REDONDO BEACH SUSMP REPORT

for

316 North Catalina Ave.
Redondo Beach, CA 90277

Prepared by

Civil Development Group, LLC
Job No. 10-069

July 6, 2010

REGISTERED PROFESSIONAL ENGINEER
JOHN C. WOO
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EXP 3/31/2010
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Requirements List and Project Applicable BMP solutions

1. Peak storm water runoff discharge rates

The project site, located at 316 North Catalina Ave. in Redondo Beach, CA 90277, is about 0.14 acres in size. The existing site currently has a residential house on it. Existing onsite storm water sheet flows across the site westerly direction and sheet flows over the sidewalk at Catalina Ave. The existing total 50 year peak discharge from the site is calculated to be approximately 0.59 cfs (See sheet 12). There are no existing storm water mitigation or pollution prevention measures in place.

The site is proposed by two residential buildings. The proposed 50 year peak discharge from the site is calculated to be 0.59cfs (See sheet 13), same as the pre development peak discharge. The proposed storm water flow pattern will be same as the existing pattern. The on-site storm water will be collected by a storm drain system and a catch basin on the Northern portion of the site and discharged onto North Catalina Ave. And the on-site storm water will also be collected by a trench drain on the Southern portion of the site and discharged onto North Catalina Ave. These pipes, catch basin and trench drain are all sized to handle the flow of the entire 50-year storm rate.

KriStar FloGard downspout filter assembly shall be installed at all roof drains in North portion of the storm drain system to remove pollutants from runoff before discharging into North Catalina Ave. The peak flow calculated for a 50 year storm event is 0.38cfs. KriStar FloGard trench drain filter insert shall be installed at the trench drain in South portion of the storm drain system to remove pollutants from runoff before discharging into North Catalina Ave. The peak flow calculated for a 50 year storm event is 0.21cfs.

2. Conserve nature areas

There are no environmentally sensitive areas on the project site, and no native vegetation will be preserved during grading operations. Landscape areas shall be provided at planters and yard areas. Runoff shall be directed through landscaping areas when possible before entering the storm drain system. Landscaping plan designs shall incorporate use of native and drought resistant plants while maximizing trees and tree clustering.

3. Minimize storm water pollution concern

Storm water runoff, particularly roof water runoff, shall be directed through FloGard downspout filter assembly before entering the storm drain system in order to filter contaminated storm water. KriStar FloGard downspout filter assembly and KriStar FloGard LoPro trench drain insert shall be installed in the storm drain system to remove pollutants from runoff before it is discharged into North Catalina Ave. (See sheet 10 & 11).

4. Protect slopes and channels

The proposed slope shall be stabilized with landscaping and shall be vegetated with native or drought tolerant vegetation to minimize erosion. The runoff from the slope is conveyed by concrete swale to drain to pipe system.

5. Provide storm drain system stenciling and signage

All storm drain inlets and catch basins within the project area must be stenciled with prohibitive language (such as: "NO DUMPING – DRAINS TO OCEAN") and/or graphical icons to discourage illegal dumping.

Signs and prohibitive language and/or graphical icons, which prohibit illegal dumping, must be posted at public access points along channels within the project.

Stencils and signs must be large enough to be easily readable and legibility is to be maintained perpetually.

6. Properly design outdoor material storage areas

All outdoor materials that may contribute pollutants to the storm water conveyance system shall be contained in a covered area with required execution of the following BMPs:

1. Placed in an enclosure such as, but not limited to, a cabinet, shed or similar structure that prevents contact with runoff or spillage to the storm water conveyance system.
2. Protected by secondary containment structures such as berms, dikes, or curbs.
3. Storage area must be paved and sufficiently impervious to contain leaks and spills.
4. The storage area must have a roof or awning to minimize collection of storm water within the secondary containment area.

7. Properly design trash storage areas

All trash container areas must meet the following Structural or Treatment Control BMP requirements:

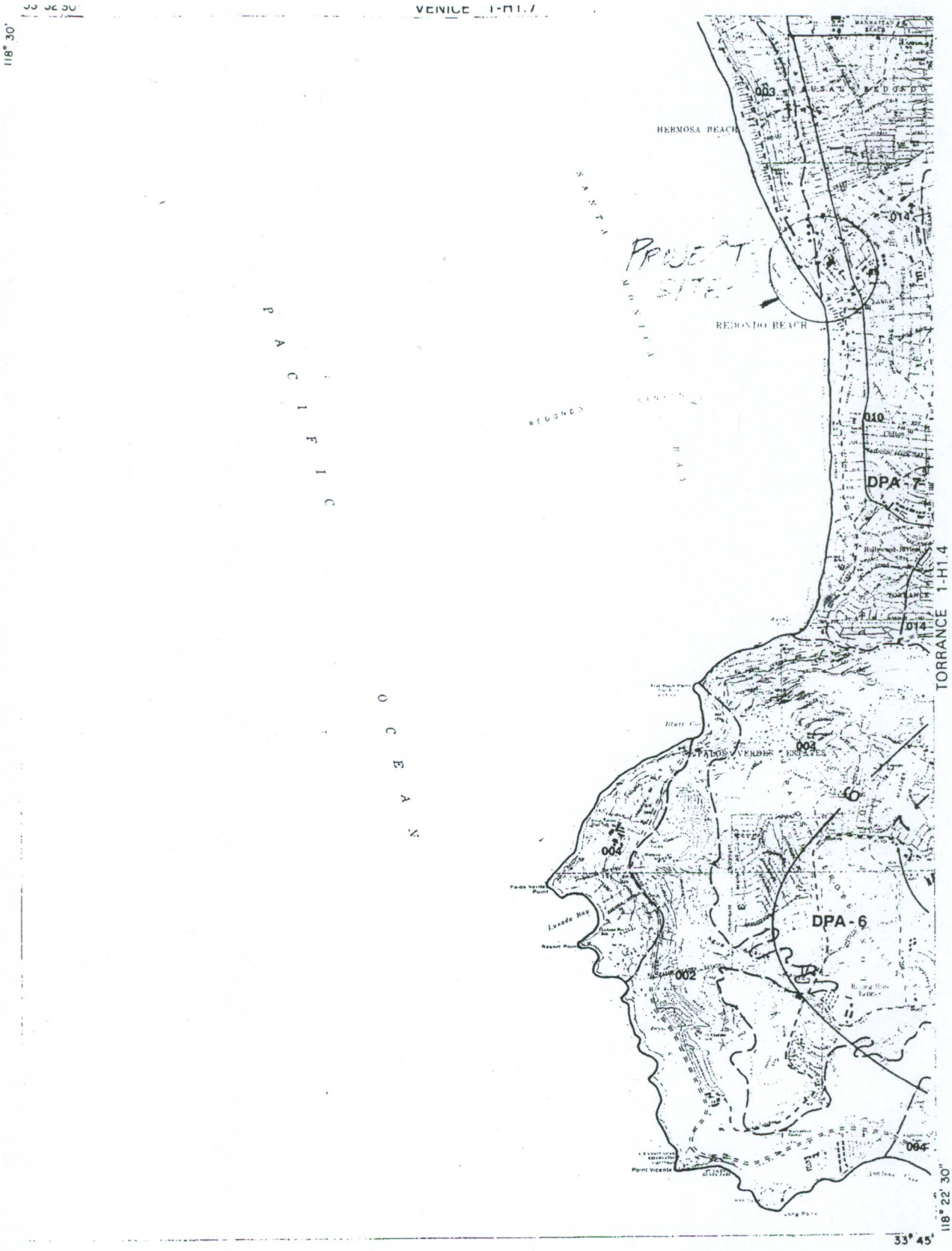
1. Trash container areas must have drainage from adjoining roofs and pavement diverted around the area(s).
2. Trash container area(s) must be screened or walled to prevent off-site transport of trash.

8. Proof of ongoing BMP maintenance

The owner shall provide the City with a copy of an approved Maintenance Covenant and any other additions or updates required by the City. If the treatment control BMPs shall be maintained by a homeowner's association, the.conditions, covenants and restrictions must include language to indicate so. See manufacturer's specifications for detailed maintenance requirements.

9. Design standards for structural or treatment control BMPs

The proposed use of KriStar FloGard LoPro trench drain insert and FloGard downspout filter assembly will fully treat water from the 0.75" storm event, as well as treat the runoff from the 50-year storm event (See sheet 13).



LEGEND

— — — SOIL CLASSIFICATION AREA

..... DEBRIS POTENTIAL AREA

(K) RAINFALL ZONE

—12— 50-YEAR ISOHYET (MAX. 24-HOUR AMOUNT)

L A C D P W

N

0 FEET 5000

REDONDO BEACH 1981

hydrologic map

Runoff Coefficient Groups																	
RC	G	RC	G	RC	G	RC	G	RC	G	RC	G	RC	G	RC	G	RC	G
1	-	21	B	41	B	61	B	81	A	101	B	121	B	141	A	161	B
2	A	22	A	42	A	62	A	82	A	102	A	122	B	142	A	162	A
3	B	23	A	43	B	63	A	83	-	103	A	123	A	143	B	163	A
4	A	24	B	44	A	64	A	84	B	104	A	124	B	144	B	164	A
5	A	25	A	45	B	65	A	85	B	105	A	125	B	145	B	165	A
6	A	26	B	46	B	66	A	86	B	106	B	126	B	146	A	166	B
7	A	27	B	47	A	67	B	87	B	107	A	127	B	147	A	167	A
8	A	28	B	48	A	68	A	88	B	108	A	128	B	148	B	168	B
9	A	29	A	49	A	69	B	89	A	109	A	129	B	149	B	169	B
10	B	30	B	50	A	70	A	90	A	110	A	130	B	150	B	170	B
11	A	31	B	51	A	71	A	91	A	111	A	131	B	151	A	171	B
12	A	32	A	52	B	72	A	92	A	112	A	132	B	152	A	172	B
13	A	33	A	53	B	73	A	93	A	113	A	133	A	153	B		
14	A	34	A	54	A	74	B	94	A	114	A	134	B	154	A		
15	B	35	B	55	A	75	B	95	A	115	A	135	A	155	A		
16	A	36	A	56	A	76	B	96	B	116	B	136	B	156	A		
17	A	37	B	57	B	77	A	97	A	117	A	137	A	157	B		
18	B	38	A	58	A	78	B	98	A	118	A	138	B	158	B		
19	B	39	A	59	A	79	A	99	A	119	B	139	A	159	A		
20	B	40	A	60	B	80	A	100	A	120	A	140	A	160	B		

RC = Runoff Coefficient Curve Number
G = Group Letter (See Pages 2 & 3)

NOT for use for Areas Greater
***
than 10 Acres

Los Angeles County
Department of Public Works

CAPITAL FLOOD Q'S FOR SMALL
DEVELOPED DRAINAGE AREAS
-
RUNOFF COEFFICIENT GROUP
DEFINITION

Area (Acres)	Capital Flood Q's by Rainfall Zone:				
	I	J	K	L	M
0.5	1.8	1.4	2.1	2.6	3.0
1.0	3.3	2.6	4.0	4.9	5.7
1.5	4.8	3.7	5.8	7.1	8.2
2.0	6.2	4.9	7.6	9.2	11.0
2.5	7.6	6.0	9.4	11.0	13.0
3.0	8.9	7.0	11.0	13.0	15.0
3.5	10.0	8.1	13.0	15.0	18.0
4.0	12.0	9.2	14.0	17.0	20.0
4.5	13.0	10.0	16.0	19.0	22.0
5.0	14.0	11.0	18.0	21.0	24.0
5.5	15.0	12.0	19.0	23.0	27.0
6.0	17.0	13.0	21.0	25.0	29.0
6.5	18.0	14.0	23.0	27.0	31.0
7.0	19.0	15.0	24.0	29.0	33.0
7.5	20.0	16.0	26.0	31.0	35.0
8.0	21.0	17.0	27.0	33.0	37.0
8.5	23.0	18.0	29.0	35.0	40.0
9.0	24.0	19.0	30.0	36.0	42.0
9.5	25.0	20.0	32.0	38.0	44.0
10.0	26.0	21.0	34.0	40.0	46.0

NOT for use for Areas Greater Than 10 Acres.

QAREA3.TAB

Flood Level Adjustment	
Flood Level	Factor
10 Yrs.	0.696
Urban	0.855

To Adjust from a Capital Flood to a 10-Year or Urban Flood, Multiply the Table Q by the Factor.

Los Angeles County
Department of Public Works

CAPITAL FLOOD Q'S FOR SMALL DEVELOPED DRAINAGE AREAS
-
RUNOFF COEFFICIENT GROUP B

Runoff Coefficient Table

No.	C	I	C	I	C	I	C	I
2	.100	.000	.100	.120	.350	.230	.525	.400
	.620	.580	.702	.810	.770	1.270	.837	2.000
	.880	3.000	.900	3.580	.919	4.500	.930	5.500
	.939	7.000	.946	8.000				
3	.100	.000	.100	.700	.170	1.300	.260	1.700
	.340	2.140	.393	2.500	.460	3.070	.520	3.680
	.577	4.400	.613	5.000	.648	5.700	.670	6.330
	.687	7.000	.702	8.000				
4	.100	.000	.100	.360	.220	.500	.400	.730
	.450	.840	.520	1.070	.572	1.300	.620	1.600
	.660	1.940	.700	2.410	.739	3.090	.780	4.310
	.817	6.000	.845	8.000				
5	.100	.000	.100	.400	.133	.502	.277	.720
	.400	.980	.501	1.270	.590	1.610	.677	2.080
	.780	2.880	.842	3.700	.876	4.500	.900	5.500
	.912	6.500	.920	8.000				
6	.100	.000	.100	.300	.200	.380	.350	.510
	.450	.660	.550	.910	.650	1.350	.719	1.820
	.780	2.390	.826	3.000	.862	3.600	.900	4.490
	.932	5.500	.988	8.000				
7	.100	.000	.100	.600	.200	.860	.350	1.200
	.435	1.500	.520	1.900	.580	2.290	.642	2.800
	.691	3.300	.732	3.800	.777	4.500	.806	5.100
	.839	6.000	.888	8.000				
8	.100	.000	.100	.100	.400	.240	.600	.400
	.711	.600	.760	.770	.804	1.000	.850	1.400
	.886	1.900	.914	2.500	.948	3.700	.962	4.700
	.972	6.000	.980	8.000				
9	.100	.000	.100	.270	.270	.420	.450	.800
	.570	1.140	.690	1.640	.813	1.920	.869	2.910
	.895	3.250	.918	3.700	.942	4.600	.960	5.600
	.972	7.000	.978	8.000				
10	.100	.000	.100	.560	.168	1.010	.290	1.470
	.400	2.000	.489	2.500	.558	3.000	.620	3.510
	.680	4.130	.730	4.770	.778	5.500	.818	6.300
	.848	7.000	.876	8.000				
11	.100	.000	.100	.200	.360	.510	.500	.770
	.600	1.080	.650	1.320	.693	1.570	.725	1.850
	.750	2.150	.772	2.480	.799	2.990	.826	3.730
	.855	5.000	.892	8.000				
12	.100	.000	.100	.180	.520	.220	.650	.330
	.720	.440	.760	.580	.806	.780	.860	1.200
	.900	1.600	.931	2.100	.953	2.700	.970	3.200
	.980	4.200	.986	8.000				

Los Angeles County
Department of Public Works

RUNOFF COEFFICIENT TABLE

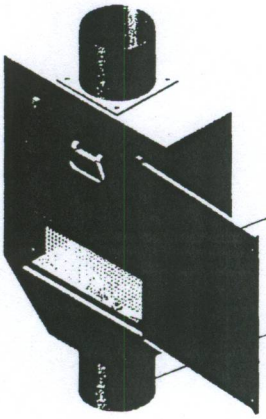
FloGard™

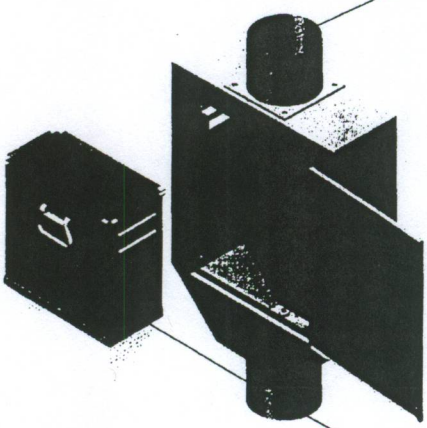
ARCHITECTURAL SERIES

DOWNSPOUT FILTER ASSEMBLY

FEATURES

- Handles non-soluble solids such as sediment, gravel, hydrocarbons
- Uses the same effective filter medium as the the other FloGard filter products
- Custom size or shape downspout pipe connections available
- Easy, economical installation
- Easy, low cost maintenance





The **FloGard**™ Downspout Filter Assembly is typically installed on commercial or industrial building downspout (downdrain) pipes for the removal of non-soluble pollutants normally found on building roofs (sediment, gravel, hydrocarbons, etc.).

Constructed of corrosion-resistant stainless steel (Type 304), the **FloGard**™ Downspout Filter is designed to accept either 4" or 6" diameter downspout pipes. Special size or shape downspout pipe connections are available upon request.

FloGard™ Downspout Filters offer a tamper-proof, water-proof, hinged access door and easy slide-in pollutant collection basket for ease of maintenance.

Specifications

Model No.		
FG-DS6	Inlet Diameter	6" (Sch. 40)
	Outlet Diameter	6" (Sch. 40)
	Outside Dimensions	18" x 24" x 7"
FG-DS4	Inlet Diameter	4" (Sch. 40)
	Outlet Diameter	4" (Sch. 40)
	Outside Dimensions	18" x 24" x 5"
Clean Flow Rate	455 gpm (1.01 cfs)	
Bypass Flow Area (%)	125% min.	

* Non-standard shapes and dimensions available upon request

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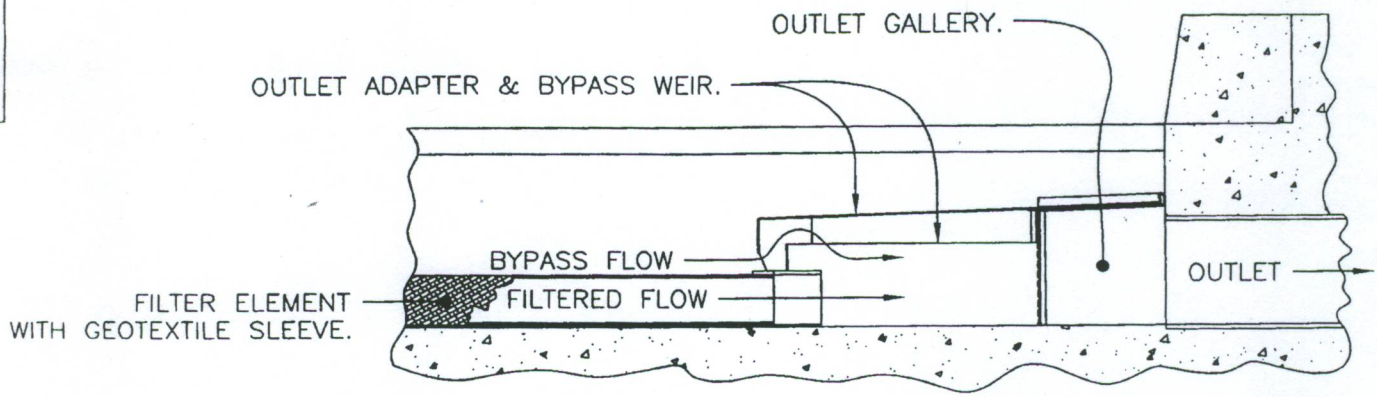
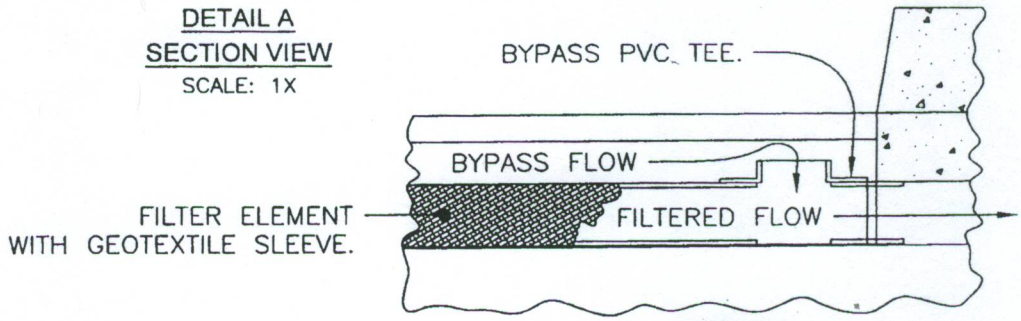
FloGard™ is a registered trademarks of KriStar Enterprises, Inc.
KriStar Enterprises, Inc. • P.O. Box 7352 • Santa Rosa, CA 95407-0352 • PH: 800-579-8819 • FAX: 707-524-8186 • www.kristar.com

FG-LP-0002



DETAIL A
SECTION VIEW
SCALE: 1X



DETAIL B
SECTION VIEW
ALTERNATE ADAPTER CONFIGURATION
SCALE: 1X

SPECIFIER CHART

MODEL	FILTER TYPE	TRENCH WIDTH "ID" (CLEAR OPENING)	MINIMUM TRENCH DEPTH (FROM BOTTOM OF GRATE)	SOLIDS STORAGE CAPACITY CUBIC FEET	FILTERED FLOW CUBIC FEET / SECOND	TOTAL BYPASS CAPACITY CUBIC FEET /SECOND
FG-TDOF3	PIPE *	3.0	6.5	0.1	0.5	0.1
FG-TDOF4	PIPE *	4.0	6.5	0.2	0.5	0.1
FG-TDOF6	PIPE	6.0	6.5	0.4	0.5	0.2
FG-TDOF8	PIPE	8.0	6.5	0.7	0.5	0.3
FG-TDOF10	PIPE	10.0	6.5	0.9	0.5	0.5
FG-TDOF12	PIPE	12.0	6.5	0.9	1.0	0.6
FG-TDOF18	PIPE	18.0	6.5	1.3	1.5	1.1
FG-TDOF24	PIPE	24.0	6.5	1.8	2.0	1.5
FG-TDOA6	PANEL	6.0	6.5	0.5	0.2	0.3
FG-TDOA8	PANEL	8.0	6.5	0.7	0.2	0.3
FG-TDOA10	PANEL	10.0	6.5	0.8	0.3	0.5
FG-TDOA12	PANEL	12.0	6.5	1.0	0.4	0.6
FG-TDOA18	PANEL	18.0	6.5	1.4	0.8	1.1
FG-TDOA24	PANEL	24.0	6.5	1.8	1.1	1.5

* ALTERNATE ADAPTER CONFIGURATION. SEE DETAIL B.

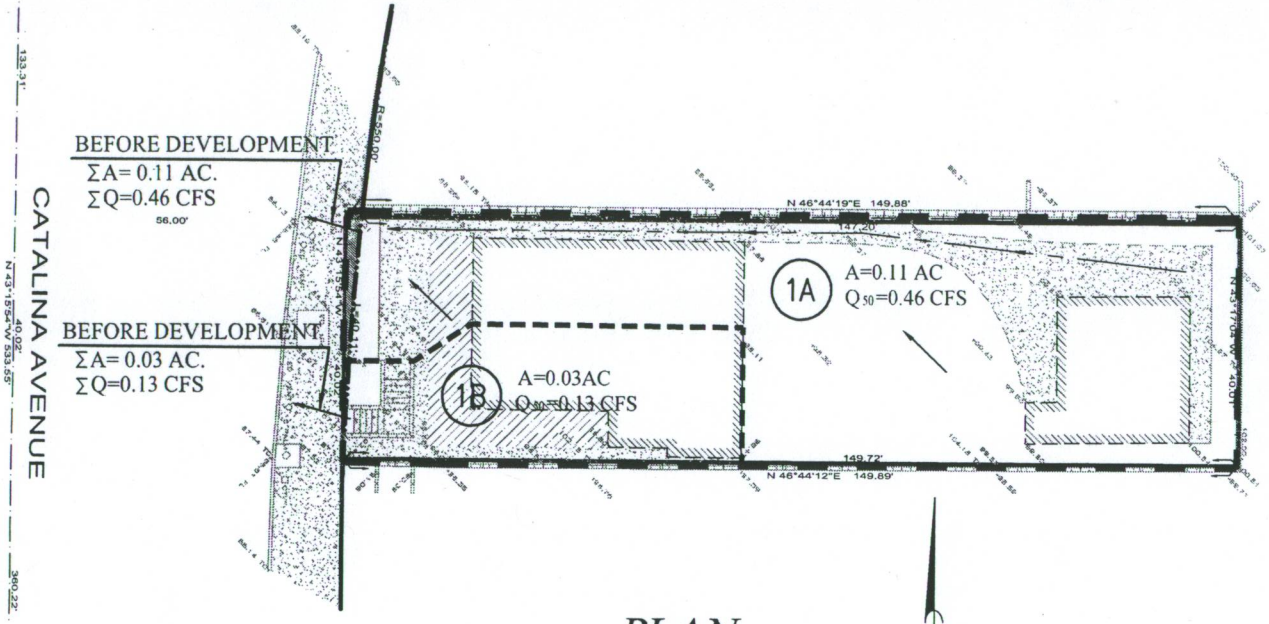
TITLE

FloGard® LoPro™

TRENCH DRAIN FILTER INSERT

KriStar Enterprises, Inc.
P.O. Box 6419, Santa Rosa, CA 95406
Ph: 800.579.8819, Fax: 707.524.8186, www.kristar.com

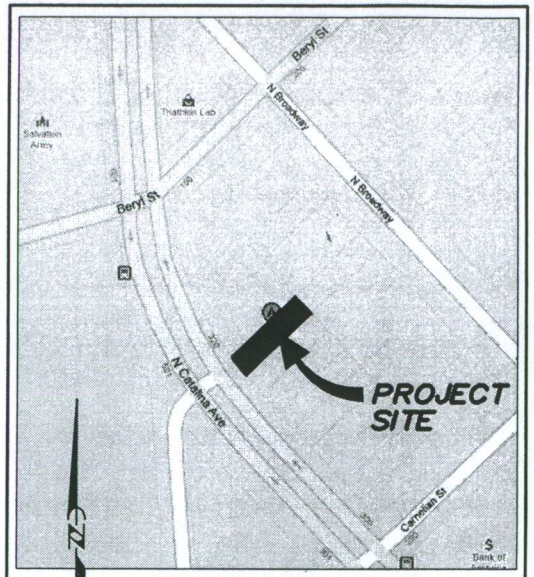
DRAWING NO.	REV	ECO	DATE	DATE	
FG-LP-0002	C	0020	3/7/07	JPR 2/21/07	SHEET 2 OF 2



PLAN
PRE DEVELOPMENT
SCALE: 1" = 20'

0 20 40 80 Feet

GRAPHIC SCALE
SCALE: 1" = 20'



VICINITY MAP
NOT TO SCALE

LEGEND

— · — · —	DRAINAGE BOUNDARY
- - - - - -	SUBAREA BOUNDARY
ΣQ	SUM OF Q (c.f.s.)
ΣA	SUM OF AREA (AC)
(2B) A=0.11 AC	SUB-AREA ACREAGE
Q_{50}	50 YR. DEVELOPED Q (c.f.s.)
→	DIRECTION OF FLOW

HYDROLOGY INFORMATION

PER "HYDROLOGY/SEDIMENTATION MANUAL"
BY LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS.

RAINFALL ZONE: K

SOIL TYPE: 010

FREQUENCY: 50-YR

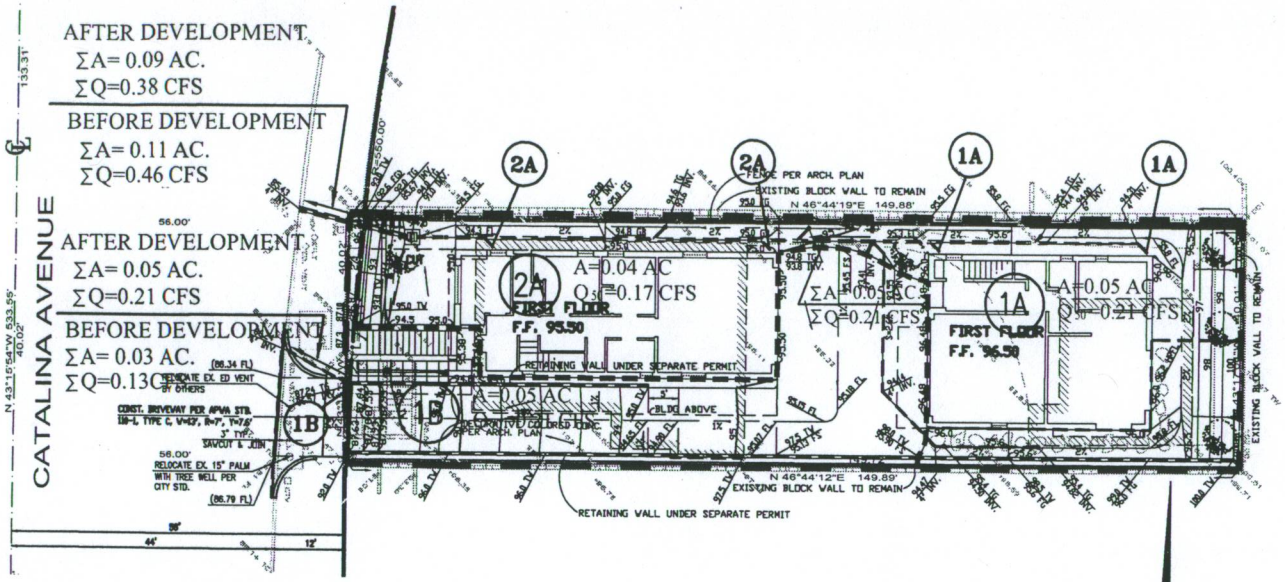
FLOW RATE: Q_{50} = 4.2A
PER SMALL DEVELOPED DRAINAGE AREAS

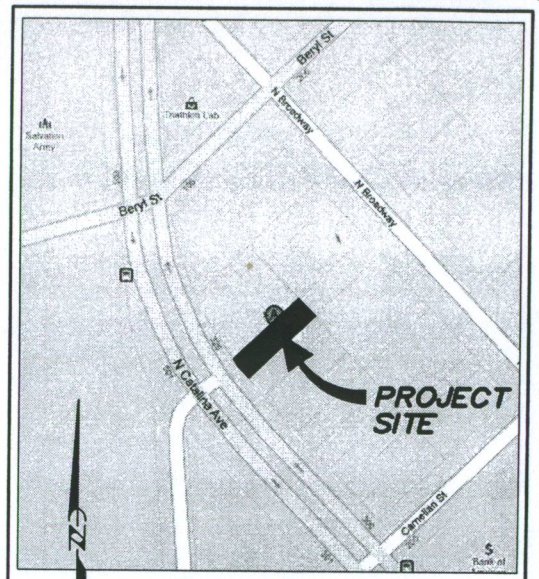
REGISTERED PROFESSIONAL ENGINEER
JOHN C. WOO
No. C45021
EXPIRES 3-31-12
CIVIL
STATE OF CALIFORNIA

PRE DEVELOPMENT HYDROLOGY STUDY
for NEW 3-UNIT CONDOMINIUM

Civil Development Group

316 North Catalina Ave., Redondo Beach, CA 90277





VICINITY MAP

NOT TO SCALE

PLAN

POST DEVELOPMENT

SCALE: 1" = 20'

0 20 40 80 Feet

GRAPHIC SCALE
SCALE: 1" = 20'

HYDROLOGY INFORMATION

PER "HYDROLOGY/SEDIMENTATION MANUAL"
BY LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS.

RAINFALL ZONE: K
SOIL TYPE: 010
FREQUENCY: 50-YR
FLOW RATE: Q_{50} = 4.2A
PER SMALL DEVELOPED DRAINAGE AREAS

S.U.S.M.P. CALCULATION

*: PER L.A.C.D.P.W. MANUAL FOR SUSMP:
Tc=5 minute, I=0.447 in/hr, C=0.100
IMP=90%, Cd=0.820, Q=0.367A cfs

SUB-AREA S.U.S.M.P. HYDROLOGY TABLE

SUB-AREA	AREA (AC.)	IMP (%)	Q_{PM} (C.F.S.) REQUIRED	Q_{PM}* (C.F.S.) PROVIDED	UNIT
1A	0.05	90	0.02	1.01	DOWNSPOUT FILTER (FloGard FG-DS4)
2A	0.04	90	0.01	1.01	
1B	0.05	90	0.02	0.50	TRENCH DRAIN FILTER (FloGard FG-TDOF6)

LEGEND

- DRAINAGE BOUNDARY
- SUBAREA BOUNDARY
- ΣQ — SUM OF Q (c.f.s.)
- ΣA — SUM OF AREA (AC)
- (2B) A=0.04 AC — SUB-AREA ACREAGE
- Q_{50} — 50 YR. DEVELOPED Q (c.f.s.)
- DIRECTION OF FLOW

REGISTERED PROFESSIONAL ENGINEER
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EXPIRES 3-31-12
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STATE OF CALIFORNIA

POST DEVELOPMENT HYDROLOGY STUDY

for NEW 3-UNIT CONDOMINIUM

316 North Catalina Ave., Redondo Beach, CA 90277

Civil Development Group