

Stormwater Control Plan
for
The Residence at
558 Main Street
Watsonville, CA
APN 018-241-20

Applicant:
Pacific Coast Development
800 East Lake Avenue
Watsonville, CA 95076

Prepared by:
Roper Engineering
64 Penny Lane, Suite A
Watsonville, CA 95076
(831) 724-5300



A handwritten signature in black ink that reads "Jeff Roper". The signature is stylized with a large, looping "J" and a cursive "Roper".

Job No. 19016
May 15, 2020

Project Information

1. Project Location:
The property is located at 558 Main Street, between Fifth Street and East Lake Avenue, APN 018-241-20
2. Applicant:
Pacific Coast Development
800 East Lake Avenue, Suite 9
Watsonville, CA 95076
3. Project Phase: N/A
4. Project Type: Mixed Use, Commercial/Residential
5. Total Project Area: 0.69 ± acres
6. Total new and/or replaced impervious area: 28,929 sf
7. Stormwater Performance Requirements:
This project is subject to performance requirements No.1 Site Design and Runoff Reduction, No. 2 Water Quality Treatment and No. 3 Runoff Retention. This project is exempt from performance requirement No. 4, Peak Management, since it is located in Water Management Zone 4.
8. City of Watsonville Water Management Zone: Zone 4

**8. Site Design and Runoff Reduction Measures
(Performance Requirement No. 1)**

Design Strategies	Y/N	Description
Limit disturbance of creeks and natural drainage features.	N	No creeks or natural drainage features exist on the site.
Minimize compaction of highly permeable soils	N	No permeable soils exist on the site.
Limit clearing and grading of native vegetation at the site to a minimum area needed to build the project, allow access, and provide fire protection	N	The property has been previously developed. No native vegetation exists at the site.
Minimize impervious surfaces by concentrating improvements on the least-sensitive portions of the site, while leaving the remaining land in a natural undisturbed state.	N	The property has been previously developed. No areas are in their natural undisturbed state.
Minimize stormwater runoff by implementing one or more of the following site design measures: 1. Direct roof runoff into cisterns or rain barrels for reuse 2. Direct roof runoff onto vegetated areas safely away from building foundations and footings, consistent with California building code 3. Direct runoff from sidewalks, walkways, and/or patios onto vegetated areas safely away from building foundations and footings, consistent with California building code 4. Direct runoff from driveways and/or uncovered parking lots onto vegetated areas safely away from building foundations and footings, consistent with California building code 5. Construct bike lanes, driveways, uncovered parking lots, sidewalks, walkways, and patios with permeable surfaces	Y	The proposed project complies with design measures 2, 3 & 4. All runoff from new and replaced impervious surfaces is to be directed to the Filtera Bioretention System.

9. Water Quality Treatment (Performance Requirement No. 2)

Performance requirement No. 2 requires the project to treat stormwater runoff to reduce pollutant loads and concentrations using physical, biological, and chemical removal. Runoff from all new impervious surfaces will be directed to the Filterra vault, where water quality treatment will be facilitated. The system was sized using flow based design as represented on the Filterra Sizing Spreadsheet attached to this report.

10. **Runoff Retention (Performance Requirement No. 3)**

Performance Requirement No. 3 requires the project to prevent discharge from events up to the 95th percentile 24-hour rainfall event (1.3"). Due to the clay soils found at the site, the type D soil percolation rate of 0.25"/hr was utilized in the SCM Sizing Calculator attached.

The Central Coast Region Stormwater Control Measure Sizing Calculator was prepared for and adopted by the Regional Water Quality Control Board for the Central Coast Region.

11. **Site Assessment Measures**

Site Assessment Measure	Description
Site topography	The existing site has a relatively gentle slope towards Main Street.
Hydrologic features including contiguous natural areas, wetlands, watercourses, seeps, or springs	None.
Depth to seasonal high groundwater	Ground water was found 23 feet below grade. See geotechnical report.
Locations of groundwater wells used for drinking water	No wells exist in the vicinity.
Depth to an impervious layer such as bedrock	No bedrock is expected at site.
Presence of unique geology (e.g., karst)	No unique geology expected.
Geotechnical hazards	No unique geologic hazards expected.
Documented soil and/or groundwater contamination	No documented contamination.
Soil types and hydrologic soil groups	Clayey Sand, see geotechnical investigation.
Vegetative cover/trees	The existing site was previously developed. No native vegetation exists on the site. New landscaping will be provided.
Run-on characteristics (source and estimated runoff from offsite which discharges to the project area)	The site receives as small area of run-on from the adjacent properties to the north and east.
Existing drainage infrastructure for the site and nearby areas including the location of municipal storm drains	Existing storm drainage is intercepted by the storm drain system in Main Street.
Structures including retaining walls	The site is currently vacant. A bank building was recently removed.
Utilities	Existing utilities servicing the property will be abandoned. New utilities will be constructed. See

	Utility Plan.
Easements	PG&E and access easements exist on the property.
Covenants	Property owner will be responsible for maintenance of the stormwater management system.
Zoning/Land Use	Current zoning is CCA – Central Commercial Core Area
Setbacks	CCA setback requirements
Open space requirements	No open space requirements
Other pertinent overlay(s)	No other pertinent overlays

12. Site Design Measures

Design Measure	Description
Define the development envelope and protected areas, identifying areas that are most suitable for development and areas to be left undisturbed	Project site previously developed. No areas to be left undisturbed.
Conserve natural areas, including existing trees, other vegetation, and soils	Project site previously developed, no native areas exist.
Limit the overall impervious footprint of the project	Overall impervious footprint minimized.
Construct streets, sidewalks, or parking lot aisles to the minimum widths necessary, provided that public safety or mobility uses are not compromised	Driveways and sidewalks have been proposed to the minimum width necessary.
Set back development from creeks, wetlands, and riparian habitats	No creeks, wetlands or riparian habitats exist in the vicinity of the project.
Conform the site layout along natural landforms	Project layout conforms to the natural landform.
Avoid excessive grading and disturbance of vegetation and soils	Grading has been minimized by utilizing the existing topography as much as possible in the project design.

13. **Post-Construction Stormwater Control Measures**

The stormwater quality control measure proposed for this development is a Contech Filterra Biofiltration Vault. All the new impervious and replaced impervious areas will be directed to this vault. The roof runoff from the units will be directed to the Filterra vault.

A detail of the Filterra vault is shown on sheet C3 of the improvement plans. The sizing spreadsheet attached shows that the 10' x 6' vault will handle 30,000 SF of impervious area during a storm intensity of 0.20 inches/hour.

The stormwater retention control measure is provided by the drain rock vault under the Biofiltration Vault and parking lot. See attached preliminary improvement plans.

14. **Statement of Compliance:**

The design of stormwater treatment facilities and other stormwater pollution control measures in this plan are in accordance with the City of Watsonville Stormwater post-Construction Standards (Resolution No. 4-14, Adopted January 14, 2014). The Water Quality Treatment Requirements have been met on the site by the proposed measures.



Filterra Sizing Spreadsheet
Uniform Intensity Approach
Storm Intensity = 0.20 in/hr

Filterra Infiltration Rate = **100** (in/hr)
 Filterra Flow per Square Foot = 0.0023 (ft3/sec/ft2)

Filterra Flow Rate, Q = 0.0023 ft3/sec x Filterra Surface Area
 Rational Method, Q = C x I x A

OR Site Flowrate, Q = (C x DI x DA x 43560) / (12 x 3600)
 DA = (12 x 3600 x Q) / (C x 43560 x DI)

where Q = Flow (ft3/sec)
 DA = Drainage Area (acres)
 DI = Design Intensity (in/hr)
 C = Runoff coefficient (dimensionless)

			DI	C	C	C
			0.2	1.00	0.9	0.50
Available Filterra Box Sizes			Filterra	100%	Typical	Residential
L	W	Filterra Surface Area	Flow Rate, Q	Imperv. DA	Impervious DA	max DA
(ft)	(ft)	(ft2)	(ft3/sec)	(sq ft)	(sq ft)	(sq ft)
4	4	16	0.0370	8,000	8,889	16,000
6	4	24	0.0556	12,000	13,333	24,000
6.5	4	26	0.0602	13,000	14,444	26,000
8	4	32	0.0741	16,000	17,778	32,000
6	6	36	0.0833	18,000	20,000	36,000
8	6	48	0.1111	24,000	26,667	48,000
10	6	60	0.1389	30,000	33,333	60,000
12	6	72	0.1667	36,000	40,000	72,000
13	7	91	0.2106	45,500	50,556	91,000

Central Coast Region Stormwater Control Measure Sizing Calculator

Version: 2/26/2014

1. Project Information

Project name:	The Residence
Project location:	558 Main Stret
Tier 2/Tier 3:	Tier 3 - Retention
Design rainfall depth (in):	1.3
Total project area (ft2):	32281
Total new impervious area (ft2):	1256
Total replaced impervious in a USA (ft2):	0
Total replaced impervious not in a USA (ft2):	27673
Total pervious/landscape area (ft2):	3361

2. DMA Characterization

Name	DMA Type	Area (ft2)	Surface Type	New, Replaced?	Connection
DMA1	Drains to SCM	19966	Roof	Replaced	SCM1
DMA2	Drains to SCM	7707	Concrete or asphalt	Replaced	SCM1
DMA3	Drains to SCM	1256	Concrete or asphalt	New	SCM1

DMA Summary Area

Total project impervious area (ft2):	28929
New impervious area (ft2):	1256
Replaced impervious within a USA (ft2):	0
Replaced impervious not in a USA (ft2):	27673
Total pervious/landscape area (ft2):	0

3. SCM Characterization

Name	SCM Type	Safety Factor	SCM Soil Type	Infilt. Rate (in/hr)	Area (ft2)
SCM1	Bioretention	1	HSG C/D	0.25	891

4. Run SBUH Model

5. SCM Minimum Sizing Requirements

SCM Name	Min. Required Storage Vol. (ft3)	Depth Below Underdrain (ft)	Drain Time (hours)
SCM1	1277	3.58	57.3

6. Self-Retaining Area Sizing Checks

Self-Retaining DMA Name	Self-Retaining DMA Area (ft2)	Tributary DMA Name	Tributary DMA Area (ft2)	Tributary / SRA Area Ratio