Template

Town of Apple Valley
Small Project
Water Quality Management Plan (WQMP)

For:

Insert Project Name

WHERE APPLICABLE, INSERT GRADING PERMIT NO., BUILDING PERMIT NO., TRACT NUMBER, LAND DEVELOPMENT FILE NO., CUP, SUP AND/OR APN (SPECIFY LOT NUMBERS IF SITE IS A PORTION OF A TRACT)

Prepared for:

Insert Owner/Developer Name

Insert Address

Insert Town, State, ZIP

Insert Telephone

Prepared by:

Insert Consulting/Engineering Firm Name

Insert Address

Insert Town, State, ZIP

Insert Telephone

Submittal Date: Insert Initial Submittal Date

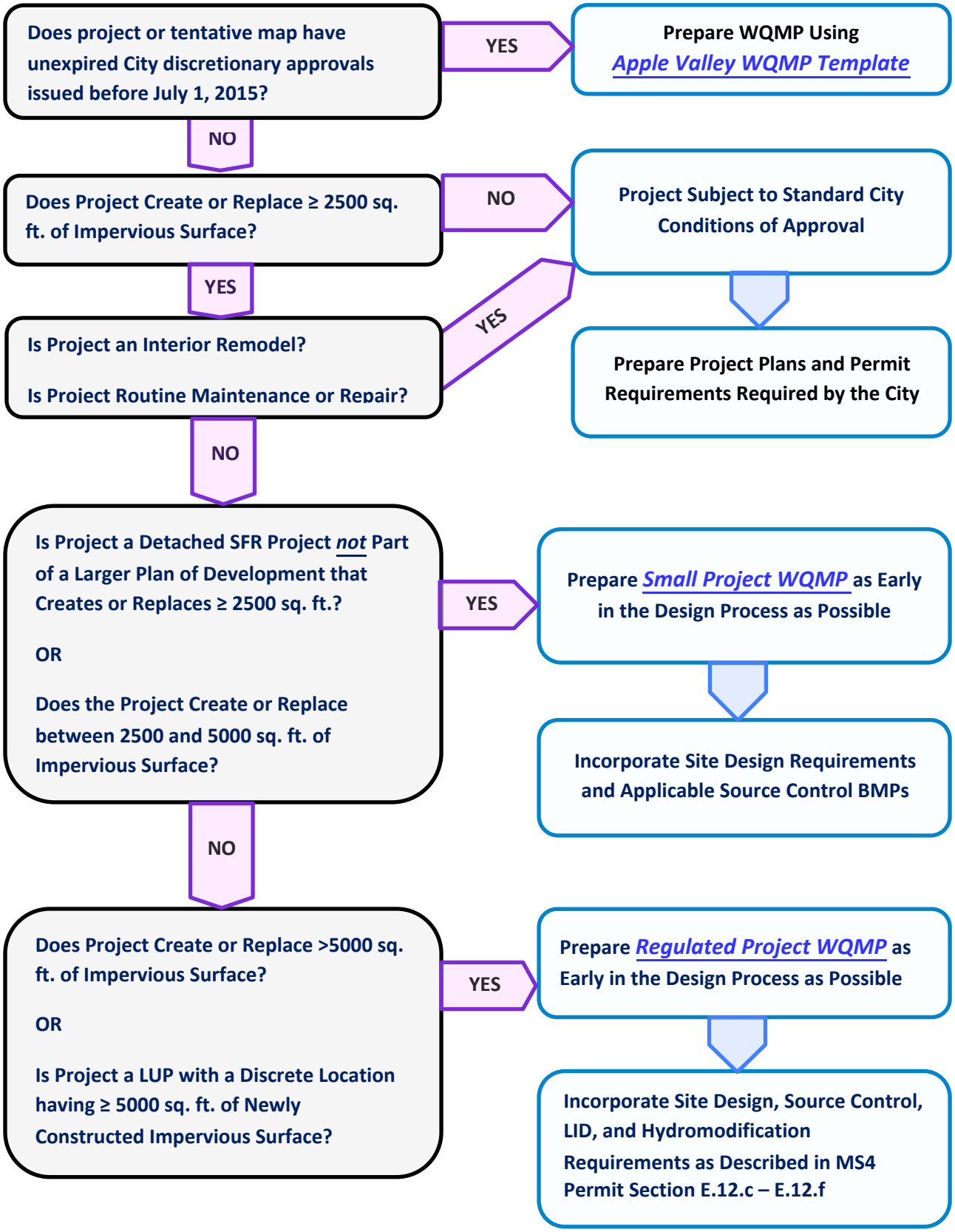
Revision No. and Date: Insert No and Current Revision Date

Revision No. and Date: Insert No and Current Revision Date

Revision No. and Date: Insert No and Current Revision Date

Final Approval Date: _____

Project WQMP Selection Diagram



Introduction

This WQMP template shall be used for projects that create and/or replace between 2500 and 5000 square feet of impervious surface; and for detached single family residence projects that create or replace ≥ 2500 sq. ft., and are *not* part of a larger plan of development consistent with Section E.12.b of the MS4 Permit. These types of projects are considered small projects. Do not confuse this template with the WQMP template or the Phase I WQMP for the Santa Ana Watershed area of San Bernardino County. This WQMP template is specifically for small projects in the Town of Apple Valley.

Section 1 Project Information

Form 1-1 Project Information					
Project Name					
Project Owner Contact Name:					
Mailing Address:		E-mail Address:		Telephone:	
Permit/Application Number(s):		Tract/Parcel Map Number(s):			
Additional Information/ Comments:					
Description of Project:					
Provide summary of Conceptual Project Site Design conditions.					

Section 2 Project Description

2.1 Project Information

Projects must provide all information requested below. The information provided for a Preliminary WQMP should give sufficient detail to identify the major proposed site design measures that impact site planning. The Final Project WQMP must identify all site design measures and source control Best Management Practices (BMPs) incorporated into the final site design, and provide other detailed information as described herein.

This information will document the project's site design measures, source control BMPs, and establish performance criteria and long term maintenance responsibilities for the project.

2.2 Property Ownership/Management

Describe the ownership/management of all portions of the project and site. State whether any infrastructure will transfer ownership to public agencies (Town, County, Caltrans, etc.) after project completion. State if a homeowners or property owners association will be formed and be responsible for the long-term maintenance of project stormwater facilities. Describe any lot-level stormwater features that will be the responsibility of individual property owners.

Form 2.1-1 Description of Proposed Project

Development Project Type

☐ Small Project (Project Total Square Feet > 2,500 but < 5,000 sq.)

2 Project Area (ft2):		**3** Number of Dwelling Units:		**4** SIC Code[1]:	

5 Is Project going to be phased? Yes ☐ No ☐ *If yes, ensure that the WQMP evaluates each phase as a distinct DA, requiring LID BMPs to address runoff at time of completion.*

Form 2.2-1 Property Ownership/Management

Describe property ownership/management responsible for long-term maintenance of the site design:

Section 3 Site and Watershed Description

Describe project site conditions relevant to the selection of Site Design Measures through an analysis of the physical conditions and limitations of the site. Identify distinct drainage areas (DA) that collect flow from each portion of the site and describe how runoff from each DA is conveyed to the site outlet(s).

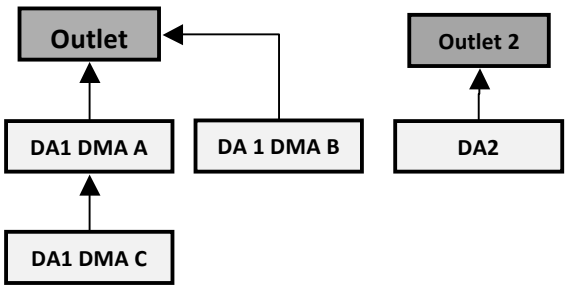
A map presenting the DAs must be included as an appendix to the WQMP. Small sites may have only one DA.

Form 3-1 Site Location and Hydrologic Features

Site coordinates (*take GPS measurements at approximate centroid of site)*	Latitude	Longitude	Thomas Bros Map page

1 San Bernardino County climatic region: ☒ Desert

2 Does the site have more than one drainage area (DA): Yes☐ No☐ U*se this form to show a conceptual schematic describing DAs and hydrologic feature connecting DAs to the site outlet(s).*



Example only – modify for project specific WQMP using additional form

Conveyance	Briefly describe on-site drainage features to convey runoff that is not retained within a DA
	Ex. Roof runoff to rock-lined swale with 4' bottom width, 5:1 side slopes and bed slope of 0.01. Conveys runoff for 400' through DA 1 to existing catch basin on SE corner of property
DA1 flows to Outlet 1	
DA2 flows to Outlet 2	

Section 4 Best Management Practices (BMP)

4.1 Minimum Site Design Measures and Source Control BMPs

The information and data in this section are required for Non-Regulated Project WQMPs.

4.1.1 Site Design Measures

Site design measures are project design methods that help reduce runoff generation and transport of pollutants offsite.

Projects must evaluate site conditions such as soil type(s), existing vegetation, and flow paths, which will influence the overall site design.

Describe site design and drainage plan including:

- A narrative of site design practices utilized or rationale for not using practices
- A narrative of how site plan incorporates preventive site design practices
- Include an attached Site Plan layout which shows how preventative site design practices are included in the WQMP

MS4 Permit Section E.12: Site Design Measures

Projects shall implement one or more of the following site design measures to reduce project site runoff:

Choose to Implement one or more of the following (checkbox (s)):

☐ Stream Setbacks and Buffers - a vegetated area including trees, shrubs, and herbaceous vegetation, that exists or is established to protect a stream system, lake, reservoir, or coastal estuarine area;

☐ Soil Quality Improvement and Maintenance - improvement and maintenance soil through soil amendments and creation of microbial community;

☐ Tree Planting and Preservation - planting and preservation of healthy, established trees that include both evergreens and deciduous, as applicable;

☐ Rooftop and Impervious Area Disconnection - rerouting of drainage pipes from rooftops and impervious areas to drain stormwater to permeable areas instead of the storm sewer; ***required for all projects***

☐ Porous Pavement - pavement that allows runoff to pass through it, thereby reducing the runoff from a site and surrounding areas and filtering pollutants;

☐ *Green Roofs - a vegetative layer grown on a roof (rooftop garden);* ***not recommended***

☐ Arid, Region Rock-lined Swale – an open-channel management practice designed specifically to treat and attenuate storm water runoff;

☐ *Rain Barrels and Cisterns - system that collects and stores storm water runoff from a roof or other impervious surface;* ***not recommended***

Site Design Measure descriptions:

Site Design Measure	Description of Proposed Implementation/Rationale for No Implementation
Stream Setbacks and Buffers - a vegetated area including trees, shrubs, and herbaceous vegetation, that exists or is established to protect a stream system, lake, reservoir, or coastal estuarine area	
Soil Quality Improvement and Maintenance - improvement and maintenance soil through soil amendments and creation of microbial community	
Tree Planting and Preservation - planting and preservation of healthy, established trees that include both evergreens and deciduous, as applicable	
Rooftop and Impervious Area Disconnection - rerouting of rooftop drainage pipes to drain rainwater to rain barrels, cisterns, or permeable areas instead of the storm sewer ***Required for all projects***	
Porous Pavement - pavement that allows runoff to pass through it, thereby reducing the runoff from a site and surrounding areas and filtering pollutants	

Green Roofs - a vegetative layer grown on a roof (rooftop garden); ***not recommended***	***NOT RECOMMENDED***
Arid Region Rock-Lined Swales - open-channel management practice designed specifically to treat and attenuate storm water runoff;	
Rain Barrels and Cisterns - system that collects and stores storm water runoff from a roof or other impervious surface;	***NOT RECOMMENDED***

Project proponents shall use the State Water Board SMARTS Post-Construction Calculator, or equivalent, to quantify the runoff reduction resulting from implementation of site design measures.
Link to calculator:

http://www.swrcb.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

☐ None of the site design measures, above, are appropriate for this Project.

If none are applicable or appropriate, provide proposed alternative BMP/approach and supporting rationale below:

Alternative:

Rationale:

The MS4 Permit requires consideration of green roofs, vegetated swales and rain barrels/cisterns. However, it is generally not practical to implement green roofs or rainbarrels/cisterns in this area. In addition, the Town has experienced poor implementation, performance, and maintenance of vegetated swales. Therefore, vegetated swales are not usually accepted or recommended—they are acceptable if appropriate for the proposed site. Arid region rock-lined swales are acceptable for most sites.

Due to the local climatology in the Mojave River Watershed, proactive measures are taken to maximize the amount of drought tolerant vegetation. As part of site design, the project proponent should utilize locally recommended vegetation types for landscaping. Typical landscaping recommendations are found in following local references:

Town of Apple Valley:

Town of Apple Valley – applevalley.org

San Bernardino County Special Districts:

Guide to High Desert Landscaping - http://www.specialdistricts.org/Modules/ShowDocument.aspx?documentid=795

Recommended High-Desert Plants - http://www.specialdistricts.org/modules/showdocument.aspx?documentid=553

Mojave Water Agency:

Desert Ranch: http://www.mojavewater.org/files/desertranchgardenprototype.pdf

Summertree: http://www.mojavewater.org/files/Summertree-Native-Plant-Brochure.pdf

Thorn less Garden: http://www.mojavewater.org/files/thornlessgardenprototype.pdf

Mediterranean Garden: http://www.mojavewater.org/files/mediterraneangardenprototype.pdf

Lush and Efficient Garden: http://www.mojavewater.org/files/lushandefficientgardenprototype.pdf

Alliance for Water Awareness and Conservation (AWAC) outdoor tips – http://hdawac.org/save-outdoors.html

4.1.2 Site Design Measure Hydrologic Evaluation

Section E.12.b.ii of the MS4 Permit lists the required Site Design / Low Impact Design preventive measures. The State Water Resources Control Board (SWRCB) and California State University, Sacramento have developed an on-line program and worksheet set to assist with site design BMP selection and sizing.
The on-line worksheets require site specific inputs, and produce the MS4 Permit-required outputs for the Project's compliance. The goal of the on-line program is to assist the project proponent with:

- Correctly calculating the runoff volume from the site;
- Adequately calculating the runoff reduction for site design measures;
- Providing options for site design; and
- Summarizing the final results.

The calculations are conducted in three main steps:

1) Site data is entered to calculate existing and proposed site runoff volumes
2) Site design BMPs are selected and criteria entered for sizing
3) The compliance criteria is calculated and summarized

The on-line worksheets/programs are found at the following website links:

Post Construction Calculator for Small Projects:
https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/phase_ii_municipal/120214_post_const_calc.xls

IMPORTANT: THIS CALCULATOR CAN ONLY BE USED FOR PROJECTS THAT CREATE AND/OR REPLACE BETWEEN 2,500 SQUARE FEET AND 5,000 SQUARE FEET OF IMPERVIOUS SURFACE (OR DETACHED SINGLE FAMILY HOMES THAT CREATE AND/OR REPLACE OVER 2,500

California Phase II LID Sizing Tool:
http://owp-web1.saclink.csus.edu/LIDTool/Start.aspx

Neither of these website links are developed or maintained by the Town of Apple Valley.

4.1.3 Town-Required On-Site Retention

4.2.1.1 Volume-Based Design Standard

The Town requires a two-stage infiltration system: first stage--a pretreatment system which can be bioretention/biofiltration landscape-based features, or proprietary hydrodynamic separators or other BMPs to remove sediments, trash and other pollutants before the runoff flows to the second stage—which is an infiltration basin, device, or subsurface infiltration gallery system.

On-Site Retention: The Project shall design / construct on site retention facilities, which must be designed consistent with Town guidelines to have minimum impact to ground water quality. This shall include maximizing the use of horizontal retention systems and minimizing the application of dry wells / injection wells.

All proposed developments shall capture, retain, and infiltrate 100% of a 100-year one (1) hour storm event that falls on the site, or as determined by the Town Engineer.

Show calculations in detail - attach a separate sheet of calculations and a table that summarizes the sizing parameters including size of impervious areas, relevant hydrologic characteristics, and design capture volume (s) for each BMP and contributing drainage management area, and demonstrates that the design criteria have been satisfied.

4.2.1.2 Flow Based Design Criteria-Pretreatment BMPs

Flow-based BMPs should be designed and sized to provide treatment for the estimated range of flow rates expected from the DMA for the BMP. Calculate the target BMP flow rate, Q, using the formula:

Q = C* I * A

Where: **Q** = flow in $ft.^3/s$

I = rainfall intensity = 0.5 inches/hour[1]

A = Drainage Area in acres

C = composite runoff coefficient for the DMA

Show calculations in detail - attach a separate sheet of calculations.

[1] Use the default value of I = 0.5 inches/hour; or use project-specific I-value that will ensure flow-based BMPs will effectively treat (or pre-treat) flows prior to discharge into on-site retention BMP(s) which must meet volume retention standard provide in 3.4.1.

Show calculations in detail - attach a separate sheet of calculations and a table that summarizes the sizing parameters including size of impervious areas, relevant hydrologic characteristics, and design flow rate (s) for each BMP and contributing drainage management area, and demonstrates that the design criteria have been satisfied.

4.2.1 Minimum Source Control BMPs

Projects with pollutant-generating activities and sources are required to implement standard permanent and/or operation source control measures as applicable. Form 4.2-1 and 4.2-2 are used to describe specific source control BMPs used in the Site Design WQMP, or to explain why specific BMPs are not applicable. Table 7-3 of the TGD for WQMP provides a list of applicable source control BMP for projects with specific types of potential pollutant sources or activities. The source control BMPs in this table must be implemented for projects with these specific types of potential pollutant sources or activities.

The site owner shall review the source control BMP requirements for development projects, and the specific BMPs required for this project as specified in Forms 4.2-1 and 4.3-2. All applicable non-structural and structural source control BMPs shall be implemented in the project.

The identified list of source control BMPs correspond to the CASQA Stormwater BMP Handbook for New Development and Redevelopment found at: https://www.casqa.org/resources/bmp-handbooks/new-development-redevelopment-bmp-handbook.

Source Control Measures (MS4 Permit Section E.12.d)

Projects with pollutant-generating activities and sources as described below shall implement all applicable standard permanent and/or operational source control measures to minimize pollutant discharges for these sources.

Source Control Measures for the following pollutant generating activities and sources shall be designed consistent with recommendations from the CASQA Stormwater BMP Handbook for New Development and Redevelopment or equivalent manual, and include:

Source	Source Control BMP	Yes/No	Rationale
(a) Accidental spills or leaks	Spill contingency plan; cleanup materials on site		
(b) Interior floor drains	Plumb drain to sanitary sewer		
(c) Parking/storage areas and maintenance	Street Sweeping: private street and parking lots Trash storage areas (SD-32)and litter control		
(d) Indoor and structural pest control	Employee training/education and IPM Use certified pesticide applicator		
(e) Landscape/outdoor pesticide use	Activity restrictions; IPM; Landscape planning (SD-10)		
(f) Pools, spas, ponds, decorative fountains, and other water features	Prevent non-stormwater discharges		
(g) Restaurants, grocery stores, and other food service operations	Wash water controls for food preparation areas; trash storage areas (SD-32)		
(h) Refuse areas	Trash Storage areas (SD-32), Litter control;		
(i) Industrial processes	Conduct indoors or in designated areas, contain pollutants		

(j) Outdoor storage of equipment or materials	Outdoor material storage areas (SD-34)		
(k) Vehicle and equipment cleaning	Vehicle Washing areas (SD-33)		
(l) Vehicle and equipment repair and maintenance	Maintenance bays and docks (SD-31);		
(m) Fuel dispensing areas	Fueling areas (SD-30)		
(n) Loading docks	Maintenance Bays and Docks; Outdoor Work Area (SD-35)		
(o) Fire sprinkler test water	Non-Stormwater discharges (SC-10)		
(p) Drain or wash water from boiler drain lines, condensate drain lines, rooftop equipment, drainage sumps, and other sources	Air/water supply storage area drainage		
(q) Unauthorized non-storm water discharges	Non-Stormwater Discharges (SC-10)		
(r) Building and grounds maintenance	Common area catch basin inspection; Landscape Planning		

Include adequate rationale for selection of source control BMPs, and/or rationale for not implementing or non-applicability.

Section 5 WQMP Attachments

5.1. Site Design and Drainage Plan

Include a site plan with the drainage and BMP information containing the following minimum information:

- Project location
- Site boundary
- Project site plan
- Pre-project aerial and onsite photographs
- Land uses and land covers, as applicable
- Site Design Measure locations
- Source Control BMP locations
- Drainage points and flow directions
- Runoff/retention volume calculations
- Identify maintenance funding source

A modified construction Site Erosion and Sediment Control Plan can be used for the Site Plan submittal.

5.2 Submittal Package Summary

The Site Design WQMP submittal package will include (as applicable):

1) This template with the appropriate sections filled out
2) A copy of the "Post Construction Calculator for Small Projects" worksheets:
3) Site design and drainage plan as per Section 5.1.
4) Onsite retention calculations
5) Maintenance Agreement

- The WQMP must include certifications by Owner, Project Engineer, and Parties Responsible for Maintenance (as applicable).

- The WQMP must include a copy of the recorded Maintenance Agreement per Attachment A.