CVALDO CORPORATION
CIVIL ENGINEERING

CONCEPTUAL STUDIES
DESIGN & PLANNING
PROJECT MANAGEMENT

PRELIMINARY
STORM WATER MANAGEMENT PLAN
FOR
PERMIT NUMBER
10004 CHANNEL ROAD

Job Number: 05-035

October 2005
Revised: June, 2007

PREPARED FOR:

Jack Wasson
5480 Baltimore Lane, Suite ~~207~~ 203
La Mesa, CA 91942

4901 Morena Blvd. Suite 1110 San Diego, CA 92117 (P) 858 866 0128 (F) 858 866 0131

TABLE OF CONTENTS

Appendices

Appendix A – Product Information

Workmaps

BMP Workmap

INTRODUCTION

The Storm Water Management Plan (SWMP) is required under the County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance (Section 67.817). The purpose of this SWMP is to address the water quality impacts of the proposed site improvements. Best Management Practices (BMPs) will be utilized to provide a long-term solution to water quality. This SWMP is also intended to ensure the effectiveness of the BMPs through proper maintenance that is based on long-term fiscal planning. The SWMP is subject to revisions as needed by the engineer.

CERTIFICATION PAGE

This Storm Water Management Plan 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.

Joel Valdovinos

4/3/07

Joel Valdovinos
Date
Registered Civil Engineer 65256 Exp. 09/30/07

SECTION 1.0
DESCRIPTION OF PROPOSED PROJECT

1.1 PROJECT LOCATION

The 10004 Channel Road project site is located in the unincorporated community of Lakeside in the County of San Diego. The site fronts the west side of Channel Road, (See Vicinity Map). Currently, the approximately 0 30-acre site is a developed lot with one mobile home that includes an access driveway. The project Site is located within the Lower San Diego Hydrologic Area.

1.2 PROJECT DESCRIPTION

Existing Condition

Currently the developed lot allows storm runoff to sheet flow across the property, and onto the existing asphalt private driveway. Under the existing condition, 95% of the project site (approximately 0.28 acres) is impermeable.

Physical Features

There are no major surface drainage changes proposed to the site; therefore, the proposed storm drainage surface flow pattern will mirror the existing conditions.

Land Use

The property is zoned RU29, Residential Use Regulation, and is within the San Diego County General Plan Designation of (9) Residential. Under the Zoning Ordinance the land will be used as Residential.

1.3 HYDROLOGIC UNIT CONTRIBUTION

The 10004 Channel Road Condominium site is located within the Santee Hydrologic Subarea (907.12) within the Lower San Diego Hydrologic Area (907.10) in the San Diego Hydrologic Unit (907). The site surface drains, southwesterly, towards the existing asphalt private driveway, and from there, the runoff continues to surface flow within the asphalt driveway in a westerly direction, which eventually, drains towards the San Diego River. Also, the project site does not receive any storm water runoff from any offsite areas. The proposed runoff velocities within the project site will not change as the proposed design will not concentrate any water discharge, and will surface flow as to match the existing conditions.

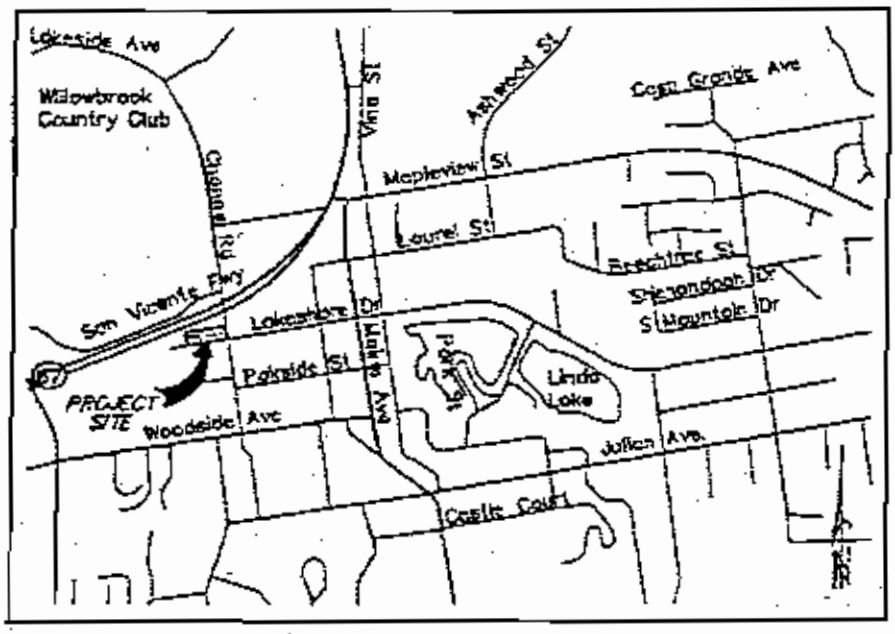
1.4 RESPONSIBLE PARTIES

Owner/Developer: Jack Wasson
5480 Baltimore Lane, Suite 204
La Mesa, CA 91942

Responsible Person: Jack Wasson
5480 Baltimore Lane, Suite 204
La Mesa, CA 91942
Tel: (619) 208-5777

The owner will be responsible for implementation and maintenance of all storm water management practices. The owner shall maintain and inspect the biofilter strip a minimum of twice a year, before and after the rainy season, after large storms, or more frequently if needed. Proper proof of maintenance will be reported to the appropriate agency. Further maintenance activities for treatment BMPs will be discussed in Section 5 of this report.

SECTION 2.0
VICINITY MAP



VICINITY MAP
NO SCALE

SECTION 3.0
WATER QUALITY ENVIRONMENT

3.1 BENEFICIAL USES

Under the Clean Water Act, "the beneficial use designation of surface waters of the state must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation." The beneficial uses for the hydrologic unit are included in Tables 3-1 through 3-3. These tables have been extracted from the Water Quality Control Plan for the San Diego Basin.

Inland Surface Waters

Inland surface waters from San Diego River has the following beneficial uses as shown in Table 3-1.

Table 3-1. Beneficial Uses for Inland Surface Waters

Hydrologic Unit Number	MUN	IND	REC1	REC2	WARM	COLD	WILD	RARE
907.12	O	X	X	X	X	X	X	X

X Existing Beneficial Use.
O Potential Beneficial Use.

Groundwater

Groundwater beneficial uses for the Santee Hydrologic Sub Area as shown in table 3-2.

Table 3-2. Beneficial Uses for Groundwater

Hydrologic Unit Number	MUN	AGR	IND	PROC
907.12	X	X	X	X

X Existing Beneficial Use.

Per the Water Quality Control Plan for the San Diego Basin (9), the beneficial uses for Hydrologic Sub Area are defined as:

- *Municipal & Domestic Supply (MUN):* Includes uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

- *Agricultural Supply (AGR):* Includes uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

- *Industrial Service Supply (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 repressurization.

- *Industrial Process Supply (PROC):* Includes uses of water for industrial activities that depend primarily on water quality.

- *Contact Water Recreation (REC-1):* 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, whitewater activities, fishing, or use of natural hot springs.

- *Noncontact Water Recreation (REC-2):* Includes the uses of water for recreational activities 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, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

- *Warm Freshwater Habitat (WARM):* Includes the 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.

- *Wildlife Habitat (WILD):* 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, and invertebrates), or wildlife water and food sources.

- *Threatened or Endangered Species (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.

3.2 303(d) STATUS

According to the 2002 California 303(d) list published by the San Diego Regional Water Quality Control Board, there are no impaired water bodies that are associated with the project.

The project location and watersheds have been compared to the current published 303(d) list of impaired water bodies, and the nearest impaired water body is the Pacific Ocean, which is impaired by a high coliform count. The Pacific Ocean is approximately 26 miles away from the project.

SECTION 4.0
CHARACTERIZATION OF PROJECT RUNOFF

4.1 STORM WATER QUALITY AT OUT FALL(S)

The California Water Codes define "water quality objectives" as: "The limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area."

The project will protect beneficial uses of water as required by the California Water Code and the Clean Water Act. The project will implement erosion control measures that will reduce pollutants from exiting the site.

4.2 EXISTING AND POSTCONSTRUCTION DRAINAGE

The existing condition drainage for the site is such that it conveys the onsite surface runoff to the southerly corner of the property and into an existing asphalt driveway.

The proposed condominium project will not alter drainage patterns on the site. The storm water discharge points will remain the same. The proposed design of the project will not change the impervious area.

There will not be an increase in the post construction water quality flows as there will be adequate treatment facilities in place.

Water Quality Treatment Flow

The water quality treatment flow is based on the water quality design storm of the 85th percentile precipitation map developed by the County of San Diego. The proposed treatment facilities will be designed to carry the calculated design flows. Water quality flows are calculated by using Q_{wq}=CIA, where Q_{wq} is the runoff that need to be treated in cfs, C is the runoff coefficient for the site, I = 0.20 inches per hour, and A is the area of the site. The calculated Q_{wq} for the site is 0.04 cfs.

4.3 POSTCONSTRUCTION EXPECTED DISCHARGES

There are no sampling data available for the existing site condition. In addition, the project is not expected to generate significant amounts of nonvisible pollutants. However, the following constituents are commonly found on similar developments and could affect water quality:

- Sediment discharge due to Postconstruction areas left bare.
- Nutrients from fertilizers.

- Hydrocarbons from paved areas.
- Pesticides from landscaping and home use.

4.4 SOIL CHARACTERISTICS

The total project area is assumed to consist of Soil Group D, to be conservative. The project does not have slopes steeper than 2:1. All slopes include existing slope protection for Postconstruction.

Note: Information regarding soils conditions is available in the Soil Survey, San Diego Area, California, U.S> Department of Agriculture, 1973.

SECTION 5.0
MITIGATION MEASURES TO PROTECT WATER QUALITY

To address water quality for the project, BMPs will be implemented during postconstruction.

5.1 CONSTRUCTION BMPS

There will be adequate treatment facilities in place during construction. Some potential BMP's that may be used are; silt fences, gravel bags, stabilized construction entrance/exit, and fiber rolls. Construction BMP's will be constructed and maintained so as to comply with all applicable ordinances and guidance documents.

5.2 POSTCONSTRUCTION BMPS

Pollutants of concern as noted in Section 4 will be addressed through three types of BMPs. These types of BMPs are site design, source control, and treatment control.

Site Design BMPs

The existing project site impervious area will not change. The proposed common areas on the site will be landscaped. The landscaping consists of both native and nonnative plants that keep erosion to a minimum. The irrigation system for these landscaped areas is monitored to reduce over irrigation.

The existing design of the site provides adequate BMPs to reduce the amount of pollutants introduces into storm runoff, as required by the County Clean Water Ordinances. These BMPs will include, but are not limited to, the following:

- The existing site design maximizes landscaping areas to minimize impervious surfaces to allow more infiltration of runoff water.
- The site maximizes the use of vegetation and promotes the use of drought-tolerant plants.
- Runoff from downspouts will be directed to pervious areas to help treat runoff before exiting the site.
- Fourteen out of the eighteen parking spaces will be covered, in the garage, including trash areas. The covered parking spaces will prevent run-off from coming in contact with potential pollutants.

Source Control BMPs

Source control BMPs will consist of measures to prevent polluted runoff. This program will include an educational component directed at the homeowners and the HOA. The homeowners and HOA will receive a set of brochures developed by the County's Environmental Health Department. These will include the following:

- Storm Water Runoff Pollution Fact Sheet;
- Storm Water Runoff Pollution Prevention Tips for Homeowners;
- Storm Water Pollution Prevention Yard Work (Landscaping, Gardening, Pest Control);
- Storm Water Pollution Prevention Pet Waste; and
- Storm Water BMP Swimming Pool and Spa Cleaning

Treatment Control BMPs

Owner will provide adequate treatment facilities to reduce the amount of pollutants introduced into storm runoff, as required by the County Clean Water Ordinances. These facilities will include, but are not limited to, the following:

- The project proposed to direct runoff to a biofilter strip on the property, this will serve as a water quality measure. Biofilter strip will be sized accordingly in final design.

SECTION 6.0
OPERATION AND MAINTENANCE STORM WATER MANAGEMENT PROGRAM

6.1 MAINTENANCE RESPONSIBILITY

The owner will be responsible for implementation and maintenance of all storm water management practices. SWMP Work Maps will indicate the maintenance responsibility of owners for any proposed Postconstruction BMPs.

6.2 MAINTENANCE ACTIVITIES PER BMPs

The owner shall maintain and inspect the storm water treatment units.

Biofilter Strip

Flow design per the maximum flow rate of runoff produced from a rainfall intensity of 0.2 inch of rainfall per hour.

Field Measurements

Only a visual inspection of the biofilter strip is required to determine if maintenance is required.

The operational and maintenance needs of the biofilter strip are:

- Erosion maintenance to maintain the performance of the biofilter strip.
- Trash and debris removal.
- Sediment removal

Inspection Frequency

The facility will be inspected and inspection visits will be completely documented:

- Twice a year.
- After every large storm (after every storm monitored or those storms with more than 0.50 inch of precipitation).
- On a weekly basis during extended periods of wet weather.

Maintenance Activity

- Report all maintenance activities to the proper agencies, as required by local ordinances.

Site-Specific Requirement

- Not applicable, at this time.

BMP Cost Estimate for Vegetated Buffer Strip

Land Cost = Negligible
Height of vegetation – $486.3
Assess adequate vegetative cover – $547.19
Inspect for accumulated sediment - $ 998.08 once every three years
General maintenance inspection – $698.08

Total cost for maintenance $2,098.20

SECTION 7.0
FISCAL RESOURCES AND REFERENCES

7.1 FISCAL RESOURCES

This section is intended to provide information regarding the ability of the owner/developer to ensure the construction and maintenance of postconstruction BMPs (Storm Water Standards Manual, Ordinance 9589).

Note: The County is developing categorical guidance for long-term BMP maintenance and resourcing. This guidance provides options and maintenance categories that can be used to complete this section. A draft of this guidance is available at www.sdcdpw.org.

7.2 REFERENCES

- *Water Quality control Plan for the San Diego Basin (9)*, California Regional Water Quality Control Board, adopted September 8, 1994.
- *San Diego County Hydrology Manual*, County of San Diego, September 2001.
- *County of San Diego Standard Urban Stormwater Mitigation Plan (SUSMP)*, February 2003.

SECTION 8.0
SUMMARY/ CONCLUSIONS

This SWMP has been prepared in accordance with the Watershed Protection, Storm Water Management, and Discharge Control Ordinance and the Storm Water Standards Manual. This SWMP has evaluated and addressed the potential pollutants associated with this project and their effects on water quality. A summary of the facts and findings associated with this project and the measure addressed by this SWMP is as follows:

- The beneficial uses for the receiving waters have been identified. None of these beneficial uses will be impaired or diminished due to the construction and operation of this project.

- The 10004 Channel Road Condominium project will not alter drainage patterns on the site. The discharge points will not be changed.

- The total impervious area of the project site will not change. The existing 5% of open areas have been landscaped to reduce or eliminate sediment discharge.

- The proposed postconstruction BMPs address mitigation measures to protect water quality, and protect water quality objectives and beneficial uses to the maximum extent practicable.

- Water will be directed towards biofilter strips, which will help treat roof runoff as it makes it way through the site and eventually to the exiting point.

- Weekly trash collection will be preformed to help reduce debris from escaping the site.

APPENDIX A

PRODUCT INFORMATION

Trash Storage Areas SD-32

Description

Trash storage areas are areas where a trash receptacle (s) are located for use as a repository for solid wastes. Stormwater runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or creeks. Waste handling operations that may be sources of stormwater pollution include dumpsters, litter control, and waste piles.

Approach

This fact sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff associated with trash storage and handling. Preventative measures including enclosures, containment structures, and impervious pavements to mitigate spills, should be used to reduce the likelihood of contamination.

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Design requirements for waste handling areas are governed by Building and Fire Codes, and by current local agency ordinances and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code and ordinance requirements. Hazardous waste should be handled in accordance with legal requirements established in Title 22, California Code of Regulation.

Wastes from commercial and industrial sites are typically hauled by either public or commercial carriers that may have design or access requirements for waste storage areas. The design criteria in this fact sheet are recommendations and are not intended to be in conflict with requirements established by the waste hauler. The waste hauler should be contacted prior to the design of your site trash collection areas. Conflicts or issues should be discussed with the local agency.

Designing New Installations

Trash storage areas should be designed to consider the following structural or treatment control BMPs:

- Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater.
- Make sure trash container areas are screened or walled to prevent off-site transport of trash.

- Use lined bins or dumpsters to reduce leaking of liquid waste.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Pave trash storage areas with an impervious surface to mitigate spills.
- Do not locate storm drains in immediate vicinity of the trash storage area.
- Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Maintenance Considerations

The integrity of structural elements that are subject to damage (i.e., screens, covers, and signs) must be maintained by the owner/operator. Maintenance agreements between the local agency and the owner/operator may be required. Some agencies will require maintenance deed restrictions to be recorded of the property title. If required by the local agency, maintenance agreements or deed restrictions must be executed by the owner/operator before improvement plans are approved.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Roof Runoff Controls SD-11

Rain Garden

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Various roof runoff controls are available to address stormwater that drains off rooftops. The objective is to reduce the total volume and rate of runoff from individual lots, and retain the pollutants on site that may be picked up from roofing materials and atmospheric deposition. Roof runoff controls consist of directing the roof runoff away from paved areas and mitigating flow to the storm drain system through one of several general approaches: cisterns or rain barrels; dry wells or infiltration trenches; pop-up emitters, and foundation planting. The first three approaches require the roof runoff to be contained in a gutter and downspout system. Foundation planting provides a vegetated strip under the drip line of the roof.

Approach

Design of individual lots for single-family homes as well as lots for higher density residential and commercial structures should consider site design provisions for containing and infiltrating roof runoff or directing roof runoff to vegetative swales or buffer areas. Retained water can be reused for watering gardens, lawns, and trees. Benefits to the environment include reduced demand for potable water used for irrigation, improved stormwater quality, increased groundwater recharge, decreased runoff volume and peak flows, and decreased flooding potential.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Designing New Installations

Cisterns or Rain Barrels

One method of addressing roof runoff is to direct roof downspouts to cisterns or rain barrels. A cistern is an above ground storage vessel with either a manually operated valve or a permanently open outlet. Roof runoff is temporarily stored and then released for irrigation or infiltration between storms. The number of rain

barrels needed is a function of the rooftop area. Some low impact developers recommend that every house have at least 2 rain barrels, with a minimum storage capacity of 1000 liters. Roof barrels serve several purposes including mitigating the first flush from the roof which has a high volume, amount of contaminants, and thermal load. Several types of rain barrels are commercially available. Consideration must be given to selecting rain barrels that are vector proof and childproof. In addition, some barrels are designed with a bypass valve that filters out grit and other contaminants and routes overflow to a soak-away pit or rain garden.

If the cistern has an operable valve, the valve can be closed to store stormwater for irrigation or infiltration between storms. This system requires continual monitoring by the resident or grounds crews, but provides greater flexibility in water storage and metering. If a cistern is provided with an operable valve and water is stored inside for long periods, the cistern must be covered to prevent mosquitoes from breeding.

A cistern system with a permanently open outlet can also provide for metering stormwater runoff. If the cistern outlet is significantly smaller than the size of the downspout inlet (say ¼ to ½ inch diameter), runoff will build up inside the cistern during storms, and will empty out slowly after peak intensities subside. This is a feasible way to mitigate the peak flow increases caused by rooftop impervious land coverage, especially for the frequent, small storms.

Dry wells and Infiltration Trenches

Roof downspouts can be directed to dry wells or infiltration trenches. A dry well is constructed by excavating a hole in the ground and filling it with an open graded aggregate, and allowing the water to fill the dry well and infiltrate after the storm event. An underground connection from the downspout conveys water into the dry well, allowing it to be stored in the voids. To minimize sedimentation from lateral soil movement, the sides and top of the stone storage matrix can be wrapped in a permeable filter fabric, though the bottom may remain open. A perforated observation pipe can be inserted vertically into the dry well to allow for inspection and maintenance.

In practice, dry wells receiving runoff from single roof downspouts have been successful over long periods because they contain very little sediment. They must be sized according to the amount of rooftop runoff received, but are typically 4 to 5 feet square, and 2 to 3 feet deep, with a minimum of 1-foot soil cover over the top (maximum depth of 10 feet).

To protect the foundation, dry wells must be set away from the building at least 10 feet. They must be installed in solids that accommodate infiltration. In poorly drained soils, dry wells have very limited feasibility.

Infiltration trenches function in a similar manner and would be particularly effective for larger roof areas. An infiltration trench is a long, narrow, rock-filled trench with no outlet that receives stormwater runoff. These are described under Treatment Controls.

Pop-up Drainage Emitter

Roof downspouts can be directed to an underground pipe that daylights some distance from the building foundation, releasing the roof runoff through a pop-up emitter. Similar to a pop-up irrigation head, the emitter only opens when there is flow from the roof. The emitter remains flush to the ground during dry periods, for ease of lawn or landscape maintenance.

Foundation Planting

Landscape planting can be provided around the base to allow increased opportunities for stormwater infiltration and protect the soil from erosion caused by concentrated sheet flow coming off the roof. Foundation plantings can reduce the physical impact of water on the soil and provide a subsurface matrix of roots that encourage infiltration. These plantings must be sturdy enough to tolerate the heavy runoff sheet flows, and periodic soil saturation.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Supplemental Information

Examples

- City of Ottawa's Water Links Surface –Water Quality Protection Program
- City of Toronto Downspout Disconnection Program
- City of Boston, MA, Rain Barrel Demonstration Program

Other Resources

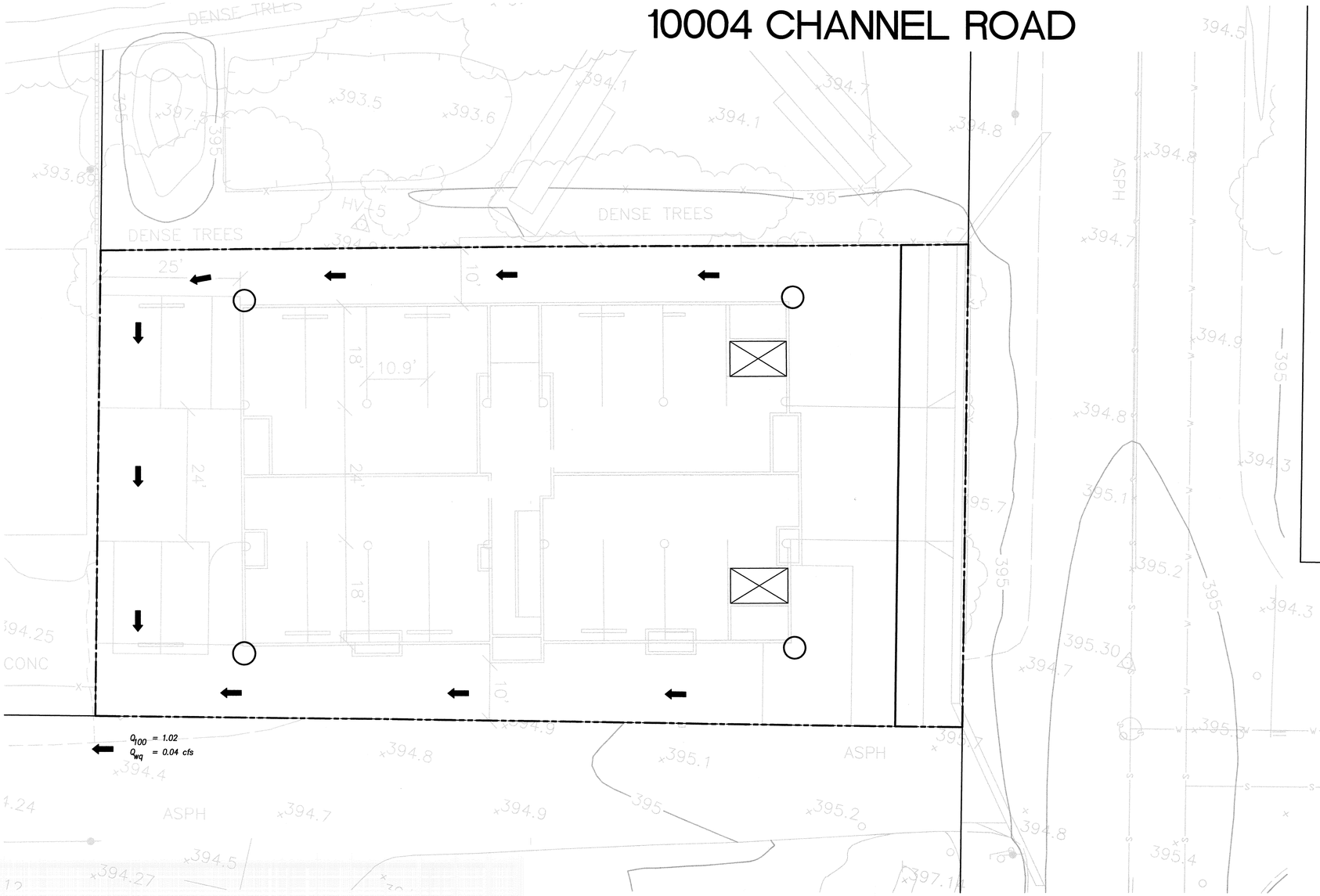
Hager, Marty Catherine, Stormwater, "Low-Impact Development", January/February 2003. www.stormh2o.com

Low Impact Urban Design Tools, Low Impact Development Design Center, Beltsville, MD. www.lid-stormwater.net

Start at the Source, Bay Area Stormwater Management Agencies Association, 1999 Edition

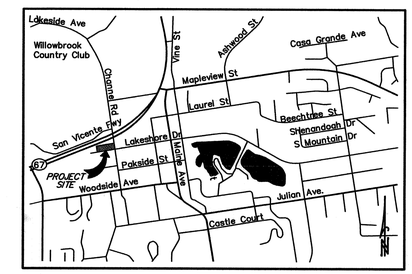
BMP WORK MAP

STORMWATER MANAGEMENT PLAN
FOR
10004 CHANNEL ROAD

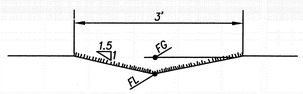


LEGEND

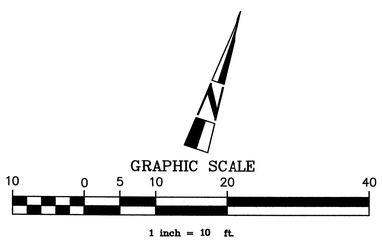
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED BOUNDARY
- BIOFILTRATION
- TRASH LOCATION
- DOWN SPOUT



VICINITY MAP
NO SCALE



BIOSTRIP DETAIL
NOT TO SCALE



CVALDO CORPORATION
CIVIL ENGINEERING
4901 MORENA BLVD. SUITE 1110
SAN DIEGO, CA 92117
(P) 858 866 0128 (F) 858 866 0131

STORMWATER MANAGEMENT PLAN
FOR
10004 CHANNEL ROAD