



San Bernardino County Stormwater Program

WATER QUALITY MANAGEMENT PLAN

UNIVERSITY HILLS SPECIFIC PLAN

WATER QUALITY MANAGEMENT PLAN (WQMP)

For compliance with Santa Ana Regional Water Quality Control Board

Order Number R8-2002-0012 (NPDES Permit No. CAS618036)

For

**INLAND COMMUNITIES CORPORATION
UNIVERSITY HILLS
CITY OF SAN BERNARDINO**

Prepared for:

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WATER QUALITY MANAGEMENT PLAN (WQMP)

PROJECT SITE INFORMATION

Name of Project: University Hills

Project Location: North of California State University, San Bernardino (CSUSB), south of San Bernardino National Forest, in the City of San Bernardino, California

Size of Significant Re-Development on an Already Developed Site (in feet²) = 0

Size of New Development (in feet²) = 17,606,952

Number of Home Subdivisions: 980

SIC Codes: 2373 -- Street Construction
2372 --Land Subdivision
2361 --Residential Building

Erosive Site Conditions? Yes

Natural Slope More Than 25%? No Development concentrated on the lower southern portion of the site where the slopes are generally below 15% grade.

WATER QUALITY MANAGEMENT PLAN (WQMP)

Check the appropriate project category below:

**Check
below**

Project Categories

| | |
|---|--|
| | 1. All significant re-development projects. Significant re-development is defined as the addition or creation of 5,000 or more square feet of impervious surface on an already developed site. This includes, but is not limited to, additional buildings and/or structures, extension of existing footprint of a building, construction of parking lots, etc. Where redevelopment results in an increase of less than fifty percent of the impervious surfaces of a previously existing development, and the existing development was not subject to SUSMPs, the design standards apply only to the addition, and not the entire development. When the redevelopment results in an increase of more than fifty percent of the impervious surfaces, then a WQMP is required for the entire development (new and existing). |
| X | 2. Home subdivisions of 10 units or more. This includes single family residences, multi-family residence, condominiums, apartments, etc. |
| | 3. Industrial/commercial developments of 100,000 square feet or more. Commercial developments include non-residential developments such as hospitals, educational institutions, recreational facilities, mini-malls, hotels, office buildings, warehouses, and light industrial facilities. |
| | 4. Automotive repair shops (with SIC codes 5013, 5014, 5541, 7532- 7534, 7536-7539). |
| | 5. Restaurants where the land area of development is 5,000 square feet or more. |
| | 6. Hillside developments of 10,000 square feet or more which are located on areas with known erosive soil conditions or where the natural slope is twenty-five percent or more. |
| | 7. Developments of 2,500 square feet of impervious surface or more adjacent to (within 200 feet) or discharging directly into environmentally sensitive areas such as areas designated in the Ocean Plan as areas of special biological significance or waterbodies listed on the CWA Section 303(d) list of impaired waters. |
| | 8. Parking lots of 5,000 square feet or more exposed to storm water. Parking lot is defined as land area or facility for the temporary storage of motor vehicles. |
| | The project does not fall into any of the categories described above. (If the project requires a precise plan of development [e.g. all commercial or industrial projects, residential projects of less than 10 dwelling units, and all other land development projects with potential for significant adverse water quality impacts or subdivision of land, it is defined as a Non-Category Project). |

Section 1

Introduction and Project Description

1.1 Project Information

- Owner: Inland Communities Corporation
1801 Avenue of the Stars, Suite 1205
Los Angeles, CA 90067
Telephone 310-277-7551
- Site Location: North of California State University, San Bernardino (CSUSB) and south of San Bernardino National Forest, in the City of San Bernardino, California

1.2 Permits

- XXXXXXXXXX
- XXXXXXXXXX

1.3 Project Description

- The project has been named University Hills and consists of 404.2 total acres with 19.5% or 78.4 acres devoted to residential uses. A total of 980 units are proposed with gross density of 2.4 dwelling units per acre. The University Hills Project also contain 7 acres of parks; including a 2 acre community clubhouse with a pool, tennis courts and other active amenities, a 5acre linear park along Badger Creek, an internal pedestrian/walking trail, and 245 acres of natural open space that is proposed to be used by a nearby California State University at San Bernardino as a "Land Laboratory".
- The project contains 20 planning plus roads, slopes. Densities within the Planning Areas range from 3.2 up to 20 dwelling units per net acre.
- In order to reduce the development footprint, the extent of infrastructure and grading, preserve the natural drainage corridors, and maintain the higher elevations in their natural state, development is concentrated on the lower (southern) portion of the site where the slopes are generally below 15% grade. Offsite street improvements include drainage, water, sewer, and dry utilities infrastructure; and a fuel modification zone will also be constructed.
- Residential development for attached/detached dwellings, one or two-story structures of wood frames and stucco, reinforced masonry, metal frame, or similar type construction anticipated.
- The area of the project site is approximately 404.2 acres. The estimated percentage of existing impervious surface is 0% and the developed project will have an estimated 19.5% of impervious surfaces.
- The proposed development is to consist of residential subdivision with roadways and associate municipal infrastructure.

- Conventional cut and fill grading will be required to achieve the terraced building pad configurations. Maximum cuts of 65 feet and fills of 60 feet deep are indicated on the rough grading plan. Cut and fill slopes are proposed to a maximum slope inclination of 2:1 (horizontal: vertical) and are a maximum of 65 feet in height.
- Inland Community Corporation to exercise responsibility on the development stage of the project.

1.4 Site Description

- The project site is located just south of the San Bernardino Mountains and is bisected by the wide Badger Canyon. The site is crossed by the San Andreas Fault Zone in general northwest-southwest direction through the middle of the site. The Southwestern and southeastern portions of the site are situated on the sloping alluvial fans, while the central and northern portions of the site consists of steep slopes associated with Badger Canyon and the San Bernardino Mountains. The site is adjacent to several large detention/debris basins that intercept the majority of the tributary drainage areas away from the project site, and which are maintained by the San Bernardino County Flood Control District to protect downstream uses.
- The land to the north, northeast, and northwest lies within the San Bernardino National Forest, while the land along the entire southern border of the site is owned and maintained by the County of San Bernardino for Flood Control purposes, including several large debris basins and settling/spreading basins. The California State University of San Bernardino Campus located immediately south of the flood control facilities. A 75-inch pipeline of the San Bernardino Valley Municipal Water District crosses the southern portion of the site in a northwest-southeast direction parallel to but south of the fault zone.
- The site covers an area of approximately 404 acres located between San Bernardino National Forest and CSUSB in the City of San Bernardino, CA. The site is vacant natural land with no evidence of previous grading or development.
- Topographically, the site consists of rolling hills separated by a series of drainage channel. The drainage channels on the site are relatively shallow and range in shape from broad and shallow to narrow and incised. Several low points in saddle areas of the site hold shallow amounts of surface water during storm event.
The site hillsides slope in varying directions at rates ranging from a minimum of approximately 5% to a maximum of approximately 50%. Vegetation across the property consists of a moderate to thick growth of annual weeds and grasses with a variety of small bushes. Vacant natural

land surrounds the subject site to the north, east and west, with existing residences and CSUSB to the south.

- There are no pre-existing water quality problems known and no toxic materials have been disposed, spilled or leaked on-site prior to grading activities.
- Runoff from the City of San Bernardino, San Bernardino County is generally conveyed to the San Bernardino County drainage area through the Santa Ana River Reach 5 which is not included in the impaired water bodies from RWQCB Region 8.

Pollutants of Concern and Hydrologic Conditions of Concern

2.1 Pollutants of Concern

The following is a list of the potential pollutants of concern expected to be generated by the new development.

Nutrients
 Pesticides
 Sediments
 Oxygen demand substances
 Oil and grease
 Bacteria/Virus
 Trash & Debris

- Existing pollutants of concern in the receiving waters are identified on the Santa Ana River as Bacteria / pathogens for reach 3 and 4 by the RWQCB, Summary of the 2006 303(d) Listed Water Bodies and Associated pollutants of concern from RWQCB Region 8, but the runoff from this project site is conveyed to the Santa Ana river through reach 5 which it not listed in 303 (d) list as impaired water body.

Pollutant of Concern Summary Table

| Pollutant Type | Expected | Potential | Listed for Receiving Water |
|-----------------------------|----------|-----------|----------------------------|
| Bacteria/Virus | | P | |
| Nutrients | E | | |
| Pesticides | E | | |
| Trash & Debris | E | | |
| Sediments | E | | |
| Oxygen Demanding Substances | | P | |
| Oil and Grease | | P | |

Receiving Water body: Santa Ana River Reach 5 (Not Listed on Table B-I as Impaired)

| | | | |
|---|--|------------|-----------|
| <p>2. (from Section 2.3, Part 3): The WQMP for projects that create a HCOC must include an evaluation of whether the project will adversely impact downstream erosion, sedimentation or stream habitat. The Agency may require that the evaluation be conducted by a registered civil engineer in the State of California, with experience in fluvial geomorphology. Perform the required evaluation as specified in A – F below. Check the boxes “yes” or “no” to verify a complete report and proceed to appropriate section based on results.</p> | | | |
| Does the evaluation include: | | Yes | No |
| A. An evaluation of potential impacts to all downstream channel reaches. | | | X |
| <p>1. Determine if the project will create a Hydrologic Condition of Concern. Check “yes” or “no” as applicable and proceed to the appropriate section as outlined below.</p> | | Yes | No |
| <p>A. All downstream conveyance channels, that will receive runoff from the project, are engineered, hardened (concrete, riprap or other), and regularly maintained to ensure design flow capacity, and no sensitive stream habitat areas will be affected. Engineered, hardened, and maintained channels include channel reaches that have been fully and properly approved (including CEQA review, and permitting by USACOE, RWQCB and California Dept. of Fish & Game) by June 1, 2004 for construction and hardening to achieve design capacity, whether construction of the channels is complete. Discharge from the project will be in full compliance with Agency requirements for connections and discharges to the MS4, including both quality and quantity requirements, and the project will be permitted by the Agency for the connection or discharge to the MS4.</p> | | X | |
| <p>B. Project runoff rates, volumes, velocities, and flow duration for the post-development condition will not exceed those of the pre-development condition for 1-year, 2-year and 5-year frequency storm events. This condition will be substantiated with hydrologic modeling methods that are acceptable to the Agency, to the U.S. Army Corps of Engineers (USACOE), and to local watershed authorities.</p> | | | X |
| <p>C. Can the conditions in part A or B above be demonstrated for the project?</p> | | X | |
| <ul style="list-style-type: none"> ▪ If the answer for A, B, and/or C above is yes, then the project does not create a HCOC—in this case go to Section 3. ▪ If the answer for C above is no, the go to section 2.3. Part 3, below. | | | |

| | | |
|--|--|--|
| <p>B. Consideration of the hydrology of the entire watershed. Review all applicable drainage area master plans to the extent available, to identify BMP requirements for new development that address cumulative inputs from development in the watershed.</p> | | |
| <p>C. Consultation with all applicable agencies including the USACOE; local watershed authorities (e.g. San Timoteo Watershed Management Authority and SAWPA [Santa Ana Watershed Project Authority]); U.S. Geological Survey (USGS); California Dept. of Fish & Game (CDFG); and the Principal Permittee; to determine any areas of potential hydrologic impact.</p> | | |
| <p>D. An evaluation of any available hydrologic modeling results. Modeling may have been performed by USGS, USACOE, local watershed authorities, the Principal Permittee, or other local jurisdiction.</p> | | |
| <p>E. A field reconnaissance to evaluate any natural or partially natural downstream reaches, or other sensitive habitat. The field reconnaissance must evaluate representative downstream conditions, including undercutting erosion, slope/bank stability, vegetative stress (due to flooding, erosion, water quality degradation, or loss of water supplies), and the area's susceptibility to adverse impacts resulting from an altered flow regime or change in sediment supply and/or sediment transport .</p> | | |
| <p>F. A report that summarizes the findings of evaluation components A through E above, and that considers the project's location, topography, soil and vegetation conditions, proportion of impervious surfaces, natural and infrastructure drainage features, and any other relevant hydrologic and environmental factors to be protected specific to the project's watershed. The report must provide a determination of whether the project will adversely impact any downstream erosion, sedimentation or stream habitat, and identify any areas where adverse impacts are expected.</p> | | |
| <ul style="list-style-type: none"> ▪ Is the report required by 2.3, Part 3.f complete? (Attach the report) If not, perform the required evaluation and add to the report. ▪ Does the report determine that the project will have an adverse downstream impact? ▪ If yes, then go to Section 2.3, Part 4, below. ▪ If no, then go to Section 3. | | |

| 3. (from Section 2.3, Part 4): If the evaluation specified in (3) above, determines that adverse impacts to downstream erosion, sedimentation or stream habitat will occur, then the project proponent must perform the requirements specified in A, B, and C, below. Check the boxes "yes" or "no" to verify all requirements have been completed. | YES | NO |
|--|-----|----|
| A. Conduct hydrologic modeling of the project and the potentially impacted areas, according to modeling standards recommended by the Agency or local watershed authority, for the 1-year, 2-year, and 5-year frequency storm events, at a minimum. Hydrologic modeling results must include determination of peak flow rate, flow velocity, runoff volume, time of concentration, and retention volume for the project area. | | |
| B. Ensure that the project will be consistent with any approved master plans of drainage or analogous plans or programs. | | |
| C. Implement Site Design BMPs as specified in Section 2.5.1, and recommend any additional BMPs that will be implemented to mitigate the adverse impacts identified in (3.F) above. | | |
| <ul style="list-style-type: none"> ▪ Are the requirements for Section 2.3 Part 4 adequate? (Attach report/results) ▪ Has the project proponent recommended BMPs to mitigate any impacts based on the modeling? ▪ If yes, then list/describe BMPs: ▪ If no, then explain how mitigation will be achieved: ▪ Will the BMPs be effective? ▪ Does the Agency have any additional requirements? ▪ Verify with Agency before submitting the project WQMP. | | |

SECTION 3 BEST MANAGEMENT PRACTICE SELECTION PROCESS

3.1 SITE DESIGN BMPS

| | | |
|--|---|----|
| 1. Minimize Stormwater Runoff, Minimize Project's Impervious Footprint, and Conserve Natural Areas | | |
| Maximize the permeable area. This can be achieved in various ways, including but not limited to, increasing building density (number of stories above or below ground) and developing land use regulations seeking to limit impervious surfaces. | | |
| Yes | X | No |
| Cut, fill slopes and terraced lots are to be covered with vegetation to stabilize soil and to provide permeability; landscaped areas will act as a buffer for potential runoff. | | |
| Runoff from developed areas may be reduced by using alternative materials or surfaces with a lower Coefficient of Runoff, or "C-Factor". | | |
| Yes | X | No |
| Runoff captured on site is conducted to grass vegetated swales from which flows would be released at lower rates than pre-development conditions. | | |
| Conserve natural areas. This can be achieved by concentrating or clustering development on the least environmentally sensitive portions of a site while leaving the remaining land in a natural, undisturbed condition. | | |
| Yes | X | No |
| 61% of the project site (235 acres) will not be graded or disturbed as the development uses a clustering pattern for the bulk of the project; the proposed grading is around relatively moderate sloped areas, away from natural vegetated depressions. | | |
| Construct walkways, trails, patios, overflow parking lots, alleys, driveways, low-traffic streets, and other low-traffic areas with open-jointed paving materials or permeable surfaces, such as pervious concrete, porous asphalt, unit pavers, and granular materials. | | |
| Yes | X | No |
| The detached dwelling units have surrounding swales to divert runoff into the driveway and to the street gutter to be intercepted by curb inlets. | | |

| | | |
|---|---|----|
| Construct streets, sidewalks, and parking lot aisles to the minimum widths necessary, provided that public safety and a pedestrian friendly environment are not compromised ¹ . Incorporate landscaped buffer areas between sidewalks and streets. | | |
| Yes | X | No |
| The project provides landscaped buffer areas between sidewalks and streets. | | |
| Reduce widths of street where off-street parking is available ² . | | |
| Yes | x | No |
| Street widths are required by city of San Bernardino standards and are of the minimum widths for this kind of development. | | |
| Maximize canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs. | | |
| Yes | x | No |
| The development will keep the natural shrubs, bushes, trees and grassy areas; new trees will be planted as a means to increase canopy interception throughout the disturbed area. | | |

¹ Sidewalk widths must still comply with Americans with Disabilities Act regulations and other life safety requirements.

² However, street widths must still comply with life safety requirements for fire and emergency vehicle access.

| | | |
|--|----|--|
| Other comparable site design options those are equally effective. | | |
| The flows to be released from the site will be lower than those generated under pre-developed condition; no erosion will be generated by sheetflow. | | |
| Minimize the use of impervious surfaces, such as decorative concrete, in the landscape design. | | |
| Yes x | No | |
| Dwelling lots are provided with open area for landscaping, draining toward the streets. | | |
| Use natural drainage systems. | | |
| Yes x | No | |
| Where areas are to remain undisturbed, natural flow patterns will be unaltered | | |
| Where soils conditions are suitable, use perforated-pipe or gravel filtration pits for low flow infiltration ³ . | | |
| Yes x | No | |
| The project incorporates Dry Wells that consists of proprietary catch basin inserts that filter the intercepted flows that are then directed to a deep gravel layer from where it is infiltrated into the underground. | | |
| Construct onsite ponding areas, rain gardens, or retention facilities to increase opportunities for infiltration, while being cognizant of the need to prevent the development of vector breeding areas. | | |
| Yes x | No | |
| Grass swales to be provided for infiltration before discharging into the existing system. | | |

³However, projects must still comply with hillside grading ordinances that limit or restrict infiltration of runoff. Infiltration areas may be subject to regulation as Class V injection wells and may require a report to the USEPA. Consult the Agency for more information on use of this type of facility.

2. Minimize Directly Connected Impervious Areas

Where landscaping is proposed, drain rooftops into adjacent landscaping prior to discharging to the storm drain.

Yes No

Roof downspouts to discharge into surrounding landscaped areas, then intercepted by a swale to convey flows toward the driveways and to the street.

Where landscaping is proposed, drain impervious sidewalks, walkways, trails, and patios into adjacent landscaping.

Yes No

Interior patios and sidewalks drain into landscaping and towards the streets.

Increase the use of vegetated drainage swales in lieu of underground piping or imperviously lined swales.

Yes No

Proposed grass swales to be used for infiltration before discharging into the existing storm drainage system.

Use one or more of the following:

| Yes | No | Design Feature |
|-----|----|--|
| | X | Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings |
| X | | Urban curb/swale system; street slopes to curb; periodic swale inlets drain to vegetated swale/biofilter. |
| X | | Dual drainage system: First flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, high flows connect directly to municipal storm drain systems. |
| X | | Other comparable design concepts that are equally effective. |

Project incorporates grass swale and urban curb/swale systems with energy dissipaters for slope protection.

| Use one or more of the following features for design of driveways and private residential parking areas: | | |
|---|----|---|
| Yes | No | Design Feature |
| | X | <ul style="list-style-type: none"> Design driveways with shared access, flared (single lane at street) or wheel strips (paving only under tires); or, drain into landscaping prior to discharging to the municipal storm drain system. |
| | X | <ul style="list-style-type: none"> Uncovered temporary or guest parking on private residential lots may be paved with a permeable surface; or designed to drain into landscaping prior to discharging to the municipal storm drain system. |
| | | <ul style="list-style-type: none"> Other comparable design concepts that are equally effective. |
| <p>Driveways drain directly towards the street system that finally discharge into the storm drain systems, which ultimately discharge into San Bernardino Flood Control Facilities.</p> | | |

3.2 SOURCE CONTROL BMPS

| Use one or more of the following design concepts for the design of parking areas: | | |
|--|----|---|
| Yes | No | Design Feature |
| X | | Where landscaping is proposed in parking areas, incorporate landscape areas into the drainage design. |
| X | | Overflow parking (parking stalls provided in excess of the Agency's minimum parking requirements) may be constructed with permeable paving. |
| | | Other comparable design concepts that are equally effective. |
| <p>Parking space provided for the community club house will be designed with permeable pavements and sheet flows into vegetated areas before it is intercepted by catch basin.</p> | | |

Source Control BMP Selection Matrix*

| Project Category | Source Control BMPs | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|------------------------------|-----------------------|------------------------|-------------------------------------|---|-------------------------------------|----------------------------|----------------------|------------------------------|------------------------------|-----------------------------|-----------------------------|-------------------|--------------------|--|-----------------------|--------------------------------|------------------------------------|-------------------------------|--|----------------------------|----------------------------------|--|-----------------------------|--|--|
| | Education of Property Owners | Activity Restrictions | Spill Contingency Plan | Employee Training/Education Program | Street Sweeping Private Street and Parking Lots | Common Areas Catch Basin Inspection | Landscape Planning (SD-10) | Hillside Landscaping | Roof Runoff Controls (SD-11) | Efficient Irrigation (SD-12) | Protect Slopes and Channels | Storm Drain Signage (SD-13) | Inlet Trash Racks | Energy Dissipaters | Trash Storage Areas (SD-32) and Litter Control | Fueling Areas (SD-30) | Air/Water Supply Area Drainage | Maintenance Bays and Docks (SD-31) | Vehicle Washing Areas (SD-33) | Outdoor Material Storage Areas (SD-34) | Outdoor Work Areas (SD-35) | Outdoor Processing Areas (SD-36) | Wash Water Controls for Food Preparation Areas | Pervious Pavement (SD-20)** | Alternative Building Materials (SD-21) | |
| Significant Re-development | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Home subdivisions of 10 or more units | X | X | | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | X | |
| Commercial/Industrial Development >100,000 ft ² | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Automotive Repair Shop | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Restaurants | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hillside Development >10,000 ft ² | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Development of impervious surface >2,500 ft ² | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Parking Lots >5,000 ft ² of exposed storm water | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Provide justification of each Source Control BMP that will not be incorporated in the project WQMP, or explanation of proposed equally effective alternatives in the following table. ** Optional.

Justification for Source Control BMPs not incorporated into the project WQMP

| Source Control BMP | Used in Project (yes/no)? | Justification/Alternative* | Implementation Description |
|---|---------------------------|---|----------------------------|
| Education of Property Owners | | | |
| Activity Restrictions | | | |
| Spill Contingency Plan | X | No chemicals are expected To be contained in the site | |
| Employee Training/Education Program | | | |
| Street Sweeping Private Street and Parking Lots | | | |
| Common Areas Catch Basin Inspection | | | |
| Landscape Planning (SD-10) | | | |
| Hillside Landscaping | | | |
| Roof Runoff Controls (SD-11) | | | |
| Efficient Irrigation (SD-12) | | | |
| Protect Slopes and Channels | | | |
| Storm Drain Signage (SD-13) | | | |
| Inlet Trash Racks | X | Density relatively low to release large amounts of trash to street+ | |
| Energy Dissipaters | | | |
| Trash Storage Areas (SD-32) and Litter Control | | | |
| Fueling Areas (SD-30) | X | No gas stations at the site | |
| Air/Water Supply Area Drainage | X | No car service stations at site | |
| Maintenance Bays and Docks (SD-31) | X | No storage or shipping facilities at the site | |
| Vehicle Washing Areas (SD-33) | X | No car wash facilities at site | |
| Outdoor Material Storage Areas (SD-34) | X | N/A | |
| Outdoor Work Areas (SD-35) | X | N/A | |
| Outdoor Processing Areas (SD-36) | X | No outdoor process areas | |
| Wash Water Controls for Food Preparation Areas | X | No food preparation or catering facilities at site | |
| Pervious Pavement (SD-20) | | | |
| Alternative Building Materials (SD-21) | X | Specific Building type approved by agency | |
| *Attach additional sheets if necessary for justification. | | | |

3.4 BMP DESIGN CRITERIA

- The following indicated Treatment Control BMP(s) (Flow Based or Volume Based) will be implemented for this project:

Design Basis of Treatment Control BMPs

| Implemented | Treatment Control BMP | Design Basis |
|------------------------|--------------------------|--------------|
| Proposed Buffer Strips | Vegetated Buffer Strips | Flow Based |
| Proposed Grass Swale | Vegetated Swale | |
| | Multiple Systems | |
| | Manufactured/Proprietary | |
| | Bioretention | Volume Based |
| | Wet Pond | |
| | Constructed Wetland | |
| | Extended Detention Basin | |
| | Water Quality Inlet | |
| | Retention/Irrigation | |
| | Infiltration Basin | |
| | Infiltration Trench | |
| | Media Filter | |
| | Manufactured/Proprietary | |

3.4.1 Flow Based design Criteria

- Proposed swales shall be used for infiltration as shown on WQMP Exhibit "A".

3.4.2 VOLUME BASED DESIGN CRITERIA

- Not applicable.

Section 4 Operation and Maintenance

4.1 Operations and maintenance

Operation and maintenance (O&M) requirements for all Source Control, Site Design, and Treatment Control BMPs are identified herewith and include the following:

4.1.1 O&M DESCRIPTION AND SCHEDULE:

- 1 Preservation of existing vegetation, Per California Storm Water BMP Handbook, ECS 2
 - 2 Planting and hydroseeding, Per California Storm Water BMP Handbook, Details ESC10
 - 3 Construct outlet protection Rip-Rap, Per California Storm Water Handbook, Details ESC 40
 - 4 Vegetated swales for infiltration and treatment control BMP
- Existing vegetation consists of bushes, shrubs; grass and scattered trees they constitute a slow runoff velocity to overland flows down the existing slopes; their existence is described in the landscaping plans; tree protection includes inspection of their crowns, trunks, root systems; any damage found should be repaired immediately; roots should not be exposed to air, that should be covered immediately with soil as soon as possible. Areas with open spots or dying grass should be replanted and fertilized; inspection should be conducted every six months beginning with project completion.
 - Planting and Hydroseeding should be done at project completion to cover stabilized slopes and to promote thickening of landscaping and planting of new plants; all seeds shall be in conformance with the California State Seed Law of the Department of Agriculture. Each seed bag shall be delivered to the site sealed and clearly marked as to species, purity, percent germination, dealer's guarantee, and dates of test. The container shall be labeled to clearly reflect the amount of Pure Live Seed (PLS) contained. All legume seed shall be pellet inoculated. Inoculant sources shall be specific and shall be applied at a rate of 2lb of inoculant per 100 lb seed. Commercial fertilizer shall conform to the requirements of the California Food and Agricultural Code. Fertilizer shall be pelleted or granular form.

Hydroseed areas should be inspected prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during non-rainy season.

Irrigation system shall be inspected for complete coverage and adjusted as needed to maintain complete coverage.

- Rip-rap outlet protection and energy dissipater established at the construction stage; it shall be inspected prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.

Inspection shall be conducted also when this BMP is subject to non-storm water discharges daily while non-stormwater discharges occur.

Inspection should account for scour beneath the riprap and around outlet; damages to slopes or underlying filter fabric should be repaired immediately.

4.1.2 INSPECTION & MONITORING REQUIREMENTS:

- Provide thorough descriptions of water quality monitoring (if locally required).
- Provide self-inspections and record keeping requirements for BMPs (review local specific requirements regarding self-inspections and/or annual reporting), including identification of responsible parties for inspection and record keeping.

4.1.3 RESPONSIBLE PARTIES:

- A combination of Landscape and Lighting Maintenance District (LLMD) and Master Homeowner's Association (HOA) in addition to Sub-Associates for various planning areas will be formed and will be responsible for implementing operation, operating, and maintaining the proposed BMP's.

**SECTION 5
FUNDING**

5.1 Funding

- The owner/ developer of the University Hills Development is the responsible party for the funding sources for all Treatment Control BMPs until the project is completed and transferred to LLMD and/or HOA's

**SECTION 6
WQMP Certification**

6.1 Certification

"This Water Quality Management Plan has been prepared for Inland Communities Corporation by PBS&J. It is intended to comply with the requirements of the City of San Bernardino, CA for University Hills Specific Plan, Condition Number(s) _____ requiring the preparation of a Water Quality Management Plan (WQMP). The undersigned is aware that Best Management Practices (BMPs) are enforceable pursuant to the Santa Ana Regional Water Quality Control Board Order No. R8-2002-0012(NPDES Permit No.CAS618036). The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with San Bernardino County's Municipal Stormwater Management Program and the intent of the NPDES Permit for San Bernardino County and the incorporated cities of San Bernardino County within the Santa Ana Region. Once the undersigned transfers its interest in the property, its successors in interest and the city/county shall be notified of the transfer. The new owner will be informed of its responsibility under this WQMP. A copy of the approved WQMP shall be available on the subject site in perpetuity. "

"I certify under a penalty of law that the provisions (implementation, operation, maintenance, and funding) of the WQMP have been accepted and that the plan will be transferred to future successors."

Applicant's Signature

Date

Applicant's Name

Applicant's Telephone Number