ATTACHMENT F

OPERATION AND MAINTENANCE PROGRAM FOR

TREATMENT BMPS

An Operation and Maintenance Program (OMP) will be prepared for the Meadowood VTM upon final design. At that time, the OMP will be inserted into Attachment F of the project's SWMP.

ATTACHMENT G

FISCAL RESOURCES

Estimated Operations and Maintenance Costs for the Meadowood Vesting Tentative Map - Attachment G
J-15956
July 24, 2009

Treatment Control BMP Identifier[1]	Location[1]	Type of Treatment Control BMP per County SUSMP	Total Cost[2]
BioClean Inlet Filter Insert w/a BioMEDIA Green Filter	Drainage Basin 3000 (2012A)	High Rate Media Filter	$1,473.20[3]
BioClean Inlet Filter Insert w/a BioMEDIA Green Filter	Drainage Basin 3000 (2012B)	High Rate Media Filter	$1,473.20[3]
BioClean Inlet Filter Insert w/a BioMEDIA Green Filter	Drainage Basin 3000 (2018A)	High Rate Media Filter	$1,473.20[3]
BioClean Inlet Filter Insert w/a BioMEDIA Green Filter	Drainage Basin 3000 (2018B)	High Rate Media Filter	$1,473.20[3]
BioClean Inlet Filter Insert w/a BioMEDIA Green Filter	Drainage Basin 3000 (2019A)	High Rate Media Filter	$1,473.20[3]
BioClean Inlet Filter Insert w/a BioMEDIA Green Filter	Drainage Basin 3000 (2019B)	High Rate Media Filter	$1,473.20[3]
BioClean Inlet Filter Insert w/a BioMEDIA Green Filter	Drainage Basin 3000 (2022.5A)	High Rate Media Filter	$1,473.20[3]
BioClean Inlet Filter Insert w/a BioMEDIA Green Filter	Drainage Basin 3000 (2022.5B)	High Rate Media Filter	$1,473.20[3]
Detention Basin (DB3)	Drainage Basin 3000	Settling Basin	$4,328.36
Detention Basin (DB4)	Drainage Basin 4000	Settling Basin	$4,328.36
Detention Basin (DB7A)	Drainage Basin 7000A	Settling Basin	$4,328.36
Detention Basin (DB7B)	Drainage Basin 7000B	Settling Basin	$4,328.36
Detention Basin (DB8A)	Drainage Basin 8000A	Settling Basin	$4,328.36
Detention Basin (DB8B)	Drainage Basin 8000B	Settling Basin	$4,328.36
BioClean Inlet Filter Insert w/a BioMEDIA Green Filter	The southern most inlet along Horse Ranch Creek Road	High Rate Media Filter	$1,473.20[3]
BioClean Inlet Filter Insert w/a BioMEDIA Green Filter		High Rate Media Filter	$1,473.20[3]
BioClean Inlet Filter Insert w/a BioMEDIA Green Filter	Offsite Improvements (32 Units)	High Rate Media Filter	$47,142.40[3]
		Total =	**$87,850.00**

Notes:
(1) For the BMP locations, refer to the exhibit located in Attachment D.
(2) Unless stated otherwise, the BMP operations and maintenance costs were obtained from Appendix H of the County of San Diego's February 10, 2003 SUSMP (see attached for a copy).
(3) County information does not have BMP annual operations and maintenance costs for the BioClean unit. However , the operations and maintenance procedures of a BioClean unit are similar to that of a Fossil Filter (with the exception of the Filter Media). Therefore, the annual cost of $1,183.40 for a Fossil Filter plus a cost of $289.80 for the BioMEDIA Green Filter (assumes that the filter media will be replaced twice a year) was utilized for the BioClean Inlet Filter Insert w/a BioMEDIA Green Filter (Total Cost = $1,473.20). See attached information for backup.

BIO CLEAN
ENVIRONMENTAL SERVICES, INC.

DATE: _____ PROJECT: Example

CUSTOMER: _____ ADDRESS: _____

_____ _____

_____ _____

CONTACT: _____ PHONE: _____

Following please find details of Bio Clean's maintenance program and a proposal to service the Stormwater Filters located at the above referenced project. Bio Clean's recommended cleaning is quarterly for filters (or 3X/yr optional) and 1 X/yr for Vaults or as per local agency or city requirements. Yearly evaluation can be provided.

Service and Maintenance Includes:

- Disposal of debris captured by filtration device.
- Evaluation of Hydrocarbon booms. Booms will be changed out at a minimum of at least twice per year.
- Hydrocarbon booms and BioMediaGREEN to be disposed of in accordance with local and state requirements.
- Transportation of debris, sediments and organics to approved facility and in accordance with local and state requirements.
- **Replacement of BioMediaGREEN Filter media*.**
- Report on collected debris, type of debris and condition of filters will be provided to landowner, city or municipality.

The Bio Clean Environmental Services Maintenance Program incorporates a tracking program used to identify each inlet unit and to preserve its history.

Contract will be billed after each service. Terms are Net 15 days. Price quoted is for yearly contract, or longer, as specified in the Service Agreement and includes ____ cleanings per year. Additional fuel charge of ____% will be billed each quarter.

Media Filter CIB 30" to 84"		Media Filter CIB 84" to 144"		Media Filter CIB 144" to 180"	
# of Filters*	1				
Price per Filter	$126.00	Price per Filter	$136.00	Price per Filter	$147.00

Media Filter CIB 180" to 288"		Media Filter GISB Up to 28" x 36"		Media Filter GISB 29" x 37" up to 48" x 54"	
Price per Filter	$187.00	Price per Filter	$200.00	Price per Filter	$210.00

Total $ Per Cleaning			Cleanings Per Year			TOTAL PRICE PER YEAR	
Filters	$126.00	X	Filters	2	=	Cleanings	$252.00
						Fuel Surcharge	$37.80
Fuel Surcharge	15%					TOTAL	$289.80

Please see Bio Clean Service Agreement for specific details.

Thank you for the opportunity to provide this proposal. If you have any questions, please feel free to contact me at (760) 433-7640.

Regards,

Greg B. Kent
President

P O Box 869, Oceanside CA 92049
(760) 433-7640 Fax (760) 433-3176
www.biocleanenvironmental.net

APPENDIX H Estimated O & M Costs for BMP Project

Estimated values derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.						Labor			Equipment				Materials		Total	Comments
						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
BIOFILTER – STRIPS and SWALES																
Preventive Maintenance and Routine Inspections																
ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS											
Height of vegetation	Average vegetation height exceeds 12 inches, emergence of trees, or woody vegetation	Visual inspection of vegetation throughout strip/swale	Once during wet season, once during dry season.(depending on growth)	Cut vegetation to an average height of 6 inches	Remove any trees, or woody vegetation.	10	43.63	436.3	one-ton truck & hydroseeder	2	26.84	53.68	string trimmer, rake, fork, bags, safety equipment	50	539.98	
Assess adequate vegetative cover	Less than 90 percent coverage in strip invert/swale or less than 70 percent on swale side slope	Visual inspection of strip/swale. Prepare a site schematic to record location and distribution of barren or browning spots to be restored. File the schematic for assessment of persistent problems.	Assess quantity needed in May each year late wet season and late dry season.	Reseed/revegetate barren spots by Nov.		8	43.63	349.04	one-ton truck & hydroseeder	1	46.15	46.15	seed	150	547.19	
				Scarify area to be restored, to a depth of 2-inches. Restore side slope coverage with hydroseed mixture.		0	43.63	0	one-ton truck & hydroseeder	0	26.84	0			0	
				If after 2 applications (2 seasons) of reseeding/revegetating and growth is unsuccessful both times, an erosion blanket or equivalent protection will be installed over eroding areas		0	43.63	0	one-ton truck & hydroseeder	0	26.84	0	blanket	0	0	
Inspect for debris accumulation	Debris or litter present	Visual observation	During routine washing, per Districts schedule.	Remove litter and debris	None	0	0	0	one-ton truck & hydroseeder	0	0	0			0	
Inspect for accumulated sediment	Sediment at or near vegetation height, channeling of flow, inhibited flow due to change in slope.	Visual observation	Annually	Remove sediment. If flow is channeled, determine cause and take corrective action. If sediment becomes deep enough to change the flow gradient, remove sediment during dry season, characterize and properly dispose of sediment, and revegetate.		16	43.63	698.08	one-ton truck & hydroseeder	1	46.15	46.15	seed, testing and disposal of sediment	300	1046.23	once every three years

APPENDIX H Estimated O & M Costs for BMP Project

Estimated Values derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.						Labor			Equipment				Materials		Total	Comments
						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
Inspect for burrows	Burrows, holes, mounds	Visual observation	Annually and after vegetation trimming.	Notify engineer to determine if regrading is necessary. If necessary, regrade to design specification and revegetate swale/strip. If regrading is necessary, the process should start in May. Revegetate strip/swale in Nov. Target completion prior to wet season. Where burrows cause seepage, erosion and leakage, backfill firmly.	None	2	43.63	87.26				0			87.26	
						0		0	one-ton truck & hydroseeder	0	26.84	0			0	
General Maintenance Inspection	Inlet structures, outlet structures, side slopes or other features damaged, significant erosion, emergence of trees, woody vegetation , fence damage, etc.	Visual observation	Semi-Annually, late wet season and late dry season.	Corrective action prior to wet season. Consult engineer if an immediate solution is not evident.	Remove any trees, or woody vegetation.	16	43.63	698.08	one-ton truck & hydroseeder	2	26.84	53.68			751.76	
TOTAL BIO FILTER AND SWALES						52		2268.78				203.66		500	2972.42	
BIO STRIP WITH SPREADER DITCH					Includes all the above plus the following.			0				0			0	
Inspect for standing water	Water accumulation in spreader ditch	Standing water in spreader ditch	Within 72 hours after a storm event 0.75 inches or greater.	De-water the spreader ditch to a depth of less than 0.25 inches. If sediment impedes the de-watering activity, then move or remove that portion of the sediment. Characterize and properly dispose.		3	43.63	130.89	0	0	0	0			130.89	
				De-water the spreader ditch to a depth of less than 0.25" by removing the bypass plug and allowing the water to drain into the infiltration trench. Use care to prevent sediment from discharging into the infiltration trench. Replace the bypass plug once the de-watering has been completed.		6	43.63	261.78	0	0	0	0			261.78	

APPENDIX H Estimated O & M Costs for BMP Project

Estimated values derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.						Labor			Equipment				Materials		Total	Comments
						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
				At the end of the wet season, remove the bypass plug and allow the spreader ditch to drain. Use care to prevent sediment from discharging into the infiltration trench. Remove, characterize, and dispose of sediment from the spreader ditch. Replace the bypass plug before the beginning of the wet season.		2	43.63	87.26	sedan	1	21.28	21.28	testing & disposal costs	200	308.54	
TOTAL BIO STRIP WITH SPREADER DITCH						55		2399.65				293.66		500	3193.31	
CONTINUOUS DEFLECTIVE SEPARATION (CDS) UNITS																
Preventive Maintenance and Routine Inspections																
DESIGN CRITERIA,																
ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS											
Inspect sump for accumulation of material.								0				0			0	
	or															
	When the sump is 50% full during two consecutive monthly inspections.							0				0			0	
	or															
	Annually in May, effect cleaning within 15 days			Empty unit		72	43.63	3141.36	one-ton truck & vactor	3	198.75	596.25	testing & disposal costs	1800	5537.61	
								0				0			0	
Inspect weir box for accumulation of material.	Presence of trash and debris	Visual observation	Monthly during the wet season	Remove trash and debris while onsite conducting inspection.		0	0	0		0	0	0		0	0	Hours accounted for during inspections
Inspect for standing water. (Include with all of inspection)	Standing water in sump	Visual observation	Annually, 72 hours after target2 storm (0.75 in)	If standing water cannot be removed or remains through the wet season notify VCD.	None											Hours accounted for during inspections
Inspect the screen for damage and to ensure that it is properly fastened.	Screen becomes clogged, damaged or loose	Visual observation	Annually before wet season.	Clean screen.	None	0	0	0	0	0	0	0	0	0	0	
Inspection for structural integrity	Holes in screen, large debris, damage to housing or weir box	Visual observation	Annually or after a cleanout.	Immediately consult with engineer and manufacturer's representative to develop a course of action, effect repairs prior to the wet season.	None			0				0			0	Hours accounted for during inspections
TOTAL CDS UNITS						72		3141.36				596.25		1800	5537.61	
DRAIN INLET INSERTS – FOSSIL FILTER																

APPENDIX H Estimated O & M Costs for BMP Project

Estimated values derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.						Labor			Equipment				Materials		Total	Comments
						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
Preventive Maintenance and Routine Inspections																
DESIGN CRITERIA																
ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS											
Inspect for debris/trash	Sufficient debris/trash that could interfere with proper functioning of insert	Visual observation	During the wet season:				43.63	0				0			0	
□ Before and once during each target2 storm (0.25 in) event				Remove and properly dispose of debris/trash. Target completion period while onsite conducting inspection.		18	43.63	785.34				0			785.34	
Oil and grease removal	Absorbent granules dark gray, or darker, or unit clogged with sediment.	Visual observation	□ At the end of each target2 storm (0.25 in) event	Replace Fossil FilterTM adsorbent within 10 working days. Characterize and properly dispose spent media prior to wet season.		2	43.63	87.26				0			87.26	
Inspection for structural integrity	Broken or otherwise damaged insert	Visual observation	Twice per year in October and May.	Replace insert or immediately consult vendor to develop course of action, effect repairs within 10 working days	None	2	43.63	87.26				0			87.26	
Annual renewal of medium	End of wet season, April 30	None	Annually, in May	Remove, characterize, and properly dispose of media a Replace media before Oct 1	None	2	43.63	87.26	sedan	1	21.28	21.28	new adsorbent and testing & disposal costs	115	223.54	
TOTAL DRAIN INLET INSERTS-FOSSIL FILTERS						24		1047.12				21.28		115	1183.4	
DRAIN INLET INSERTS – STREAM GUARD																
Preventive Maintenance and Routine Inspections																
DESIGN CRITERIA																
ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS											
Sediment removal	Sediment more than 6-inches	Visual inspection of sediment collected within insert	During the wet season:	Replace insert. Target completion while onsite conducting inspection.				0				0			0	
Inspect for debris/trash	Sufficient debris/trash that could interfere with proper functioning of insert	Visual observation	During the wet season	Remove and dispose of debris/trash. Target completion period while onsite conducting inspection.				0				0			0	
Oil and grease removal	When oil absorbent polymer becomes saturated with oil	Visual observation (absorbent polymer expansion indicates oil saturation)	Monthly	Within 10 working days, replace oil absorbent polymer		2	43.63	87.26				0			87.26	
Inspection for structural integrity	Signs of rips, gashes, and/or fallen media	Visual observation	Twice per year in October and May.	Replace insert or immediately consult vendor to develop a course of action, effect repairs within 10 working days	None	2	43.63	87.26				0			87.26	

APPENDIX H Estimated O & M Costs for BMP Project

Estimated values derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.						Labor			Equipment				Materials		Total	Comments
						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
Annual renewal of medium	End of wet season, April 30	None	Annually, in May.	Remove characterize, and properly dispose of media. Replace media before Oct 1.	None	2	43.63	87.26	sedan	1	21.28	21.28	new absorbent and testing & disposal costs	195	303.54	
TOTAL DRAIN INLET INSERTS-STREAM GUARDS						8		261.78				21.28		195	478.06	
EXTENDED DETENTION BASINS																
Preventive Maintenance and Routine Inspections																
DESIGN CRITERIA																
ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS											
Basin side slope planted for erosion protection and planted invert	Average vegetation height greater than 12-inches, emergence of trees or woody vegetation.	Visual observation and random measurements through out the side slope area	Once during wet season, once during dry season.	Cut vegetation to an average height of 6-inches and remove trimmings. Remove any trees, or woody vegetation.		48	43.63	2094.24	one-ton truck	2	26.84	53.68	string trimmer, rake, fork, bags, safety equipment	50	2197.92	
Slope stability	Evidence of erosion	Visual observation	October each year	Reseed/revegetate barren spots prior to wet season.		0	43.63	0	one-ton truck & hydroseeder	0	48.15	0	seed	150	150	
				Contact environmental or landscape architect for appropriate seed mix.												
				Scarify surface if needed.												
				If after two applications (2 seasons) of reseeding/revegetating and growth is unsuccessful both times, an erosion blanket or equivalent protection will be installed over eroding areas. No erosion blanket will be installed in the basin invert.	NOT AN ANNUAL COST	0	43.63	0	one-ton truck	0	26.84	0	blanket	0	0	
Inspect for standing water.	Standing water for more than 72 hours	Visual observation	Annually, 72 hours after a target2 storm (0.75 in) event	□ Drain facility	None											
				□ Check and unclog clogged orifice.	Should be Annual Mtce.											
				Notify engineer, if immediate solution is not evident.												
Inspection for trash and debris	Debris/trash present	Visual observation	During routine trashing, per Districts schedule.	Remove and dispose of trash and debris	None											
Inspection for sediment management and characterization of sediment for removal	□ Sediment depth exceeds marker on staff gage	□ Measure depth at apparent maximum and minimum accumulation of sediment. Calculate average depth	Annually	Remove and properly dispose of sediment. Regrade if necessary.		16	43.63	698.08	4-yd dump truck, backhoe & trailer, one-ton truck & hydroseeder	0.4	176.5	70.6	testing and disposal	460	1228.68	once every 5 years

APPENDIX H Estimated O & M Costs for BMP Project

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						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
Inspect for burrows	Burrows, holes, mounds	Visual observation	Annually and after vegetation trimming.	□ Where burrows cause seepage, erosion and leakage, backfill firmly.												
General Maintenance Inspection	Inlet structures, outlet structures, side slopes or other features damaged, significant erosion, emergence of trees or woody vegetation, graffiti or vandalism, fence damage, etc.	Visual observation	Semi-Annually, late wet season and late dry season Monthly	Corrective action prior to wet season. Consult engineers if immediate solution is not evident.	None	16	43.83	698.08	one-ton truck	2	26.84	53.68			751.76	
TOTAL EXTENDED BASIN						80		3490.4				177.96		660	4328.36	
INFILTRATION BASINS																
Preventive Maintenance and Routine Inspections																
DESIGN CRITERIA,																
ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS											
Vegetation of basin invert and side slopes	Vegetation height exceeds 12 inches, emergence of trees or woody vegetation,	Visual observation and random measurements through out the side slope and invert area	Once during wet season, once during dry season.	Cut vegetation to an average height of 6-inches. Remove any trees, or woody vegetation.	None	48	43.83	2084.24	two-ton truck	2	50	100	string trimmer, rake, fork, bags, safety equipment	50	2244.24	
Inspect for standing water.	Standing water for more than 72 hours	Visual observation	Annually, 72 hours after a target2 storm (0.75 in) event.	□ Drain facility, if possible.		16	43.83	698.08	one-ton truck	4	26.84	107.36			805.44	
				□ Notify engineer to consider.												
				□ Remove sediment, scarify invert, and regrade if necessary.				0				0			0	covered under sediment removal
				□ If unable to achieve acceptable infiltration rate or implement alternative solution then move to decommission				0				0			0	
				□ If standing water can not be removed then notify VCD.	None											
Inspection for trash and debris at inlet structures	Debris/trash present	Visual observation	During routine trashing, per Districts schedule.	Remove and dispose of trash and debris	None											
Inspection for sediment accumulation	Sediment depth exceeds marker on staff gage.	Measure depth at apparent maximum and minimum accumulation of sediment. Calculate average depth	Annually	Remove, characterize and properly dispose of sediment. Regrade and revegetate bare areas.	None	4	43.83	174.52	4-yd dump truck, loader & trailer, grader, sedan, one-ton truck & hydroseeder	0.5	256.94	128.47	seed, testing & disposal	150	452.99	once every 10 years
Slope stability	Evidence of erosion.	Visual observation	October each year.	Reseed/revegetate barren spots by Nov. Scarify surface if needed.		20	43.83	872.6	one-ton truck & hydroseeder	1	48.15	48.15	seed	275	1195.75	

APPENDIX H Estimated O & M Costs for BMP Project

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						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
				If after two applications (2 seasons) of reseeding/revegetating and growth is unsuccessful both times, an erosion blanket or equivalent protection will be installed over eroding areas. No erosion blanket will be installed in the basin invert.		0	43.63	0	one-ton truck	0	26.84	0	blanket	60	60	
				Contact environmental or landscape architect for appropriate seed mix.	None	0	43.63	0				0			0	
Inspect for burrows	Burrows, holes, mounds.	Visual observation	Annually and after vegetation trimming.	□ Where burrows cause seepage, erosion and leakage, backfill firmly.	None	0	43.63	0	one-ton truck	0	26.84	0			0	
General Maintenance Inspection	Inlet structures, outlet structures, side slopes or other features damaged, significant erosion, emergence of trees or woody vegetation, graffiti or vandalism, fence damage, etc.	Visual observation	Semi-Annually, late wet season and late dry season	Take corrective action prior to wet season. Consult engineer if immediate solution is not evident.	None	20	43.63	872.6	two-ton truck	1	50	50			922.6	
TOTAL INFILTRATION BASIN						108		4712.04				433.88		535	5881.02	
INFILTRATION TRENCHES																
Preventive Maintenance and Routine Inspections																
DESIGN CRITERIA																
ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS											
Inspect for standing water	Standing surface water for more than 72 hours	Visual observation	Annually, 72 hours after a target2 storm (0.75 in) event	□ Drain facility		16	43.63	698.08	one-ton truck	2	26.84	53.68			751.76	
				□ Notify engineer to consider:		0	43.63	0				0			0	
				□ Undertake investigation for course of action to achieve acceptable infiltration rate. If unable to achieve acceptable infiltration then BMP operations cease.				0				0			0	
Inspection for trash and debris at inlet and outlet structures	Trash/debris present	Visual observation	During routine trashing per Districts schedule	□ If standing water can not be removed, notify VCD.	None			0				0			0	Does not include Vector Control Agency costs
				Remove and dispose of trash and debris.	None	0	43.63	0				0		0	0	

APPENDIX H Estimated O & M Costs for BMP Project

Estimated values derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.						Labor			Equipment				Materials		Total	Comments
						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
Inspect for sediment accumulation	Visible sediment	Visual inspection of the stone aggregate, no sediment should be visible at the top of the trench due to sediment buildup from filter fabric.	Annually.	Remove top layer of trench, silt, filter fabric and stone, wash stone and reinstall fabric and stone into trench prior to wet season.	None	8	43.63	349.04	gradeall shovel, 10-yd dump trucks	0.068	6000	396	replacement stone and filter fabric	1200	1945.04	once every 15 years
General Maintenance Inspection	Inlet structures, outlet structures, filter fabric or other features damaged, emergance of trees or woody vegetation, graffiti or vandalism, fence damage, etc.	Visual observation	Semi-Annually, late wet season and late dry seasonMonthly	Take corrective action, prior to wet season. Consult engineer if immediate solution is not evident.	None Remove any trees, or woody vegetation.	8	43.63	349.04	one-ton truck	2	26.84	53.68			402.72	
TOTAL INFILTRATION TRENCHES						32		1396.16				503.36		1200	3099.52	
MEDIA FILTERS – PERLITE/ZEOLITE																
Preventive Maintenance and Routine Inspections																
DESIGN CRITERIA																
ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS	0	43.63	0	one-ton truck	0	26.84	0			0	
Inspect for sediment accumulation in pre-treatment sedimentation chamber	Sediment occupies 10% of the filter chamber volume.	Measure with appropriate device	Annually in May.			4	43.63	174.52	one-ton truck	1	26.84	26.84			201.36	
				Remove sediment prior to wet season. Characterize sediment and properly dispose	None	8	43.63	349.04	sedan	1	21.28	21.28	testing & disposal costs	600	970.32	
								0				0			0	
Inspect for minor maintenance	Per manufacture's guidelines	None	Annually	Clean per manufacturer's guidelines. Prior to wet season.	None.	4	43.63	174.52	one-ton truck	1	26.84	26.84			201.36	
Manufacturer's recommended major maintenance	Per manufacture's guidelines	Per manufacture's guidelines	Annually	Consult with manufacturer regarding need for replacement of canisters. If manufacturer confirms need, replace canisters. Prior to wet season. When canisters are changed send canisters to manufacturer to determine remaining life of the media	None	8	43.63	349.04	one-ton truck	1	26.84	26.84	major maintenance	5000	5375.88	By Contract and oversite
Inspection for trash and debris at inlet and outlet structures and within vaults	Trash/debris present.	Visual observation	During routine trashing, per District's schedule.	Remove and dispose of trash and debris when on site conducting inspections.	None	0	43.63	0				0			0	
Inspect for standing water	Water accumulation in any structure or other location within the filter	Standing water in any structure or other location within the filter	Annually, at end of wet season.	C Gravity drain where possible.		0	43.63	0	one-ton truck			0			0	

APPENDIX H Estimated O & M Costs for BMP Project

Estimated values derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.						Labor			Equipment				Materials		Total	Comments
						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
				□ If standing water can not be removed or remains through wet season notify VCD.	None			0				0			0	Does not include Vector Control Agency costs
General Maintenance Inspection	Inlet structures, outlet structures, vault, piping, or other features damaged and for graffiti or vandalism	Visual observation	Semi-Annually, late wet season and late dry season Monthly	Take corrective action prior to wet season. Consult engineer if immediate solution is not evident.	None	8	43.63	349.04	one-ton truck	2	26.84	53.68			402.72	
TOTALMEDIA FILTERS – PERLITEZEOLITE						32		1396.16				155.48		5600	7151.64	
MEDIA FILTERS – SAND W/PUMP																
Preventive Maintenance and Routine Inspections																
DESIGN CRITERIA																
ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS											
Drain time of 48 hours	Drain time exceeds 72 hours	Determine drain time by visual observation	Annually, after one target2 storm (0.75 in) event during wet season	□ Remove sediment, trash and debris.		4	43.63	174.52	one-ton truck	1	28.84	28.84			201.36	
				□ Check orifice				0				0			0	
				□ Notify engineer to consider removing top 2 inches of media and dispose of sediment. Restore media depth to 18 inches when overall media depth drops to 12 inches. Complete prior to wet season.	Escondido MS Delaware SF – Remove and restore media depth to 12 inches.	12	43.63	523.56	boom truck	0.5	74.84	37.47	drums, shovel, rake, drum grappler, confined space equipment characterization and disposal	1250	1811.03	every 2 years
Inspect for sediment accumulation in sedimentation chamber	Sediment depth exceeds marker on staff gage.	Measure with appropriate device	Measure sediment depth annually.	Remove sediment prior to wet season. Characterize sediment and properly dispose.		12	43.63	523.56	boom truck	0.5	74.84	37.47	drums, shovel, rake, drum grappler, confined space equipment characterization and disposal	1250	1811.03	every 2 years
Inspection for trash / debris	Trash and debris present	Visual observation	During routine trashing per Districts schedule.	Remove and dispose of trash and debris during routine trashing.	None	0	43.63	0	one-ton truck	0	28.84	0	confined space equipment	0	0	
Inspect pumps for proper functioning	Pump does not operate	Energize pump to see if water is discharged	After every storm.	Make assessment to determine if problem is electrical or mechanical. Take appropriate action. Replace pump if needed.	District 7 filters only	0	43.63	0	one-ton truck	0	28.84	0	confined space equipment	0	0	

APPENDIX H Estimated O & M Costs for BMP Project

Estimated vlaues derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.						Labor			Equipment				Materials		Total	Comments
						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
Inspect pumps for serviceability and periodic maintenance	Per manufacture's guidelines	Per manufacture's guidelines	Per manufacture's guidelines	Per manufacture's guidelines	District 7 filters only	0	55.7	0	one-ton truck	0	26.84	0	pump or parts, confined space equipment	0	0	
Inspect for burrows	Burrows, holes, mounds.	Visual observation	Annual inspections after vegetation trimming.	O Where burrows cause seepage, erosion and leakage, backfill firmly.	None			0				0			0	
Inspect for standing water	Water accumulation in any structure or other location within the filter	Standing water in any structure or other location within the filter	Annually, 72 hours after a target2 storm (0.75 in)	O Gravity drain where possible.		4	43.63	174.52	one-ton truck	1	26.84	26.84			201.36	
				O Notify engineer, if immediate solution is not evident.		2	43.63	87.26				0			87.26	
				O If standing water can not be removed or remains through wet season notify VCD.	None	2	43.63	87.26				0			87.26	Does not include Vector Control Agency costs
General Maintenance Inspection	Inlet structures, outlet structures, filter fabric or other features damaged, emergence of vegetation, graffiti or vandalism, fence damage, etc.	Visual observation	Semi-Annually, late wet season and late dry season Monthly	Within 30 working days, *take corrective action.* Consult engineer if immediate solution is not evident.	None	8	43.63	349.04	one-ton truck	2	26.84	53.68			402.72	
TOTAL MRDIA FILTER-SAND W/PUMP						44		1919.72				182.3		2500	4602.02	
MEDIA FILTERS – SAND WO/PUMP																
Preventive Maintenance and Routine Inspections																
DESIGN CRITERIA,																
ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	*SITE-SPECIFIC* REQUIREMENTS											
Drain time of 48 hours	Drain time exceeds 72 hours	Determine drain time by visual observation	Annually, after one target2 storm (0.75 in) event during wet season	O Remove sediment, trash and debris.		4	43.63	174.52	one-ton truck	1	26.84	26.84			201.36	
				O Check orifice				0				0			0	
				O Notify engineer to consider removing top 2 inches of media and dispose of sediment. Restore media depth to 18 inches when overall media depth drops to 12 inches. Complete prior to wet season.	Escondido MS Delaware SF – Remove and restore media depth to 12 inches.	8	43.63	349.04	boom truck	0.33	74.94	24.7302	drums, shovel, rake, drum grappler, confined space equipment characterization and disposal	833	1206.77	every 3 years

APPENDIX H Estimated O & M Costs for BMP Project

Estimated values derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.						Labor			Equipment				Materials		Total	Comments
						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
Inspect for sediment accumulation in sedimentation chamber	Sediment depth exceeds marker on staff gage.	Measure with appropriate device	Measure sediment depth annually.	Remove sediment prior to wet season. Characterize sediment and properly dispose.		8	43.63	349.04	boom truck	0.33	74.94	24.7302	drums, shovel, rake, drum grappler, confined space equipment characterization and disposal	833	1206.77	every 3 years
Inspection for trash / debris	Trash and debris present	Visual observation	During routine trashing, per Districts schedule.	Remove and dispose of trash and debris during routine trashing.	None	24	43.63	1047.12	one-ton truck	2	26.84	53.68	confined space equipment	50	1150.8	
Inspect for burrows	Burrows, holes, mounds.	Visual observation	Annual inspections after vegetation trimming.	□ Where burrows cause seepage, erosion and leakage, backfill firmly.	None			0				0			0	
Inspect for standing water	Water accumulation in any structure or other location within the filter	Standing water in any structure or other location within the filter	Annually, 72 hours after a target2 storm (0.75 in)	□ Gravity drain where possible.		4	43.63	174.52	one-ton truck	1	26.84	26.84			201.36	
				□ Notify engineer, if immediate solution is not evident.		2	43.63	87.26				0			87.26	
				□ If standing water can not be removed or remains through wet season notify VCD.	None	2	43.63	87.26				0			87.26	Does not include Vector Control Agency costs
General Maintenance Inspection	Inlet structures, outlet structures, filter fabric or other features damaged, emergence of vegetation, graffiti or vandalism, fence damage, etc.	Visual observation	Semi-Annually, late wet season and late dry season Monthly	Within 30 working days, take corrective action. Consult engineer if immediate solution is not evident.	None	8	43.63	349.04	one-ton truck	2	26.84	53.68			402.72	
TOTAL MRDIA FILTER-SAND W/PUMP						60		2617.8				210.5		1716	4544.3	
MULTI-CHAMBER TREATMENT TRAINS																
Preventive Maintenance and Routine Inspections																
DESIGN CRITERIA.																
ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS											
Maximum filter drain time of 72 hrs for design and smaller storms	Drain time greater than 72 hours or sediment accumulation is greater than 0.1 inch over more than 50 percent of the fabric surface area.	Visual observation	After one target2 storm (0.75 in) event during wet season.	□ Remove and replace filter fabric blanket.		4	43.63	174.52	one-ton truck	1	26.84	26.84			201.38	
				□ If problem persists, consult with engineer, the media may need to be replaced. Complete prior to wet season.	None	2	43.63	87.26		0	0	0		0	87.26	

APPENDIX H Estimated O & M Costs for BMP Project

Estimated values derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.						Labor			Equipment				Materials		Total	Comments
						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
Inspection for trash/ debris at inlet and outlet structures and the MCTT	Trash and debris present	Visual observation	During routine trashing per District schedule	Remove and dispose of trash and debris During routine trashings.	None	0	43.63	0	one-ton truck	0	26.84	0	confined space equipment	50	50	
Inspection for sediment accumulation	Sediment accumulates 50% of the volume underneath the tube settlers. Maximum of 2-feet grit chamber	Measure with appropriate device	Remove tube settler, measure sediment depth annually	Remove sediment prior to wet season. Characterize sediment and properly dispose.	None	36	43.63	1570.68	one-ton truck	1	26.84	26.84	drums, shovel, rake, drum grappler, confined space equipment, characterization and disposal	600	2197.52	
				□ If standing water can not be removed or remains through the wet season notify VCD.	None	2	43.63	87.26				0			87.26	Does not include Vector Control Agency costs
Replace filter media every 3 years per designer's specification	Operation greater than 3 years	Not applicable	Every 3 years	Remove and replace filter media. Characterize and properly dispose.	None	8	43.63	349.04	vactor and one-ton truck	0.33	198.75	65.5875	confined space equipment, characterization and disposal	1200	1614.628	every three yea
Inspect sorbent pillows in main settling chamber	Darkened by oily material	Visual Observation	Annually, in May.	Annually, renew sorbent pillows, or immediately if pillows are darkened by oily material, characterize and properly dispose.	None	4	43.63	174.52	one-ton truck	1	26.84	26.84	sorbent pillow	100	301.36	
Inspect pumps for proper functioning	Pump does not operate	Energize pump to see if water is discharged	After every storm.	Make assessment to determine if problem is electrical or mechanical. Take appropriate action. Replace pump if needed.	None	0	43.63	0	one-ton truck	0	26.84	0	confined space equipment	0	0	
Inspect pumps for serviceability and periodic maintenance	Per manufacture's guidelines	Per manufacture's guidelines	Per manufacture's guidelines	Per manufacture's guidelines	None	0	55.7	0	one-ton truck	0	26.84	0	confined space equipment, pump or parts	0	0	
General Maintenance Inspection	Inlet structures, outlet structures, filter fabric, settling tubes or other features damaged, emergence of vegetation, graffiti or vandalism, fence damage, etc.	Visual observation	Semi-Annually, late wet season and late dry season	Within 30 working days, take corrective action. Consult engineer if immediate solution is not evident.	None	8	43.63	349.04	one-ton truck	2	26.84	53.68			402.72	
TOTAL MULTI-CHAMBER TREATMENT TRAINS						64		2792.32				199.788		1950	4942.108	
OIL-WATER SEPARATOR																
Preventive Maintenance and Routine Inspections																
DESIGN CRITERIA,																
ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS											

APPENDIX H Estimated O & M Costs for BMP Project

Estimated Values derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.						Labor			Equipment				Materials		Total	Comments
						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
Inspect for sediment accumulation in the pre-separator and separator chamber	Greater than 12-inches	Measure with appropriate device	Annually	Prior to wet season, remove the accumulated material. Characterize and properly dispose.	None	4	43.63	174.52				0	testing and disposal	120	294.52	every 5 years
Inspect for oil accumulation in oil chamber	Oil depth is not more than 50 percent of chamber volume	Gauge the level of oil/water with a wooden gauge stick	Annually	Prior to wet season remove and properly dispose of oil and grease.	None	1	43.63	43.63				0	testing and disposal	60	103.63	every 5 years
Inspect coalescer for debris and gummy deposits	Debris or gummy deposits present	Visual observation	Annually	Wash the coalescer in an appropriate area with high-pressure hot water when needed.	None	1	43.63	43.63				0			43.63	
Inspect water level in tank	Less than full	Visual observation	Annually	Fill with water prior to wet season.	None	1	43.63	43.63				0			43.63	
Inspect for general mechanical integrity	Per manufacture's guidelines	Per manufacture's guidelines	Annually	Operate each mechanical component to ensure proper operation. Repair as needed	None	4	43.63	174.52				0			174.52	
TOTAL OIL-WATER SEPARATOR						11		479.93				0		180	659.93	
WET BASIN																
Preventive Maintenance and Routine Inspections																
DESIGN CRITERIA,																
ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS											
24-hour draw down measured between the rim of the outlet structure and invert of the WQ orifice in the outlet structure.	Drawdown greater than 25 hours or water is flowing over weir.	Evaluate drain time from inlet and outlet flow data loggers or observe 25 hours after target2 storm (0.75 in) Observation of water flowing over spillway	Once during wet season and after completion or modification of the facility.	If >25-hours:		4	43.63	174.52	one-ton truck	1	26.84	26.84			201.36	
				□ Open gate to discharge water to permanent pool elevation.		2	43.63	87.26	one-ton truck	1	26.84	26.84			114.1	
				□ Clear outlet of debris.		2	43.63	87.26	one-ton truck	1	26.84	26.84			114.1	
				□ Consult engineer if needed.		2	43.63	87.26	one-ton truck	1	26.84	26.84			114.1	
								0				0			0	
				If water is spilling over weir, open canal gate until water level is at permanent pool elevation. Check/clear outlet of debris.	None	4	43.63	174.52	one-ton truck	1	26.84	26.84			201.36	
Inspect for burrows	Burrows, holes, mounds	Visual observation	Annually and after vegetation trimming.	Where burrows cause seepage, erosion and leakage, backfill firmly.	None	4	43.63	174.52	one-ton truck	1	26.84	26.84			201.36	
General Maintenance Inspection	Inlet structures, outlet structures, side slopes or other features damaged, significant erosion, graffiti or vandalism, fence damage, etc.	Visual observation	Semi-Annually, late wet season and late dry season	Take corrective action, or restore to as-constructed condition prior to wet season. Consult engineers if immediate solution is not evident.	None	8	43.63	349.04	one-ton truck	2	26.84	53.68			402.72	

APPENDIX H Estimated O & M Costs for BMP Project

Estimated values derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.						Labor			Equipment				Materials		Total	Comments
						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
Inspect Zone 1 4 for vegetation coverage and density to sustain vector abatement efficacy								0				0			0	
(See attachments for zone locations.)	Observable vegetation coverage/density	Visual, visible vegetation growth or emergent vegetation growth	Quarterly	1. Have a biologist survey the Wet Basin to determine if any birds are nesting or other sensitive animals are present. If birds are nesting, with advice from the biologist, proceed with the maintenance.		8	70	560	sedan	1	21.28	21.28			581.28	
				2. Lower and maintain the water level to expose the area to be maintained, do not completely drain basin		4	43.63	174.52	one-ton truck	1	26.84	26.84			201.36	
				3. Mechanically remove allCut plantsvegetation		56	43.63	2443.28	one-ton truck	3	26.84	80.52	string trimmer, hand tools, bags, safety equipment	100	2623.8	
				4. Dispose of the vegetation material in a landfill or other appropriate disposal area.		24	43.63	1047.12	packer	3	53.44	160.32	hand tools, safety equipment	50	1257.44	
				4.5. Restock mosquito fish as recommended by vector control agency.	None	8	70	560	sedan	1	21.28	21.28			581.28	
Inspect Zone 2 4 for vegetation coverage and density to sustain vector abatement efficacy	Vegetation density is such that mosquito fish cannot swim freely in the planted area.	Mosquito fish cannot be seen in the planted area, vegetation density approximately 80 to 100 percent	Quarterly	Annually, or at a special request of the local vector control agency				0				0			0	
								0				0			0	
				1. Have a biologist survey the Wet Basin to determine if any birds are nesting or other sensitive animals are present. If birds are nesting, with advice from the biologist, proceed with the maintenance.		8	70	560	sedan	1	21.28	21.28			581.28	
				2. Lower and maintain the water level to expose the area to be maintained, do not completely drain basin		4	43.63	174.52	one-ton truck	1	26.84	26.84			201.36	

APPENDIX H Estimated O & M Costs for BMP Project

Estimated values derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.

						Labor			Equipment				Materials		Total	Comments
						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
				3. Mechanically removeCut Typha sp. (cattail), Scirpus sp. (bulrush) to produce random vegetation clusters (2-5 plants) with clusters at approximately 0.5 meters on center4. An effort should be made to maintain a ratio of Scirpus to Typha of 2:1. If the vegetation is cut, cut the vegetation to below the permanent pool water surface.		58	43.63	2443.28	one-ton	3	26.84	80.52	string trimmer, hand tools, bags, safety equipment	100	2623.8	
				4. Dispose of the vegetation material in a landfill or other appropriate disposal area.		24		0	packer	3	53.44	160.32	hand tools, safety equipment	50	210.32	
				5. Monitor vegetation density quarterly to determine grow back rate.	None	4	43.63	174.52	one-ton	1	26.84	26.84			201.36	
Maintain Vegetated Access Road to reduce fire hazard from contact with vehicle catalytic converters.								0				0			0	
								0				0			0	
Inspect for sediment accumulation in forebay and main pond	More than 2 inches in the forebay and 4 inches in the main pond, or	Sediment depth exceeds marker on staff gage.						0				0			0	life cycle
		Measure in forebay by estimating depth using stationing along concrete maintenance ramp. In main pond by measuring down from water quality orifice and comparing to as-constructed grade.	When pond is drained for Zone 1 vegetation removal, or every 3 years.	*Remove and properly dispose of sediment. By November, restore vegetation to the plan shown on the as-built drawings.*	La Costa site only			0				0			0	life cycle
								0				0			0	
								0				0			0	
								0				0			0	
TOTAL WET BASIN						222		9271.62				840.78		300	10412.38	
NOTES:																
1. The design storm event is a storm that has a one year, 24 hour recurrence frequency.																
2. A target storm event is a storm greater than 0.7525 inches of rainfall. For drain inlet inserts, a target storm event is a storm with a prediction of greater than 0.25 inches of rainfall.																
3. Woody wetland vegetation consists of: willows (Salix spp), mule fat (baccharis salicifolia), cottonwood (populus fremontii), and western sycamore (*plantanus racemosa*). *Note, this criterion is not applicable to the wet basin.*																
4. Zone 1, open water area of the basin, average depth is about 3 feet. Zone 2, shallow water bench, depth of water 0 –12 inches. Zone 3, periodic inundation is the temporary water storage volume impounded between the permanent pool and the overflow weir, i.e. the water quality storage. (See attachments for zone locations.) Zone A is the remaining upland slope between Zone 3 and the maintenance road.																
This Maintenance Indicator Document has been developed using site specific information gathered by specialists trained in the identification of threatened and endangered species and their habitat. Information contained in this document includes guidance for inspection for possible																

APPENDIX H Estimated O & M Costs for BMP Project

Estimated values derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.				Labor			Equipment				Materials		Total	Comments
				Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	

threatened and endangered species harborage. Further, some of the maintenance recommendations are based on the requirements of specific plant species used in this Pilot Program. The recommendations provided in this document must be reassessed with respect to species and plant materials if the guidance contained herein is to be used for a separate project in another area.

ATTACHMENT H

CERTIFICATION SHEET

CERTIFICATION SHEET

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.

Date: 01/14/09

Dennis C. Bowling, M.S.
R.C.E. #32838 Exp. 06/10
Principal

ATTACHMENT I

303(d) List of Water Quality Limited Segments Information, Hydrologic Unit Exhibit, and Beneficial Uses

2006 CWA SECTION 303(d) LIST OF WATER QUALITY LIMITED SEGMENTS REQUIRING TMDLS

SAN DIEGO REGIONAL WATER QUALITY CONTROL BOARD

USEPA APPROVAL DATE: JUNE 28, 2007

REGION	TYPE	NAME	CALWATER WATERSHED	POLLUTANT/STRESSOR	POTENTIAL SOURCES	ESTIMATED SIZE AFFECTED	PROPOSED TMDL COMPLETION
9	C	Pacific Ocean Shoreline, San Clemente HA	90130000				
				Indicator bacteria		3.7 Miles	2005
				Impairment located at Poche Beach (large outlet), Ole Hanson Beach Club Beach at Pico Drain, San Clemente City Beach at El Portal St. Stairs, San Clemente City Beach at Mariposa St., San Clemente City Beach at Linda Lane, San Clemente City Beach at South Linda Lane, San Clemente City Beach at Lifeguard Headquarters, Under San Clemente Municipal Pier, San Clemente City Beach at Trafalgar Canyon (Trafalgar Ln.), San Clemente State Beach at Riviera Beach, San Clemente State Beach at Cypress Shores.		
					Nonpoint/Point Source		
9	C	Pacific Ocean Shoreline, San Diego HU	90711000				
				Indicator bacteria		0.37 Miles	2005
				Impairment located at San Diego River Mouth (aka Dog Beach).			
					Nonpoint/Point Source		
9	C	Pacific Ocean Shoreline, San Diequito HU	90511000				
				Indicator bacteria		0.86 Miles	2005
				Impairment located at San Dieguito Lagoon Mouth, Solana Beach.			
					Nonpoint/Point Source		
9	C	Pacific Ocean Shoreline, San Joaquin Hills HSA	90111000				
				Indicator bacteria		0.63 Miles	2005
				Impairment located at Cameo Cove at Irvine Cove Dr./Riviera Way, Heisler Park-North			
					Urban Runoff/Storm Sewers		
					Unknown Nonpoint Source		
					Unknown point source		
9	C	Pacific Ocean Shoreline, San Luis Rey HU	90311000				
				Indicator bacteria		0.49 Miles	2005
				Impairment located at San Luis Rey River Mouth.			
					Nonpoint/Point Source		
9	C	Pacific Ocean Shoreline, San Marcos HA	90451000				
				Indicator bacteria		0.5 Miles	2005
				Impairment located at Moonlight State Beach.			
					Nonpoint/Point Source		
9	C	Pacific Ocean Shoreline, Scripps HA	90630000				
				Indicator bacteria		3.9 Miles	2019
				This listing for indicator bacteria only applies to the Childrens Pool Beach area of this ocean shoreline segment.			
					Nonpoint/Point Source		

2006 CWA SECTION 303(d) LIST OF WATER QUALITY LIMITED SEGMENTS REQUIRING TMDLS

SAN DIEGO REGIONAL WATER QUALITY CONTROL BOARD

USEPA APPROVAL DATE: JUNE 28, 2007

REGION	TYPE	NAME	CALWATER WATERSHED	POLLUTANT/STRESSOR	POTENTIAL SOURCES	ESTIMATED SIZE AFFECTED	PROPOSED TMDL COMPLETION
9	E	San Elijo Lagoon	90461000				
				Eutrophic		566 Acres	2019
				Estimated size of impairment is 330 acres.			
					Nonpoint/Point Source		
				Indicator bacteria		566 Acres	2008
				Estimated size of impairment is 150 acres.			
					Nonpoint/Point Source		
				Sedimentation/Siltation		566 Acres	2019
				Estimated size of impairment is 150 acres.			
					Nonpoint/Point Source		
9	R	San Juan Creek	90120000				
				DDE		1 Miles	2019
					Source Unknown		
				Indicator bacteria		1 Miles	2005
					Nonpoint/Point Source		
9	E	San Juan Creek (mouth)	90120000				
				Indicator bacteria		6.3 Acres	2008
					Nonpoint/Point Source		
9	R	San Luis Rey River	90311000				
				Chloride		19 Miles	2019
				Impairment located at lower 13 miles.			
					Urban Runoff/Storm Sewers		
					Unknown Nonpoint Source		
					Unknown point source		

2006 CWA SECTION 303(d) LIST OF WATER QUALITY LIMITED SEGMENTS REQUIRING TMDLS

SAN DIEGO REGIONAL WATER QUALITY CONTROL BOARD

USEPA APPROVAL DATE: JUNE 28, 2007

REGION	TYPE	NAME	CALWATER WATERSHED	POLLUTANT/STRESSOR	POTENTIAL SOURCES	ESTIMATED SIZE AFFECTED	PROPOSED TMDL COMPLETION
				Total Dissolved Solids		19 Miles	2019
					Industrial Point Sources		
					Agriculture-storm runoff		
					Urban Runoff/Storm Sewers		
					Surface Mining		
					Flow Regulation/Modification		
					Natural Sources		
					Golf course activities		
					Unknown Nonpoint Source		
					Unknown point source		
9	R	San Marcos Creek	90451000				
				DDE		19 Miles	2019
					Source Unknown		
				Phosphorus		19 Miles	2019
					Source Unknown		
				Sediment Toxicity		19 Miles	2019
					Source Unknown		
9	L	San Marcos Lake	90452000				
				Ammonia as Nitrogen		17 Acres	2019
					Source Unknown		
				Nutrients		17 Acres	2019
					Source Unknown		
				Phosphorus		17 Acres	2019
					Source Unknown		
9	L	San Vicente Reservoir	90721000				
				Chloride		1058 Acres	2019
					Source Unknown		

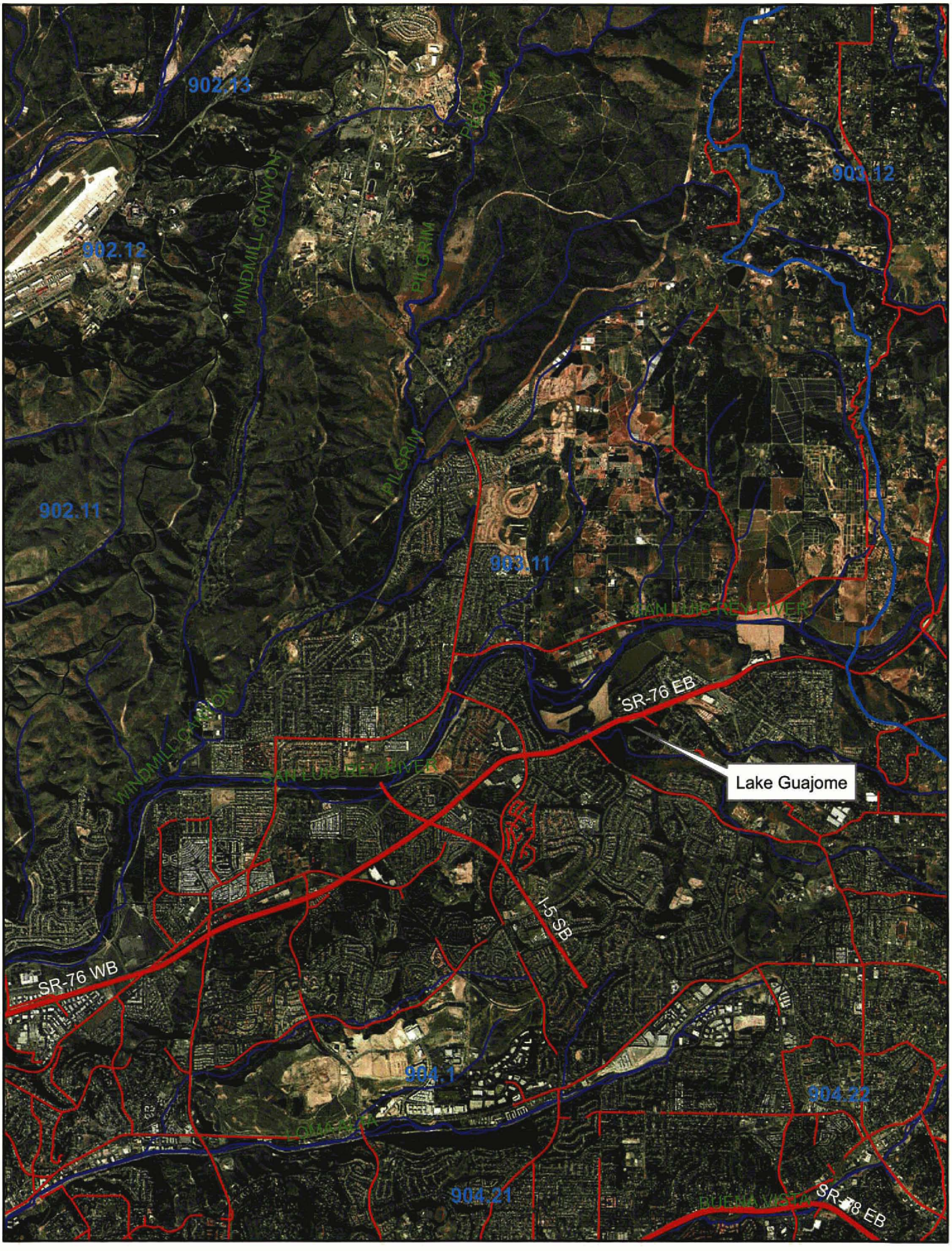
2006 CWA SECTION 303(d) LIST OF WATER QUALITY LIMITED SEGMENTS REQUIRING TMDLS

SAN DIEGO REGIONAL WATER QUALITY CONTROL BOARD

USEPA APPROVAL DATE: JUNE 28, 2007

REGION	TYPE	NAME	CALWATER WATERSHED	POLLUTANT/STRESSOR	POTENTIAL SOURCES	ESTIMATED SIZE AFFECTED	PROPOSED TMDL COMPLETION
9	R	Green Valley Creek	90521000				
				Chloride		0.98 Miles	2019
					Source Unknown		
				Manganese		0.98 Miles	2019
					Source Unknown		
				Pentachlorophenol (PCP)		0.98 Miles	2019
					Source Unknown		
				Sulfates		0.98 Miles	2019
					Urban Runoff/Storm Sewers		
					Natural Sources		
					Unknown Nonpoint Source		
					Unknown point source		
* 9	L	Guajome Lake	90311000				
				Eutrophic		33 Acres	2019
					Nonpoint/Point Source		
9	L	Hodges, Lake	90521000				
				Color		1104 Acres	2019
					Urban Runoff/Storm Sewers		
					Unknown Nonpoint Source		
					Unknown point source		
				Manganese		1104 Acres	2019
					Source Unknown		
				Nitrogen		1104 Acres	2019
					Agriculture		
					Dairies		
					Urban Runoff/Storm Sewers		
					Unknown Nonpoint Source		
					Unknown point source		

* PROJECT SITE IS NOT TRIBUTARY TO GUAJOME LAKE ∴ IS NOT APPLICABLE.



Lake Guajome Location

Filepath: J:\15956\GIS\15956_Hydrologic_Map_Exhibit.mxd
Exhibit Date: December 2, 2008
REC JN: 15956

0 1,750 3,500 7,000 Feet

Data Sources:
SanGIS Assessor Parcels: April 2006
SanGIS Roads - February 2006
Landiscor Aerial Photo: January 2006

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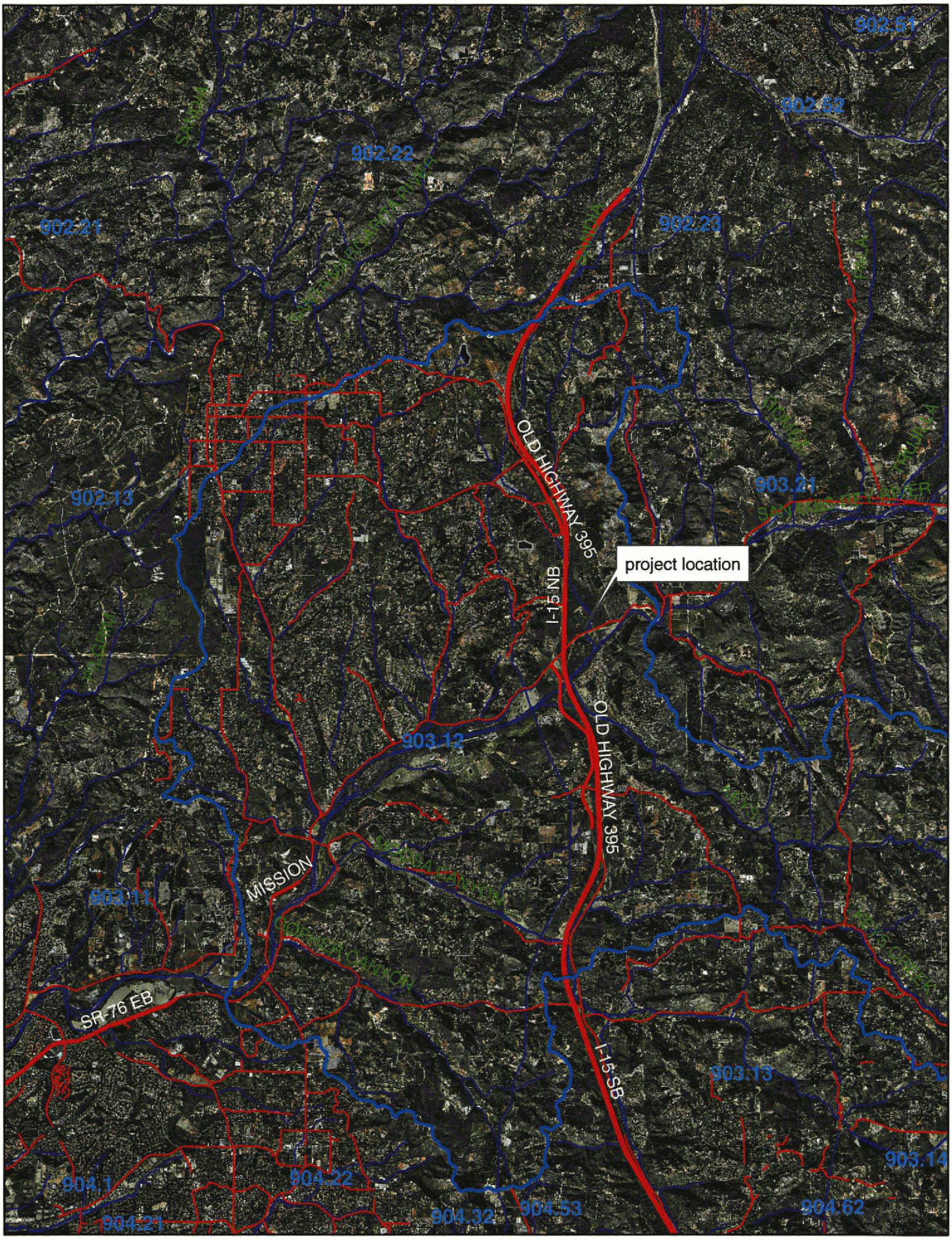

Meadowood Vesting Tentative Map Hydrologic Unit Exhibit

Filepath: J:\15956\GIS\15956_Hydrologic_Map_Exhibit.mxd
Exhibit Date: December 2, 2008
REC JN: 15956

0 3,550 7,100 14,200 Feet

Data Sources:
SanGIS Assessor Parcels: April 2006
SanGIS Roads - February 2006
Landiscor Aerial Photo: January 2006

RICK ENGINEERING COMPANY

WATER QUALITY CONTROL PLAN
FOR THE SAN DIEGO BASIN (9)

SEPTEMBER 8, 1994

(with amendments effective prior to April 25, 2007)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN DIEGO REGION

Table 2-5. BENEFICIAL USES OF GROUND WATERS

Ground Water		Hydrologic Unit Basin Number	BENEFICIAL USE					
			MUN	AGR	IND	PROC	FRSH	GWR
SAN LUIS REY HYDROLOGIC UNIT		3.00						
Lower San Luis	HA [2]	3.10	●	●	●			
Monserate	HA	3.20						
Pala	HSA	3.21	●	●	●			
Pauma	HSA	3.22	●	●	●			
La Jolla Amago	HSA	3.23	●	●	●	●		
Warner Valley	HA	3.30						
Warner	HSA	3.31	●	●	●		●	
Combs	HSA	3.32	●	●	●			

2 These beneficial uses do not apply westerly of the right-of-way of Interstate 5 and this area is excepted from the sources of drinking water policy. The beneficial uses for the remainder of the hydrologic area are as shown.

● Existing Beneficial Use

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1, 2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Luis Rey River Watershed – continued																
San Luis Rey River	3.12	+	●	●					●	●	●	●		●	●	
Live Oak Creek	3.12	+	●	●					●	●		●		●	●	
Keys Creek	3.12	+	●	●					●	●		●		●		
Moosa Canyon	3.15	+	●	●					●	●		●		●		
unnamed intermittent streams	3.16	+	●	●				●	●			●		●		
Moosa Canyon	3.14	+	●	●				●	●			●		●		
Moosa Canyon	3.13	+	●	●				●	●			●		●		
Turner Lake	3.13	See Reservoirs & Lakes – Table 2-4														
South Fork Moosa Canyon	3.13	+	●	●				●	●			●		●		
Moosa Canyon	3.12	+	●	●				●	●			●		●		
Gopher Canyon	3.12	+	●	●				●	●			●		●		
South Fork Gopher Canyon	3.12	+	●	●				●	●			●		●		
San Luis Rey River	3.11	+	●	●				●	●			●		●	●	
Pilgrim Creek	3.11	+	●	●				●	●		●	●	●	●	●	
Windmill Canyon	3.11	+	●	●				●	●			●	●	●		
Tuley Canyon	3.11	+	●	●				●	●			●		●		
Lawerence Canyon	3.11	+	●	●				●	●			●		●		
Mouth of San Luis Rey River	3.11	See Coastal Waters – Table 2-3														

● Existing Beneficial Use

\+ Excepted from MUN (See Text)

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.