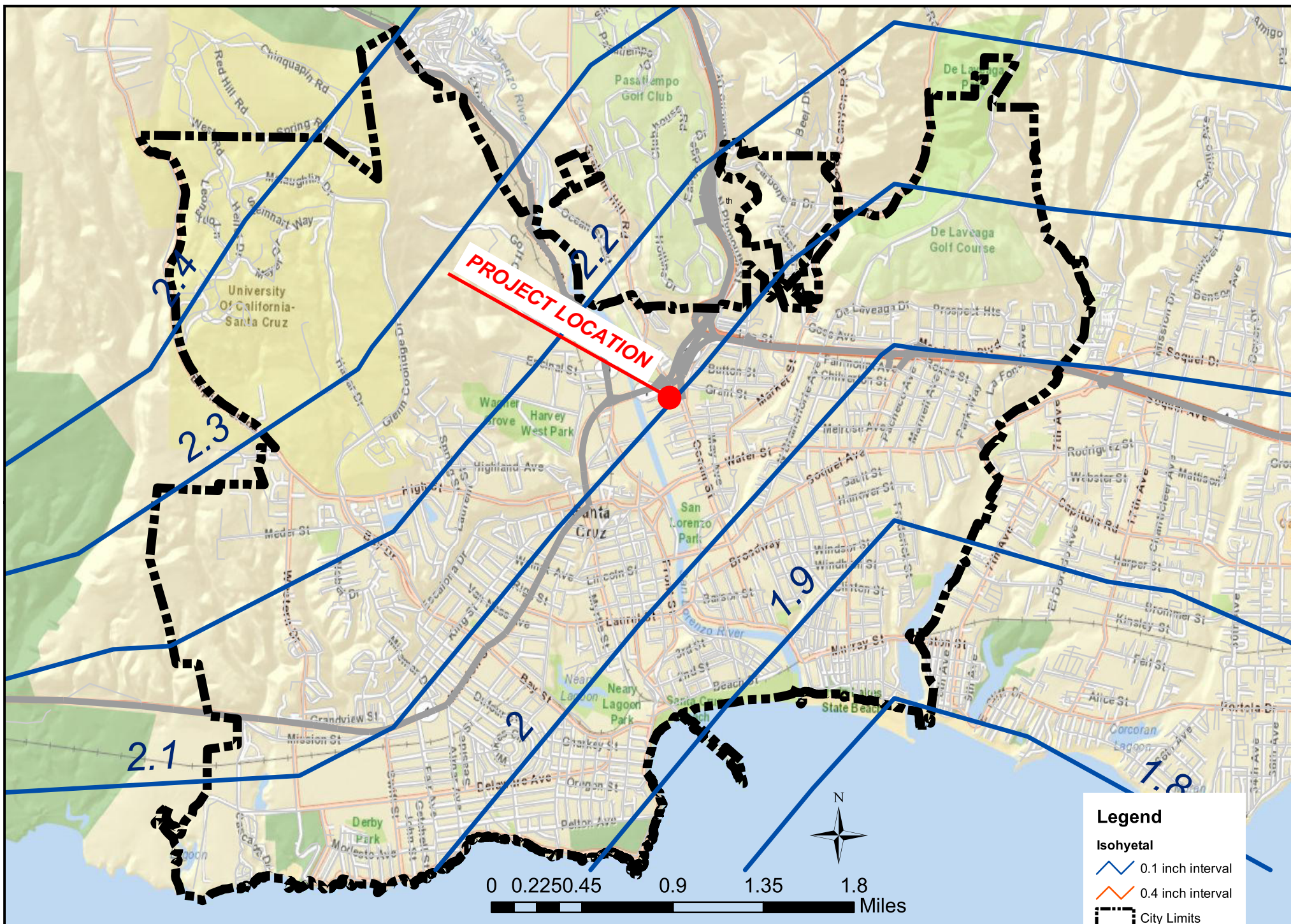
Drawings: 2 (Issued) CAD 2013.01 - 150 Felker Street (Design) CAD (Issued) 10/13/01 - C3.1 - GRADING  
Last Saved: Wed Mar 08, 2022 - 2:56pm  
Last Printed: Wed Mar 08, 2022 - 4:38pm  
By: JBB



## ***Attachment B***

95<sup>th</sup> Percentile 24-hour Rainfall Depths





**City of Santa Cruz**

**95th Percentile 24-hour Rainfall Depths**

**Source: Central Coast Regional Water Quality Control Board**

*Data Source (for spatial variation):*

*PRISM Climate Group*

*Oregon State University*

<http://prism.oregonstate.edu>





## ***Attachment C***

Storm water and Low-Impact Development BMP Requirement Worksheet

Central Coast SCM Sizing Calculator

# APPENDIX A

## STORM WATER AND LOW-IMPACT DEVELOPMENT BMP REQUIREMENT WORKSHEET

### How to Use This Worksheet

The City's Storm Water BMP requirements are based on project type, proposed impervious area, and location within the watershed. This worksheet was developed to help permit applicants determine and meet storm water BMP requirements applicable to a proposed development or redevelopment

- 1 - Download this fillable form online at [www.cityofsantacruz.com/LID](http://www.cityofsantacruz.com/LID)
- 2 - Fill out the Worksheet to determine what stormwater BMP requirements apply to a proposed project.
- 3 - Attach Worksheet and additional documentation required as listed in the City Storm Water Best Management Practices for Private and Public Development Projects to plans for review by the Department of Public Works
- 4 - Please contact the Public Works Environmental Project Analyst at 420-5160 if you have any questions on completing the worksheet.

**Project Address:** 150 Felker Street

**Bldg Permit #:**

### A - Project Type

Check project type that applies:

- ☐ Single Family Home ☒ Multi-family, Commercial, Industrial, Public facilities

Check development type that applies:

- ☐ New Development ☒ Redevelopment / Remodel

### B - Proposed Development Area and Impervious Area:

**Pre-project** impervious surface area: 12416 sq ft

**Post-project** impervious surface area: 12200 sq ft

Amount of impervious surface area that will be **replaced**: 12200 sq ft

Amount of new impervious surface area that will be **created**: 0 sq ft

Reduced Impervious Area Credit: 216 sq ft

**New and Replaced Impervious Area = 12200 sq ft**

**Net Impervious Area = 11984 sq ft**

(Net Impervious Area = Impervious Area created + Impervious Area replaced - Reduced Impervious Area Credit)

### C - Post-Construction BMP Tier requirement:

Check Project Type and Impervious Area (from calculations above) that applies.

**BMP requirements are cumulative** (e.g. a project subject to BMP Tier 3 is also subject to Tiers 1 and 2), permit review fees are not cumulative.

Projects requiring a Stormwater Control Plan will need to involve a civil engineer.

SINGLE-FAMILY HOMES	BMP TIER	Permit Review Fee	Stormwater Control Plan required?
<input type="checkbox"/> Single-family Home with Net Impervious Area < <b>15,000 sf</b> , please consult Chapter 6A, BMPs for Single-Family Homes on Small Lots	N/A	\$0	No
<input type="checkbox"/> Net Impervious Area ≥ <b>15,000 sf</b> ; New and replaced impervious area < <b>22,500 sf</b>	3	\$330	Yes
<input type="checkbox"/> New and replaced impervious area ≥ <b>22,500 sf</b>	4	\$550	Yes
MULTI-FAMILY, COMMERCIAL, INDUSTRIAL, PUBLIC FACILITIES	BMP TIER	Permit Review Fee	Stormwater Control Plan Required?
<input type="checkbox"/> New and Replaced Impervious Area ≥ <b>2,500 sf</b> ; Net Impervious Area < <b>5,000 sf</b>	1	\$0	No
<input checked="" type="checkbox"/> Net Impervious Area ≥ <b>5,000 sf</b> ; New and Replaced Impervious Area < <b>15,000 sf</b>	2	\$330	Yes
<input type="checkbox"/> New and Replaced Impervious Area ≥ <b>15,000 sf</b> but < <b>22,500 sf</b>	3	\$550	Yes
<input type="checkbox"/> New and replaced impervious area ≥ <b>22,500 sf</b>	4	\$550	Yes

If the proposed project is only subject to BMP Tiers 1 or 2, skip to Step F.

**D - Watershed Management Zones - For projects subject to Tiers 3 Post-Construction BMP requirements only.**

Watershed Management Zones are viewable online on the City of Santa Cruz GIS website at: <http://gis.cityofsantacruz.com/gis/index.html>

**Watershed Management Zones and associated Tier 3 (Runoff Retention) Post-Construction BMP requirements**

If Tier 3 BMP requirements are applicable to the project, check the watershed management zone area where the project is located.

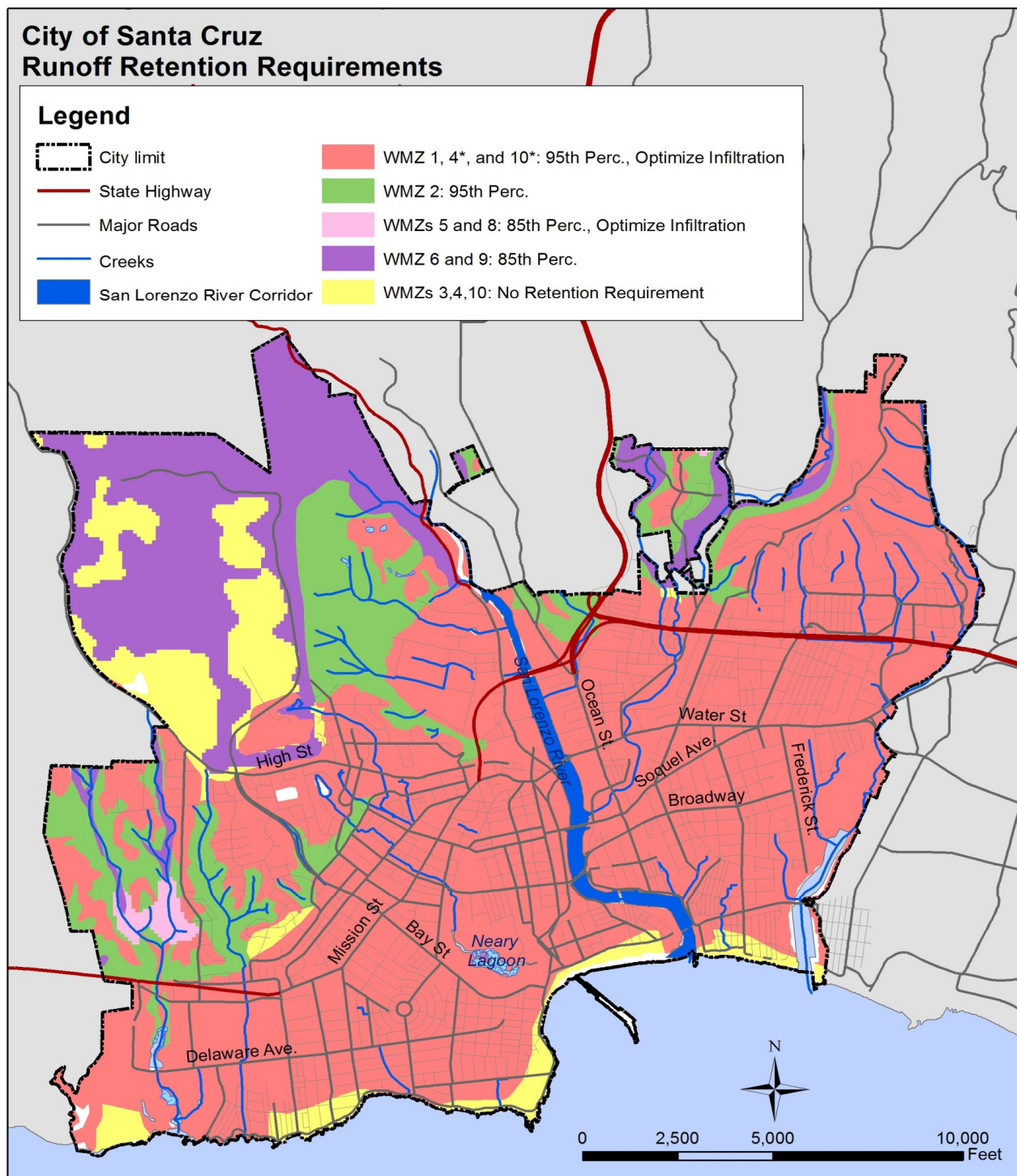
☒ WMZ 1, and portions of 4, and 10 overlying groundwater basin

☐ WMZ 2

☐ WMZ 5 and 8

☐ WMZ 6 and 9

☐ WMZ 3, 4 and 10



**E - Special Circumstances - For projects subject to Tiers 3 and 4 Post-Construction BMP requirements only.**

Check if special circumstance applies to the project

☐ Highly Altered Channel and Intermediate Flow Control Facility

☐ Urban Sustainability Area

**F - Additional Stormwater BMP Requirements for Multi-family, Commercial and Industrial projects**

Check if additional BMP requirements apply to the project

a) State Construction Activities Storm Water General Permit

☐ Construction activity resulting in land disturbance of one acre or more, or part of a larger common plan of development

b) Additional Source Control BMP requirements for specific facilities

☐ Commercial or industrial facility

☐ Parking areas

☐ Material Storage Areas

☐ Pools, spas and other water features

☐ Vehicle fueling, maintenance and wash areas

☒ Trash Storage Areas

☐ Equipment and accessory wash areas

☐ Restaurants and food processing or manufacturing facilities

☐ Interior and parking garage floor drains

☐ Miscellaneous drain or wash water

**G - Complete if your project is only subject to Tier 1 Requirements - Site planning and LID design measures.**

LID design measures shall be clearly marked on site plans

**Check applicable boxes and provide short description of measure and location**

☐ Conserve natural areas, riparian areas and wetlands

Description: \_\_\_\_\_

☐ Concentrate improvements on the least-sensitive portions of the site and minimize grading

Description: \_\_\_\_\_

☐ Direct roof runoff into cisterns or rain barrels

Description: \_\_\_\_\_

☒ Direct roof downspouts to landscaped areas or rain gardens

Description: downspouts are disconnected and drain across landscaped areas prior to entering storm drain system

☒ Use pervious pavement (pervious concrete or asphalt, turf block, crushed aggregate, etc.)

Description: Access drives are proposed to be pervious pavers

☐ Disperse runoff from paved areas to adjacent pervious areas

Description: \_\_\_\_\_

# Central Coast Region Stormwater Control Measure Sizing Calculator

Version: 2/26/2014

## 1. Project Information

Project name:	Felker Street Apartments
Project location:	150 Felker Street, Santa Cruz
Tier 2/Tier 3:	Tier 2 - Treatment
Design rainfall depth (in):	2.0
<b>Total project area (ft2):</b>	17436
Total new impervious area (ft2):	0
Total replaced impervious in a USA (ft2):	0
Total replaced impervious not in a USA (ft2):	12200
Total pervious/landscape area (ft2):	5236

## 2. DMA Characterization

Name	DMA Type	Area (ft2)	Surface Type	New, Replaced?	Connection
A.1	Drains to SCM	2570	Roof	Replaced	SCM 1
A.2	Drains to SCM	263	Landscape	Replaced	SCM 1
B.1	Drains to SCM	3161	Roof	Replaced	SCM 2
B.2	Drains to SCM	160	Landscape	Replaced	SCM 2
C.1	Drains to SCM	2985	Roof	Replaced	SCM 3
C.2	Drains to SCM	320	Landscape	Replaced	SCM 3
D.1	Drains to SCM	2833	Roof	Replaced	SCM 4
D.2	Drains to SCM	331	Landscape	Replaced	SCM 4
E.1	Self-Retaining	312			
E.2	Self-Retaining	1762			
F.1	Self-Treating	552			
G.1	Self-Retaining	179			
G.2	Self-Retaining	235			
H.1	Self-Treating	537			
H.2	Self-Treating	414			
I.1	Self-Retaining	160			
I.2	Self-Retaining	662			

### DMA Summary Area

Total project impervious area (ft2):	11549
New impervious area (ft2):	0
Replaced impervious within a USA (ft2):	0
Replaced impervious not in a USA (ft2):	11549
Total pervious/landscape area (ft2):	1074

## 3. SCM Characterization

Name	SCM Type	Safety Factor	SCM Soil Type	Infiltr. Rate (in/hr)	Area (ft2)
SCM 1	Bioretention	1	Site-Specific	0.03	150
SCM 2	Bioretention	1	Site-Specific	0.03	150
SCM 3	Bioretention	1	Site-Specific	0.03	158
SCM 4	Bioretention	1	Site-Specific	0.03	150

## 4. Run SBUH Model

## 5. SCM Minimum Sizing Requirements

SCM Name	Minimum SCM Area (ft <sup>2</sup> )		
SCM 1	104		
SCM 2	127		
SCM 3	121		
SCM 4	115		

6. Self-Retaining Area Sizing Checks				
Self-Retaining DMA Name	Self-Retaining DMA Area (ft <sup>2</sup> )	Tributary DMA Name	Tributary DMA Area (ft <sup>2</sup> )	Tributary / SRA Area Ratio
E.1	312		0	0.00
E.2	1762		0	0.00
G.1	179		0	0.00
G.2	235		0	0.00
I.1	160		0	0.00
I.2	662		0	0.00

## **Attachment D**

*City of Santa Cruz Zoning Map*

*95<sup>th</sup> Percentile 24-hour Rainfall Depths Map*



# City of Santa Cruz Zoning Districts Map

City of Santa Cruz  
Planning Department  
800 Center St., Room 208  
Santa Cruz, CA 95060  
Ph: 420-5100



## Legend

----- Santa Cruz City Limit

Parcels

### Zoning Districts:

- CB - Beach Commercial
- CBD - Central Business District
- CBD-E - Subdistrict Lower Pacific Ave.
- CC - Community Commercial
- CD/R - Coastal Dependent Related
- CN - Neighborhood Commercial
- CT - Thoroughfare Commercial
- EA-20 - Exclusive Agriculture
- FP - Flood Plain
- IG - General Industrial
- OFR - Ocean Front Recreational
- PA - Professional and Administration
- PF - Public Facilities
- PK - Parks
- R-1 - Single Family Residence
- RL - Multiple Residence Low Rise
- RM - Multiple Residence Medium Rise
- RH - High Density Residential
- RS - Residential Suburban
- RTA - Beach / Medium Density Residential
- RTB - Motel Residential
- RTC - Beach Commercial
- RTD - Beach Residential
- RTE - Beach High Density Residential

### Overlay Zones:

- CON - Conservation Overlay
- MU - Mixed Use Overlay
- PER - Performance Overlay
- Coastal Zone Overlay Boundary



Scale: 1" = 800'

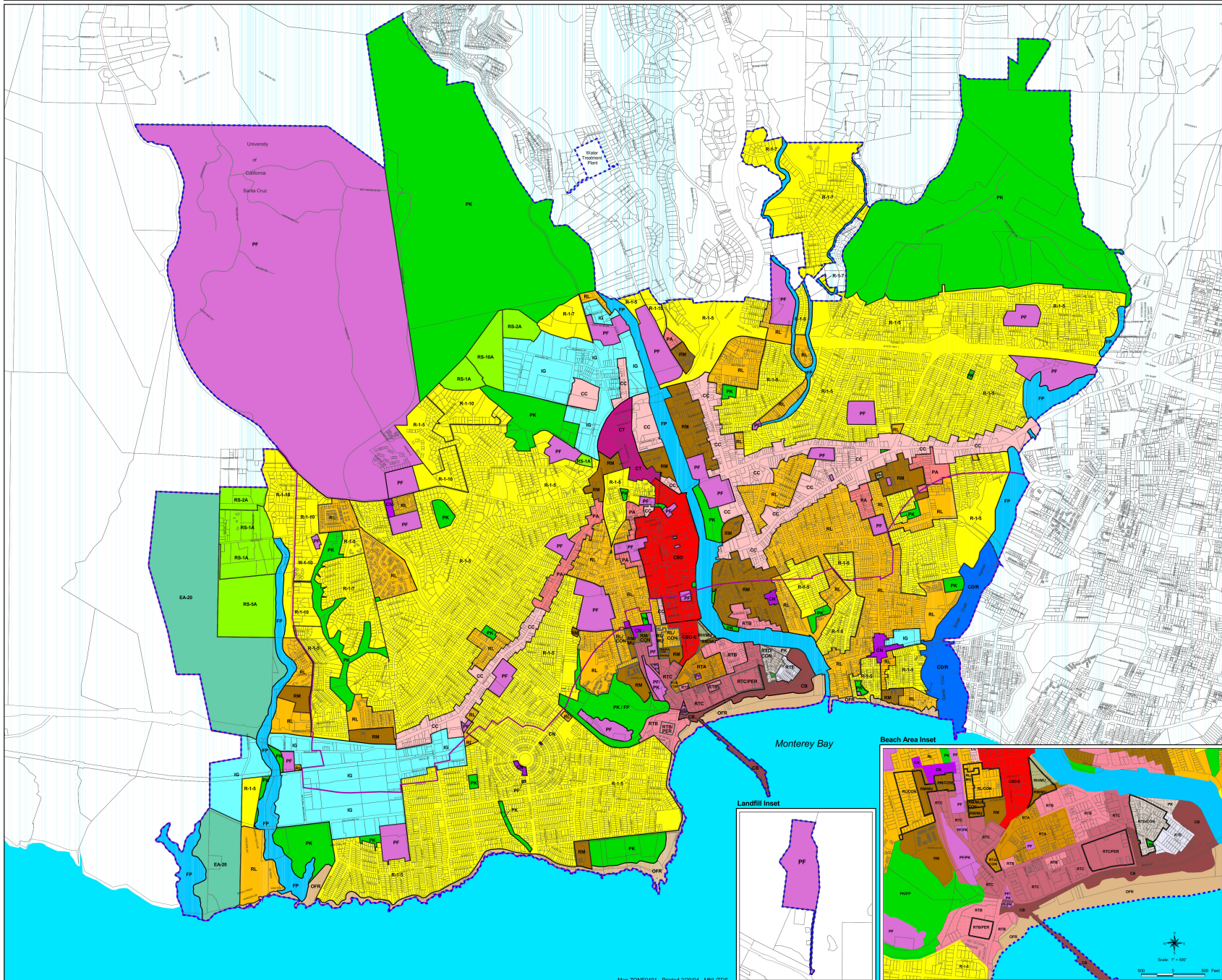
800 0 800 1600 2400 3200 Feet

### Location Map



Prepared for the City of Santa Cruz by TriAxial Data Systems  
36 Brennan Street • Watsonville, CA 95076 • Phone (831) 763-3697 • Fax (831) 763-3699

This is a graphic representation only of data provided by the City of Santa Cruz and the County of Santa Cruz. The author assumes no responsibility nor liability for errors or omissions.



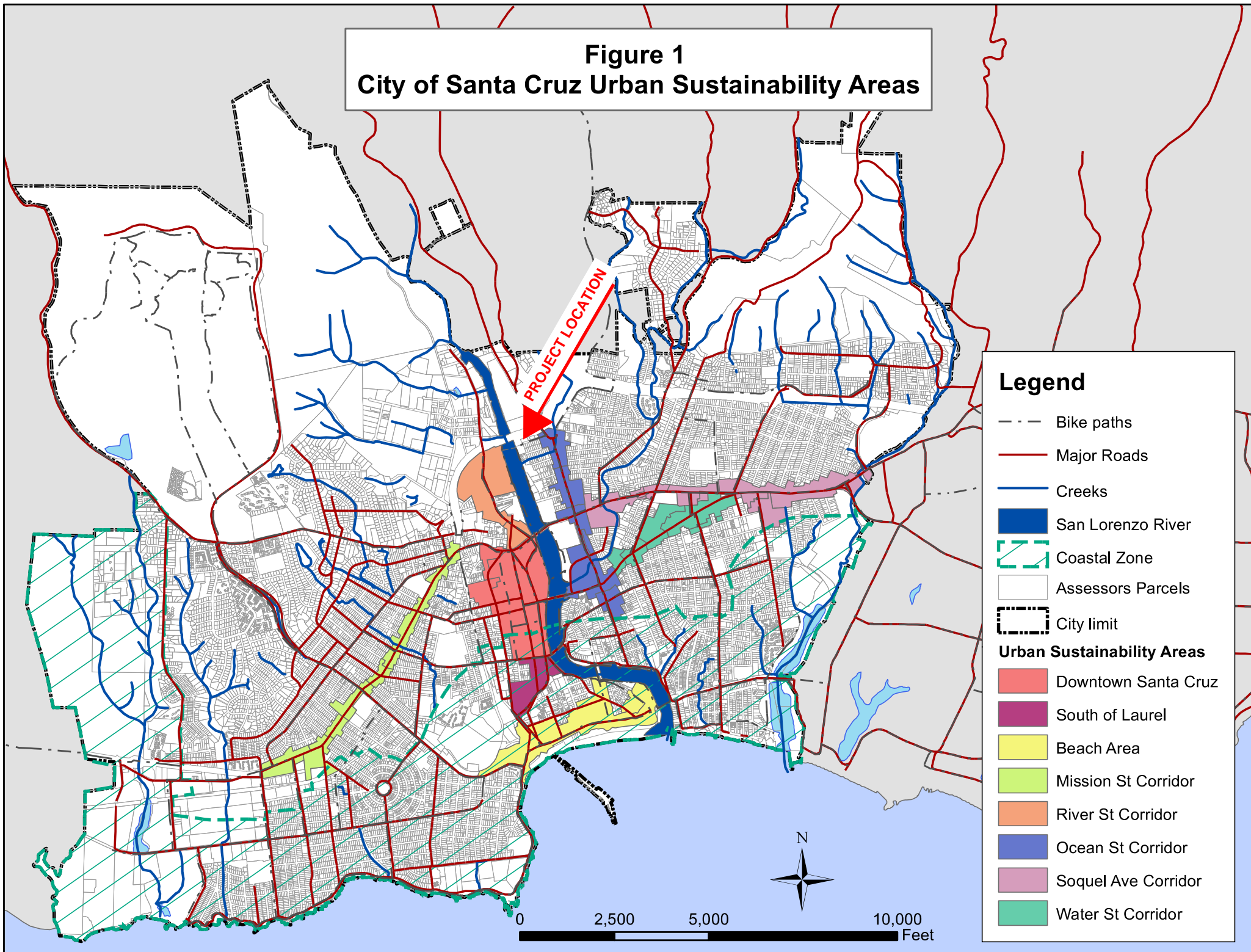
Map ZONE001 - Printed 2/20/04 - MHL/TDS



## **Attachment E**

*City of Santa Cruz Urban Sustainability Area Map*

**Figure 1**  
**City of Santa Cruz Urban Sustainability Areas**



## **Attachment F**

*Site Soils Data*  
*-Soils Map*

## **Attachment G**



Soil Map—Santa Cruz County, California  
(150 Felker Street)



Map Scale: 1:2,810 if printed on A landscape (11" x 8.5") sheet.

0 40 80 160 240 Meters

0 100 200 400 600 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84



Natural Resources  
Conservation Service

Web Soil Survey  
National Cooperative Soil Survey

11/30/2021  
Page 1 of 3

## Santa Cruz County, California

### 180—Watsonville loam, thick surface, 15 to 30 percent slope s

#### Map Unit Setting

*National map unit symbol:* h9g8

*Elevation:* 20 to 1,200 feet

*Mean annual precipitation:* 28 inches

*Mean annual air temperature:* 57 degrees F

*Frost-free period:* 245 to 275 days

*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Watsonville and similar soils:* 85 percent

*Minor components:* 12 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Watsonville

##### Setting

*Landform:* Marine terraces

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

##### Typical profile

*H1 - 0 to 18 inches:* loam

*H2 - 18 to 39 inches:* clay

*H3 - 39 to 63 inches:* sandy clay loam

##### Properties and qualities

*Slope:* 15 to 30 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Somewhat poorly drained

*Capacity of the most limiting layer to transmit water (Ksat):* Very low  
to moderately low (0.00 to 0.06 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0  
mmhos/cm)

*Available water supply, 0 to 60 inches:* Very low (about 2.9 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* D

*Ecological site:* R014XD089CA - CLAYPAN

*Hydric soil rating: Yes*

### **Minor Components**

#### **Tierra, sandy loam**

*Percent of map unit: 4 percent*

*Hydric soil rating: No*

#### **Watsonville, loam**

*Percent of map unit: 3 percent*

*Landform: Marine terraces*

*Landform position (two-dimensional): Toeslope*

*Landform position (three-dimensional): Tread*

*Hydric soil rating: Yes*

#### **Bonnydoon, loam**

*Percent of map unit: 2 percent*

*Hydric soil rating: No*

#### **Los osos, loam**

*Percent of map unit: 1 percent*

*Hydric soil rating: No*

#### **Elkhorn**

*Percent of map unit: 1 percent*

*Hydric soil rating: No*

#### **Fagan, loam**

*Percent of map unit: 1 percent*

*Hydric soil rating: No*

## **Data Source Information**


Soil Survey Area: Santa Cruz County, California

Survey Area Data: Version 15, Sep 9, 2021



## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

### 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: Santa Cruz County, California

Survey Area Data: Version 15, Sep 9, 2021

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

Date(s) aerial images were photographed: Apr 13, 2020—Apr 24, 2020

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.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
104	Baywood loamy sand, 0 to 2 percent slopes	1.9	5.4%
105	Baywood loamy sand, 2 to 15 percent slopes	2.9	8.0%
170	Soquel loam, 0 to 2 percent slopes	12.7	35.1%
179	Watsonville loam, thick surface, 2 to 15 percent slopes	6.5	17.9%
180	Watsonville loam, thick surface, 15 to 30 percent slopes	9.5	26.3%
185	Water	2.6	7.3%
<b>Totals for Area of Interest</b>		<b>36.0</b>	<b>100.0%</b>



## **Attachment G**

### *Operations and Maintenance Agreement*

## Attachment G

### Maintenance Agreement Regarding Maintenance of Structural or Treatment Control Best Management Practices (BMPs)

for: Address 150 Felker Street

APN# 008-181-23

I, \_\_\_\_\_, being the owner of the real property, APN 008-181-23, which is located at 150 Felker Street, Santa Cruz, California, consent and agree to inspect and maintain any and all structural or treatment control Best Management Practices (BMPs) a minimum of once per year prior to October 1 on the subject property. The structural or treatment control BMPs on the subject property include(s):

\_\_\_\_\_  
Pervious Pavers and Flow-Through Planters

**I agree to send a letter that provides proof of inspection and maintenance to the City of Santa Cruz Department of Public Works prior to December 1 of each year.** Proof of inspection and maintenance shall include a log of inspection and maintenance dates for the past year, and receipts if conducted by a hired service. The log should also indicate any significant observations or repairs made. The proof of inspection and maintenance should be sent to: Environmental Projects Analyst, Department of Public Works, City of Santa Cruz, 809 Center Street, Room 201, Santa Cruz, CA 95060.

In the event that the property is sold, transferred, or leased, the obligations hereby imposed on the property owner shall be assumed by subsequent property owners and lessees. To this end, property owner, in any deed transferring an ownership interest in the property or in any lease agreement for the property, shall include a term by which the subsequent property owner or lessee acknowledges his or her understanding of the obligations imposed by this agreement and expressly agrees to accept and assume responsibility for complying with all said obligations imposed by this agreement.

In addition, I will provide printed information to the new property owner or lessee regarding proper BMP inspection and maintenance frequency and methods. The information shall accompany the first deed transfer. This information shall include the following:

- (1) a description of any and all storm water structural or treatment control BMPs;
- (2) a map of the property indicating the BMP locations; and
- (3) a description of how inspections and necessary maintenance can be performed.

The transfer of this information shall also be required with any subsequent sale of the property.

Failure to comply with the provisions of this Maintenance Agreement may result in enforcement actions including assessment of civil penalties as allowed by the City's Municipal Code, Chapter 16.19.190 Administrative Remedies.

I have read the above agreement and understand it.

Owner Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Owner Address: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

**Attachment H**

*Letter from project Geotechnical Engineer*



# CMAG ENGINEERING, INC.

P.O. BOX 640, APTOS, CALIFORNIA 95001

PHONE: 831.475.1411

WWW.CMAGENGINEERING.COM

May 13, 2022  
Project No. 21-116-SC

AEST Realty  
4100 Moorpark Avenue, Suite 205  
San Jose, California 95117

ATTN: Arthur Lin

**SUBJECT: ON-SITE INFILTRATION**  
Proposed Apartment Building  
150 Felker Street, Santa Cruz, Santa Cruz County, California  
APN 008-181-23

**REFERENCES:** See the Attached List of References.

Dear Mr. Lin:

Per the request of your Architect, regarding the referenced review comments letter for the project from the City of Santa Cruz, we offer our opinion, from the geotechnical aspect, as to the feasibility of using shallow SCM's at the subject site.

Based on the referenced Geotechnical Investigation report and our experience in the area, it is our opinion that the effectiveness of any proposed shallow SCM's at the subject site which require infiltration into the near-surface soils will be low for the following reasons:

- The near-surface soils are consistent with the "Watsonville Loam, 15-30 percent slope" classification depicted in the Soil Survey of Santa Cruz County, California, 1980. This classification is depicted as having a very low permeability (<0.06 in/hr from 26 to 41 inches below grade). Our investigation encountered fine grained soils consisting of sandy silt to sandy lean clay within the upper 10 feet.
- Based on the poor engineering qualities of the near-surface soils we have recommended a mechanically stabilized engineered fill pad beneath the proposed apartment building which encompasses most of the subject property. The recommended fill pad, which extends 5 feet beyond the proposed structure, will consist of imported material compacted to a minimum of 90 percent relative compaction. The engineered fill pad is considered to be relatively impermeable.
- Based on our experience in the area, the groundwater elevation can be at or near the ground surface during the rainy season. Proposed shallow SCM's will have little

On-Site Infiltration  
150 Felker Street  
Santa Cruz County, California

May 13, 2022  
Project No. 21-116-SC  
Page 2

effectiveness during high groundwater conditions.

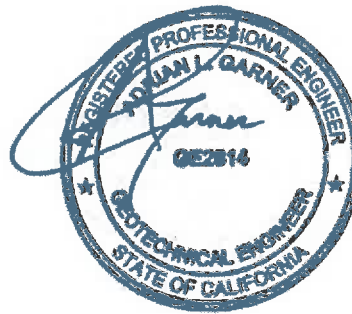
It is a pleasure being associated with you on this project. If you have any questions, or if we may be of further assistance please do not hesitate to contact our office.

Sincerely,

**CMAG ENGINEERING, INC.**



Shannon Chome', PE  
Senior Engineer  
C 68398  
Expires 9/30/23



Adrian L. Garner, PE, GE  
Principal Engineer  
C 66087, GE 2814  
Expires 6/30/22

Distribution:      Client (Electronic Copy)  
                         Scott Brereton (Electronic Copy)  
                         Dave Dauphin (Electronic Copy)

### **REFERENCES**

City of Santa Cruz (April 18, 2022). *RE: 150 Felker St. CP21-0137, APN 008-181-23.*

CMAG Engineering, Inc. (September 13, 2021). *Geotechnical Investigation, Proposed Apartment Building, 150 Felker Street, Santa Cruz, Santa Cruz County, California, APN 008-181-23.* Project No. 21-116-SC.

C2G Civil Consultants Group (November 5, 2021). *Site Improvement Plans, 150 Felker Street, Santa Cruz, California, 95060.* Job: 2013.01. Sheets C0.1, C1.1, C2.1, C3.1, C3.2, C4.1, C4.2, C5.1 - C5.3.

William C. Kempf Architects (March 10, 2022). *New Apartment Building for 150 Felker Street, Santa Cruz, California, APN 008-181-23.* Client Name: Arthur Lin. Project Name: Felker Street. Sheets A-1.1, A-1.2, A-2.1, A-3.1 - A-3.6, A-4.1, A-5.1, A-5.2, A-6.1, A-6.2.