ATTACHMENT I-1

PRELIMINARY STORWATER CONTROL PLAN FOR A REGULATED PROJECT

Farmstead at Long Meadow Ranch Lodging

Sherwood Design Engineers
April 18, 2017

PRELIMINARY

Stormwater Control Plan

For a Regulated Project

Farmstead at Long Meadow Ranch Lodging

April 18, 2017

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Attachments

This Stormwater Control Plan was prepared using the template dated July 11, 2014.

I. Project Data

Table 1. Project Data Form

Project Name/Number	Farmstead at Long Meadow Ranch Lodging
Application Submittal Date	
Project Location	1000 Mills Lane, St. Helena, CA 94574
Project Phase No.	N/A
Project Type and Description	Construction of new lodging buildings, parking, and associated amenities
Total Project Site Area (acres)	9.5
Total New and Replaced Impervious Surface Area	122,104 square feet
Total Pre-Project Impervious Surface Area	0 square feet
Total Post-Project Impervious Surface Area	122,104 square feet

II. Setting

II.A. Project Location and Description

The proposed project is located in the City of St. Helena at the corner of Mills Lane and the northeast side of Main Street (see Figure 1). The project will transform the vacant parcel to include fruit and vegetable farming and lodging. The proposed project will include 65 guest rooms and suites, a multi-purpose building, including meeting, kitchen, reception, and housekeeping uses, and a fitness center with a pool and spa.

The proposed use of the project is consistent with the current Service Commercial and Urban Reserve/Residential zoning of the project site.

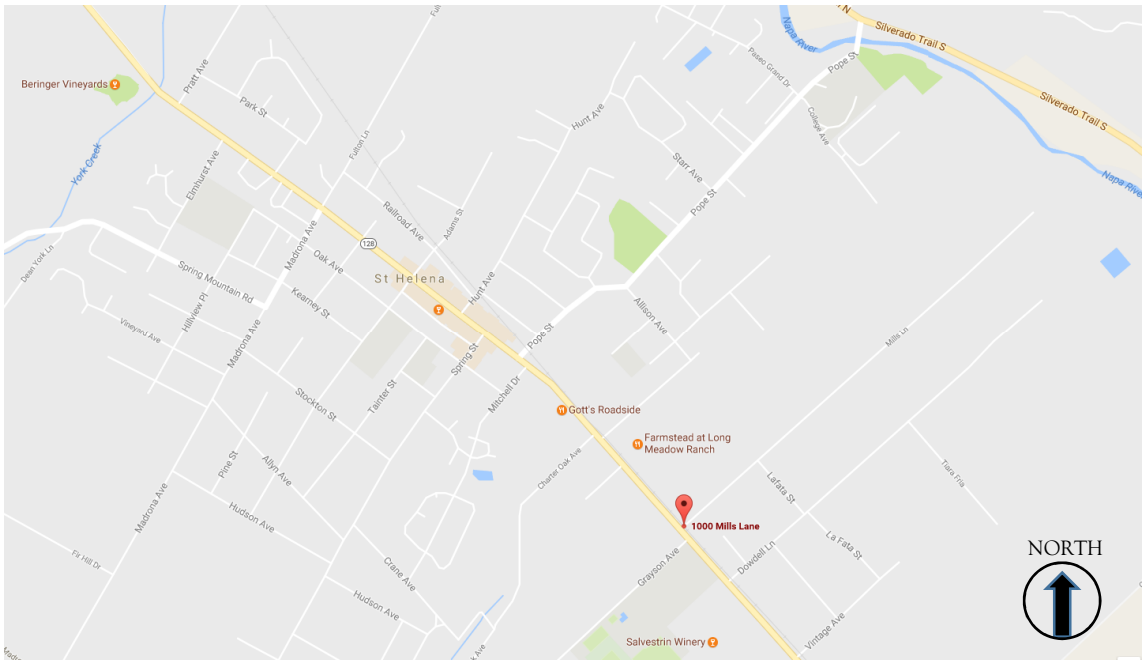


Figure 1: Vicinity Map

II.B. Existing Site Features and Conditions

The existing site (see Figure 2) is largely fallow agricultural land with no existing utilities. A dirt service road runs through the site from Mills Lane to the adjacent parcel at 738 Main Street. The site is fairly flat, with a slight mounding of previously leftover spoils at the center of the northern portion of the site.

The existing site has little storm drain infrastructure. Site drainage is characterized by slow surface flow towards the southern corner of the site. Some of the surface runoff is collected in an existing swale that runs above the southeast property line and discharges into an existing 36" culvert. Limited infiltration occurs due to the site soils, which are mainly sandy clay over clayey gravel, falling into Hydrologic Soil Group "D."

Figure 2: Existing Site Conditions

II.C. Opportunities and Constraints for Stormwater Control

The project site and project intent lend themselves to opportunities for stormwater control. Restoring the agricultural function of a large portion of the site for the new farm area will help improve the hydrologic function of the soils and increase infiltration. Site design, focused on showcasing a connection to the land, will include extensive landscaped areas throughout the site that minimize site imperviousness and help promote infiltration on site.

The prime constraints for stormwater management on site include the impermeable nature of the clayey soils and minimal elevation differences across the site. Due to the poorly draining soils, bioretention facilities will need to be underdrained. The project site is largely flat, so conveyance of runoff to bioretention facilities will need to rely on methods other than simply sheet flow, and gravity storm drain conveyances will likely require bubble-ups to discharge into bioretention facilities.

III. Low Impact Development Design Strategies

III.A. Optimization of Site Layout

The northwest portion of the site will remain largely pervious, with the most of the land used for organic fruit and vegetable farming. The lodging portion of the site will include large landscaped areas throughout the site to minimize the imperviousness of the site.

III.B. Use of Permeable Pavements

Permeable pavements are used extensively throughout the site. The service roads in the farm area will be gravel roads. Plazas and walkways through the lodging area as well as the parking spots adjacent to the main roadways will also be permeable pavement. All permeable pavements will be constructed according to the appropriate specifications and in accordance with the *BASMAA* Post-Construction Manual.

The permeable pavement for the parking stalls will also function as a self-retaining area that receives runoff from the impervious drive aisle. This section of permeable pavement will have a deeper base coarse to allow for additional storage and retention of one inch of rainfall across the impervious area draining to it. Although permeable pavement is not pervious landscaped area, by increasing the storage in the base course, the permeable pavement is able to match the function of a pervious landscaped self-retaining area, and therefore meets the intent of the BASMAA Manual.

III.C. Dispersal of Runoff to Pervious Areas

Runoff is dispersed to pervious areas whenever feasible. Runoff from building roofs is directed to landscaped areas or bioretention facilities. Runoff from the main roadway is directed to the pervious parking stalls.

III.D. Stormwater Control Measures

With the exception of runoff that is directed to self-retaining areas, runoff from impervious surfaces will be routed to one of six bioretention facilities on site (see Figure 3). The bioretention facilities will be constructed in accordance with the guidelines provided in the BASMAA Post-Construction Manual, including the following:

- Each layer of the bioretention facility will be built flat and level. The following layers will have consistent elevations throughout the facility:
    - Bottom of Gravel Layer
    - Top of Gravel Storage Layer
    - Top of Soil Layer
    - Rim of Facility Reservoir
- 12 inches of Class 2 permeable, Caltrans specification 68-2.02F(3) used for the gravel layer
- 18 inches of a sand/compost mix per the BASMAA specifications provided for the planting medium
- 4" dia. PVC SDR 35 perforated pipe to be installed with holes facing down and connected to overflow structure no lower than the top of the gravel layer
- 6-inch-deep reservoir between top of soil elevation and overflow grate elevation
- Concrete drop inlet with frame for an overflow structure with grate set to specified elevation, connected to storm drain
- Plantings selected for water conservation
- Irrigation system on a separate zone, with drip emitters and "smart" irrigation controllers
- Sign identifying the facility as a separate stormwater treatment facility

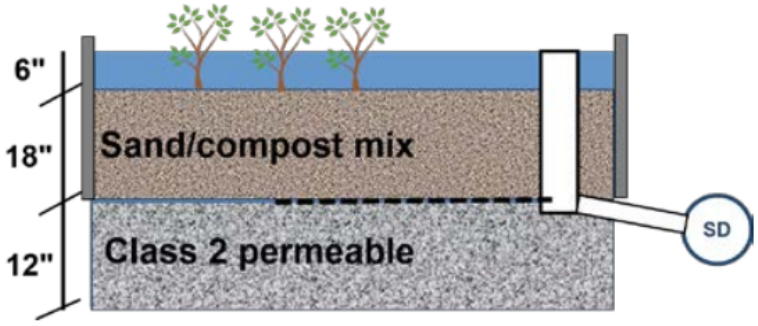


Figure 3: Bioretention Facility Schematic (source: *BASMAA Post-Construction Manual*)

Per the BASMAA Post-Construction Manual, self-retaining areas must be designed to retain an inch of rainfall across the entire drainage management area without flowing off-site. The maximum ratio of impervious to pervious area is 2 parts impervious area to 1 part pervious area.

IV. Documentation of Drainage Design

IV.A. Descriptions of Each Drainage Management Area

IV.A.1. Table of Drainage Management Areas

Table 2. Drainage Management Areas

DMA Name	Surface Type	Area (square feet)
DMA 1A	Landscaping	27,25`
DMA 1B	Roof/Paving	4,374

DMA 2	Roof	7,949
DMA 3	Roof	15,478
DMA 4	Roof/Paving	18,377
DMA 5	Roof/Paving	19,577
DMA 6	Roof	11,650
DMA 7	Roof/Paving	12,336
DMA 8A	Pervious Paving	18,183
DMA 8B	Paving	32,363
DMA 9	Pervious Paving	65,633
DMA 10	Water feature	2,454
DMA 11	Landscaping	174,679

IV.A.2. Drainage Management Area Descriptions

DMA 1A, totaling 27,251 square feet, drains a portion of the farm area. DMA 1A is self-retaining area and does not drain to a retaining DMA or facility.

DMA 1B, totaling 4,374 square feet, drains the agricultural building roofs and surrounding paving adjacent to the farm area. DMA 1B drains to DMA 1A, a self-retaining area.

DMA 2, totaling 7,949 square feet, drains the Utility Barn roof and one of the Lodging building roofs. DMA 2 drains to DMA 2 Bioretention Facility.

DMA 3, totaling 15,478 square feet, drains three of the Lodging building roofs. DMA 3 drains to DMA 3 Bioretention Facility.

DMA 4, totaling 18,377 square feet, drains one of the Lodging building roofs, a portion of the Multipurpose Center building roof, and a portion of the northern driveway. DMA 4 drains to DMA 4 Bioretention Facility.

DMA 5, totaling 19,577 square feet, drains Fitness Center building roof, the Bicycle Barn building roof, the pool deck, and one of the Lodging building roofs. DMA 5 drains to DMA 5 Bioretention Facility.

DMA 6, totaling 11,650 square feet, drains three of the Lodging building roofs. DMA 6 drains to DMA 6 Bioretention Facility.

DMA 7, totaling 12,336 square feet, drains one of the Lodging building roofs, a portion of the Multipurpose Center building roof, and a portion of the northern driveway. DMA 7 drains to DMA 7 Bioretention Facility.

DMA 8A, totaling 18,183 square feet, drains the pervious paving of the parking stalls bordering the drive aisle. DMA 8A is a self-retaining area and does not drain to a retaining DMA or facility.

DMA 8B, totaling 32,363 square feet, drains the main driveway adjacent to Mills Lane. DMA 8B drains to DMA 8A, pervious pavement that will function as a self-retaining area by having sufficient storage within the base coarse to retain one inch of rainfall across the entire area draining to it.

DMA 9, totaling 65,633 square feet, drains the pervious paving of the project walkways and farm access roads. DMA 9 is a self-retaining area and does not drain to a retaining DMA or facility.

DMA 10, totaling 2,454 square feet, drains the pool and water features. DMA 10 is a self-retaining area and does not drain to a retaining DMA or facility.

DMA 11, totaling 174,679 square feet, drains the landscaped area of the project. DMA 11 is a self-treating area and does not drain to a retaining DMA or facility.

IV.B. Tabulation and Sizing Calculations

See the Attachment B, the Provision E.12 Sizing Calculator spreadsheet, for tabulation of DMAs and sizing calculations.

V. Source Control Measures

V.A. Site activities and potential sources of pollutants

On-site activities and sources that could potentially produce stormwater pollutants include:

- Plazas, sidewalks, and parking lots
- Pools, spas, and other water features
- Solid waste management
- Landscape maintenance
- Food service

V.B. Source Control Table

Table 3. Source Control Table

Potential source of runoff pollutants	Permanent source control BMPs	Operational source control BMPs
On-site storm drain inlets	All inlets will be marked with "No Dumping! Flows to Bay" or similar.	Markings will be regularly inspected and repainted or replaced as need. New site owners, lessees, or operators will receive stormwater pollution prevention information. Lease agreements will include the following statement: "Tenant shall not allow anyone to discharge

		anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains.
Landscape maintenance	Existing native trees, shrubs, and ground cover will be preserved to the maximum extent possible. Landscaping will be designed to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. Landscaped areas used to retain or detain stormwater will have plants that are tolerant of saturated soil conditions. Pest-resistant plants will be used where appropriate, especially when adjacent to hardscape. Plants appropriate to site soils, slope, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions will be selected.	Landscaping will be maintained using minimum or no pesticides. Integrated Pest Management (IPM) information will be provided to new owners, lessees, and operators.
Plazas, sidewalks, and parking lots		Plazas, sidewalks, and parking lots will be swept regularly to prevent accumulation of litter and debris. Debris from pressure washing will be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser will be collected and discharged to the sanitary sewer and not to a storm drain.
Pool, spas, and other water features	Water from the pool, spa, and other water features will not be discharged to the storm drain system.	
Food service	Food service areas will have designated cleaning areas that are sized to insure that the largest items can be accommodated.	Regularly inspect and clean all grease removal devices to keep them functioning properly and efficiently.
Condensation line drainage and fire sprinkler test water	Condensation line drainage and fire sprinkler test water will be disposed of into the sanitary sewer. Discharge to	

	storm drain or infiltration will not be allowed.	
Refuse area	Refuse and recycled materials will be handled in the designated trash enclosure area. This area is to be roofed and equipped with a drain to a sand filter and then to the sanitary sewer.	All dumpsters will be posted with signs stating "Do not dump hazardous materials here" or similar.

VI. Stormwater Facility Maintenance

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

Maintenance of stormwater facilities will be the responsibility of the property owner and will be performed by the owner's employees as part of routine maintenance of buildings, grounds, and landscaping. The applicant commits to execute any necessary agreements regarding the maintenance of stormwater facilities prior to completion of construction. The applicant accepts responsibility for interim operation and maintenance of stormwater treatment and flow-control facilities until such time as this responsibility is formally transferred to a subsequent owner.

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility

The six bioretention facilities will be maintained as follows. Details of maintenance responsibilities and procedures will be included in a Stormwater Facility Operation and Maintenance Plan to be submitted for approval prior to the completion of construction.

- Annual Landscape Maintenance: Remove any soil or debris blocking planter inlets or overflows; remove the trash that collects near inlets or gets caught in vegetation; prune or cut back plants for health and to ensure flow into inlets and across the surface of the facility; remove and replant as necessary while maintaining the design surface elevation and minimizing the introduction of soil; control weeds by manual methods and soil amendment and only use natural herbicides if necessary; add mulch to control weeds and maintain the mulch layer thickness
- Check signage: remove graffiti and replace if necessary
- Check irrigation: confirm to be adequate but not excessive
- Do not add fertilizer to bioretention facilities
- Do not use synthetic pesticides on bioretention facilities

VII. Construction Checklist

Table 4. Construction Checklist to be incorporated in Construction Drawings

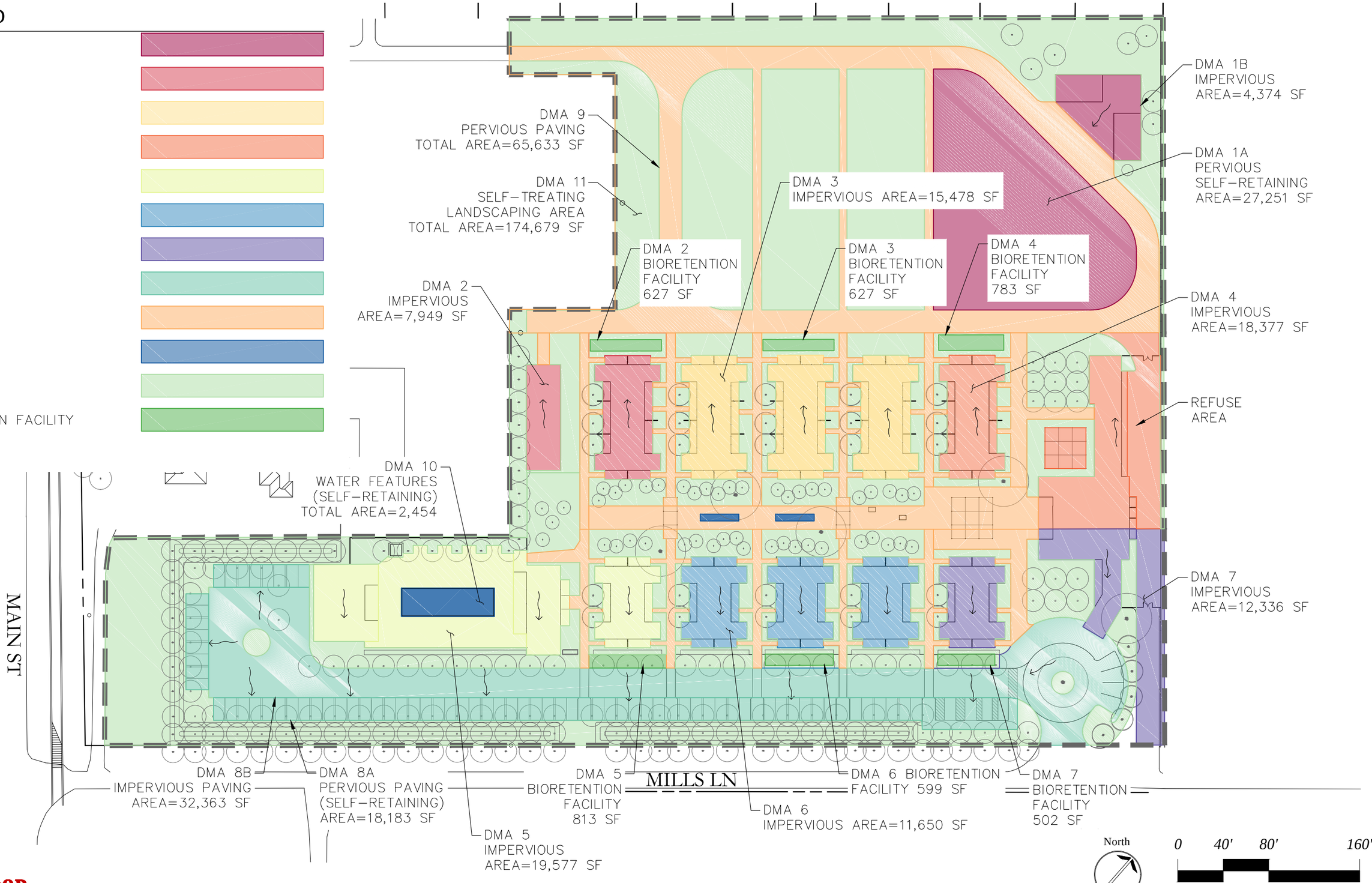
Stormwater Control Plan Page #	Source Control or Treatment Control Measure	See Plan Sheet #s
5 and Exhibit	DMA 1B impervious area drains to DMA 1A pervious self-retaining area	
5 and Exhibit	DMA 2 impervious area drains to DMA 2 Bioretention Facility; facility is designed as specified	
5 and Exhibit	DMA 3 impervious area drains to DMA 3 Bioretention Facility; facility is designed as specified	
5 and Exhibit	DMA 4 impervious area drains to DMA 4 Bioretention Facility; facility is designed as specified	
5 and Exhibit	DMA 5 impervious area drains to DMA 5 Bioretention Facility; facility is designed as specified	
5 and Exhibit	DMA 6 impervious area drains to DMA 6 Bioretention Facility; facility is designed as specified	
5 and Exhibit	DMA 7 impervious area drains to DMA 7 Bioretention Facility; facility is designed as specified	
6 and Exhibit	DMA 8A pervious pavement is designed as specified	
6 and Exhibit	DMA 8B drains to DMA 8A pervious pavement; pervious pavement is design as specified	
6 and Exhibit	DMA 9 pervious pavement is designed as specified	

VIII. Certifications

The preliminary design of stormwater treatment facilities and other stormwater pollution control measures in this plan are in accordance with the current edition of the BASMAA *Post-Construction Manual*.

LEGEND

- DMA 1
- DMA 2
- DMA 3
- DMA 4
- DMA 5
- DMA 6
- DMA 7
- DMA 8
- DMA 9
- DMA 10
- DMA 11
- BIORETENTION FACILITY



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LMR PROPERTY AQUISITION PARTNERS

STORMWATER CONTROL PLAN EXHIBIT

FARMSTEAD AT LONG MEADOW RANCH LODGING

ST. HELENA, CA

April 2017

Provision E.12 Sizing Calculator

See the instructions and the BASMAA Post-Construction Manual

Step 1: Enter Total Site Area	**Step 2:** List names of all DMAs and square footage of each	**Step 3:** If DMA is "Self-Treating" or "Self-Retaining," **copy** square footage to appropriate column	**Step 4:** If the DMA is "Drains to Self Retaining" or "Drains to Bioretention" enter runoff factor from Table 4-1		**Step 6:** For "Drains to Self-Retaining" DMAs, enter the **name of receiving DMA**	**Step 5:** Slide (move) number from this column to correct column (F or H-Q)	Version 0.3. 2015-12-02									
Total Site Area:	414,255							**BIORETENTION FACILITIES**										
DMA Names	**Square Feet**	**Self-Treating**	**Self-Retaining**	**Runoff Factor**	**Drains to Self-Retaining**	**Name of Receiving DMA**		**DMA 2 Bioretention Facility**	**DMA 3 Bioretention Facility**	**DMA 4 Bioretention Facility**	**DMA 5 Bioretention Facility**	**DMA 6 Bioretention Facility**	**DMA 7 Bioretention Facility**					
DMA 1A	27,251		27251															
DMA 1B	4,374			1	4374	DMA 1A												
DMA 2	7,949			1				7949										
DMA 3	15,478			1					15478									
DMA 4	18,377			1						18377								
DMA 5	19,577			1							19577							
DMA 6	11,650			1								11650						
DMA 7	12,336			1									12336					
DMA 8A	18183		18183															
DMA 8B	32363			1	32363	DMA 8A												
DMA 9	65633		65633															
DMA 10	2454		2454															
DMA 11	174679	174679																
Total DMAs	**410304**	**174679**	**113521**		**36737**		**0**	**7949**	**15478**	**18377**	**19577**	**11650**	**12336**	**0**	**0**	**0**		
						Sizing Factor	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**		
						Minimum Size	**0**	**318**	**619**	**735.08**	**783.08**	**466**	**493.44**	**0**	**0**	**0**		
Total Facilities	**3951**	**Step 7:** Enter Facilty Footprints				**Footprint on Exhibit**		627	627	783	813	599	502					
DMAs + Facilities	**414255**						**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**		
	OK	**Step 8:** Iterate sizes of facility footprints and DMAs until all footprints are at least the minimum **AND** DMAs + Facilities equals Total Site Area																
		Step 9: Check to make sure Areas Draining to each Receiving Self-Retaining Area do not exceed maximum 2:1 ratio.																
		Step 10: Check results on this spreadsheet are consistent with what is shown on the SCP Exhibit.																