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September 10, 2014

San Marcos Highlands TSM 408-Revised

Water Quality Improvement Plan (WQIP) / Preliminary Hydrology / Hydraulic Study Addendum

The original Preliminary Hydrology / Hydraulic Study dated February 19, 2013, addressed the proposed stormwater runoff of the 198 Lot version of the site. The original WQIP's, dated February 20, 2013, also reflected the 198 Lot version of the TM and addressed the site's water quality treatment BMP's and their proposed maintenance.

The current TM proposes 189 residential lots to be constructed. The development footprint for the 198 Lot version is larger than the proposed 189 lot version. The calculations for stormwater runoff and areas designed for water quality treatment for the larger development footprint are sufficient for the smaller development footprint of the 189 Lot version. Therefore, the above referenced study and WQIP's are still valid for the current version of the TM and are conservative in nature with respect to the smaller 189 Lot version.

Furthermore, the methodology used including hydromodification, County of San Diego LID sizing, and the modified rational method for hydrology are still valid and follow all current and relevant City of San Marcos standards.

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PROJECT AREA

GROSS AREA WITHIN PROJECT PROPERTY LINE = 262.14 ACRES
AREA OF DEVELOPMENT = 50.86 ACRES
OPEN SPACE = 56.86 ACRES

HYDROLOGIC UNIT CONTRIBUTION (WATERSHED)

WATERSHED	HYDROLOGIC AREA	HYDROLOGIC SUB-AREA	DOWNSTREAM WATERBODIES(AC.)
CARLSBAD	904.3 AGUA HEDIONDA	904.32 BUENA	AGUA HEDIONDA CREEK, AGUA HEDIONDA LAGOON, PACIFIC OCEAN

IMPAIRED WATER BODIES

2010 CALIFORNIA 303(d) LIST OF WATER QUALITY REGION 9 – SAN DIEGO

CALWATER WATERSHED	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE EFFECTED	POLLUTANT	POLLUTANT CATEGORY
9043100	AGUA HEDIONDA CREEK	RIVER & STREAM	7 MILES	ENTEROCOCCUS, FECAL COLIFORM, MANGANESE, PHOPHORUS, SELENIUM, IDS, NITROGEN, TOXICITY.	PATHOGENS, METALS/METALLOIDS, NUTRIENTS, SALINITY, TOXICITY.
9043100	AGUA HEDIONDA LAGOON	COASTAL & BAYSHORE LINE	0 MILES	NOT LISTED	NOT LISTED
9045100	PACIFIC OCEAN	COASTAL & BAYSHORE LINE	0 MILES	TOTAL COLIFORM	PATHOGENS

ANTICIPATED POLLUTANTS

PRIORITY PROJECT CATEGORIES	GENERAL POLLUTANT CATEGORIES							
	SEDIMENT	NUTRIENTS	HEAVY METALS	ORGANIC COMPOUNDS	TRASH & DEBRIS	OXYGEN DEMANDING SUBSTANCES	OIL & GREASE	BACTERIA & VIRUSES
PARKING LOT	P ^(P)	P ^(P)	X	X	X ^(P)	X	X	P ^(P)
STREETS, HIGHWAY & FREEWAY	X	P ^(P)	X	X ^(P)	X	P ^(P)	X	P ^(P)

NOTES:
X=ANTICIPATED
P=POTENTIAL
^(P) A POTENTIAL POLLUTANT IF LANDSCAPING EXISTS ON-SITE
^(P) A POTENTIAL POLLUTANT IF THE PROJECT INCLUDES UNCOVERED PARKING AREAS
^(P) A POTENTIAL POLLUTANT IF LAND USE INVOLVES FOOD OR ANIMAL WASTE PRODUCTS
^(P) INCLUDING PETROLEUM HYDROCARBONS
^(P) INCLUDING SOLVENTS

POLLUTANTS OF CONCERN

CATEGORY	GENERAL POLLUTANT CATEGORIES							
	SEDIMENT	NUTRIENTS	HEAVY METALS	ORGANIC COMPOUNDS	TRASH & DEBRIS	OXYGEN DEMANDING SUBSTANCES	OIL & GREASE	BACTERIA & VIRUSES
ANTICIPATED	X	X	X	X	X	X	X	X
DOWNSTREAM IMPAIREMENT	X	X	X					X
PRIMARY POLLUTANT OF CONCERN	X	X	X					X
SECONDARY POLLUTANT OF CONCERN				X	X	X	X	

SAN MARCOS STORMWATER PROGRAM MANAGER

By: ERICA RYAN, SW PROGRAM MANAGER

DATE: _____

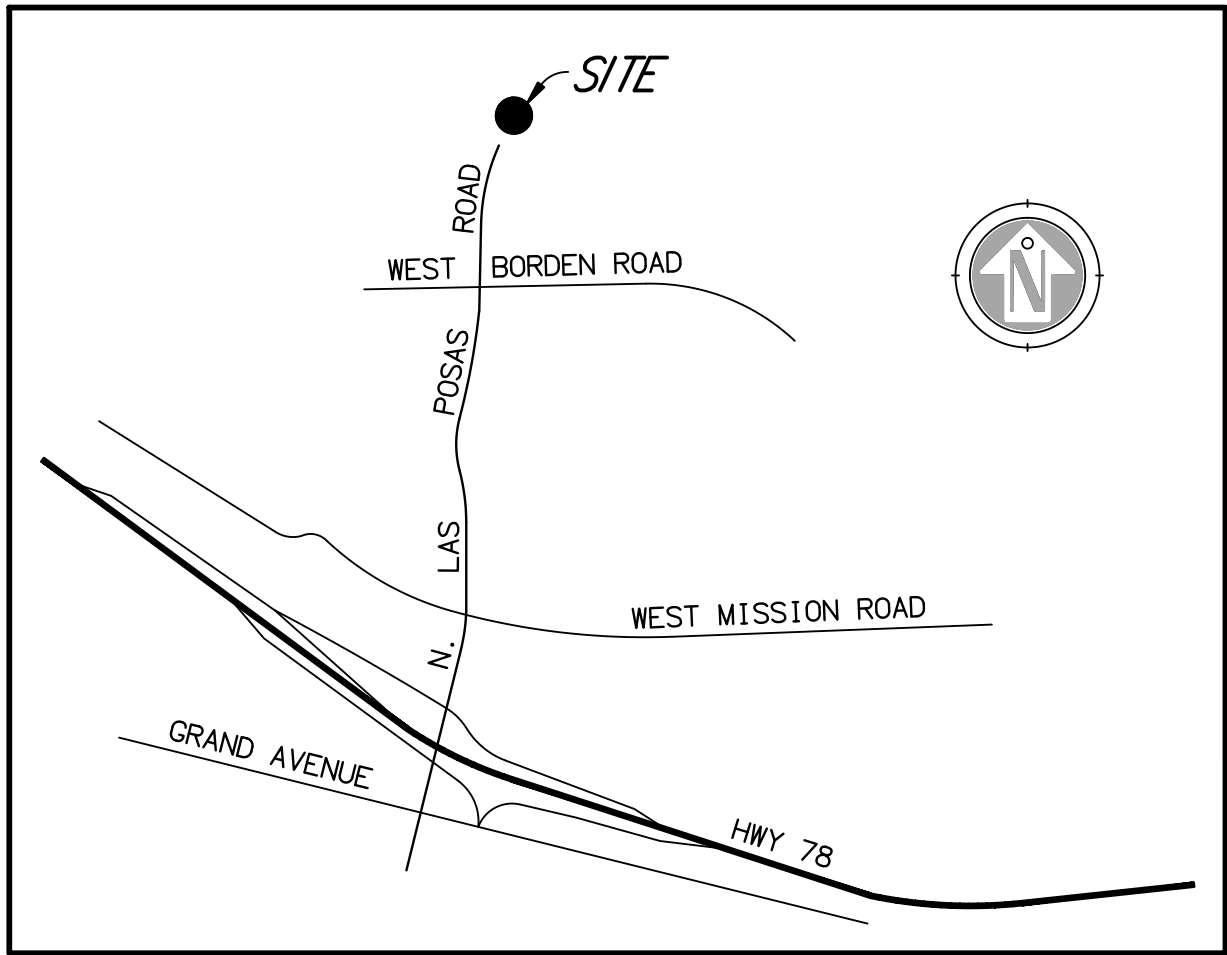
SAN MARCOS FIRE DEPARTMENT		VALLECITOS WATER DISTRICT FOR GRADING PERMIT ONLY		ENGINEER OF WORK		CITY APPROVED CHANGES			RECOMMENDED FOR APPROVAL		APPROVED FOR CONSTRUCTION		BENCH MARK		CITY OF SAN MARCOS ENGINEERING DIVISION		City Drawing No.
By: _____ Fire Marshal		By: KENNETH J. GERDES DATE R.C.E.: 39307 EXP: 12/13		By: _____ Date: _____ Name: ROBERT D. DENTINO R.C.E.: 45629 exp: 12-31-14		No. Description City VMD Date			By: PETER KUEY, PRINCIPAL CIVIL ENGINEER R.C.E.: 44034 exp: 06-30-2013 Date: _____		By: MICHAEL D. EDWARDS, CITY ENGINEER R.C.E.: 32977 exp: 06-30-2014 Date: _____				WATER QUALITY IMPROVEMENT PLAN TITLE SHEET FOR: XX-00-00 (00X)		GP-
Date: _____				Drawn By											SAN MARCOS HIGHLANDS		Sheet 1 of 7
															V.W.D. PROJECT NO.		V.W.D.

LID DESIGN PROPOSED

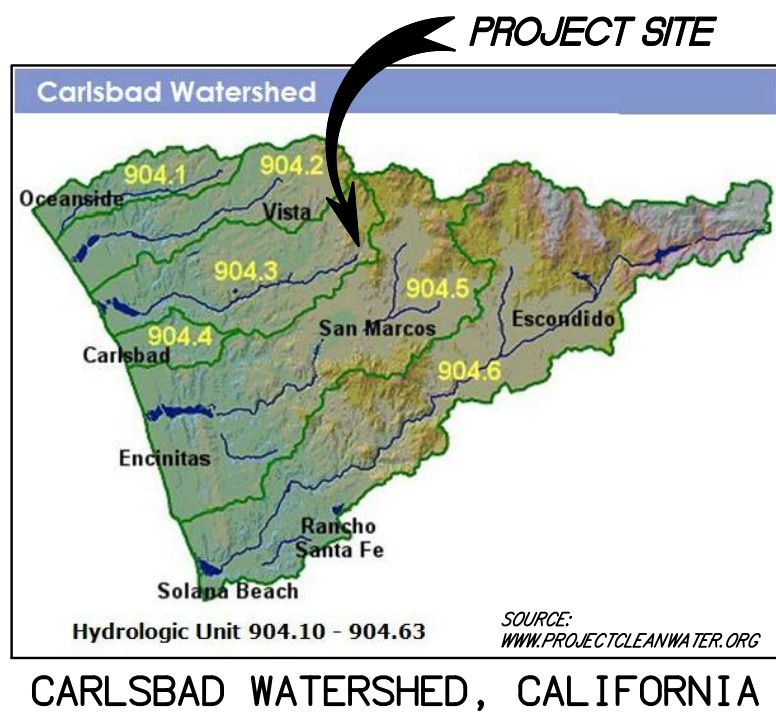
LOW IMPACT DEVELOPMENT (LID) INTEGRATED MANAGEMENT PRACTICES (IMP) AND LID SITE DESIGN WERE CONSIDERED FOR USE BEFORE PROPRIETARY MECHANICAL TREATMENT DEVICES WERE CONSIDERED. BELOW ARE LID IMPs CONSIDERED FOR USE AT THE PROJECT:

LOCATION NODE	LID DESIGN PRINCIPLE CONSIDERED	APPLICABLE	SITE CONSTRAINTS OR OPPORTUNITIES TO USAGE	ALTERNATIVE PROPOSED	PERMIT COMPLIANCE MET	QUANTITY UNITS
1	CONSERVE NATURAL AREAS, SOILS AND VEGETATIONS	YES	N/A	N/A	YES	
2	DETAIN AND RETAIN RUNOFF THROUGH OUT THE SITE	YES	STEEP SLOPES AND LIMITED FLAT AREAS.	SOME PORTIONS OF THE IMPERVIOUS AREA WILL COMBINE BIO-RETENTION STRIPS AND PONDS	YES	
3	USE DRAINAGE AS DESIGN ELEMENT	YES	N/A	SEE ABOVE	YES	
4	USE PERVIOUS SURFACES	NO	SITE'S SOIL TYPE D HAS LOW INFILTRATION RATE, STREET SLOPES GREATER THAN 10% AND FILL AREAS ARE NOT RECOMMENDED FOR INFILTRATION.	BIO-RETENTION POND AND TRENCH ARE EQUIPPED WITH UNDERDRAIN. IN CORPORATE PIPE DETENTION IN STORMDRAIN SYSTEM PRIOR TO THE FINAL OUTFALL.	YES	
5	DISPERSE RUNOFF TO ADJACENT PERVIOUS AREAS	NO	SITE'S SOIL TYPE D HAS LOW INFILTRATION RATE, STREET SLOPES GREATER THAN 10% AND FILL AREAS ARE NOT RECOMMENDED.	WHENEVER POSSIBLE, ROOF DRAINS IS DIRECTED TO LANDSCAPE AREAS TO SAND FILTER, AND THEN TO BIO-RETENTION	YES	
6	DIRECT RUNOFF TO INTEGRATED MANAGEMENT PRACTICES (IMP).	YES	N/A	SAND FILTER TRENCH WITH UNDERDRAIN AND PIPE DETENTION	YES	

NOTE: THIS WATER QUALITY IMPROVEMENT PLAN (WQIP) HAS BEEN PREPARED IN CONJUNCTION WITH A TENTATIVE SUBDIVISION MAP. THIS WQIP IS INTENDED TO SATISFY REQUIREMENTS OF REGIONAL WATER QUALITY CONTROL BOARD ORDER R9-2007-0001 AND SUBSEQUENT AMENDMENTS.



VICINITY MAP
NOT TO SCALE



SITE MAP

PROJECT SUMMARY

THE PURPOSE OF THE PROJECT IS TO BUILD 198 UNITS OF SINGLE FAMILY RESIDENTIAL WITH ITS FACILITIES INCLUDING STREET ACCESS, LANDSCAPE, PARKING LOTS, STORM DRAINS, WET AND DRY UTILITIES ON 262.14 ACRES (GROSS) OF LAND. THE PROJECT SITE IS LOCATED ON A HILLY AREA WITH SLOPE RANGING FROM 10 TO 30%. THE SITE IS CURRENTLY VACANT WITH SOME PERENNIAL VEGETATION GENERALLY CONSISTS OF LOW VEGETATION WITH SOME THICK BRUSH SCATTERED AROUND THE AREA BUT DENSER ALONG THE NATURAL SWALES OR BROOKS. AN INCREASE IN RUNOFF FROM THE EXISTING SITE CONDITION IS EXPECTED. HOWEVER, THE SITE WILL INCLUDE STORM DRAIN IMPROVEMENTS SUCH AS PIPE SIZING, DETENTION PONDS, ETC. THAT MITGATE FOR THE INCREASE FLOWS. BIORETENTION SYSTEM AND DETENTION PONDS ARE UTILIZED IN THIS PROJECT TO TREAT THE POLLUTANTS GENERATED FROM THIS DEVELOPMENT.

NOTES

THE SELECTION, SIZING, AND DESIGN OF STORMWATER TREATMENT LID, SITE DESIGN, AND SOURCE CONTROL IN THIS PLAN MEET THE REQUIREMENTS OF REGIONAL WATER QUALITY CONTROL BOARD ORDER R9-2007-0001. NO REVISIONS TO THIS PLAN SHALL OCCUR WITHOUT REVIEW FROM THE CITY ENGINEER.