# PROGRAMMATIC WATER QUALITY TECHNICAL REPORT

## GRANTVILLE FOCUSED PLAN AMENDMENT EIR

Grantville
San Diego, CA 92120

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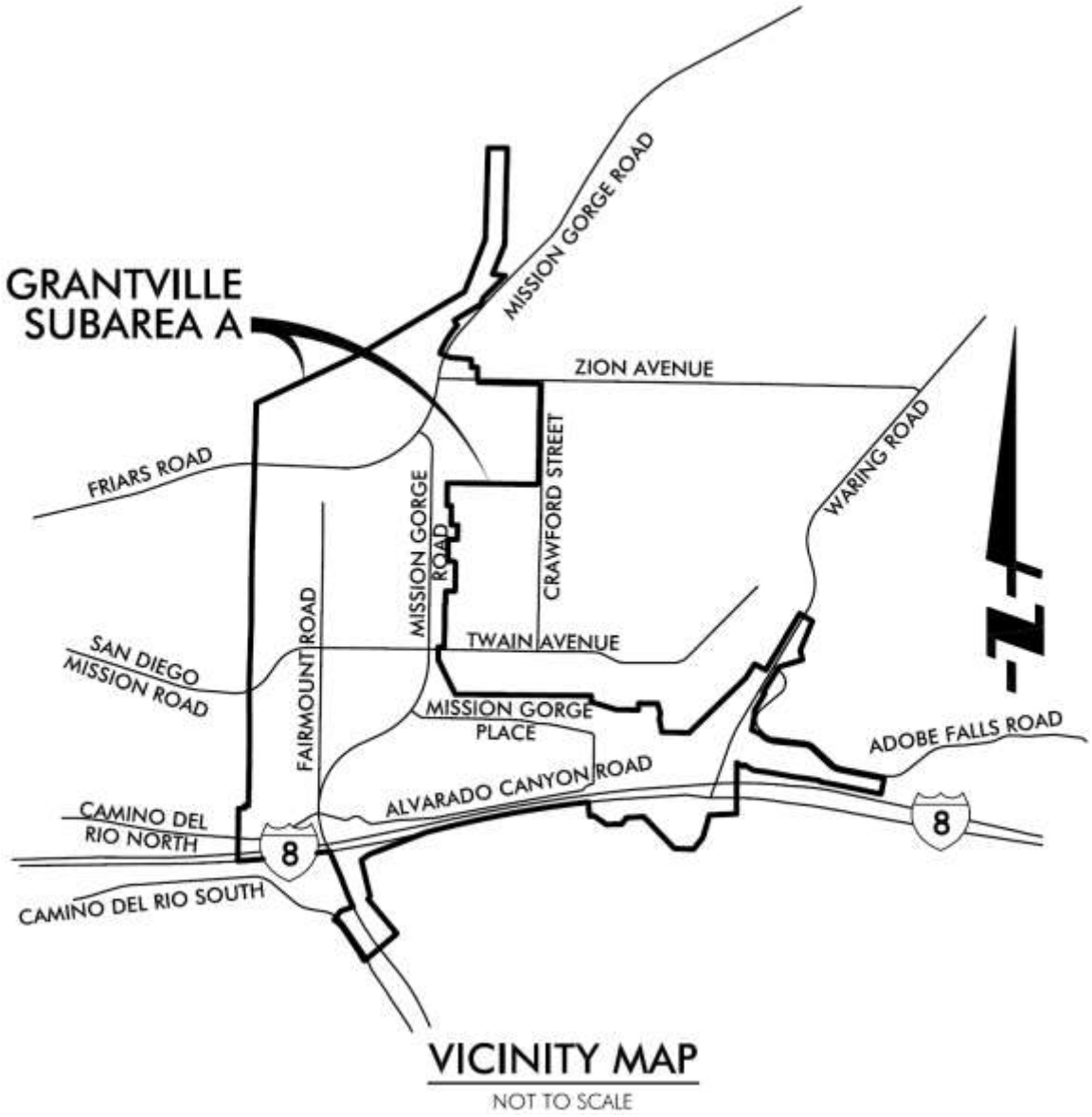


Figure 1 Vicinity Map

# 1.0 INTRODUCTION

The Water Quality Technical Report (WQTR) is required and prepared per the City of San Diego Storm Water Standards Manual, and City Municipal Code Section 43.03, under the San Diego Water Board Order No. R9-2007-0001, NPDES permit No. CAS0108758. The purpose of this WQTR is to address the water quality impacts from the proposed Grantville Subarea A Focused Plan Amendment (herein referred to as project) and is intended to address water quality impacts in context of the CEQA A-J Hydrology/Water Quality Criterion. California Storm Water Quality Association (CASQA) BMPs, as well as those outlined in the Storm Water Standards Manual, will be used to provide a long-term solution to water quality onsite. This WQTR is subject to revisions as needed by the engineer.

This Water Quality Technical Report (WQTR) is preliminary and is designated as applicable during the Environmental Impact Report stage of the Grantville Subarea A Focused Plan Amendment. As such, this WQTR addresses the Focused Plan Amendment at a programmatic level and does not specifically address any particular project or property within the redevelopment area. To supplement this WQTR, a final, approved WQTR will be

required prior to the issuance of any grading or building permits for projects within the jurisdiction of the Focused Plan Amendment, and responsibility for implementation and maintenance of all BMPs will fall on the individual property owners and developers.

This WQTR is intended to address the 2012 storm water requirements of the City of San Diego, including all LID (Low Impact Development), and Hydromodification requirements. The City of San Diego Storm Water Standards Manual will be used in order to comply with the rules and regulations enforced by the City, under RWQCB Permit No. R9-2007-0001 issued by the San Diego Regional Water Quality Control Board to the County of San Diego, and the incorporated cities within. A new Storm Water Quality Control Permit Order No. R9-2013-0001, NPDES No. CA50109266 has been adopted by the RWQCB. However, per Permit R9-2013-0001, projects are to comply with Permit No. R9-2007-0001 until completion and adoption of the Water Quality Implementation Plans and BMP Design Manuals required by Permit No. R9-2013-0001. Implementation of the Water Quality Implementation Plans and BMP Design Manuals is expected in December 2015. Projects which begin construction prior to December 2015 may comply with Permit No. R9-2007-0001 as outlined in this Water Quality Technical Report. Projects which begin construction after December 2015 will be subject to the requirements of the new City of San Diego Storm Water Standards Manual.

## 1.1 PROJECT DESCRIPTION

The Grantville area of San Diego is located at the eastern end of Mission Valley. It is bordered to the south by Interstate 8, to the west and north by the San Diego River, and to the east by the Allied Gardens neighborhood. Subarea A consists of the westerly and southerly portions of Grantville, along the San Diego River and Interstate 8, and contains approximately 400 acres. Major roads within Subarea A include Mission Gorge Road, Fairmount Road, Friars Road, and Waring Road. Surrounding land uses include single family residential, multifamily residential, commercial, industrial, churches, and the Admiral Baker Golf Course.

Existing land uses in the redevelopment area are predominantly high-density commercial and industrial, with smaller amounts of office, multifamily residential, and medical. A narrow strip of open space exists along the San Diego River bed, and a portion of the Admiral Baker Golf Course is included in the Subarea. Proposed land uses will include industrial, office, commercial, residential mixed use, commercial mixed use, multifamily residential, single family residential, and open space. Runoff from the project area drains west to the San Diego River or to Alvarado Creek, which then flows to the San Diego River. The San Diego River is a Water Quality Sensitive Area.

This Report, which is meant to act as a program-level guidance document for development within Grantville Subarea A, will address the water quality impacts from all planned land uses within the Focused Plan Amendment. Tables 1 and 2 show the applicable priority project categories for the planned uses. The priority project status of individual projects within the redevelopment area will be assessed on a project-by-project basis in each project's final WQTR.

Table 1: Priority Project Categories

| PRIORITY PROJECT CATEGORIES | |
|---|---|
| CATEGORY | |
| Attached or Detached Res. Dev. 10+ Units | ✓ |
| Heavy Industry over 1 acre | ✓ |
| Commercial Dev. over 1 acre | ✓ |
| Automotive Repair Shop | ✓ |
| Restaurants | ✓ |
| Hillside Developments > 5,000 sq ft. | ✓ |
| Project Discharging to Receiving Waters within Water Quality Sensitive Areas | ✓ |
| Parking Lots > 5,000 sq ft or > 15 spaces | ✓ |
| Streets, roads, highways, freeways, create new paved surface > 5,000 sq ft. | ✓ |
| Significant Redevelopment over 5,000 sq ft. | ✓ |
| Retail Gasoline Outlets | ✓ |

Table 2: BMP Applicability Matrix

| | *LID BMPs* (1) | *Source Control BMPs* (2) | *BMPs Applicable to Individual Priority Development Project Categories* (3) | | | | | | | | | | *Treatment Control BMPs* (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | a. Roads | b. Residential Driveways & Guest Parking | c. Dock Areas | d. Maintenance Bays | e. Vehicle Wash Areas | f. Equipment Wash Areas | g. Outdoor Processing Areas | h. Surface Parking Areas | i. Fueling Areas | j. Hillside Landscaping | |
| **Standard Projects** | R | R | O | O | O | O | O | O | O | O | O | O | O |
| **Priority Development Projects:** | | | | | | | | | | | | | |
| Housing Development greater than 10 dwelling units (6) | R | R | R | R | | | | | | | | R | S |
| Commercial Development greater than 1 acre | R | R | R | | R | R | R | R | R | R | R | R | S |
| Automotive Repair Shop | R | R | | | R | R | R | R | | | R | | S |
| Industrial developments greater than 1 acre | R | R | R | | R | R | R | R | R | R | R | R | S |
| Restaurants | R | R | | | R | | | R | | | | | S |
| Steep Hillside Development greater than 5,000 ft$^2$ | R | R | R | | | | | | | | | R | S |
| Water Quality Sensitive Areas | R | R | Select based on the Priority Development Project categories that match the land use within the project | | | | | | | | | | S |
| Parking Lots | R | R | | | | | | | | R (5) | | | S |
| Streets, Highways & Freeways | R | R | | | | | | | | | | | S |
| Significant Redevelopment greater than 5,000 ft$^2$ | R | R | Select based on the Priority Development Project categories that match the land use within the project | | | | | | | | | | S |
| Retail Gasoline Outlets (RGOs) | R | R | R | | | | R | | | R | R | R | S |

R = Required; select one or more applicable and appropriate BMPs from the applicable steps in Section III.B.1-4, or equivalent as identified in Appendix C.
O = Optional or may be required by City staff. As appropriate, applicants are encouraged to incorporate treatment control BMPs and BMPs applicable to individual Priority Development Project categories into the project design. City staff may require one or more of these BMPs, where appropriate.
S = Select one or more applicable and appropriate treatment control BMPs from Appendix C.
(1) Refer to Section III.B.1.
(2) Refer to Section III.B.2.
(3) Priority Development Project categories must apply specific storm water BMP requirements, where applicable. Priority Development Projects are subject to the requirements of all Priority Development Project categories that apply.
(4) Refer to Section III.B.4.
(5) Applies if the paved area totals greater than 5,000 square feet or with more than 15 parking spaces and is potentially exposed to urban runoff.
(6) This category includes single-family homes, multi-family homes, condominiums, and apartments.

## 1.2 PRESENT CONDITION

The present condition of the site includes approximately 400 acres of land predominantly in the developed condition. The central and northerly portions of the site generally slope to the west toward the San Diego River, while the southerly portion of the site slopes towards Alvarado Creek, which runs through this portion of the site. The existing network of streets and storm drain systems discharge runoff from the site to these water courses at several outlet points. Existing land uses in the analyzed watersheds, including offsite areas which surface drain onto the project, are listed in Table 3.

Table 3: Existing Land Use Summary

| EXISTING FEATURES | SIZE (Ac) | REMARKS |
|---|---|---|
| Open Space | 19 | Golf Course and Canyon Areas, On- and Offsite |
| Single Family Residential | 8 | Offsite |
| Multifamily Residential | 21 | On- and Offsite |
| Commercial | 156 | On- and Offsite |
| Hospital/Office | 29 | On- and Offsite |
| Industrial | 116 | Onsite |

## 1.3 PROPOSED LAND USE SUMMARY

The Grantville Subarea A Focused Plan Amendment EIR is a Land Use document and does not propose grading or drainage design for the Subareas. Proposed grading and drainage design will be provided on a project-by-project basis at the time of final design. Proposed grading and drainage shall be designed to ensure that existing drainage patterns will remain the same in the proposed condition, in accordance with the City of San Diego guidelines that proposed development shall not divert water from existing drainage courses. Then Land Uses proposed in the Focused Plan Amendment are listed in Table 4.

Table 4: Proposed Land Use Summary

| PROPOSED GENERAL LAND USE SUMMARY | |
|---|---|
| LOCATION | ESTIMATED AREA (AC) |
| Open Space | 12 |
| Single Family Residential | 5 |
| Multifamily Residential | 47 |
| Residential Mixed Use | 111 |
| Commercial | 115 |
| Hospital/Office | 36 |
| Industrial | 23 |

## 1.4 HYDROLOGIC UNIT CONTRIBUTION

Grantville Subarea A is located within the Mission San Diego Hydrologic Subarea, within the Lower San Diego Hydrologic Area and the Mission San Diego Hydrologic Subarea. The corresponding number designation is 907.11.

With a land area of approximately 440 square miles, the San Diego River watershed is the second largest hydrologic unit (HU) in San Diego County. It also has the highest population (~475,000) of the County's watersheds and contains portions of the cities of San Diego, El Cajon, La Mesa, Poway, Santee, and several unincorporated jurisdictions. Important hydrologic resources in the watershed include five water storage reservoirs, a large groundwater aquifer, extensive riparian habitat, coastal wetlands, and tidepools. Approximately 58.4% of the San Diego River watershed is currently undeveloped. The majority of this undeveloped land is in the upper, eastern portion of the watershed, while the lower reaches are more highly urbanized with residential (14.9%), freeways and roads (5.5%), and commercial/ industrial (4.2%) land uses predominating.

The project site can be divided into two major hydrologic basins, one draining to Alvarado Creek, and the other draining directly to the San Diego River. Alvarado Creek runs from east to west through the southerly portion of Subarea A, confluencing with the San Diego River near the southwesterly corner of Subarea A. Alvarado Creek extends approximately 4 miles east of the project site, and its watershed includes portions of the Cities of San Diego and La Mesa, as well as Lake Murray. The watershed is predominantly developed, with the exception of portions of Mission Trails Regional Park. The onsite portions of the watershed drain to Alvarado Creek through a combination of storm drain systems and surface flow. Alvarado Creek also accepts offsite flow through Subarea A from areas to the north and south of the project. As it flows through Subarea A, portions of Alvarado Creek are conveyed in a lined channel, an underground culvert, and a semi-natural channel.

The San Diego River makes up the northwesterly and westerly boundaries of Subarea A. The northerly and westerly portions of Subarea A drain to the San Diego River through surface flow and storm drain systems. These storm drain systems also convey runoff from the adjacent residential area to the east through the project site to the River.

Upon existing Subarea A, site flows continue west for approximately 9 miles in the San Diego River. Flows pass through developed portions of Mission Valley in a semi natural channel before reaching areas of hardened channel slopes and discharging into the Pacific Ocean at the Dog Beach outlet.

The San Diego River and Pacific Ocean at the San Diego River Outlet have 303(d) listed impairments which are listed in Section 2.1.2. There are no TMDLs for any of the receiving waters from the proposed project site.

# 2.0 WATER QUALITY ENVIRONMENT

## 2.1 BENEFICIAL USES

The beneficial uses for the hydrologic unit are included in the tables below. These tables have been extracted from the "Water Quality Control Plan for the San Diego Basin (9)," dated September 8, 1994.

**MUN-** Municipal and Domestic Supply: Includes uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
**AGR-** Agricultural Supply: Includes uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
**WARM-**– Warm Freshwater Habitat: Includes uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.
**AQUA-** Includes the uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.
**COMM-** includes the uses of water for commercial or recreational collection of fish, shellfish, or other organisms, including, but not limited to, uses involving organisms intended for human consumption or bait purposes.

**BIOL-** Includes uses of water that support designated areas or habitats, such as refuges, parks, sanctuaries, ecological reserves, or Areas of Special Biological Significance (ASBS) where the preservation or enhancement of natural resources requires special protection.
**EST-** Includes uses of water that support estuarine ecosystems, including but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g. estuarine mammals, waterfowl, or shorebirds.)
**RARE-** Includes uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species, established under state or federal law as rare, threatened or endangered.
**SPWN-** Includes uses of water that support that support high quality aquatic habitats suitable for reproduction and early development of fish. This use is applicable for only the protection of anadromous fish.
**SHELL-** Includes uses of water that support habitats suitable for the collection of filter feeding shellfish (e.g. clams, oysters and mussels) for human consumption, commercial, or sport purposes.
**MIGR-** Includes uses of water that support habitats necessary for migration, acclimatization between fresh and salt water, or other temporary activities by aquatic organisms such as anadromous fish.
**MAR-** Includes uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g. marine mammals, shorebirds.)
**IND** – Includes uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.
**REC1** – Contact Recreation: Includes uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and SCUBA diving, surfing, white water activities, fishing, or use of natural hot springs.
**REC2** – Non-Contact Recreation: Includes the uses of water for recreation involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
**WILD** – Wildlife Habitat: Includes uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife, (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

### 2.1.1 INLAND SURFACE WATERS

Inland surface waters have the following beneficial uses as shown in Table 5:

Table 5: Beneficial Uses

| RECEIVING WATERS | HYDROLOGIC UNIT BASIN NUMBER | MUN | AGR | IND | REC1 | REC2 | MAR | EST | WARM |
|---|---|---|---|---|---|---|---|---|---|
| San Diego River | 907.11 | x | x | x | x | x | x | x | x |

| RECEIVING WATERS | WILD | RARE | COLD | BIOL | MIGR | SPWN | SHELL | NAV | PROC | AQUA | COMM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| San Diego River | x | x | x | x | x | x | x | x | x | x | x |

o – Potential Beneficial Use
x – Existing Beneficial Use

### 2.1.2 303(D) STATUS

According to the California 2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report) published by the State Water Resources Control Board (SWRCB), the San Diego River and Pacific Ocean at the San Diego River outlet are beneficial use impaired water bodies. Alvarado Creek is identified as an

impaired water body from Selenium. The San Diego River is impaired from Fecal Coliform, Enterococcus Bacteria, Low Dissolved Oxygen, Nitrogen, Phosphorus, Total Dissolved Solids, Toxicity, and Manganese. The Pacific Ocean at the San Diego River Outlet is impaired from Enterococcus Bacteria and Total Coliform. See Table 6 for a summary of 303(d) listed segments downstream of the project.

There are several points of discharge into the San Diego River within the project site. The Pacific Ocean Shoreline at the San Diego River outlet is approximately 9 miles downstream of the project site.

Table 6: 303(d) Listed Segments

| 303(D) LISTED WATER QUALITY SEGMENTS | | | |
|---|---|---|---|
| RECEIVING WATER | HYDROLOGIC UNIT CODE | 303(d) IMPAIRMENT(S) | DISTANCE FROM PROJECT (miles) |
| San Diego River | 907.11 | Fecal Coliform, Enterococcus Bacteria, Low DO, Nitrogen, Phosphorus, TDS, Toxicity, and Manganese | 0 |
| Pacific Ocean at San Diego River Outlet | 907.11 | Total Coliform, Enterococcus Bacteria | 9 |
| Alvarado Creek | 907.11 | Selenium | 0 |

The causes of water quality problems are as follows according to the 2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report) list. San Diego River: Urban Runoff/Storm Sewers, Wastewater, Non-Point/Point Source, Unknown Point Source, Unknown Non-Point Source, Flow Regulation/Modification, Natural Sources. Pacific Ocean at San Diego River outlet: Non-Point/Point Source. Alvarado Creek: Other Urban Runoff

## 2.2 HYDROLOGY- CONDITIONS OF CONCERN

### 2.2.1 STANDARD ELEMENT

Section 4 of the Storm Water Standards Manual (SWSM) states that Priority Development Projects are to apply the requirements of the SWSM to ensure that the project manages increases in runoff discharge rates and durations that are likely to cause increased erosion of stream beds and banks, silt pollution generation, or other impacts to beneficial uses and stream habitat due to increased erosive force.

The proposed greater project site is currently developed and zoned for a number of uses, including open space, single family residential, multi-family residential, commercial, hospital, office, and industrial. The proposed Focused Plan Amendment will redistribute these uses, and incorporate areas of residential mixed use and commercial mixed use. Overall, the proposed uses will result in equal or lower imperviousness and a lower runoff coefficient for the project site.

As the Grantville Subarea A Focused Plan Amendment is a land use planning document, proposed grading and drainage design is not a part of this project. Grading and drainage design will be performed at the time of final engineering for individual projects within the redevelopment area. Therefore, this study assumes that the existing drainage patterns will be preserved in the proposed conditions.

A detailed description of the drainage patterns and flows are discussed in the report titled "Hydrology Study for Grantville Subarea A Focused Plan Amendment EIR" prepared by Fuscoe Engineering, January 2014. See Table 7a for summary of the impervious area determination for the existing and proposed conditions.

Table 7a: Impervious Area Determination

| SITE IMPERVIOUS AREA COMPOSITION | | | | |
|---|---|---|---|---|
| | TOTAL HARDSCAPE (ACRES) | TOTAL SOFTSCAPE (ACRES) | TOTAL BASIN AREA (ACRES) | % IMPERVIOUS SURFACES |
| Existing | 282 | 67 | 349 | 80.8 |
| Proposed | 266 | 83 | 349 | 76.2 |

For determination of runoff coefficients for the project, in accordance with the City of San Diego Drainage Design Manual, type D soils are assumed for the entire project site, and runoff coefficients are determined through use of Table 2 of the Manual summarized below in Table 7b.

Table 7b: Runoff Coefficients

| **Land Use** | **Runoff Coefficient** |
|---|---|
| | **Soil Type D** |
| Open Space | 0.35 |
| Single Family Residential | 0.55 |
| Multifamily Residential | 0.70 |
| Mobile Homes | 0.79 |
| Commercial (85% Impervious) | 0.85 |
| Industrial (90% Impervious) | 0.95 |

Note: For land use of hospital, a percent imperviousness of 85% is assumed and the associated runoff coefficient used for calculations is 0.85.

PRE CONSTRUCTION CONDITIONS AND FLOW

Pre-project features include onsite drainage areas consisting of the existing development within Subarea A, portions of development which drain onto the site, and onsite and offsite hillsides and open spaces.

The existing project site consists of 2 major drainage basins with 24 sub basins which ultimately convey flow to the San Diego River near the southwest corner of Subarea A. As shown in the Drainage Map included in Appendix 4, fourteen of the sub basins drain to Alvarado Creek (A-basins) and an additional ten drain directly to the San Diego River (SD-basins). In addition, several offsite basins contribute flows to storm drain systems running through the project site.

From the hydrology study, the 2, 10 and 100 year peak flow rates discharging to Alvarado Creek and the San Diego River have been calculated and are shown in Table 8.

Table 8: Existing Condition Flows

| **Basin** | **Runoff Coefficient** | **Tc** | **A** | **Q(100)** | **Q(10)** | **Q(2)** |
|---|---|---|---|---|---|---|
| | | **min.** | **ac** | **cfs** | **cfs** | **cfs** |
| Alvarado Creek | - | - | - | 4,300 | 2,300 | - |
| A-1 | 0.85 | 5 | 5.23 | 30 | 21 | 14 |
| A-2 | 0.85 | 10 | 23.82 | 89 | 61 | 41 |
| A-3 | 0.92 | 10 | 15.55 | 63 | 43 | 29 |
| A-4 | 0.88 | 10 | 20.25 | 78 | 54 | 36 |
| A-5 | 0.93 | 10 | 15.36 | 63 | 43 | 29 |
| A-6 | 0.88 | 10 | 14.09 | 65* | 45* | 30* |
| A-7 | 0.92 | 10 | 13.97 | 56 | 39 | 26 |
| A-8 | 0.95 | 5 | 7.58 | 49 | 34 | 23 |
| A-9 | 0.95 | 5 | 2.88 | 19 | 13 | 9 |
| A-10 | 0.95 | 5 | 1.83 | 12 | 8 | 5 |
| A-11 | 0.79 | 10 | 10.65 | 104* | 72* | 48* |
| A-12 | 0.64 | 10 | 13.17 | 1149* | 796* | 530* |
| A-13 | 0.74 | 10 | 8.75 | 28 | 20 | 13 |
| A-14 | 0.83 | 10 | 3.63 | 35* | 24* | 16* |
| A Total | - | - | - | 1,840 | 1,274 | 849 |
| San Diego River | - | - | - | 36,000 | 3,100 | - |
| SD-1 | 0.85 | 5 | 5.91 | 34 | 24 | 16 |
| SD-2 | 0.90 | 10 | 9.80 | 39 | 27 | 18 |
| SD-3 | 0.94 | 5 | 2.78 | 18 | 12 | 8 |
| SD-4 | 0.83 | 15 | 50.23 | 141 | 97 | 65 |
| SD-5 | 0.88 | 15 | 51.62 | 333* | 230* | 153* |
| SD-6 | 0.95 | 5 | 3.90 | 25 | 18 | 12 |
| SD-7 | 0.85 | 15 | 17.36 | 50 | 34 | 23 |
| SD-8 | 0.85 | 5 | 5.48 | 32 | 22 | 15 |
| SD-9 | 0.83 | 15 | 28.00 | 78 | 54 | 36 |
| SD-10 | 0.61 | 10 | 17.51 | 87* | 60* | 41* |
| SD Total | - | - | - | 837 | 579 | 386 |

* Includes Offsite Areas

POST CONSTRUCTION CONDITIONS AND FLOW

The Grantville Subarea A Focused Plan Amendment EIR does not propose substantial changes in existing drainage patterns. Therefore drainage basin areas and discharge locations are substantially the same in the existing and proposed conditions. The final design of projects within Subarea A may require minor changes to points of discharge that will be reviewed by City staff to ensure that flows are not diverted between existing drainage basins. The 2, 10 and 100 year peak flow rates discharching to Alvarado Creek and the San Diego River have been calculated and are shown in Table 9:

Table 9: Proposed Condition Flows

| **Basin** | **Runoff Coefficient** | **Tc** | **A** | **Q(100)** | **Q(10)** | **Q(2)** |
|---|---|---|---|---|---|---|
| | | **min.** | **ac** | **cfs** | **cfs** | **cfs** |
| Alvarado Creek | - | - | - | 4,300 | 2,300 | - |
| A-1 | 0.95 | 5 | 5.23 | 34 | 24 | 16 |
| A-2 | 0.84 | 10 | 23.82 | 88 | 61 | 40 |
| A-3 | 0.70 | 10 | 15.55 | 48 | 33 | 22 |
| A-4 | 0.74 | 10 | 20.25 | 66 | 45 | 30 |
| A-5 | 0.78 | 10 | 15.36 | 52 | 36 | 24 |
| A-6 | 0.70 | 10 | 14.09 | 54* | 38* | 25* |
| A-7 | 0.70 | 10 | 13.97 | 43 | 30 | 20 |
| A-8 | 0.70 | 5 | 7.58 | 36 | 25 | 17 |
| A-9 | 0.70 | 5 | 2.88 | 14 | 10 | 6 |
| A-10 | 0.70 | 5 | 1.83 | 9 | 6 | 4 |
| A-11 | 0.67 | 10 | 10.65 | 98* | 68* | 46* |
| A-12 | 0.85 | 10 | 13.17 | 1161* | 804* | 536* |
| A-13 | 0.72 | 10 | 8.75 | 28 | 19 | 13 |
| A-14 | 0.73 | 10 | 3.63 | 34* | 23* | 15* |
| A Total | - | - | - | 1759 | 1217 | 812 |
| San Diego River | - | - | - | 36,000 | 3,100 | - |
| SD-1 | 0.95 | 5 | 5.91 | 38 | 27 | 18 |
| SD-2 | 0.95 | 10 | 9.80 | 41 | 28 | 19 |
| SD-3 | 0.95 | 5 | 2.78 | 18 | 13 | 8 |
| SD-4 | 0.74 | 15 | 50.23 | 125 | 87 | 58 |
| SD-5 | 0.81 | 15 | 51.62 | 321* | 222* | 147* |
| SD-6 | 0.70 | 5 | 3.90 | 19 | 13 | 9 |
| SD-7 | 0.85 | 15 | 17.36 | 50 | 34 | 23 |
| SD-8 | 0.85 | 5 | 5.48 | 32 | 22 | 15 |
| SD-9 | 0.85 | 15 | 28.00 | 80 | 56 | 37 |
| SD-10 | 0.61 | 10 | 17.51 | 87* | 60* | 41* |
| SD Total | - | - | - | 811 | 561 | 374 |

*Includes Offsite Areas

### 2.2.2 LOW IMPACT DEVELOPMENT ELEMENT

In a hydrologic context, Low Impact Development BMPs include features that attempt to mimic pre-development hydrologic and water quality conditions from a project site. Such features include infiltration, storage, and filtration based practices and may contain flow through planters, vegetated buffer areas, vegetated swales, curb cuts to landscaping, and bioretention/rain gardens. Redevelopment projects within Subarea A shall implement LID BMPs where possible. Refer to section 4.1 for a detailed list of possible LID Site Design BMPs which could be used.

### 2.2.3 HYDROMODIFICATION ELEMENT

Redevelopment projects in the Subarea A will be subject to the Final Hydromodification Management Plan Implemented on January 14, 2011. All priority projects are subject to the Final Hydromodification Management Plan. However, based on Figure 6-1 of the Final Hydromodification Management Plan, many, if not all, projects within Subarea A will be exempt from the HMP requirements. Following are the exemptions which are potentially applicable to redevelopment projects within Subarea A:

- Per Figure 6-1 Node 3, projects which do not increase the impervious area from pre-project conditions are exempt. This is anticipated to occur on projects within Subarea A which propose a land use with less impervious area than existing conditions.
- Per Figure 6-1 Node 4, projects which do not increase peak flows to each outlet location over the pre-project conditions are exempt. This is also anticipated to occur on projects within Subarea A which propose a land use with less impervious area than existing conditions, and may also occur due to the incorporation of LID features.
- Per Figure 6-1 Node 5, projects which discharge directly to an exempt system are exempt from the HMP requirements. Exempt systems include the San Diego River from its confluence with San Vicente Creek to the Pacific Ocean, which includes the reach adjacent to Subarea A. Therefore, redevelopment projects within Subarea A which discharge directly to the San Diego River are exempt from the HMP requirements.
- Per Figure 6-1 Nodes 7 and 8, projects which discharge to a stabilized conveyance, such as storm drain pipe or lined channels, which then discharge directly to an exempt system, may be exempt if the conveyance has sufficient capacity to convey the ultimate $Q_{10}$. This could apply to redevelopment projects within Subarea A which discharge to the existing storm drain systems which then discharge directly to the San Diego River. However, to qualify for this exemption, the stabilized conveyance must have capacity to convey runoff from the 10-year storm event. As such, to qualify for this exemption, the existing conveyance systems would need to be checked for capacity to convey the ultimate $Q_{10}$.
- Figure 6-1 Node 9 is relevant to drainage basins within Subarea A that discharge to Alvarado Creek, and states that projects which discharge to a highly urbanized watershed may be exempt from the HMP requirements. The HMP defines a highly impervious watershed as one with an impervious percentage greater than 70 percent for the sub-basin from the project outfall downstream to an exempt water body. It is anticipated that the redeveloped impervious percentage of Subarea A will be 76.2 percent after redevelopment, and the San Diego River, which receives runoff from Subarea A, is an exempt water body. Therefore, this exemption could apply to projects within Subarea A that discharge directly to Alvarado Creek upstream of the San Diego River.

Individual redevelopment projects within Subarea A will be required to evaluate their exemption status on a case by case basis. If a project does not qualify for any of the possible exemptions listed above, the project will be required to implement hydromodification controls per the Final Hydromodification Management Plan. An example of a possible project within Subarea A which would be required to implement hydromodification controls would be a project which increases both impervious area and peak flows from existing conditions; discharges to Alvarado Creek within or upstream of an unlined reach; and where the sub-basin from the discharge point in Alvarado Creek to the confluence with the San Diego River has an impervious percentage of less than 70 percent.

For projects which are required to implement hydromodification controls, the project may choose to use a lower flow threshold of $0.1Q_2$ or use the Southern California Coastal Water Research Project channel screening tools outlined in the Final Hydromodification Management Plan to determine the susceptibility of the downstream channel. A lower flow threshold of $0.5Q_2$ is used for "Low" susceptibility channels, a lower flow threshold of $0.3Q_2$ is used for "Medium" susceptibility channels, and a lower flow threshold of $0.1Q_2$ is used for "High" susceptibility channels. Based on these thresholds, hydromodification controls must meet the following peak flow and duration criteria, per Section 6.2 of the Final Hydromodification Management Plan:

- For flow rates ranging from the pre-project lower flow threshold to the pre-project $Q_{10}$, the post-project discharge rates and durations shall not deviate above the pre-project rates and durations by more than 10% over and more than 10% of the length of the flow duration curve.
- For flow rates ranging from the lower flow threshold to $Q_5$, the post-project peak flows shall not exceed pre-project peak flows. For flow rates from $Q_5$ to $Q_{10}$, post-project peak flows may exceed pre-project flows by up to 10% for a 1-year frequency interval.

To satisfy these criteria, LID BMPs are recommended and may also function as Treatment Control BMPs. Sizing and analysis of the hydromodification controls may be performed using the following methods, per Section 6.2 of the Final Hydromodification Management Plan:

- Use the BMP sizing factors contained in the HMP or the on-line BMP calculator to size LID BMP's or extended detention basins to ensure compliance with hydromodification criteria.
- Prepare continuous simulation hydrologic models and compare the pre-project and mitigated post-project runoff peaks and durations (with Hydromodification flow controls) until compliance to flow control standards can be demonstrated.

As noted above, individual redevelopment projects within Subarea A will need to determine their exemption status and required hydromodification controls on a case-by-case basis. As noted in Section 1.0, projects which begin construction after December 2015 will be required to comply with the new BMP Design Manuals prepared in accordance with RWQCB Permit No. R9-2013-0001. The Hydromodification exemptions and design procedures described above shall be superceeded by the BMP Design Manual upon its implementation in December 2015.

## 2.3 POTENTIAL POLLUTANTS

An analysis of any known areas of contamination within the project boundary is included in the Phase 1 Environmental Site Assessment for the project, which has been prepared by others. Please refer to this document for known areas of contamination.

The following constituents are commonly found on similar land uses as those proposed by the Focused Plan Amendment and could affect water quality:

- Sediment discharge due to construction activities and post-construction areas left bare
- Nutrients from fertilizers, animal waste, detergents, automobile emissions, and organic matter
- Heavy Metals from automobile sources
- Organic compounds found in pesticides, solvents, and hydrocarbons
- Trash and debris deposited in drain inlets
- Oxygen demanding substances from plant debris, food waste, and chemical waste
- Hydrocarbons such as oil and grease from paved areas
- Bacteria and viruses from food and animal waste products and fertilizer
- Pesticides from application in landscaped areas and around buildings

Based on the 2012 San Diego Storm Water Standards Manual, the pollutants given in Table 10 are anticipated, taking into account the proposed site uses.

Table 10: Anticipated and Potential Pollutants

| ANTICIPATED AND POTENTIAL POLLUTANTS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | SEDIMENT | NUTRIENTS | HEAVY METALS | ORGANIC COMPOUND | TRASH & DEBRIS | OXYGEN DEMANDING SUBSTANCES | OIL AND GREASE | BACTERIA & VIRUSES | PESTICIDES |
| Detached Residential Development | X | X | | | X | X | X | X | X |
| Attached Residential Development | X | X | | | X | P(1) | P(2) | P | X |
| Commercial Development | P | P | | P(2) | X | P(5) | X | P(3) | P(5) |
| Automotive Repair Shops | | | X | X(4)(5) | X | | X | | |
| Restaurants | | | | | X | X | X | X | P(1) |
| Steep Hillside Development | X | X | | | X | X | X | | X |
| Parking Lots | P(1) | P(1) | X | | X | P(1) | X | | P(1) |
| Streets Highways and Freeways | X | P(1) | X | X(4) | X | P(5) | X | X | P(1) |

Notes:
X = Anticipated
P= Potential
(1) A potential pollutant if landscaping exists on-site.
(2) A potential pollutant if the project includes uncovered parking areas
(3) A potential pollutant if land use involves food or animal waste products.
(4) Including petroleum hydrocarbons
(5) Including solvents

According to the table provided above, which was lifted from the City of San Diego Storm Water Standards Manual, the proposed land uses within the project have anticipated or potential pollutants for sediment, nutrients, heavy metals, organic compounds, trash & debris, oxygen demanding substances, oil & grease, bacteria and viruses, and pesticides.

Per the 2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report) the receiving waters have 303(d) beneficial use impairments consisting of fecal coliform, enterococcus bacteria, toxicity, low dissolved oxygen, manganese, nitrogen, phosphorus, selenium, total dissolved solids to include salinity, chlorides and sulfates. Therefore, pollutants given in Table 11, which are designated as anticipated or potential for the proposed site as well as have 303(d) impairments downstream, are considered primary pollutants of concern.

Table 11: Primary Pollutants of Concern

| PRIMARY POLLUTANTS OF CONCERN | SPECIFIC 303(D) IMPAIRMENT |
|---|---|
| SEDIMENT | Total Dissolved Solids |
| NUTRIENTS | Phosphorus, Nitrogen, Selenium |
| ORGANIC COMPOUNDS | Low Dissolved Oxygen |
| TRASH & DEBRIS | Low Dissolved Oxygen |
| OXYGEN DEMANDING SUBSTANCES | Low Dissolved Oxygen |
| BACTERIA & VIRUSES | Fecal Coliform, Enterococcus Bacteria |
| METALS | Manganese |

## 2.4 SOIL CHARACTERISTICS

The site is currently heavily developed. The site generally slopes from east to west, from the adjacent mesas ultimately to the San Diego River. Detailed geotechnical investigations will be performed at the time of final engineering for individual projects within the redevelopment area. Soil data contained in this report has been obtained from soil maps developed by the Soil Conservation Service.

As mapped by the Soil Conservation Service, soil types on the project site include Riverwash (Rm), Tujunga Sand (TuB), Huerheuro-Urban Land Complex (HuC), Huerhuero Loam (HrC), and Olivenhain Cobbly Loam (OhF). According to the San Diego County Hydrology Manual and Soil Conservation Service Soil Survey, the Hydrologic Soil Type of the Riverwash and Tujunga Sand is type "A", while the remaining soils that are present belong to Hydrologic Soil Type "D". Soil type "A" indicates soils with rapid infiltration rates, consisting largely of alluvial material. Soil type "D" denotes soils which have substandard infiltration rates, and are composed of a high percentage of clays. Within Subarea A, the type "A" soils are predominantly present along the courses of the San Diego River and Alvarado Creek. The type "D" soils are present at the higher elevations above the river bed and on the mesas and steep slopes in and around the project site. However, in accordance with the City of San Diego Drainage Design Manual, all hydrology calculations are based upon assuming type D soils for determination of runoff coefficient.

# 3.0 CONSTRUCTION BMPs

Note that this Construction BMP section of this WQTR is not required per the SWSM. However, as this WQTR is also addressing the requirements of CEQA Guildelines Appendix G, the Construction BMP requirements for individual projects are included.

## 3.1 CONSTRUCTION PHASE POTENTIAL POLLUTANTS

The Grantville Subarea A Focused Plan Amendment is a land use planning document and does not propose a specific project to be constructed. Therefore, the Focused Plan Amendment is not subject to the Statewide General Construction Permit. However, individual projects within Subarea A which fall under the jurisdiction of the Focused Plan Amendment will need to enroll under the Statewide General Construction Permit (GCP, State

Water Resources Control Board Order No. 2009-0009-DWQ amended by 2010-0014-DWQ & 2012-006-DWQ) and obtain a Waste Discharge Identification (WDID) Number prior to the beginning of site preparation and grading operations. This report will discuss construction phase pollutants and BMPs in general terms only, and individual projects within the Subarea will be responsible for complying with all applicable regulations prior to and during construction.

Clearing, grading, excavation and construction activities associated with projects may impact water quality due to sheet erosion of exposed soils and subsequent deposition of particulates in local drainages. Grading activities, in particular, lead to exposed areas of loose soil, as well as sediment stockpiles, that are susceptible to uncontrolled sheet flow. Although erosion occurs naturally in the environment, primarily from weathering by water and wind action, improperly managed construction activities can lead to substantially accelerated rates of erosion that are considered detrimental to the environment.

In addition to erosion and sedimentation, the use of materials such as fuels, solvents, and paints also present a risk to surface water quality. Improperly managed construction materials can lead to the possibility for exposure of potential contaminants to precipitation. When this occurs, these constituents become visible and/or non-visible pollutants entrained in storm water runoff. If they are not intercepted or left uncontrolled, the polluted runoff would otherwise freely sheet flow through the downstream desert washes and can cause pollution accumulation concerning groundwater infiltration. A list of common construction materials and their associated construction activity are provided in Table 12.

Table 12: Construction Period Anticipated Pollutants

| CONSTRUCTION ACTIVITY | CONSTRUCTION SITE MATERIAL | VISUALLY OBSERVABLE? |
|---|---|---|
| **Paving** | Hot Asphalt | Yes - Rainbow Surface or Brown Suspension |
| | Asphalt Emulsion | |
| | Liquid Asphalt (tack coat) | |
| | Cold Mix | |
| | Crumb Rubber | Yes – Black, solid material |
| | Asphalt Concrete (Any Type) | Yes - Rainbow Surface or Brown Suspension |
| **Cleaning** | Acids | No |
| | Bleaches | |
| | Detergents | Yes – Foam |
| | Solvents | No |
| **Concrete Work** | Portland Cement (PCC) | Yes - Milky Liquid |
| | Masonry products | No |
| | Sealant (Methyl Methacrylate - MMA) | No |
| | Incinerator Bottom Ash, Bottom Ash, Steel Slag, Foundry Sand, Fly Ash, Municipal Solid Waste | No |
| | Mortar | Yes - Milky Liquid |
| | Concrete Rinse Water | Yes - Milky Liquid |
| | Non-Pigmented Curing Compounds | No |
| **Landscaping** | Aluminum Sulfate | No |
| | Sulfur-Elemental | |
| | Fertilizers | |
| | Natural Earth (Sand, Gravel, and Topsoil) | Yes - Cloudiness and turbidity |
| | Herbicide, Pesticide | No |

| CONSTRUCTION ACTIVITY | CONSTRUCTION SITE MATERIAL | VISUALLY OBSERVABLE? |
|---|---|---|
| | Lime | |
| **Painting** | Paint | Yes |
| | Paint Strippers | No |
| | Resins | |
| | Sealants | |
| | Solvents | |
| | Lacquers, Varnish, Enamels, and Turpentine | |
| | Thinners | |
| **Portable Toilet Facilities** | Portable Toilet Waste | Yes |
| **Line Flushing** | Chlorinated Water | No |
| **Adhesives** | Adhesives | No |
| **Dust Control** | Salts (Magnesium Chloride, Calcium Chloride, and Natural Brines) | No |
| **Vehicle Maintenance** | Antifreeze and Other Vehicle Fluids | Yes - Colored Liquid |
| | Batteries | No |
| | Fuels, Oils, Lubricants | Yes - Rainbow Surface Sheen and Odor |
| **Soil Amendment/Stabilization** | Polymer/Copolymer | No |
| | Straw/Mulch | Yes - Solids |
| | Lignin Sulfonate | No |
| | Psyllium | |
| | Guar/Plant Gums | |
| | Gypsum | |
| **Wood (Treated) Work** | Ammoniacal-Copper-Zinc-Arsenate, Copper-Chromium-Arsenic, Ammoniacal-Copper-Arsenate, Copper Naphthenate | No |
| | Creosote | Yes - Rainbow Surface or Brown Suspension |
| Source: Caltrans SWPPP Attachment S, March 2003 | | |

Prior to the issuance of a development permit, individual project applicants shall provide evidence that the development of their project shall comply with the GCP and associated local NPDES regulations to ensure that the potential for soil erosion is minimized on a project-by-project basis. Also, in accordance with standard City project permitting and approval procedures, a NOI for coverage of projects under the GCP will be filed with the SWRCB prior to the issuance of a grading permit (for projects one acre or greater of soil disturbance).[1] Accordingly, a SWPPP will be prepared and implemented at their project site, and revised as necessary, as administrative or physical conditions change. The San Diego RWQCB, upon request, must instruct the developer to make the SWPPP available for public review. The SWPPP will describe Best Management Practices (BMPs) that address pollutant source reduction and provide measures/controls necessary to mitigate potential pollutant sources. These include, but are not limited to: erosion controls, sediment controls, tracking controls, non-storm water management, materials & waste

[1] Any dewatering activities associated with construction must be in accordance with applicable RWQCB and local agency dewatering permits, as well.

management, and good housekeeping practices.[2] The above-mentioned BMPs for construction activities are discussed further in Section 3.2. BMPs given on the following pages make references to the standard BMP details provided in the California BMP Handbook, prepared by the California Storm Water Quality Association (CASQA).

## 3.2 CONSTRUCTION PHASE BMPS

**Erosion Controls**
Erosion Control, also referred to as soil stabilization, is a source control measure that is designed to prevent soil particles from detaching and becoming transported in the storm water runoff. Erosion Control BMPs protect the soil surface by covering and/or binding the soil particles. The scheduling of soil disturbing activities should be minimized during the wet season. If such activities occur in the wet season, all exposed slopes or areas with loose soil will be stabilized. This may involve the application of soil binders, or geotextiles and mats. Temporary earth dikes or drainage swales may also be employed to divert runoff away from exposed areas and into more suitable locations. If implemented correctly, erosion controls can effectively reduce the sediment loads entrained in storm water runoff from construction sites. Below is a list of approved construction BMPs that can be implemented for the proposed Project's SWPPP.

Erosion Controls

| | |
|---|---|
| EC-1 | Scheduling |
| EC-2 | Preservation of Existing Vegetation |
| EC-5 | Soil Binders |
| EC-6 | Straw Mulch |
| EC-7 | Geotextiles and Mats |
| EC-8 | Wood Mulching |
| EC-9 | Earth Dikes and Swales |
| EC-10 | Velocity Dissipation Devices |
| EC-11 | Slope Drains |

**Sediment Controls**
Sediment controls are structural measures that are intended to complement and enhance the soil stabilization/erosion control measures and reduce sediment discharges from construction areas. Sediment controls are designed to intercept and filter out soil particles that have been detached and transported by the force of water. In addition, silt fencing should be installed along the perimeter of the site where sheet flows discharge from the site, and should also be placed around areas of soil disturbing activities, such as grading or clearing. Check dams or chevrons should be situated in areas where high velocity runoff is anticipated. Gravel bag berms or fiber rolls should be used to intercept sheet flows or at the toe of slopes to minimize sediment mobilization. Street sweeping should also be scheduled in areas where sediment can be tracked from the project site onto paved streets or roads. Below is a list of approved construction BMPs that can be implemented for the proposed Project's SWPPP.

Sediment Controls

| | | | |
|---|---|---|---|
| SE-1 | Silt Fence | SE-7 | Street Sweeping |
| SE-2 | Desilting Basin | SE-8 | Sandbag Barrier |
| SE-3 | Sediment Trap | SE-9 | Straw Bale Barrier |
| SE-4 | Check Dam | SE-10 | Chemical Treatment |
| SE-5 | Fiber Rolls | SE-11 | Chemical Treatment |
| SE-6 | Gravel Bag Berm | | |

[2] California BMP Handbook for Construction (2003): http://www.cabmphandbooks.com/Construction.asp

**Tracking Controls**
The proposed project site will stabilize all construction entrance/exit points to reduce the tracking of sediments onto paved streets and roads by construction vehicles. Construction roadways should also be stabilized to minimize off-site tracking of mud and dirt. Wind erosion controls should be employed in conjunction with tracking controls. Below is a list of approved construction BMPs that can be implemented for the proposed Project's SWPPP.

Tracking Controls

| | |
|---|---|
| TC-1 | Stabilized Construction Entrance / Exit |
| TC-2 | Stabilized Construction Roadway |
| TC-3 | Entrance / Outlet Tire Wash |
| WE-1 | Wind Erosion Control |

**Non-Storm Water Management**
The Statewide NPDES Permit defines non-storm water discharges as follows: "Non-storm water discharges consist of all discharges from a municipal storm water conveyance which do not originate from precipitation events (i.e., all discharges from a conveyance system other than storm water)." Paving and grinding operations should be avoided during the wet season, where possible. Illegal connections and dumping incidents on the construction site, especially at or near storm drain inlets, will be promptly reported and cleaned up at the earliest opportunity. Vehicle equipment cleaning, fueling, and maintenance should be conducted in designated areas that are adequately protected and contained. Spill kits should also be readily available in these designated areas. Below is a list of approved construction BMPs that can be implemented for the proposed Project's SWPPP.

Non-Storm Water Management Controls

| | | | |
|---|---|---|---|
| NS-1 | Water Conservation Practices | NS-9 | Vehicle & Equipment Fueling |
| NS-2 | Dewatering Operations | NS-10 | Vehicle & Equipment Maint. |
| NS-3 | Paving and Grinding Operations | NS-11 | Pile Driving Operations |
| NS-4 | Temporary Stream Crossing | NS-12 | Concrete Curing |
| NS-5 | Clear Water Diversion | NS-13 | Concrete Finishing |
| NS-6 | IC/ID Detection and Reporting | NS-14 | Material Use Over Water |
| NS-7 | Potable Water / Irrigation | NS-15 | Demolition Over Water |
| NS-8 | Vehicle & Equipment Cleaning | NS-16 | Temporary Batch Plants |

**Materials and Waste Management**
Waste management consists of implementing procedural and structural BMPs for collecting, handling, storing and disposing of wastes generated by a construction project to prevent the release of waste materials into storm water discharges. All materials with the potential to contaminate storm water runoff should be delivered and stored in designated areas with secondary containment measures (i.e. covered and bermed). Chemicals, drums, and bagged materials should not be stored directly on soil, but instead be on pallets. Personnel should also be trained on the proper use of these materials. Stockpiles of sediment should be stored in areas away from drainage courses and concentrated flows of runoff. A temporary barrier around stockpiles should also be installed and a cover provided during the rainy season. Spill cleanup procedures and kits should be made readily available near hazardous materials and waste. Solid wastes, such as trash and debris, should be collected on a regular basis and stored in designated areas. Concrete and paint washout areas should be installed and properly maintained in areas conducting the associated activities. Below is a list of approved construction BMPs that can be implemented for the proposed Project's SWPPP.

Waste Management and Materials

| | | | |
|---|---|---|---|
| WM-1 | Material Delivery & Storage | WM-6 | Hazardous Waste |
| WM-2 | Material Use | WM-7 | Contaminated Soil |
| WM-3 | Stockpile Management | WM-8 | Concrete Waste |
| WM-4 | Spill Prevention and Control | WM-9 | Sanitary / Septic Waste |
| WM-5 | Solid Waste Management | | |

**Monitoring Program**
A monitoring program will also be included in the SWPPP that outlines storm event inspections of the site and a sampling plan in accordance with the GCP. "The goals of [the program] are (1) to identify areas contributing to a storm water discharge; (2) to evaluate whether measures to reduce pollutant loadings identified in the SWPPP are adequate, properly installed, and functioning in accordance with the terms of the General Permit; and (3) whether additional control practices or corrective maintenance activities are needed."[3] If a discharge is observed during these inspections, a sampling and analysis of the discharge is required.

Sampling and Analysis

"Any breach, malfunction, leakage, or spill observed which could result in the discharge of pollutants to surface waters that would not be visually detectable in storm water shall trigger the collection of a sample of discharge…The goal of the sampling and analysis is to determine whether the BMPs employed and maintained on site are effective in preventing the potential pollutants from coming in contact with storm water and causing or contributing to an exceedance of water quality objectives in the receiving waters."[4] In any case of breakage and potential for non visible pollution, sampling and analysis will be required to ensure that the beneficial uses of downstream receiving waters are protected. In addition, sampling is required for any site which directly discharges runoff into a receiving water listed in the Attachment 3 of the GCP listed as impaired for sedimentation.

# 4.0 POST CONSTRUCTION BMPs

To address water quality for projects within the Grantville Subarea A Focused Plan Amendment, BMPs will be implemented concerning site planning, activities, and structural treatment. Based on land uses proposed within the Focused Plan Amendment, this Programmatic WQTR will identify a general list of BMPs that could apply to projects within Subarea A. Individual redevelopment projects that fall under the jurisdiction of the Focused Plan Amendment will be responsible for preparing a final WQTR identifying specific BMPs which will be implemented with the project in accordance with the City of San Diego Storm Water Standards Manual (SWSM). SWSM guidelines are utilized in the selection of post construction BMPs as given in this WQTR. In addition, any features or activities included in the project that are applicable for the inclusion of CASQA BMPs are included as well. BMP design and education sheets are included in Appendix 2.

## 4.1 LOW IMPACT DEVELOPMENT BMPs

### 4.1.1 STANDARD REQUIREMENTS LID BMPs

Projects within the Grantville Subarea A Focused Plan Amendment will be designed to include LID BMPs which reduce runoff, prevent storm water pollution associated with the project, and conserve natural areas onsite. Incorporating Low Impact Development (LID) design strategies for priority development projects is required per R9-2007-0001, the Municipal Storm Water Permit issued to the County of San Diego and the incorporated cities and districts within. The LID Site Design BMPs given in Table 13 shall be incorporated into redevelopment projects within Subarea A where applicable.

Table 13: LID Site Design BMPs

[3] Website: http://www.swrcb.ca.gov/stormwtr/docs/finalconstpermit.pdf. (Fact Sheet for Water Quality Order 99-08-DWQ).
[4] Water Quality Order 99-08-DWQ, Section B.8.

| LID SITE DESIGN BMP | DESCRIPTION |
|---|---|
| Conserve natural areas, provide buffer zones, preserve existing native trees and shrubs, and concentrate or cluster development. | Projects within the redevelopment area which contain natural areas will conserve the natural areas where feasible. Properties adjacent to natural water bodies, including Alvarado Creek and the San Diego River, may provide buffer zones between the water body and the footprint of redevelopment. Existing native trees and shrubs shall be preserved where possible. Redevelopment projects shall concentrate or cluster development on the least environmentally sensitive portions of a site. |
| Minimize impervious footprint. | Projects within the redevelopment area shall, where applicable, increase building density; construct walkways, trails, patios, overflow parking lots and alleys or other low-traffic areas with permeable surfaces; construct streets, sidewalks, and parking lot aisles to the minimum widths necessary while preserving public safety access and a walkable environment; and minimize the use of impervious surfaces in the landscape design. |
| Minimize directly connected impervious areas (DCIAS). | Where landscaping is proposed for projects within the redevelopment area, the projects shall drain rooftops, pavement, and other impervious surfaces into adjacent landscaping where it is technically feasible, safe, and appropriate without causing damage to structures, slopes, pavements or other improvements prior to discharging to the storm water conveyance system. |
| Minimize soil compaction in landscaped areas. | Where landscaping is proposed for projects within the redevelopment area, the subsoils below the topsoil layer shall be scarified at least six inches. Where applicable, the topsoils material shall be incorporated into the subsoils to avoid stratified layers. |
| Topsoil improvement. | Where landscaping is proposed for projects within the redevelopment area, the City of San Diego Landscape regulations shall be adhered to in order to maintain plant and lawn health, as well as improve the soil's capacity to retain moisture, reduce runoff and improve water quality. |
| Convey runoff safely from the tops of slopes. | Where slopes are present on projects within the redevelopment area, concrete brow ditches, earthen swales, or grading design shall direct runoff away from the tops of slopes. |
| Vegetate slopes with native or drought tolerant vegetation. | Where slopes are present on projects within the redevelopment area, the slopes will be vegetated with native or drought tolerant vegetation wherever possible. |
| Stabilize permanent channel crossings. | If projects within the redevelopment area proposed new crossings of Alvarado Creek or the San Diego River, the channel crossings will be properly stabilized to prevent channel erosion. |

| LID SITE DESIGN BMP | DESCRIPTION |
|---|---|
| Install energy dissipation where needed. | Any proposed or modified storm drain outlets to open channels, including Alvarado Creek and the San Diego River, which are proposed within the redevelopment area shall provide energy dissipation designed in accordance with the County of San Diego Drainage Design Manual and city of San Diego Standard Drawings. |

### 4.1.2 PRIORITY DEVELOPMENT PROJECT LID REQUIREMENTS

Priority Development Projects are to include Low Impact Development in accordance with the requirements of the SWSM, which will include features that attempt to mimic natural hydrologic conditions for the water quality design storm. Individual redevelopment projects within Grantville Subarea A which are determined to be Priority Development Projects in the projects' final WQTRs shall be required to incorporate Low Impact Development BMPs. To maximize the post-project runoff volume managed with LID BMPs on site, LID BMPs shall be implemented using the following progression:

*For Priority Development Projects, the feasible portion of the post-project runoff volumes and peak flows from the water quality design storm shall be infiltrated on site. If it is shown to be infeasible to infiltrate the requisite volume of water, that water may be retained on-site for re-use or evapotranspiration. If it is shown to be infeasible to retain the requisite volume of water, then that water must be treated with treatment control BMPs.*

As described in the Section 2.4 above, Hydrologic Soil Groups A and D are both present within Subarea A. Soil Group A is ideal for infiltration, and redevelopment projects located in the areas of Soil Group A should incorporate infiltration into their LID BMPs where possible. For redevelopment projects in the areas of Soil Group D, infiltration may not be feasible; however, infiltration-type BMPs could be incorporated with the use of an impermeable liner and subdrain system. LID BMPs as described in Table 14 shall be incorporated where feasible into Priority Development Projects within Subarea A. Please refer to Appendix 3 for cross-sections for selected LID BMPs.

Table 14: Implementation Requirements

| IMPLEMENTATION REQUIREMENTS | DESCRIPTION |
|---|---|
| Priority Development Projects with landscaped or other pervious areas shall, as feasible, drain the portion of the water quality storm which the previous portions of the site can infiltrate from the impervious areas into property designed pervious areas prior to discharge to the storm water conveyance system. Landscape and site features shall be designed to mitigate erosion and prevent damage to structures utilities, pavements, and other site features from water routed to pervious areas.<br><br>Project proponent shall show in the Water Quality Technical Report all analysis and justifications as to the amount of water being routed from impervious areas to pervious areas while protecting structures, utilities, slopes, pavements and other site features from damage and landscapes from erosion. | Projects within the redevelopment area which include landscaping and pervious areas shall direct storm water runoff to the pervious areas where possible. Potential landscape features which can be designed to accept storm water runoff include flow-through planters, rock swales, vegetated swales, and bioretention areas. Refer to Appendix 3. |
| Priority Development Projects with landscaped or other pervious areas shall properly design and construct the pervious areas to effectively receive and infiltrate or treat runoff from impervious areas, taking into consideration the pervious areas' soil conditions, slope, and other pertinent factors. | As mentioned above, LID pervious areas will be constructed where possible. |
| Priority Development Projects with appropriate soil conditions shall construct walkways, trails, overflow parking lots, alleys, driveways, and/or other low-traffic areas with permeable surfaces, such as pervious concrete, porous asphalt, unit pavers, or granular materials, as feasible, to the extent that the portion of the water quality storm volume would be managed by such features and landscaped areas. | Redevelopment projects within Subarea A that are underlain by Group A soils shall encourage infiltration of storm water runoff by incorporating permeable surfaces into pavement areas such as walkways, trails, overflow parking lots, alleys, driveways and/or other low-traffic areas where possible. Such permeable surfaces shall be designed to protect adjacent structures and other improvements from damage due to water migration.<br><br>Redevelopment projects that are underlain by Group D soils may incorporate permeable surfaces in combination with an impermeable liner and subdrain system in order to protect subgrade soils and adjacent improvements.<br><br>Refer to Appendix 3 for typical details for permeable pavements. |

| IMPLEMENTATION REQUIREMENTS | DESCRIPTION |
|---|---|
| If, due to site conditions, safety concerns, feasibility, site economics, or other considerations, infiltration is not feasible, the site proponent may elect to manage the feasible portion of the water quality design by retaining that water on site for reuse and/or evapo-transpiration, if such retention features are in conformance with other project planning elements. Such retention and re-use/evapo-transpiration LID BMPs may include, but are not limited to: | |
| Retention and detention systems that utilize evaporation and evapotranspiration of the retained or detained water (see Section 3.1.2 of The County of San Diego Low Impact Development Handbook). | Retention systems which collect storm water for irrigation or other uses shall be encouraged within Subarea A. Where required for peak attenuation, detention systems shall be designed to encourage evaporation and evapotranspiration. Where appropriate, extended detention basins may be utilized as a Treatment Control BMP. |
| Use of biofilters and pervious surfaces (including vegetated roofs) that have an underdrain systems allowing evapotranspiration of as much water as feasible following the rainfall event. | Pervious surfaces and biofilters such as bioretention basins, rain gardens, vegetated roofs and sand filter trenches shall be incorporated where possible on redevelopment projects within Subarea A. These features shall be designed in order receive runoff from nearby surrounding areas and either provide flow-through filtration or infiltrate to an subdrain which is conveyed to the storm drain system. These features may also be designed as Treatment Control BMPs as described in Section 4.3.<br><br>Refer to Appendix 3 for typical details of a selection of pervious surfaces and biofilters. |
| Incorporating trees and other plants that add foliage material to the landscaping for rainwater interception and evapotranspiration. | Redevelopment projects within Subarea A shall provide landscaping including trees, shrubs and other plants in accordance with City of San Diego Landscape regulations and planning department review. |
| Increasing the water holding capacity of the soil used in landscape areas by minimizing compaction and using soil amendments | Where landscaping is proposed for projects within the redevelopment area, the subsoils below the topsoil layer shall be scarified at least six inches. Where applicable, the topsoils material shall be incorporated into the subsoils to avoid stratified layers. Additionally, the City of San Diego Landscape regulations shall be adhered to in order to maintain plant and lawn health, as well as improve the soil's capacity to retain moisture, reduce runoff and improve water quality. |

| IMPLEMENTATION REQUIREMENTS | DESCRIPTION |
|---|---|
| Use of cisterns and/or rain barrels to capture rain water and release it for irrigation or other uses without overflowing from sequential water quality design storm events. | Retention systems such as cisterns or rain barrels which collect storm water for irrigation or other uses may be used within Subarea A, but are not required or encouraged. It should be noted that precipitation held in a retention system is not normally adequate as a year round sole irrigation source in San Diego due to the arid climate. Use of such a system would require a dual system for irrigation which may not be a financially viable option. |
| Site features and BMPs that evapo-transpire and/or treat runoff, such as planter boxes with overflow drains, will receive credit as LID BMPs for the entire volume of water that is managed by such systems. | Where possible, redevelopment projects within Subarea A shall incorporate LID BMPs such as flow-through planters, downspout planter boxes, and biofilters. |
| Any remaining portion of the post-project water quality storm event runoff that is not managed with LID BMPs is to be managed with treatment control BMPs, as required in these standards. | Redevelopment projects within Subarea A which cannot manage all storm water runoff using LID BMPs shall provide Treatment Control BMPs as outlined in Section 4.3. |

## 4.2 SOURCE CONTROL BMPS

"Source Control BMP (both structural and non-structural)" means land use or site planning practices, or structures that aim to prevent urban runoff pollution by reducing the potential for contamination at the source of pollution. Source Control BMPs minimize the contact between pollutants and urban runoff. The following table, which is based on the City of San Diego Storm Water Standards, lists the Source Control BMPs that are applicable to the land uses proposed in the Focused Plan Amendment. Source Control BMPs which are applicable to individual projects within Subarea A will need to be identified in each projects' final WQTR and implemented during design, construction and maintenance of the projects in accordance with the SWSM.

Table 15: Source Control BMPs

| SOURCE CONTROL BMP | DESCRIPTION |
|---|---|
| DESIGN OUTDOOR MATERIAL STORAGE AREAS TO REDUCE POLLUTION INTRODUCTION | Any hazardous materials or chemicals associated with redevelopment projects within Subarea A shall be stored indoors, away from any drain which connects to the storm drain. No outdoor hazardous material storage areas will be allowed. |
| USE OF PHOSPHATE FREE FERTILIZERS | Landscape maintenance staff for individual projects within Subarea A may use only phosphate-free fertilizer for the site landscaping, where feasible. |
| BUILDING AND GROUNDS MAINTENANCE | Additional Building and Grounds Maintenance BMPs from SC-41 to be implemented to prevent or reduce the introduction of nutrients from fertilizers include not applying fertilizer directly to surface waters; disposal of grass and vegetation clippings as garbage or by composting; do not dispose of collected vegetation into the storm drainage system; follow all federal, state, and local laws governing the use, storage, and disposal of fertilizers; do not use fertilizers if rain is expected; use the minimum amount needed for the job; calibrate fertilizer distributors to avoid excessive application; work fertilizer into the soil rather than dumping; and clean pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water. |
| DESIGN TRASH STORAGE AREAS TO REDUCE POLLUTION INTRODUCTION | Trash enclosures for redevelopment projects within Subarea A will be on an impervious surface, walled, and feature lids to all dumpsters/trash cans. In addition, any runoff will travel through the LID and (or) Treatment Control BMPs. |
| EMPLOY INTEGRATED PEST MANAGEMENT PRINCIPLES | The need for pesticide use in the design of projects within the Subarea A will be eliminated and/or reduced by:<br>a. Planting pest-resistant or well-adapted plant varietals such as native plants<br>b. Discouraging pests by designing the site and landscape to employ pollution prevention as a first-line of defense.<br>c. Distributing Integrated Pest Management (IPM) educational materials to maintenance staff. At a minimum, educational materials will address the following topics:<br>i. Keeping pests out of buildings and landscaping using barriers, screens and caulking<br>ii. Physical pest elimination techniques, such as weeding, squashing, trapping, washing or pruning out pests<br>iii. Relying on natural enemies to eat pests<br>iv. Proper use of pesticides as a last line of defense. |
| USE EFFICIENT IRRIGATION SYSTEMS AND LANDSCAPE DESIGN | Rain shutoff devices will be required to prevent irrigation during and after precipitation events. In addition, flow reducers or shutoff valves will be required to control water loss. The irrigation systems of individual projects within Subarea A will be designed taking into account water needs of each individual area as well as water conservation strategies. |

| SOURCE CONTROL BMP | DESCRIPTION |
|---|---|
| DESIGN NEW BUILDING FIRE SPRINKLERS SYSTEMS TO ENABLE DISCHARGE TO SANITARY SEWER | New buildings within Subarea A which provide fire sprinkler systems shall design those systems such that they are able to drain to sanitary sewer for operational maintenance and testing. |
| PROVIDE STORM WATER CONVEYANCE SYSTEM STENCLING AND SIGNAGE | Curb stenciling for storm drain inlets associated with redevelopment within Subarea A shall say "No Dumping-I Live Downstream" or equivalent massage as desired by the City of San Diego. |
| BMPs FOR INDIVIDUAL PRIORITY PROJECT CATAGORIES | |
| ROADS | Road construction/reconstruction within Subarea A shall utilize BMPs detailed in Appendix VI of the City of San Diego Street Design Standards to the extent feasible. These BMPs include, but are not limited to, urban curb/swale system, rural swale system, dual drainage system, and concave medians. |
| DOCK AREAS | Loading/Unloading areas for individual projects within Subarea A shall include covering the loading dock areas or otherwise designing drainage to preclude urban run-on and runoff, and an acceptable method of containment and pollutant removal, such as a shut-off valve and containment area. Direct connections to storm drains from depressed loading docks will not be allowed. |
| MAINTENANCE BAYS | Repair/maintenance bays for redevelopment projects within Subarea A shall either be located indoors or designed to preclude urban run-on and runoff. Additionally, repair/maintenance bays shall include a drainage system to capture all wash water, leaks and spills. This drainage system shall connect to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm water conveyance system is prohibited. |
| VEHICLE & EQUIPMENT WASH AREAS | Areas for washing/steam cleaning of vehicles and outdoor equipment/accessories associated with redevelopment projects in Subarea A shall be self-contained to preclude run-on and runoff, covered with a roof or overhang, equipped with a clarifier or other pretreatment facility, and properly connected to a sanitary sewer. |
| OUTDOOR PROCESSING AREAS | Outdoor processing areas associated with redevelopment projects in Subarea A shall cover or enclose areas that would be the most significant source of pollutants; slope the area toward a dead-end sump; or discharge to the sanitary sewer. Additionally, the processing areas shall be graded to prevent run-on from surrounding areas, and the installation of storm drains in areas of equipment repair is prohibited. |
| SURFACE PARKING AREAS | Parking areas for projects within Subarea A will incorporate LID BMPs such as flow through landscaping, biofilters, and pervious paving in overflow parking. |

| SOURCE CONTROL BMP | DESCRIPTION |
|---|---|
| NON–RETAIL FUELING AREAS | Fueling areas within redevelopment projects in Subarea A shall provide a fuel dispensing area that is concrete paved, sloped to prevent ponding, graded to prevent run-on and urban runoff, and designed to drain to a treatment control BMP prior to discharging to a storm water conveyance system. Additionally, an overhanging roof structure or canopy shall be provided that is equal to or greater than the area within the fuel dispensing area's grade break, and designed not to drain onto or across the fuel dispensing area. |
| STEEP HILLSIDE LANDSCAPING | Steep hillside areas disturbed by individual redevelopment projects within Subarea A will be landscaped with deep-rooted, drought tolerant and/or native plant species selected for erosion control, in accordance with the Landscape Technical Manual. |

In addition to the Source Control BMPs listed in Table 15, individual projects within Grantville Subarea A may implement applicable Source Control BMPs listed in the *California Stormwater Quality Association Stormwater Best Management Practice Handbook*, both the *New Development and Redevelopment* and *Municipal* editions, which are available at http://www.cabmphandbooks.com. Following is a description of the major categories of these Source Control BMPs and a listing of individual BMPs which may be applicable to projects within Subarea A, per the requirements of the SWSM.

**Design**
These Source Control BMPs seek to reduce storm water pollution by designing the site layout and infrastructure to prevent introduction of contaminants to the storm water system.

Design
SD-10 Site Design and Landscape Planning
SD-11 Roof Runoff Controls
SD-12 Efficient Irrigation
SD-13 Storm Drain Systems Signs

**Materials**
The materials Source Control BMPs introduce construction materials that can remove contaminants before they enter the storm drain system, or reduce the number of contaminants present in materials onsite.

Materials
SD-20 Pervious Pavements
SD-21 Alternative Building Materials

**Areas**
These Source Control BMPs focus on controlling and preventing pollution from site areas that are common sources of contaminants. Proper design and maintenance of these areas can have a significant beneficial impact on storm water quality.

Areas
SD-30 Fueling Areas
SD-31 Maintenance Bays and Docks
SD-32 Trash Enclosures
SD-33 Vehicle Washing Areas
SD-34 Outdoor Material Storage Areas
SD-35 Outdoor Work Areas

SD-36 Outdoor Processing Areas

**Non-Stormwater Management**
Not all pollutants in the storm water system are generated by runoff from storm events. The Non-Stormwater Management Source Control BMPs address the improper dumping or spilling of liquids into the storm water system.

Non-Stormwater Management
SC-10 Non-Stormwater Discharges
SC-11 Spill Prevention, Control and Cleanup

**Vehicle and Equipment Management**
Existing land uses within Grantville Subarea A include car dealerships, gas stations, and car repair shops, which can be a significant source of storm water pollution if not properly managed. Redevelopment projects that incorporate these uses will be required to incorporate the following Source Control BMPs.

Vehicle and Equipment Management
SC-20 Vehicle and Equipment Fueling
SC-21 Vehicle and Equipment Cleaning
SC-22 Vehicle and Equipment Repair

**Material and Waste Management**
Industrial and commercial projects within Grantville Subarea A will be subject to the applicable Source Control BMPs from the following list, which cover outdoor material handling, storage and maintenance.

Material and Waste Management
SC-30 Outdoor Loading/Unloading
SC-31 Outdoor Container Storage
SC-32 Outdoor Equipment Maintenance
SC-33 Outdoor Storage of Raw Materials
SC-34 Waste Handling and Disposal

**Building and Grounds Management**
These Source Control BMPs address pollution prevention through proper care and maintenance of buildings, landscaping, and parking lots.

Building and Grounds Management
SC-41 Building and Grounds Maintenance
SC-43 Parking/Storage Area Maintenance

**General Stormwater Management**
The General Stormwater Management Source Control BMPs seek to educate property owners and maintenance staff about selection and handling of materials which have the potential to contaminate storm water runoff.

General Stormwater Management
SC-60 Housekeeping Practices
SC-61 Safer Alternative Products

**Municipal Field Program BMPs**
The following Source Control BMPs apply to the maintenance and care of public infrastructure. These will apply to new and existing public streets within Grantville Subarea A, but also can apply to private streets, storm drains, waterlines, sewer lines, and other features on private projects within the Subarea.

Municipal Field Program BMPs
SC-70 Road and Street Maintenance

SC-71 Plaza and Sidewalk Cleaning
SC-72 Fountains & Pools Maintenance
SC-73 Landscape Maintenance
SC-74 Drainage System Maintenance
SC-75 Waste Handing and Disposal
SC-76 Water and Sewer Utility Maintenance

## 4.3 TREATMENT CONTROL BMPS

Structural treatment facilities are designed to remove pollutants contained in storm water runoff. Runoff within Grantville Subarea A will flow from impervious and semi-pervious surfaces, picking up pollutants and other associated debris as it does so. Individual projects within the redevelopment area will provide treatment of these anticipated pollutants by implementing BMPs from the list below as required by the SWSM. Tables 16 and 17 are based on the treatment matrix located in the San Diego Storm Water Standards Manual. The shaded rows identify the primary pollutants of concern possible from the proposed land uses within the Focused Plan Amendment. After the specific primary pollutants of concern from the project have been determined, redevelopment projects within Subarea A will need to select and implement a Treatment Control BMP, or a combination of Treatment Control BMPs used in series, that will provide a removal efficiency of high or medium for the primary pollutants of concern. The primary pollutants of concern and Treatment Control BMPs for individual projects within Subarea A will need to be identified in each project's final WQTR.

Table 16: Grouping of Potential Pollutants by Fate

| POLLUTANT | COARSE SEDIMENT AND TRASH | POLLUTANTS THAT TEND TO ASSOCIATE WITH FINE PARTICLES DURING TREATMENT | POLLUTANTS THAT TEND TO BE DISSOLVED FOLLOWING TREATMENT |
|---|---|---|---|
| SEDIMENT | X | X | |
| NUTRIENTS | | X | X |
| HEAVY METALS | | X | |
| ORGANIC COMPUNDS | | X | |
| TRASH & DEBRIS | X | | |
| OXYGEN DEMANDING | | X | |
| BACTERIA | | X | |
| OIL & GREASE | | X | |
| PESTICIDES | | X | |

Table 17: Grouping of Pollutans and Relative Effectiveness of Treatment Facilities

| | BIORETENTION FACILITIES (LID) | SETTLING BASINS (DRY PONDS) | WET PONDS AND CONSTRUCTED WETLANDS | INFILTRATION FACILITIES OR PRACTICES (LID) | MEDIA FILTERS | HIGHER RATE BIOFILTERS* | HIGHER RATE MEDIA FILTERS* | TRASH RACKS & HYDRO–DYNAMIC DEVICES | VEGETATED SWALES |
|---|---|---|---|---|---|---|---|---|---|
| COARSE SEDIMENT AND TRASH | H | H | H | H | H | H | H | H | H |
| POLLUTANTS THAT TEND TO ASSOCIATE WITH FINE PARTICLES DURING TREATMENT | H | H | H | H | H | M | M | L | M |
| POLLUTANTS THAT TEND TO BE DISSOLVED FOLLOWING TREATMENT | M | L | M | H | L | L | L | L | L |

L: Low Removal Efficiency
M: Medium Removal Efficiency
H: High Removal Efficiency
U: Unknown Removal Efficiency

(1) Efficiency Rating based on Model Standard Urban Storm Water Mitigation Plan for San Diego County, Port of San Diego, and Cities in San Diego County.

Certain factors such as site layout, soil feasibility, and treatment capability are to be taken in to account when selecting Treatment Control BMPs for individual projects within the development area. The goal in selecting Treatment Control BMPs is to find the best solution in order to promote water quality treatment, realize project objectives, remain cost efficient, and utilize low impact design (LID) practices. Table 18 provides guidance for the selection of Treatment Control BMPs for redevelopment projects within Grantville Subarea A, which are to be implemented per the requirements of the SWSM.

Table 18: Treatment Control BMPs

| TREATMENT CONTROL BMP: | CALIFORNIA STORMWATER BMP HANDBOOK SECTION: | DESCRIPTION |
|---|---|---|
| INFILTRATION TRENCH | TC-10 | Infiltration Trenches may be used for redevelopment projects within Subarea A to provide medium or high removal rates for all primary pollutants of concern. However, Infiltration Trenches should only be used for projects to be built on Group A soils and proper care should be taken to prevent infiltrated water from damaging structures or other improvements. Additionally, Infiltration Trenches should only be used where there is sufficient depth to groundwater to prevent contamination of the groundwater by infiltrated water.<br><br>Infiltration Trenches shall be designed as volume-based BMPs. Refer to Appendix 3 for typical details of Infiltration Trenches. |
| INFILTRATION BASIN | TC-11 | Infiltration Basins may be used for redevelopment projects within Subarea A to provide medium or high removal rates for all primary pollutants of concern. However, Infiltration Basins should only be used for projects to be built on Group A soils and proper care should be taken to prevent infiltrated water from damaging structures or other improvements. Additionally, Infiltration Basins should only be used where there is sufficient depth to groundwater to prevent contamination of the groundwater by infiltrated water.<br><br>Infiltration Basins shall be designed as volume-based BMPs. Refer to Appendix 3 for typical details of Infiltration Basins. |

| TREATMENT CONTROL BMP: | CALIFORNIA STORMWATER BMP HANDBOOK SECTION: | DESCRIPTION |
|---|---|---|
| RETENTION/IRRIGATION | TC-12 | Retention/Irrigation BMPs may be used for redevelopment projects within Subarea A to provide medium or high removal rates for all primary pollutants of concern with the exception of oxygen demanding substances, for which the removal rate is unknown. To prevent coarse sediments and debris from clogging the system, some for of pretreatment should be used. It should also be noted that precipitation held in a retention system is not normally adequate as a year round sole irrigation source in San Diego due to the arid climate. Use of such a system would require a dual system for irrigation which may not be a financially viable option.<br><br>Retention/Irrigation BMPs shall be designed as volume-based BMPs. |
| WET PONDS | TC-20 | Wet Ponds may be used for redevelopment projects within Subarea A to provide medium or high removal rates for all primary pollutants of concern. Potential Wet Pond designs must take into account aesthetics, safety, vector control, and soils considerations, as well as maintaining the water level during the dry season.<br><br>Wet Ponds shall be designed as volume-based BMPs. Refer to TC-20 for typical details and design guidelines for Wet Ponds. |
| CONSTRUCTED WETLANDS | TC-21 | Constructed Wetlands may be used for redevelopment projects within Subarea A to provide medium or high removal rates for all primary pollutants of concern. Potential Constructed Wetlands designs must take into account aesthetics, safety, vector control, and soils considerations.<br><br>Constructed Wetlands shall be designed as volume-based BMPs. Refer to TC-21 for typical details and design guidelines for Constructed Wetlands. |

| TREATMENT CONTROL BMP: | CALIFORNIA STORMWATER BMP HANDBOOK SECTION: | DESCRIPTION |
|---|---|---|
| EXTENDED DETENTION BASIN | TC-22 | Extended Detention Basins may be used for redevelopment projects within Subarea A to provide medium or high removal rates for sediment, trash, bacteria, organics and oxygen demanding substances. However, they provide a low removal rate for nutrients, and therefore should not be used as a sole Treatment Control BMP for projects which anticipate nutrients as a potential pollutant. Extended Detention Basins may also be designed for peak attenuation and hydromodification mitigation if needed.<br><br>Extended Detention Basins shall be designed as volume-based BMPs. Refer to Appendix 3 for typical details of Extended Detention Basins. |
| VEGETATED SWALE | TC-30 | Vegetated Swales may be used for redevelopment projects within Subarea A to provide medium or high removal rates for sediment and organics. However, they provide low or unknown removal rates for nutrients, trash, bacteria, and oxygen demanding substances, and therefore should not be used as a sole Treatment Control BMP for projects which anticipate these as potential pollutants.<br><br>Vegetated Swales shall be designed as flow-based BMPs. Refer to Appendix 3 for typical details of Vegetated Swales. |
| VEGETATED BUFFER STRIP | TC-31 | Vegetated Buffer strips may be used for redevelopment projects within Subarea A to provide medium or high removal rates for sediment, trash and organics. However, they provide low or unknown removal rates for nutrients, bacteria, and oxygen demanding substances, and therefore should not be used as a sole Treatment Control BMP for projects which anticipate these as potential pollutants.<br><br>Vegetated Buffer Strips shall be designed as flow-based BMPs. Refer to Appendix 3 for typical details of Vegetated Buffer Strips. |

| TREATMENT CONTROL BMP: | CALIFORNIA STORMWATER BMP HANDBOOK SECTION: | DESCRIPTION |
|---|---|---|
| BIOFILTRATION | TC-32 | Biofiltration BMPs, such as rain gardens, bioretention basins, downspout planters, and flow-through planters may be used for redevelopment projects within Subarea A to provide medium or high removal rates of sediment, nutrients, trash, bacteria, and organics. However, they provide a low removal rate of oxygen demanding substances, and therefore should not be used as a sole Treatment Control BMP for projects which anticipate oxygen demanding substances as a potential pollutant. Biofiltration BMPs with impermeable linings are suitable for use in areas with Group D soils, while in areas of Group A soils they can be constructed with a permeable liner to encourage infiltration of some filtered water while most is collected by the subdrain system. Biofilters are also commercially available as proprietary planter box-type systems.<br><br>Biofilters shall be designed as volume-based BMPs. Refer to Appendix 3 for typical details of a selection of types of Biofiltration BMPs. |
| MEDIA FILTER | TC-40, MP-40 | Media Filters, such as sand filter trenches and basins, may be used for redevelopment projects within Subarea A to provide medium or high removal rates of sediment, trash, bacteria, organics, and oxygen demanding substances. However, they provide a low removal rate of nutrients, and therefore should not be used as the sole Treatment Control BMP for projects which anticipate nutrients as a potential pollutant. Media Filters with impermeable linings are suitable for use in areas with Group D soils, while in areas of Group A soils they can be constructed with a permeable liner to encourage infiltration of some filtered water while most is collected by the subdrain system. Media Filters are also commercially available as proprietary cartridge-based vault systems.<br><br>Media Filters shall be designed as volume-based BMPs. Refer to Appendix 3 for typical details of a sand filter trench. |

| TREATMENT CONTROL BMP: | CALIFORNIA STORMWATER BMP HANDBOOK SECTION: | DESCRIPTION |
|---|---|---|
| WATER QUALITY INLET | TC-50, MP-50 | Due to the low removal efficiency of Water Quality Inlets for the majority of the primary pollutants of concern, they should not be used as a stand-alone Treatment Control BMP if higher-quality treatment alternatives are feasible. Water Quality Inlets may provide effective treatment for runoff from specific areas on projects within Subarea A, such as equipment wash down areas, outdoor processing areas, and vehicle storage areas.<br><br>Water Quality Inlets shall be designed as flow-based BMPs. |
| VORTEX SEPARATOR/WET VAULT | MP-51 | Due to the low removal efficiency of Vortex Separators/Wet Vaults for the majority of the primary pollutants of concern, they should not be used as a stand-alone Treatment Control BMP if higher-quality treatment alternatives are feasible. However, they can be useful as part of a treatment-train approach to storm water management, providing pretreatment for filtration/infiltration BMPs located downstream, or as a catch-all at the end of a treatment train.<br><br>Vortex Separators/Wet Vaults shall be designed as flow-based BMPs. |
| DRAIN INSERTS | MP-52 | Due to the low removal efficiency of Drain Inserts for the majority of the primary pollutants of concern, they should not be used as a stand-alone Treatment Control BMP if higher-quality treatment alternatives are feasible. However, they can be useful as part of a treatment-train approach to storm water management and can provide pretreatment for filtration/infiltration BMPs located downstream.<br><br>Drain Inserts shall be designed as flow-based BMPs. |

Table 19 presents treatment control BMPs which could be implemented to provide a medium to high removal rate of the Primary Pollutants of Concern for the proposed land uses within Subarea A. Individual redevelopment projects within the Subarea shall select one or more Treatment Control BMPs to treat the Primary Pollutants of Concern for that particular project, if required by the SWSM.

Table 19: Medium to High Efficiency BMPs Appropriate for a Given Pollutant

| PRIMARY POLLUTANTS OF CONCERN | SOURCE | POSSIBLE TREATMENT |
|---|---|---|
| SEDIMENT | *EROSION, VEHICLE TIRES, WIND BLOWN* | Infiltration Basin, Bioretention Basin, Cistern Plus Bioretention, Vault plus Bioretention, Self-retaining Area, Dry Wells, Constructed Wetlands, Vegetated Buffer Strips, Flow-Through Planter Boxes, Medial Filter, Extended Detention Basin, Vegetated Swale, Vortex Separator or Wet Vault |
| NUTRIENTS | *FERTILIZER, ANIMAL WASTE, DETERGENTS, AUTOMOBILE EMISSIONS, ORGANIC MATTER* | Infiltration Basin, Self-retaining Area, Dry Wells, Bioretention Basin, Cistern Plus Bioretention, Vault plus Bioretention, Constructed Wetlands, Flow-Through Planter Boxes |
| ORGANIC COMPOUNDS | *PESTICIDES, SOLVENTS, HYDROCARBONS* | Infiltration Basin, Bioretention Basin, Cistern Plus Bioretention, Vault plus Bioretention, Self-retaining Area, Dry Wells, Constructed Wetlands, Flow Through Planter Boxes, Media Filter |
| TRASH & DEBRIS | *LITTER, TRASH DISPOSAL AREAS* | Infiltration Basin, Bioretention Basin, Cistern Plus Bioretention, Vault plus Bioretention, Self-retaining Area, Dry Wells, Constructed Wetlands, Extended Detention Basin, Flow Through Planter Boxes, Media Filter, Vegetated Buffer Strips, Vortex Separator or Wet Vault |
| OXYGEN DEMANDING SUBSTANCES | *PLANT DEBRIS, FOOD WASTE, CHEMICAL WASTE* | Infiltration Basin, Bioretention Basin, Cistern Plus Bioretention, Vault plus Bioretention, Self-retaining Area, Dry Wells, Constructed Wetlands, Flow Through Planter Boxes, Extended Detention Basin, Media Filter |
| BACTERIA & VIRUSES | *FOOD & ANIMAL WASTE PRODUCTS, FERTILIZER* | Infiltration Basin, Bioretention Basin, Cistern Plus Bioretention, Vault plus Bioretention, Self-retaining Area, Dry Wells, Constructed Wetlands, Flow Through Planter Boxes, Extended Detention Basin, Media Filter |

### 4.3.1 TREATMENT CONTROL BMP SIZING

This section will provide guidance for determining sizing for flow-based and volume-based Treatment Control BMPs. The following sizing criteria are intended to provide rule-of-thumb sizing guidance for planning purposes based on current BMP sizing guidance provided in the City of San Diego Storm Water Standards Manual. Individual projects within the redevelopment area will be responsible for designing Treatment Control BMPs based on the applicable sizing standards at the time of final design. Final hydromodification criteria are anticipated to be in effect at the time of final design for redevelopment projects within Subarea A. The lower threshold requiring hydromodification analysis is expected to be set at one acre. Projects within Subarea A which exceed this threshold will need to account for hydromodification in the sizing of the Treatment Control BMPs if the Treatment Control BMPs are part of the hydromodification mitigation strategy for the project.

**Volume-Based BMP Sizing**

The treatment capacities for volume-based BMPs are calculated based on the runoff volume produced from the 85th percentile storm event. The precipitation from the 85th percentile storm event ($P_{85}$) is approximately 0.62 inches for Grantville Subarea A based on the San Diego County Hydrology Manual isopluvial maps. The method used in calculating the C Factor as well as the Treatment Volume is Method 2 for Volume-based BMPs as mentioned in the San Diego Stormwater Standards Manual. This method is outlined and recommended in the WEF Manual of Practice No. 23 ASCE Manual and Report on Engineering Practice No. 87: Urban Runoff Quality Management.

The C Factor for Volume Based BMPs is calculated as:
$C = 0.858i^3 – 0.78i^2 + 0.774i + 0.04$
Where i = watershed imperviousness ratio

The runoff from the 85th percentile storm event is calculated as:
$P_0 = (a * C) * P_{85}$ (in)
Where a = 1.545 (event capture ratio for 48 hour drawdown time)

The volume which the Treatment Control BMP must be sized to accommodate is then:
Volume = $P_0 * A$
Where A = area which is tributary to the BMP

Based on the proposed land uses within the Subarea A Focused Plan Amendment, the Table 20 provides approximate rule-of-thumb sizing on a volume-per-tributary-area basis. Also provided is an approximate BMP surface area required for BMPs of two typical depths, 1 ft and 3 ft. This sizing guideline is provided for planning purposes only and does not account for possible hydromodification/peak attenuation functions. Final treatment control BMP sizing must calculated and presented in the final WQTR for individual redevelopment projects within Subarea A.

Table 19: Volume BMP Sizing/Required Areas Per Tributary Acre

| PROPOSED LAND USE | IMPERVIOUS RATIO | C | $P_0$ (IN) | VOLUME PER ACRE ($FT^3$/AC) | AREA FOR 1 FT DEPTH (SF) PER ACRE | AREA FOR 3 FT DEPTH (SF) PER ACRE |
|---|---|---|---|---|---|---|
| SINGLE FAMILY RESIDENTIAL | 0.30 | 0.23 | 0.22 | 783 | 783 | 261 |
| MULTIFAMILY RESIDENTAIL | 0.50 | 0.34 | 0.34 | 1,180 | 1,180 | 393 |
| RESIDENTIAL MIXED USE | 0.80 | 0.60 | 0.60 | 2,084 | 2,084 | 695 |
| COMMERCIAL | 0.85 | 0.66 | 0.66 | 2,299 | 2,299 | 766 |
| HOSPITAL/ OFFICE | 0.90 | 0.73 | 0.70 | 2,539 | 2,539 | 846 |
| INDUSTRIAL | 0.95 | 0.81 | 0.77 | 2,806 | 2,806 | 935 |

**Flow-Based BMP Sizing**
The treatment capacities for flow-based BMPs are calculated based on the maximum flow produced from the intensity of the 85th percentile storm event, or 0.2 inches of rainfall per hour. The method used in calculating the C Factor for flow-based BMPs is per the city of San Diego Drainage Design Manual.

The water quality flow rate for flow-based Treatment Control BMPs is calculated as:
$Q_{WQ} = C * I * A$
Where C = runoff coefficient
I = 85th percentile intensity = 0.2 in/hr
A = area which is tributary to the BMP

The following table provides approximate water quality flow rates for the land uses proposed by the Grantville Subarea A Focused Plan Amendment on a flow-rate-per-tributary-acre basis. This sizing guideline is provided for planning purposes only and does not account for possible hydromodification/peak attenuation functions. Final treatment control BMP sizing must calculated and presented in the final WQTR for individual redevelopment projects within Subarea A.

Table 21: Water Quality Flowrate Per Tributary Acre

| Land Use | C | Qwq (cfs/ac) |
|---|---|---|
| Open Space | 0.50 | 0.10 |
| Single Family Residential | 0.55 | 0.11 |
| Multifamily Residential | 0.70 | 0.14 |
| Residential Mixed Use | 0.70 | 0.14 |
| Commercial Mixed Use | 0.85 | 0.17 |
| Commercial | 0.85 | 0.17 |
| Hospital/Office | 0.85 | 0.17 |
| Industrial | 0.95 | 0.19 |

# 5.0 ENVIRONMENTAL IMPACTS

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would impact any of the items listed in the table below.

Under existing conditions, Grantville Subarea A is developed with open space, multifamily residential, commercial, hospital, office, and industrial land uses. Under the proposed condition, the project will be redeveloped to include open space, single family residential, multifamily residential, residential mixed use, commercial, hospital, office, and industrial land uses. The following discussions are based on the proposed land use changes within the proposed redevelopment area. The impact assessments are based on the significance criteria listed below for hydrology/water quality.

## 5.1 THRESHOLDS OF SIGNIFICANCE

Table 22: Thresholds of Significance

| **THRESHOLDS OF SIGNIFICANCE – VIII. HYDROLOGY AND WATER QUALITY** | |
|---|---|
| **Would the Project:** | |
| A | Violate any water quality standards or waste discharge requirements? |
| B | Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table? |
| C | Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or in a manner which would result in a substantial erosion or siltation on- or off-site? |
| D | Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site? |
| E | Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff? |
| F | Otherwise substantially degrade water quality? |
| G | Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? |
| H | Place within a 100- year flood area structures which would impede or redirect flood flows? |
| I | Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? |
| J | Be subject to inundation by seiche, tsunami, or mudflow? |

**Table 13** CEQA Thresholds of Significance for Hydrology and Water Quality

***Impact A*** ***Would the Project violate any water quality standards or waste discharge requirements?***

**Impact Analysis:** As a result of the recommended site design, source control, and treatment control BMPs, water quality exceedances are not anticipated as a result of the proposed redevelopment, and pollutants are not expected within runoff from Grantville Subarea A that would adversely affect beneficial uses in downstream receiving waters. Projects within the Subarea will be required to institute controls designed to limit discharges to the appropriate standard. The projects will comply with the requirements of the State Regional Water Quality Control Board concerning coverage under the General Construction Permit. Individual assessments of various pollutant constituents are provided below.

From the following analysis of the primary pollutants of concern it is concluded that a violation of water quality standards is potentially significant, but mitigated through implementation of the BMPs described in this programmatic WQTR. Applicants for individual projects will be required to prepare a project specific WQTR and process for approval with the City of San Diego. Individual projects greater than 1 acre will also be required to prepare a Storm Water Pollution Prevention Plan and file a Notice of Intent to gain coverage under the State of California's GCP.

***Sediment***

Post-Construction Phase

Redevelopment projects within Grantville Subarea A shall implement Site Design, Source Control and Treatment Control BMPs which will effectively remove sediment from runoff prior to discharge to the storm drain system. Possible Treatment Control BMPs for projects for which sediment is an anticipated pollutant which have a high or medium removal rate of sediment include infiltration trench, infiltration basin, retention/irrigation, wet pond, constructed wetland, extended detention basin, vegetated swale, vegetated buffer strip, Biofiltration, media filter, and vortex separator/wet vault.

Construction Phase

As a result of grading and other activities, construction sites can contribute large amounts of sediment to downstream channels unless properly managed. These construction activities associated with projects within Grantville Subarea A could impact water quality due to sheet erosion of exposed soils and subsequent deposition of particles and pollutants in drainage ways or introduction of construction-related pollutants. Grading activities and sediment stockpiles, in particular, can lead to exposed areas of loose soil that are susceptible to uncontrolled sheet flow. The use of materials such as fuels, solvents, and paints during the development of the sector areas also present a risk to surface water quality due to an increased potential for pollutants entering the storm drain system.

Under the Statewide General Construction NPDES Permit (Order No. 2009-0009-DWQ amended by 2010-0014-DWQ & 2012-006-DWQ), the proponents of projects within Subarea A will submit a Notice of Intent (NOI) to the State Water Resources Control Board (SWRCB) prior to commencement of construction activities. In addition, a SWPPP will be prepared and implemented at the project sites, and revised as necessary as administrative or physical conditions change. The SWPPP will describe Best Management Practices (BMPs) meeting the Best Available Technology Economically Achievable and Best Conventional Pollutant Control Technology (BAT/BCT) standards required by the Construction Permit and that address pollutant source reduction and will ensure that water quality standards are not exceeded in the receiving waters. These include, but are not limited to erosion controls, sediment controls, tracking controls, non-storm water management, materials & waste management, and good housekeeping practices. The SWPPP shall be developed in accordance with the construction plans. The SWPPP shall provide BMPs that are to be maintained for the duration of the construction as well as measures that are specific to each phase of construction.

As a result of the selected BMPs and source control measures, it is expected that sediments in runoff will not be increased, that water quality standards will not be exceeded and that beneficial uses will not be adversely affected. In order to reduce the amount of sediment discharged off-site due to construction activities, to a level less than significant projects, within Subarea A will implement an effective combination of erosion and sediment control BMPs in conformance with the General Construction Permit (GCP).

***Nutrients***

Nutrients from sources such as fertilizer, animal waste, detergents, automobile emissions and organic mater are to be minimized through appropriate source control measures such as the use of phosphate free fertilizers. Limiting sediment discharge during the construction phase of projects within Subarea A through proper SWPPP protocols will limit the amount of nutrients reaching offsite waters. Also, any nutrients picked up by surface runoff on projects where nutrients are an anticipated pollutant will be conveyed to the LID and Treatment Control BMPs which will be implemented for all projects within Grantville Subarea A. Treatment Control BMPs which provide a high or medium removal rate for nutrients include infiltration trench, infiltration basin, retention/irrigation, wet pond, and constructed wetland. Providing adequate BMPs on projects within Subarea A will result in significant pollutant removal, creating a condition where nutrients will not be contained in runoff from redevelopment projects at levels that could adversely affect water quality or beneficial uses in downstream waters.

***Organic Compounds***

Organic compounds are carbon-based, and are typically found in pesticides, solvents, and hydrocarbons. Organic compounds can also sorb to sediments, creating a situation where pollutants are mobilized through sediment transport. Projects within Grantville Subarea A will feature Source Control BMPs which are

designed to limit the availability of pollutant discharge to downstream waters, as well as Treatment Control BMPs to remove organic compounds from runoff on projects where organic compounds are an anticipated pollutant. Integrated Pest Management methods will be used to limit pesticide application, resulting in a minimal amount of pollutants reaching the downstream waters. Maintenance staff will be trained in ways to minimally use pesticides, as well as policies concerning storage and spill clean up. Additional Source Control BMPs will include properly designed and maintained vehicle equipment wash areas, maintenance bays, outdoor processing areas, and fueling areas. Treatment Control BMPs which provide a high or medium removal rate of organic compounds include infiltration trench, infiltration basin, retention/irrigation, wet pond, constructed wetland, extended detention basin, vegetated swale, vegetated buffer strip, Biofiltration, and media filter.

***Trash and Debris***

Development can generate moderate/large amounts of trash and debris if not properly managed. Trash and debris can contribute to the degradation of receiving waters by disruption of physical habitats, attracting pests and increasing the mobilization of nutrients, pathogens, metals and other pollutants that may be attached to the surface. Redevelopment projects within Subarea A have the potential to generate trash and debris which could be carried in runoff. Maintenance staff employed onsite will be responsible for monitoring any patterns of waste/litter onsite and take corrective action, as well as properly maintaining and cleaning trash disposal areas. Additionally, any trash or debris carried by storm flows on projects within Subarea A for which trash and debris are an anticipated pollutant will be captured by LID and Treatment Control BMPs. Treatment Control BMPs which provide a high or medium removal rate of trash and debris include infiltration trench, infiltration basin, retention/irrigation, wet pond, constructed wetland, extended detention basin, vegetated buffer strip, Biofiltration, media filter, water quality inlet, vortex separator/wet vault, and drain inserts.

***Oxygen Demanding Substances***

Oxygen demanding substances onsite include biodegradable organic material which may come from plant debris, food waste, or chemical waste. If allowed to reach receiving waters, this material creates a situation where dissolved oxygen levels may plummet, resulting in poor water quality. Source controls including proper clean up of the park area, and placement of waste receptacles will reduce the amount of these substances contained on the onsite runoff. In addition to source controls, storm water runoff from redevelopment projects within Subarea A for which oxygen demanding substances are an anticipated pollutant will be treated through LID site design as well as Treatment Control BMPs designed to remove pollutants prior to discharge to the offsite storm drain. Treatment Control BMPs which provide a high or medium removal rate for oxygen demanding substances include infiltration trench, infiltration basin, retention/irrigation, wet pond, constructed wetland, extended detention basin, Biofiltration, and media filter.

***Bacteria & Viruses***

Redevelopment projects within Grantville Subarea A have the potential to introduce bacteria and viruses to storm water runoff. Sources of bacteria and viruses include food waste, animal waste, and fertilizer. Source Controls such as proper grounds maintenance and design of trash storage areas will help prevent the introduction of bacteria and viruses to storm water runoff. Additionally, LID and Treatment Control BMPs will be implemented by projects within Subarea A for which bacteria and viruses are anticipated pollutants to remove bacteria and viruses which are introduced to storm water runoff. Treatment Control BMPs which provide a high or medium removal rate for bacteria and viruses include infiltration trench, infiltration basin, retention/irrigation, wet pond, constructed wetland, extended detention basin, Biofiltration, and media filter.

***Dry Weather Flow***

Although the previous discussions have focused on wet weather flows, dry weather flows are also important. Dry weather flows due to anthropogenic sources have the potential to impact local receiving water bodies. Dry weather flows are typically low in course sediment due to the low flow rates but pollutants associated with suspended solids (such as phosphorous, trace metals, pesticides) are typically found in low concentrations in dry weather flows. Dry weather flows can also transport constituents such as bacteria and some pesticides.

Redevelopment projects within Grantville Subarea A are not expected to generate significant dry weather flows due to Source Control BMPs such as use of efficient irrigation systems and landscape design, as well as properly designed and maintained vehicle equipment wash areas, maintenance bays, outdoor processing areas, and fueling areas. When dry weather flows do occur, they will be conveyed toward the LID and Treatment BMPs as described above for water quality treatment.

***Impact B*** ***Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).***

**Impact Analysis:** Groundwater recharge in the area will potentially improve as a result of the proposed redevelopment. This is due to the reduction in impervious surface due to the proposed changes in land use and the incorporation of Low Impact Development features, and is reflected in the lower weighted runoff coefficients calculated for the proposed conditions hydrology analysis. Further information on the proposed Low Impact Development features of the redevelopment can be found in Section 4.1 of this report.

In the post construction condition, no pumping of groundwater is anticipated. During the construction phase, a small amount of construction dewatering may be required in portions of the Subarea adjacent to the San Diego River and Alvarado Creek. However, this dewatering is not expected to substantially affect the overall groundwater table or any groundwater-dependant uses.

It is concluded that this issue is considered a less than significant impact.

***Impact C*** ***Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.***

**Impact Analysis:** As the Focused Plan Amendment is a land use document and does not propose grading or drainage design for the Subarea, this study assumes that existing drainage patterns will remain intact. This assumption is in accordance with City of San Diego guidelines that proposed development shall not divert water from existing drainage courses. The City of San Diego will review individual project grading plans and hydrology studies and will maintain the authority to ensure that drainage patterns are not altered by individual projects and will ensure that existing drainage patterns are unchanged in the proposed condition.

It is concluded that the alteration of existing drainage patterns is potentially significant, but mitigated through review and oversight by the City of San Diego. The Applicant for each project within the Subarea will be required to prepare a project specific hydrology study and WQTR and process for approval with the City of San Diego.

***Impact D*** ***Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.***

**Impact Analysis:** As the Focused Plan Amendment is a land use document and does not propose grading or drainage design for the Subarea, this study assumes that existing drainage patterns will remain intact. This assumption is in accordance with City of San Diego guidelines that proposed development shall not divert water from existing drainage courses. The City of San Diego will review

individual project grading plans and hydrology studies and will maintain the authority to ensure that drainage patterns are not altered by individual projects and will ensure that existing drainage patterns are unchanged in the proposed condition. Additionally, the proposed redevelopment will result in a decrease in runoff from the project site due to the reduced imperviousness of the proposed land uses relative to the existing land uses.

It is concluded that the alteration of existing drainage patterns is potentially significant, but mitigated through review and oversight by the City of San Diego. The Applicant for each project within the Subarea will be required to prepare a project specific hydrology study and WQTR and process for approval with the City of San Diego.

***Impact E*** ***Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.***

**Impact Analysis:** As the Focused Plan Amendment is a land use document and does not propose grading or drainage design for the Subarea, no detailed analysis of existing or proposed drainage systems is performed in this study. However, in accordance with City of San Diego guidelines, storm drain systems within the redevelopment will be sized to adequately convey runoff from the 100-year storm. The existing down stream drainage systems consist of the San Diego River and Alvarado Creek. Onsite runoff to these water courses will decrease as a result of the proposed Focused Plan Amendment, and is therefore anticipated to not detrimentally affect their capacity. Hydraulic analysis of proposed and existing storm drain systems will be performed for individual projects within the Subarea at the time of final design. The land use designations proposed in the Focused Plan Amendment for the Subarea do not result in significant increases in imperviousness or runoff to receiving infrastructure or waterbodies.

The project will not provide substantial additional sources of polluted runoff due to the proposed LID Site Design, Source Control, and Treatment Control BMPs. Refer to the discussion of Impact A above for details.

It is concluded that this issue is potentially significant, but mitigated through implementation of the BMPs described in this WQTR. The Applicant for each project within the Subarea will be required to prepare a project specific hydrology study and WQTR and process for approval with the City of San Diego.

***Impact F*** ***Otherwise substantially degrade water quality***

**Impact Analysis:** Refer to the water quality discussion included in the Impact A analysis above.

From the preceeding analysis of the primary pollutants of concern it is concluded that a violation of water quality standards is potentially significant, but mitigated through implementation of the BMPs described in this WQTR. Applicants for individual projects will be required to prepare a project specific WQTR and process for approval with the City of San Diego. Individual projects greater than 1 acre will also be required to prepare a Storm Water Pollution Prevention Plan and file a Notice of Intent to gain coverage under the State of California's GCP.

***Impact G*** ***Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation.***

**Impact Analysis:** Portions of Subarea A are within a FEMA-mapped floodplain. However, proposed land uses for these portions of the Subarea include Industrial, Commercial, and Retail. As such housing is not proposed within the FEMA-mapped floodplain.

It is concluded that this issue is potentially significant, but mitigated through the City of San Diego's regulation and oversight of development within the floodplain.

***Impact H*** ***Place within a 100-year flood hazard area structures which would impede or redirect flood flows.***

**Impact Analysis:** Land use designation for the Focused Plan Amendment indicates that Industrial, Commercial, and Retail land use if proposed within the floodplain. There is potential for structures associated with redevelopment to impede or redirect flood flows for San Diego River and Alvarado Creek. For any development within the mapped floodplain, the project applicant will be required to perform hydraulic and hydrologic analysis and submit associated studies and grading/improvement plans to the City of San Diego for review. The City of San Diego, as Floodplain Administrator, will retain full jurisdiction for approval of development in the floodplain. Development in the floodplain shall be performed such that new structures are constructed at finish floor elevations higher than the elevation of the 100-year storm, the development will not lead to an increase in the 100-year flowrate downstream, and the development will not raise the flood elevation of the 100-year storm event.

It is concluded that this issue is potentially significant, but mitigated through the City of San Diego's regulation and oversight of development within the floodplain.

***Impact I*** ***Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.***

**Impact Analysis:** Analysis of dam break scenarios is beyond the scope of this report. The City of San Diego, as Floodplain Administrator, will retain full jurisdiction for approval of development in the floodplain. Development in the floodplain shall be performed such that new structures are constructed at finish floor elevations higher than the elevation of the 100-year storm, the development will not lead to an increase in the 100-year flowrate downstream, and the development will not raise the flood elevation of the 100-year storm event.

It is concluded that this issue is potentially significant, but mitigated through the City of San Diego's regulation and oversight of development within the floodplain.

***Impact J*** ***Inundation by seiche, tsunami, or mudflow.***

**Impact Analysis:** The site is not near any significant source of water which could inundate the project

site if a tsunami were to occur. Grantville Subarea A is approximately 9 miles upstream of the Pacific Ocean along the San Diego River. The ponds within the River bed in Subarea A do not pose a significant threat from a tsunami or seiche. Lake Murray is approximately 2.5 miles upstream of the Subarea A on a tributary to Alvarado Creek. Any seismic activity inducing a seiche on Lake Murray would not reach the project site. Steep slopes exist above the project site along the southeasterly portion. Any danger of mudflow/landslides from these slopes and the any recommendations for mitigation will need to be addressed during final engineering by a qualified geotechnical engineer.

It is concluded that this issue is potentially significant, but mitigated through the City of San Diego's regulation and oversight of development and a requirement that development along the southeasterly portion of the subarea will be required to include investigation of potential for mudflow/landslide and recommendations for mitigation.

# 6.0 MAINTENANCE

The operation and maintenance requirements for each type of post-construction BMP are contained in the following sections. Maintenance responsibility for the BMPs will belong to the owners/developers of individual projects within Grantville Subarea A.

## 6.1 POST-CONSTRUCTION BMPs

Post-construction BMPs are to be maintained in perpetuity. Maintenance requirements for Source Control BMPs as well as LID and Treatment Control BMPs are shown below. Additional information on Source Control BMP maintenance can be found in the *California Stormwater Quality Association Stormwater Best Management Practice Handbook*. It shall be noted that preventative maintenance such as removal of trash and debris from the site will help ensure proper function of the BMPs.

Table 23: Site Design BMP Maintenance

| SITE DESIGN BMP | RESPONSIBLE PARTY | MINIMUM MAINTENANCE FREQUENCY |
|---|---|---|
| CONSERVE NATURAL AREAS/PROVIDE BUFFER ZONES | Property Owner/Developer | Periodic monitoring of landscaped areas along perimeter to ensure trash and debris does not accumulate. |
| MINIMIZE IMPERVIOUS FOOTPRINT | Property Owner/Developer | The site is to be maintained and monitored to ensure impervious areas are not expanded or developed at the expense of pervious areas. |
| MINIMIZE DIRECTLY CONNECTED IMPERVIOUS AREAS (DCIAS) | Property Owner/Developer | Periodic monitoring of landscaped areas to ensure proper drainage and upkeep. |
| MINIMIZE SOIL COMPACTION IN LANDSCAPED AREAS | Property Owner/Developer | Any replanting of landscaped areas shall be done with minimal compaction of the surrounding soils. |
| TOPSOIL IMPROVEMENT | Property Owner/Developer | Any replanting of landscaped areas shall be done in accordance with City of San Diego Landscape regulations in order to maintain plant and lawn health, as well as improve the soil's capacity to retain moisture, reduce runoff and improve water quality. |
| CONVEY RUNOFF SAFELY FROM THE TOPS OF SLOPES | Property Owner/Developer | Periodic monitoring to ensure slope stability. Drainage channels should be inspected and cleaned periodically. Any erosion or rills should be noted and slope stabilization techniques employed using jute netting, EC blankets, or re-vegetation. |

| SITE DESIGN BMP | RESPONSIBLE PARTY | MINIMUM MAINTENANCE FREQUENCY |
|---|---|---|
| VEGETATE SLOPES WITH NATIVE OR DROUGHT TOLERANT VEGETATION | Property Owner/Developer | Periodic monitoring of slope planting to ensure proper health and upkeep. Any erosion or rills should be noted and slope stabilization techniques employed using jute netting, EC blankets, or re-vegetation. |
| STABILIZE PERMANENT CHANNEL CROSSINGS | Property Owner/Developer | Periodic inspection and repair of any eroded or damaged areas. |
| INSTALL ENGERGY DISSIPATION WHERE NEEDED | Property Owner/Developer | Periodic inspection and repair of any eroded or damaged areas. |

Table 24: Source Control BMP Maintenance

| SOURCE CONTROL BMP | RESPONSIBLE PARTY | MINIMUM MAINTENANCE FREQUENCY |
|---|---|---|
| DESIGN OUTDOOR MATERIAL STORAGE AREAS TO REDUCE POLLUTION INTRODUCTION | Property Owner/Developer | Loading areas should be inspected and cleaned on a monthly basis. |
| USE OF PHOSPHATE FREE FERTILIZERS | Property Owner/Developer | In conjunction with normal landscape maintenance. |
| BUILDING AND GROUNDS MAINTENANCE | Property Owner/Developer | Sweep paved areas regularly to collect loose particles; wipe up spills with rags and other absorbent material immediately; do not hose down the area to a storm drain. |
| DESIGN TRASH STORAGE AREAS TO REDUCE POLLUTION INTRODUCTION | Property Owner/Developer | Periodic normal maintenance to ensure trash is contained and the area is not a potential runoff pollution problem area. |
| EMPLOY INTEGRATED PEST MANAGEMENT PRINCIPLES | Property Owner/Developer | In conjunction with normal landscape maintenance and as required to control pests. |
| USE EFFICIENT IRRIGATION SYSTEMS AND LANDSCAPE DESIGN | Property Owner/Developer | In conjunction with maintenance activities, verify that landscape design continues to function properly by adjusting properly to eliminate overspray to hardscape areas, and to verify that irrigation timing and cycle lengths are adjusted in accordance with water demands, given time of year, weather, and day or night time temperatures. |
| DESIGN NEW BUILDING FIRE SPRINKLERS SYSTEMS TO ENABLE DISCHARGE TO SANITARY SEWER | Property Owner/Developer | As required for fire sprinkler system maintenance |
| PROVIDE STORM WATER CONVEYANCE SYSTEM STENCLING AND SIGNAGE | Property Owner/Developer | Storm drain stencils shall be inspected for legibility, at minimum, once prior to the rainy season, no later than October 1 each year. Those determined to be illegible will be re-stenciled as soon as possible. |
| ROADS | Property Owner/Developer | In conjunction with normal landscape maintenance, and additional maintenance for specific LID/Treatment Control BMPs implemented |

| SOURCE CONTROL BMP | RESPONSIBLE PARTY | MINIMUM MAINTENANCE FREQUENCY |
|---|---|---|
| DOCK AREAS | Property Owner/Developer | Conduct regular inspections and make repairs as necessary, with the frequency depending on the age of the facility; check loading and unloading equipment regularly for leaks; regular broom dry-sweeping of area; conduct major clean-out of dock area and containment area prior to October 1 of each year. |
| MAINTENANCE BAYS | Property Owner/Developer | Sweep maintenance area weekly to collect loose particles; wipe up spills with rags and other absorbent material immediately; do not hose down the area to a storm drain. |
| VEHICLE & EQUIPMENT WASH AREAS | Property Owner/Developer | Repair curb, berm, pavement, and roof promptly when required; sweep washing areas frequently to remove solid debris; inspect and maintain clarifiers and other pretreatment devices per manufacturer's recommendations. |
| OUTDOOR PROCESSING AREAS | Property Owner/Developer | Repair curb, berm, pavement, and roof promptly when required; sweep processing areas frequently to remove solid debris; conduct major clean-out of processing area and sump prior to October 1 of each year. |
| SURFACE PARKING AREAS | Property Owner/Developer | Street sweeping within private roads and parking lot areas shall be conducted at a minimum frequency of once per year prior to the rainy season. Periodic normal maintenance to ensure parking area is absent of trash and any other potential contaminants. |
| NON-RETAIL FUELING AREAS | Property Owner/Developer | Clean oil/water separators and other treatment control BMPs at appropriate intervals; keep ample supply of spill cleanup materials onsite at all times; inspect fueling areas, storage tanks, catch basin inserts, containment areas, and drip pans on a regular schedule. |
| STEEP HILLSIDE LANDSCAPING | Property Owner/Developer | In conjunction with normal landscaping maintenance; inspect following major rain events and repair any areas of erosion. |

Table 25: LID/Treatment Control BMP Maintenance

| LID/TREATMENT CONTROL BMP | RESPONSIBLE PARTY | MINIMUM MAINTENANCE FREQUENCY | UNIT/ANNUAL MAINTENANCE COSTS |
|---|---|---|---|
| FLOW THROUGH LANDSCPAED AREAS | Property Owner/Developer | Regular landscape maintenance with semiannual inspections. Vegetation should be left to a minimum of a 4"-6" height in order to facilitate pollutants filtration and removal within the area. Water is should not be allowed to pond; if this occurs, maintenance consisting of minor re-grading may be required. | Included in Normal Landscape Maintenance. |

| LID/TREATMENT CONTROL BMP | RESPONSIBLE PARTY | MINIMUM MAINTENANCE FREQUENCY | UNIT/ANNUAL MAINTENANCE COSTS |
|---|---|---|---|
| PERVIOUS PAVEMENT AREAS | Property Owner/Developer | Semiannual Inspection and vacuuming in order to remove fines caught within the pores of the pervious surface. Vacuuming shall be with a vacuum truck/sweeper which is designed for this type of application. | Estimated $500-$1000 per year. |
| INFILTRATION TRENCH | Property Owner/Developer | Semiannual Inspection. If trench takes more than 72 hours to drain, rock fill should be removed and replaced and all dimensions of the trench should be increased by 2 inches to provide a fresh surface for infiltration | Approximately 10% of construction cost per year |
| INFILTRATION BASIN | Property Owner/Developer | Semiannual Inspection. If basin takes more than 72 hours to drain, filter media should be removed and replaced. | Approximately 10% of construction cost per year |
| RETENTION/ IRRIGATION | Property Owner/Developer | Monthly inspection during rainy season. If BMP holds water for over 72 hours and/or relies on electrical or mechanical devices to dewater, provide routine inspection and treatment by mosquito and vector control agencies. | Approximately 15% of construction cost per year |
| WET PONDS | Property Owner/Developer | Semiannual inspections; remove trash and debris at middle and end of wet season; stock mosquito fish if permitted; perform annual vegetation harvest in summer; remove sediment from forebay and regrade about every 5-7 years. | Approximately 5% of construction cost per year |
| CONSTRUCTED WETLANDS | Property Owner/Developer | Semiannual inspections; remove trash and debris at middle and end of wet season; stock mosquito fish if permitted; perform annual vegetation harvest in summer; remove sediment from forebay and regrade about every 5-7 years. | Approximately 5% of construction cost per year |
| EXTENDED DETENTION BASIN | Property Owner/Developer | Remove trash and debris, and trim vegetation at beginning and end of wet season; inspect vegetation monthly for aesthetic and vector reasons; inspect annual for sediment accumulation; remove sediment about every 10 years | Approximately 5% of construction cost per year |
| VEGETATED SWALES | Property Owner/Developer | Inspections should occur once a month during the rainy season after a runoff producing event to ensure the area is functioning properly. Plants should be maintained and kept healthy. Excess sediment/debris shall be removed and disposed of properly. The inlets/outlets shall be inspected frequently for clogging and cleaned out as necessary. Vegetation shall be trimmed at the | Included in Normal Landscape Maintenance. |

| LID/TREATMENT CONTROL BMP | RESPONSIBLE PARTY | MINIMUM MAINTENANCE FREQUENCY | UNIT/ANNUAL MAINTENANCE COSTS |
|---|---|---|---|
| | | beginning and end of the wet season and inspected monthly to prevent establishment of woody vegetation. Monitoring will occur on a monthly basis during the first year and quarterly thereafter. Quantitative data will be collected annually to evaluate frequency of maintenance activities and adjustments to scheduling will be made accordingly. | |
| VEGETATED BUFFER STRIP | Property Owner/Developer | Semiannual inspection for erosion, damage to vegetation, and standing water; remove trash and debris in conjunction with regular landscape maintenance. | Included in Normal Landscape Maintenance. |
| BIOFILTRATION | Property Owner/Developer | Semiannual inspection of plants and removal of sediment and debris; soils may need to be replaced after 5-10 years. | Included in Normal Landscape Maintenance. |
| MEDIA FILTER | Property Owner/Developer | Semiannual inspection for standing water, sediment, trash and debris; remove trash and debris regularly; inspect once yearly during wet season to ensure facility drains within 72 hours; remove and replace filter media if drain time exceeds 72 hours. | Approximately 5% of construction cost per year |
| PROPRIETARY MEDIA FILTER | Property Owner/Developer | Semi Annual Inspection, Annual Media Replacement (see below) | ~$800-$1,200 per Unit/Year |
| WATER QUALITY INLET | Property Owner/Developer | The Water Quality Inlet should be maintained (Vactor Truck) 2 times per year, with one cleaning just prior to the Oct 1 beginning of the rainy season. | ~$500-1000 per year |
| VORTEX SEPARATOR/WET VAULT | Property Owner/Developer | Per manufacturer's recommendations | ~$500-1000 per year |
| DRAIN INSERTS | Property Owner/Developer | The Drain Insert should be maintained (Vactor Truck) 3 times per year, with one cleaning just prior to the Oct 1 beginning of the rainy season. The oil absorbent media should be replaced once per year. | ~$500-1000 per year |

## 6.2 FISCAL RESOURCES

The funding and execution of BMP maintenance for individual redevelopment projects within Subarea A will be the responsibility of the property owner/developer. Prior to the start of construction and as a part of the final WQTR, the property owner/developer for projects within Subarea A shall prepare and execute a Storm Water Management and Discharge Control Maintenance Agreement with the City of San Diego. The designated responsible party will be responsible for all areas within private property as follows: properly disposing of waste material from their assumed areas within the project site, maintaining landscaping throughout those areas in a manner that will prevent soil erosion and minimize sediment transport, maintaining drainage facilities in a clean manner and in good repair, and properly maintaining all post-construction BMPs (both structural and non-structural) that exist within the private property of the project.

It should be noted that maintenance for any of the above mentioned post-construction BMPs may be performed through third-party agreements; however, the ultimate responsibility of each facility rests on the property owner/developer

# 7.0 APPENDICES

*Appendix 1* *Runoff Coefficient References*

*Appendix 2* *BMP Educational Fact Sheets*

*Appendix 3* *LID and Treatment Control BMP Details*

*Appendix 4* *Proposed Hydrology*

*Appendix 5* *FEMA FIRM Panels*

# Certification

This Water Quality Technical Report has been prepared under the direction of the following Registered Civil Engineer. The registered Civil Engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

_____ _____

Paul D. Haaland, PE Date
RCE #63656