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Sent: Tuesday, April 15, 2014 11:37 AM
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Subject: Santa Monica Bay Watersheds - RAA Approach Presentation
Attachments: DRAFT SMB RAA Approach - RB Meeting_040914.pdf

Good morning,

Thank you again for your time and feedback on the proposed RAA approach for the Santa Monica Bay Watersheds. I have attached the slides that were presented at the April 9th meeting.

Best regards,
Megan

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SANTA MONICA BAY WATERSHEDS

Reasonable Assurance Analysis (RAA) Approach for Enhanced Watershed Management Programs (EWMPs)

Los Angeles Regional Water Quality
Control Board
April 9, 2014

Geosyntec 
consultants

engineers | scientists | innovators

Outline

- Objectives
- WMGs & Study Area Overview
- Reasonable Assurance Analysis (RAA) Approach
 - Dry Weather Approach
 - SBPAT Overview & Calibration
 - Target Load Reduction Approach
 - Structural BMPs
 - Non-Structural BMPs
 - Demonstrating
“Reasonable Assurance”
- Summary



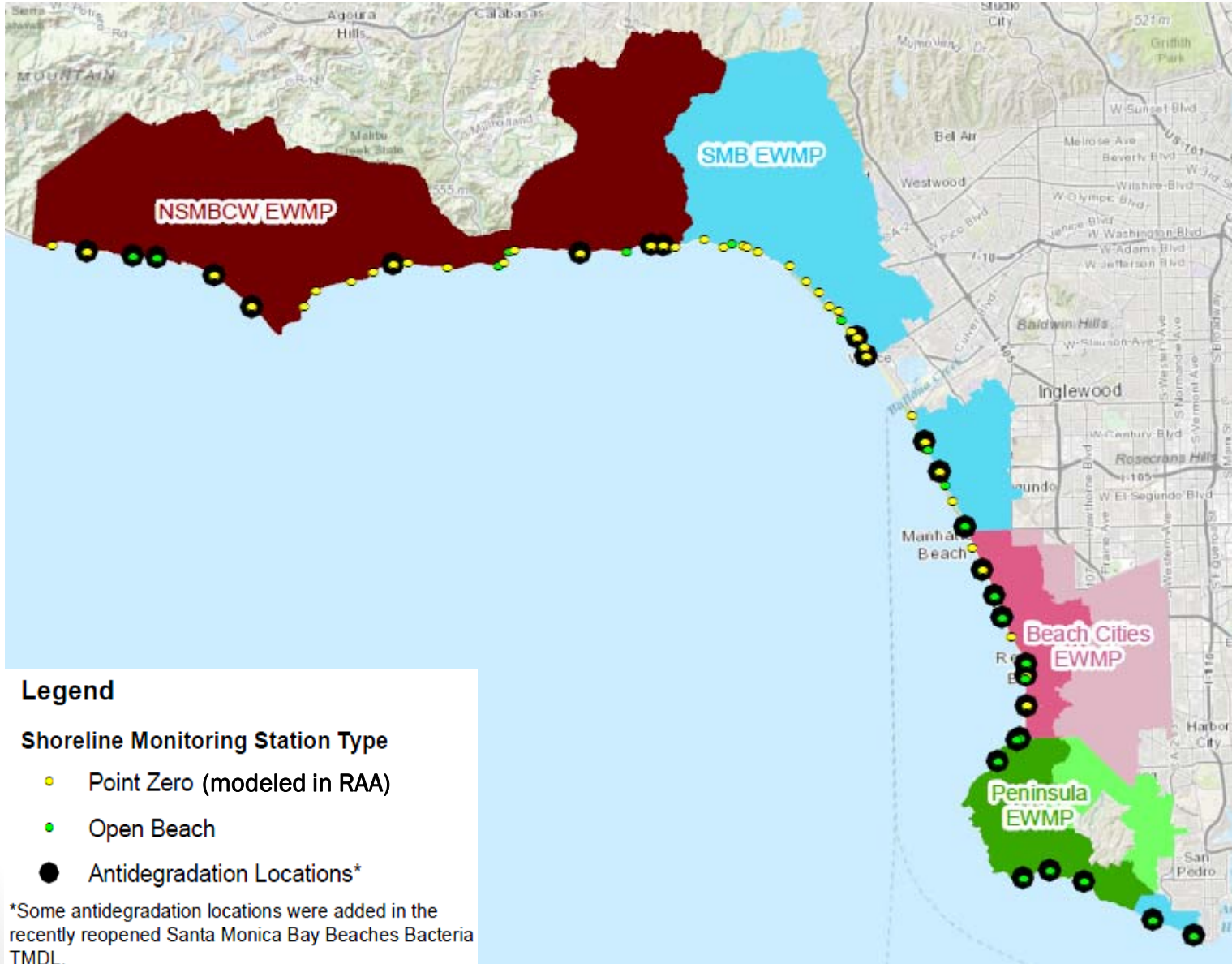
Objectives

- To present our draft RAA approach for RWQCB consideration
- To receive initial feedback and input from RWQCB
- To confirm acceptance of approach

Watershed Management Groups

- North Santa Monica Bay Coastal Watersheds WMG (Jurisdictional Groups 1 and 4)
- Santa Monica Bay WMG (Jurisdictional Groups 2 and 3)
- Beach Cities WMG (Jurisdictional Groups 5 and 6)
- Peninsula WMG (Jurisdictional Group 7)

Study Area Overview



Legend

Shoreline Monitoring Station Type

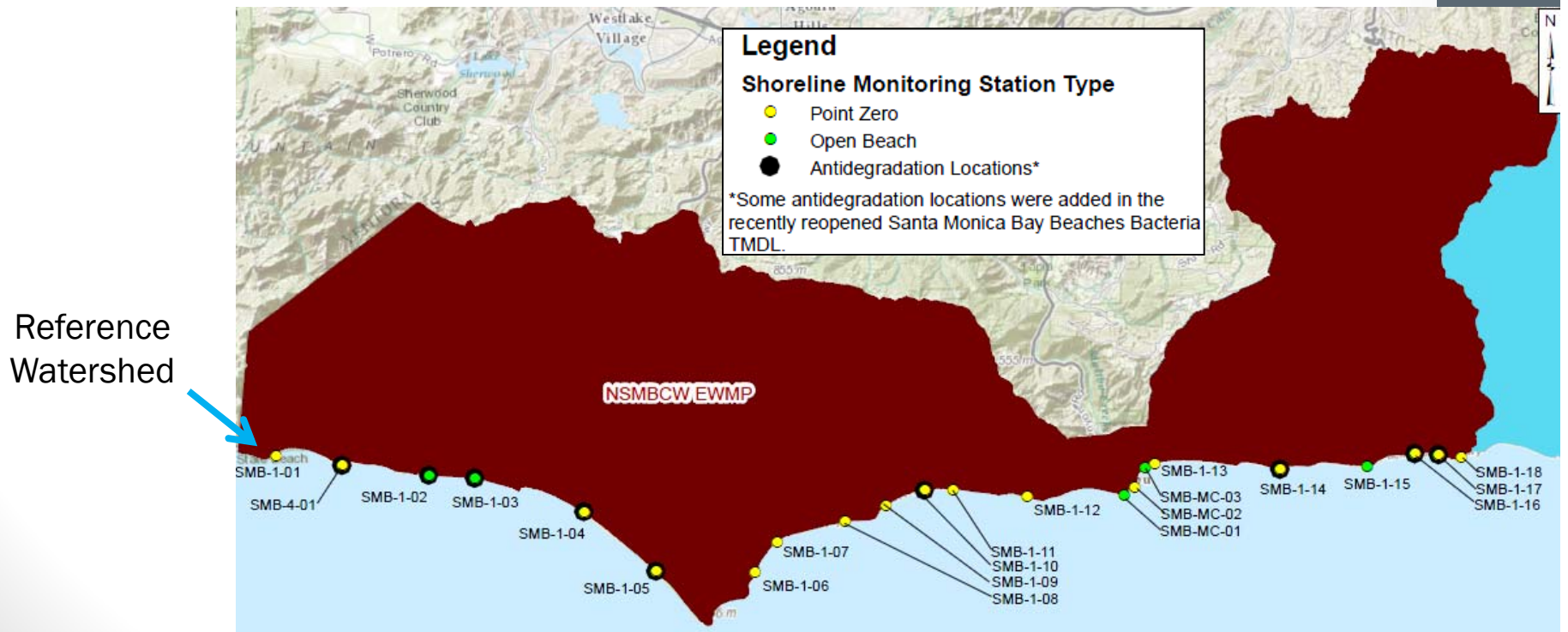
- Point Zero (modeled in RAA)
- Open Beach
- Antidegradation Locations*

*Some antidegradation locations were added in the recently reopened Santa Monica Bay Beaches Bacteria TMDL.

North Santa Monica Bay Coastal Watersheds WMG

WMG Agencies

- City of Malibu
- Los Angeles County Flood Control District (LACFCD)
- County of Los Angeles



NSMBCW WBPCs

WBPCs established consistent with RB Guidelines for RAA

Category	Water Body	Pollutant
1	SMB	Trash/Debris
		DDTs/PCBs
	SMB Beaches	Dry Weather Bacteria, Wet Weather Bacteria
		Indicator Bacteria
	Malibu Creek and Lagoon	Nutrients
Malibu Creek	Trash	
2	Topanga Canyon Creek	Lead
	Malibu Creek	Sulfates & Selenium
	Malibu Lagoon	pH
3	None	None

Santa Monica Bay WMG

WMG Agencies

- City of Los Angeles
- City of Santa Monica
- City of El Segundo
- LACFCD
- County of Los Angeles



SMB WBPCs

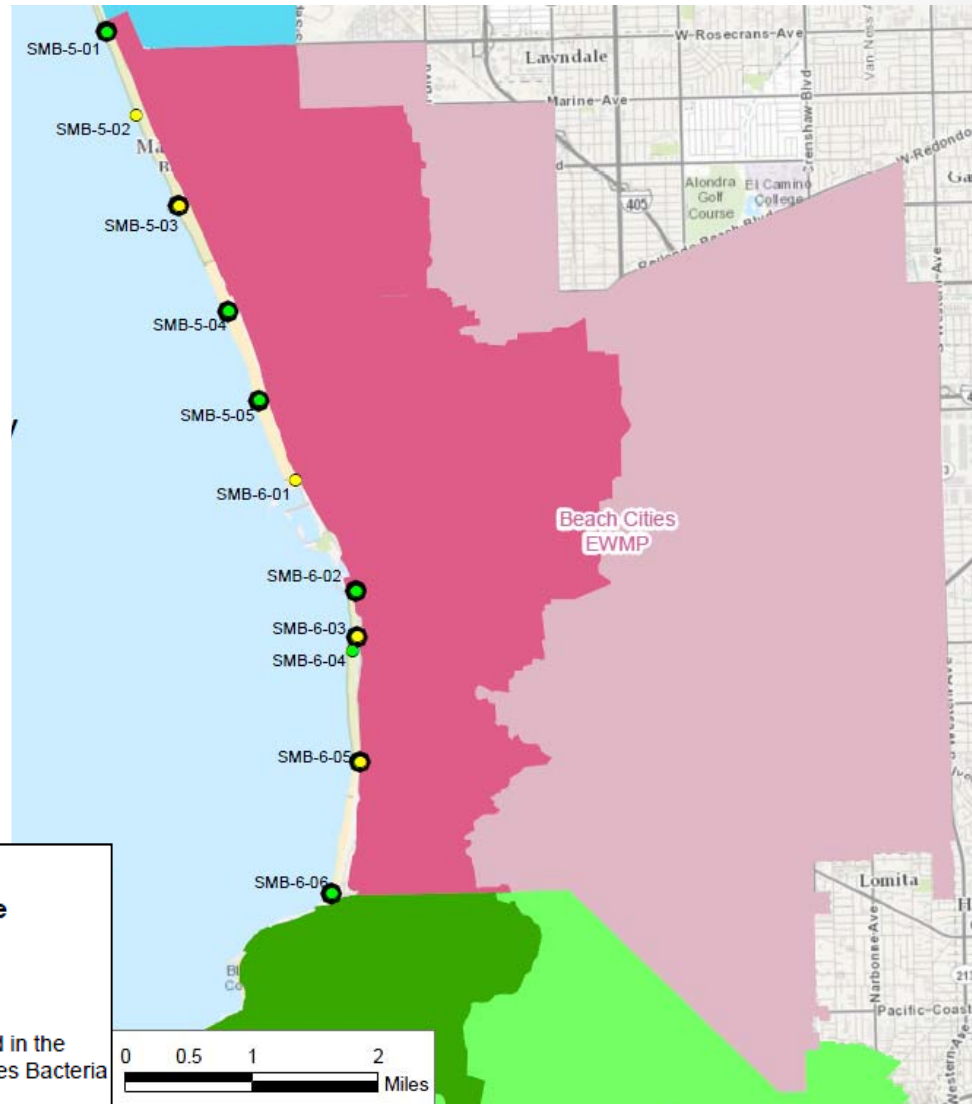
WBPCs established consistent with RB Guidelines for RAA

Category	Water Body	Pollutant
1	SMB Beaches	Dry Weather Bacteria, Wet Weather Bacteria
	SMB	PCBs/DDTs
	SMB Offshore/ Nearshore	Debris
2	Santa Monica Canyon Channel	Lead
		Indicator Bacteria
3	None	None

Beach Cities WMG

WMG Agencies

- City of Redondo Beach
- City of Manhattan Beach
- City of Hermosa Beach
- City of Torrance
- LACFCDD



Legend

Shoreline Monitoring Station Type

- Point Zero
- Open Beach
- Antidegradation Locations*

*Some antidegradation locations were added in the recently reopened Santa Monica Bay Beaches Bacteria TMDL.

Beach Cities WBPCs

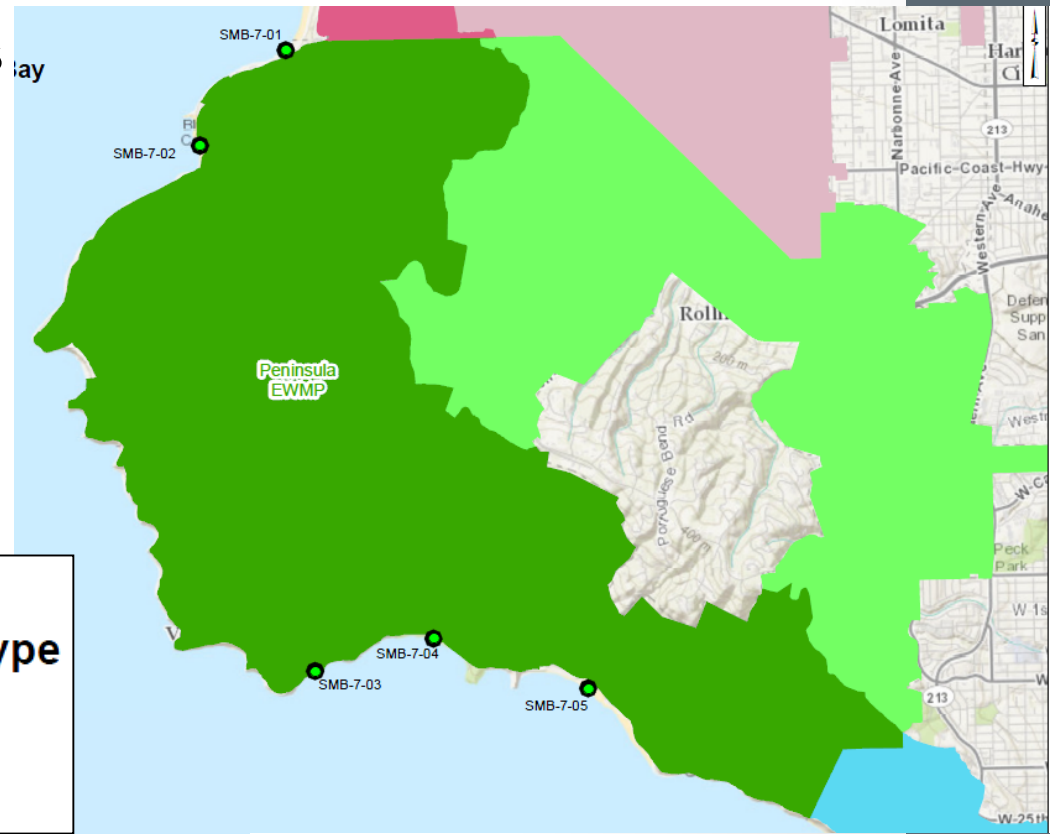
WBPCs established consistent with RB Guidelines for RAA

Category	Water Body	Pollutant
1	SMB Beaches	Dry Weather Bacteria, Wet Weather Bacteria
	SMB	Trash/Debris
		DDTs/PCBs
	Dominguez Channel (including Torrance Lateral)	Toxicity
		Total Copper, Total Lead, Total Zinc
2	Dominguez Channel (including Torrance Lateral)	Indicator Bacteria
3	Dominguez Channel (including Torrance Lateral)	Cyanide
		pH
		Selenium
		Mercury

Peninsula WMG

WMG Agencies

- City of Palos Verdes Estates
- City of Rolling Hills Estates
- City of Rancho Palos Verdes
- County of Los Angeles
- LACFCD



Legend

Shoreline Monitoring Station Type

- Open Beach
- Point Zero
- Antidegradation Locations*

Peninsula WBPCs

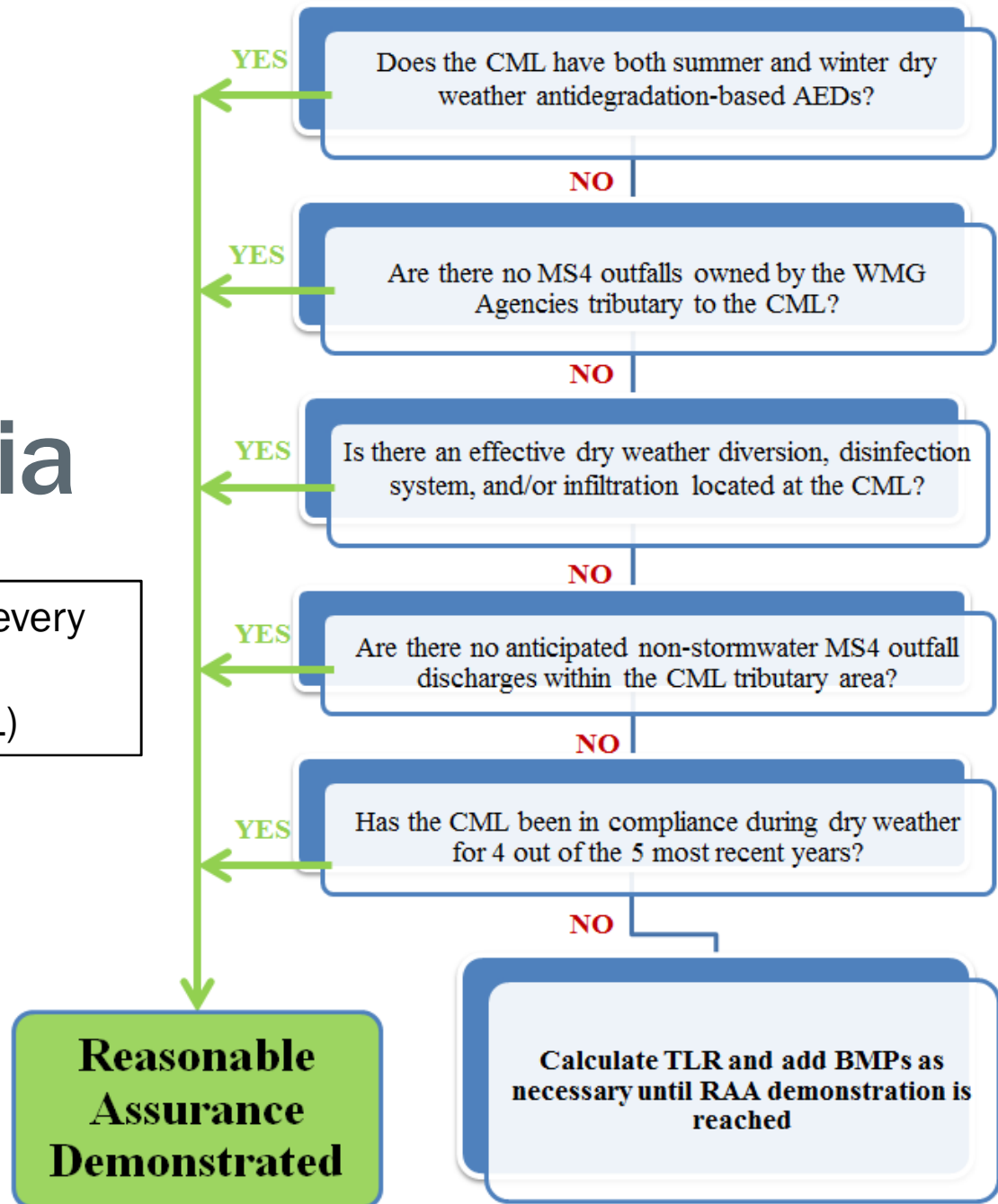
WBPCs established consistent with RB Guidelines for RAA

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R

Category	Water Body	Pollutant
1	SMB Beaches	Dry Weather Bacteria, Wet Weather Bacteria
	SMB	Trash/Debris
		DDTs/PCBs
	Machado Lake	Trash
		DDTs/PCBs
		Chlordane
		Dieldrin
		Odor, Eutrophic Conditions, Algae, Nitrogen, Phosphorus, Ammonia, Chlorophyll a, Dissolved Oxygen
	Inner Harbor, Outer Harbor, Cabrillo Marina, Fish Harbor	Copper, Lead, Mercury, Zinc
		PAHs
DDTs/PCBs		
Chlordane		
2	Wilmington Drain	Copper, Lead
		Coliform Bacteria
	Machado Lake	ChemA (fish tissue)
	Palos Verdes Shoreline Park	Pesticides
3	SMB	Sediment Toxicity
	None	None

Dry Weather Approach for Bacteria

Evaluation questions for every shoreline Compliance Monitoring Location (CML)



Dry Weather Approach for Other Pollutants

- Dry weather flows may be from non-MS4 NPDES permitted or conditionally exempt sources
- To address remaining non-exempt flows, WMAs may adopt new residential/commercial over-irrigation controls such as:
 - Smart controller rebates
 - Water waste ordinance
 - Outreach/education
 - Site inspection/audits
 - Wet weather BMP that will also capture/treat dry weather flows
- RAA will be narrative (i.e., no modeling) and will assume that proposed non-structural BMPs will eliminate any existing non-exempt NSW flows
 - Therefore 100% reduction of baseline load, and RA demonstrated

Wet Weather Modeling Process

Targets set consistent with RB RAA Guidelines

Calibration

- Hydrology
- Water quality

Targets

- Select average, critical years
- Set “existing” baseline loads to be consistent with TMDL analysis
- Set “allowed” loads (bacteria: use open space LU; other pollutants: use WQS)
- Baseline – Allowed = Target Load Reduction



WQ Benefit

- SBPAT to model BMP load reductions (LID/onsite, distributed, regional)
- Non-modeled nonstructural: quantify using static “mass balance” calcs or assume bulk reduction (5-10%)



Compliance

- Compared expected load reductions with TLRs → Reasonable Assurance of Compliance
- Report output *ranges* based on stochastic analysis
- Address interim and final limits/ milestones

SBPAT Overview

Model selection consistent with RB RAA Guidelines

Fixed Data

- Catchments definition/characterization
- Land uses
- Parcels
- BMP designs

Legend

Land Use Group

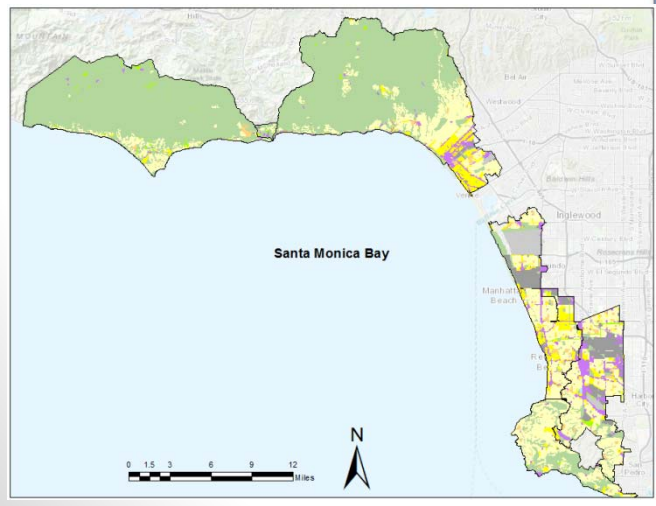
Agriculture
Commercial
Education
Industrial
MF Residential
SF Residential
Transportation
Vacant
Water

Variable/
Stochastic Data

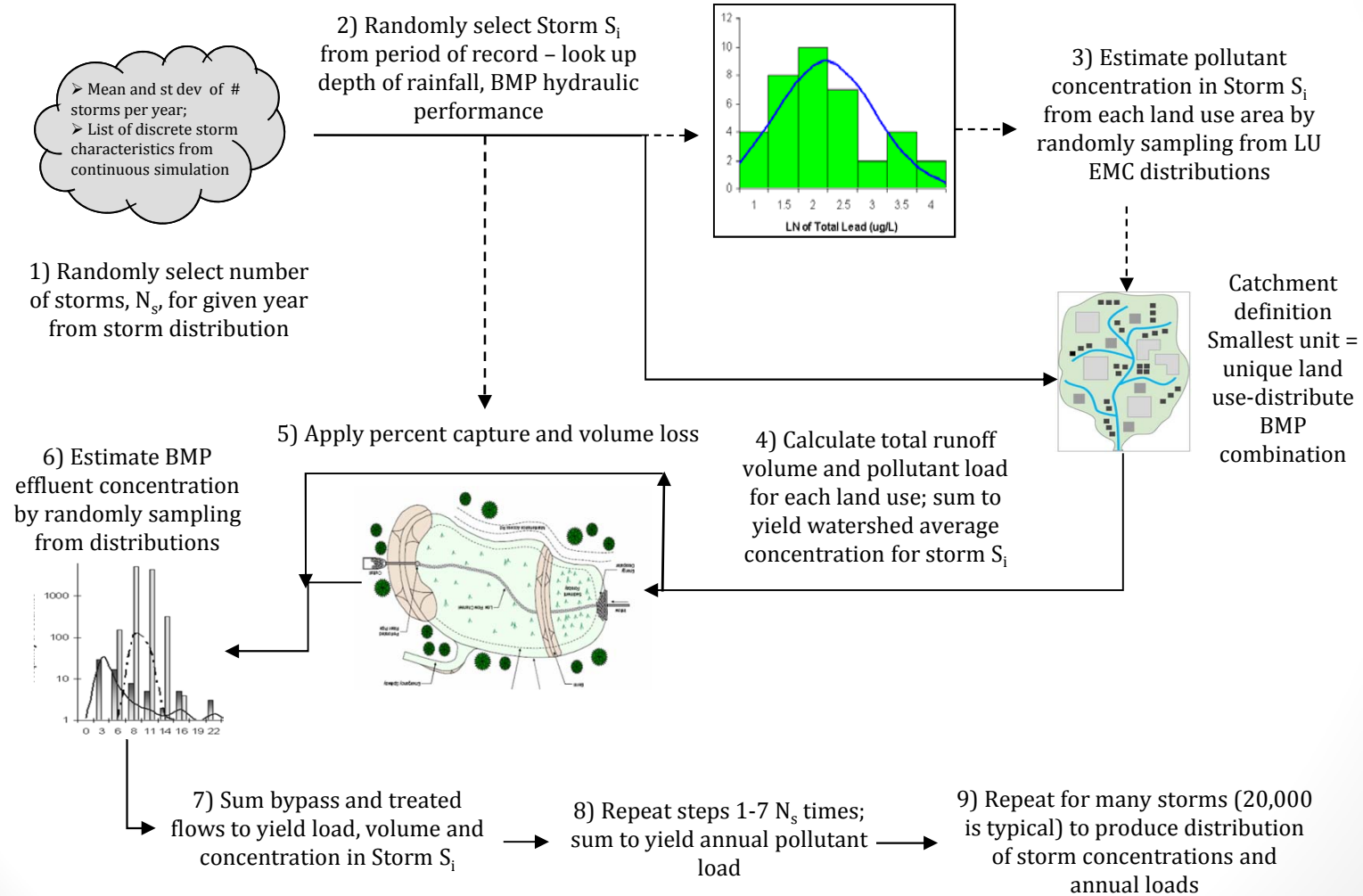
- Precipitation and hydrology
- Land use EMCs
- BMP effectiveness
- BMP treatment/bypass volumes

Models

- Monte Carlo
- EPA SWMM



Monte Carlo

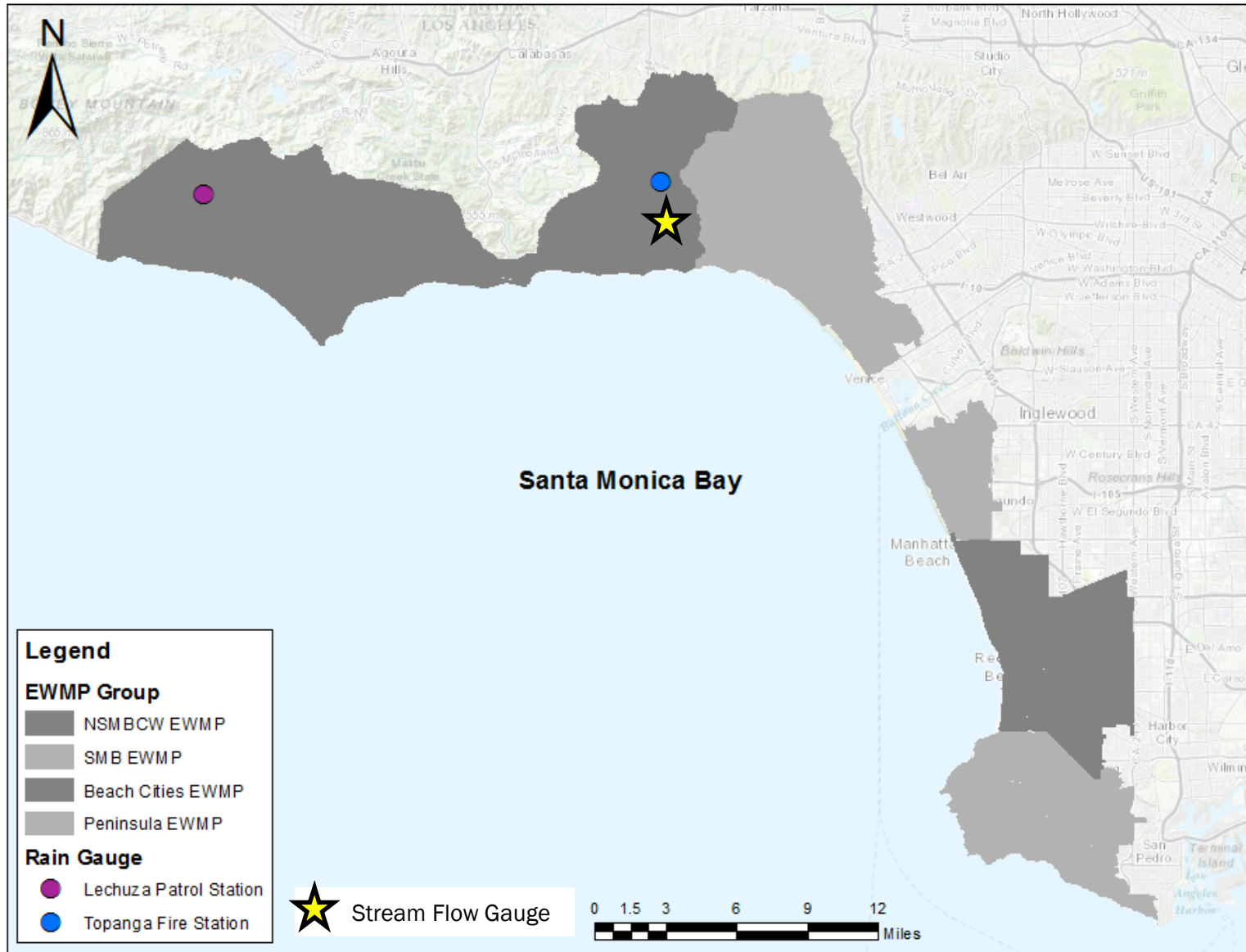


SBPAT Calibration

Model calibrated
consistent with RB
RAA Guidelines

- **Hydrology:** Modeled (predicted) vs. observed annual discharge volumes compared for Topanga Canyon
 - Precipitation gauge -- LA County Lechuza Station (#72) (hourly record adjusted using ratio with Topanga Canyon gauge)
 - Streamflow gauge -- LA County Topanga Gauge (F54C)
 - Calibration period -- 2001-2012 (WY 2007 excluded due to stream flow measurement outliers)
- **Water Quality:** Demonstrated linkage between modeled annual bacteria loads and measured annual (wet weather) exceedance days at SMB 1-18 (Topanga Canyon)

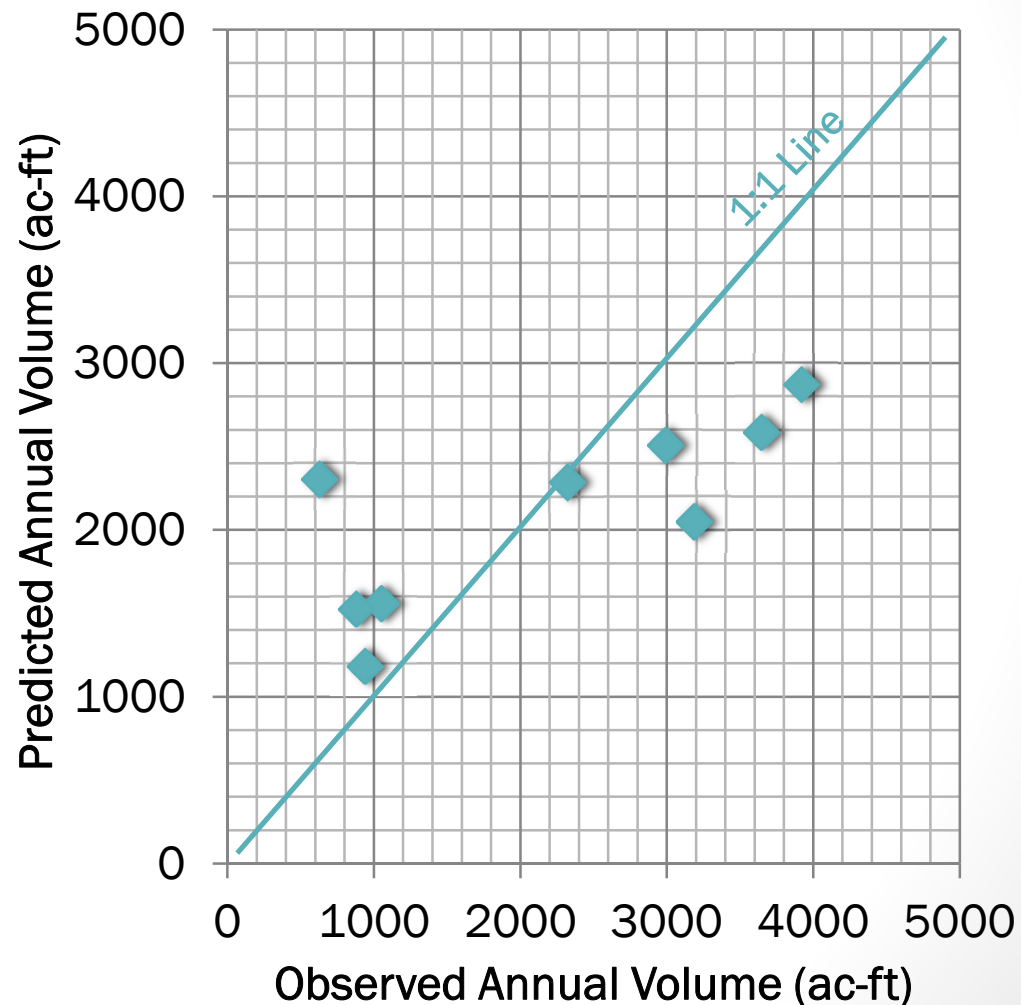
Calibration Gauges



Hydrology Calibration

Average prediction error*
= $1 - (\text{observed}/\text{predicted})$
= 2%

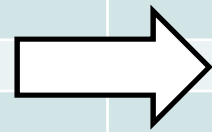
Model average prediction error meets “target tolerance” from RB Guidelines



*Average of the percent differences between each observed and modeled annual runoff volume

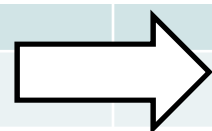
Calibrated Parameters

Los Angeles County Soil Number	Saturated Hydraulic Conductivity (in/hr)	
	Default	Calibrated
2	0.11	0.06
22	0.35	0.20
24	1.26	0.60
25	0.15	0.06
26	3.6	2.0
27	0.64	0.60
30	0.72	0.60
33	0.51	0.06
35	1.5	0.6
38	0.50	0.06
66	0.29	0.20



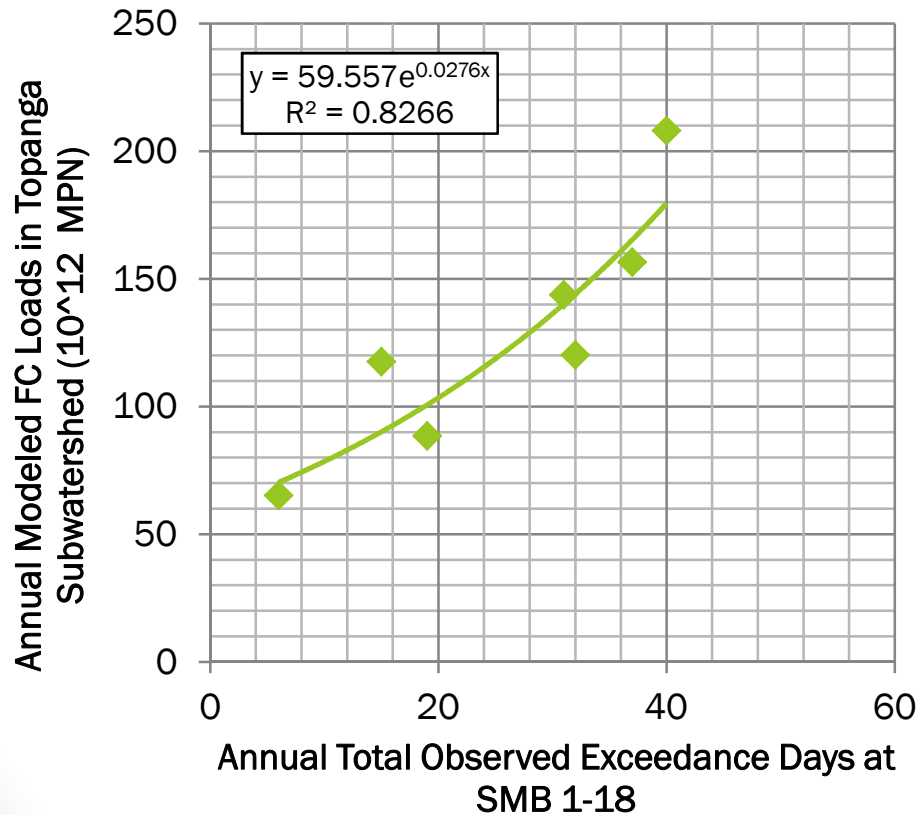
RUNOFF
INCREASES

Land Use Designation	Effective Imperviousness	
	Default	Calibrated
Vacant Undifferentiated	1%	10%



Note: Calibrated values are still within the recommended ranges from reference manuals (NRCS, 2004. *Chapter 9 - Hydrologic Soil-Cover Complexes. Part 630 Hydrology, National Engineering Handbook. 20pp. Washington, DC.*)

Use Modeled FC Loads to Predict Observed Exceedance Days



Open Space Data Source	FC EMC (MPN/100mL)	
	Mean	Standard Deviation
SBPAT Default (based on SCCWRP ¹ 2007 [n=2])	6,310	1,310
Revised based on Arroyo Sequit samples (n=11)	484	806

↓

Target Load Reduction Approach

- **Santa Monica Bay Watershed WBPCs**
 - **Bacteria**
 - Point Zero Beaches: Land-use-based approach based on reference watershed
 - Anti-Degradation Beaches: TMDLs acknowledge that historic exceedance rates for each of these subwatersheds are lower than that of the reference beach, on average → No RAA modeling
 - **Other Pollutants** (e.g., lead in Topanga & Santa Monica Canyon Channel): Allowed load = WQS x SBPAT volume. Exceptions:
 - SMB PCBs/DDT since TMDL sets allowable MS4 load at existing conditions → Zero TLR = No RAA modeling
 - Malibu Creek nutrients since urban EMCs are below TMDL WLA → Zero TLR = No RAA modeling
 - Trash/debris → Alternative compliance mechanism (full/partial capture systems)
 - **Open Beaches, all pollutants:** No MS4 outfalls → No RAA modeling
- Peninsula EWMP will also use SBPAT to set TLRs for WBPCs in Machado Lake and LA Harbor Watersheds
- **TLR set based on 50th and 90th percentile years:** Based on wet days for bacteria, based on rainfall depth for other pollutants.

Average and Critical Years to be Modeled

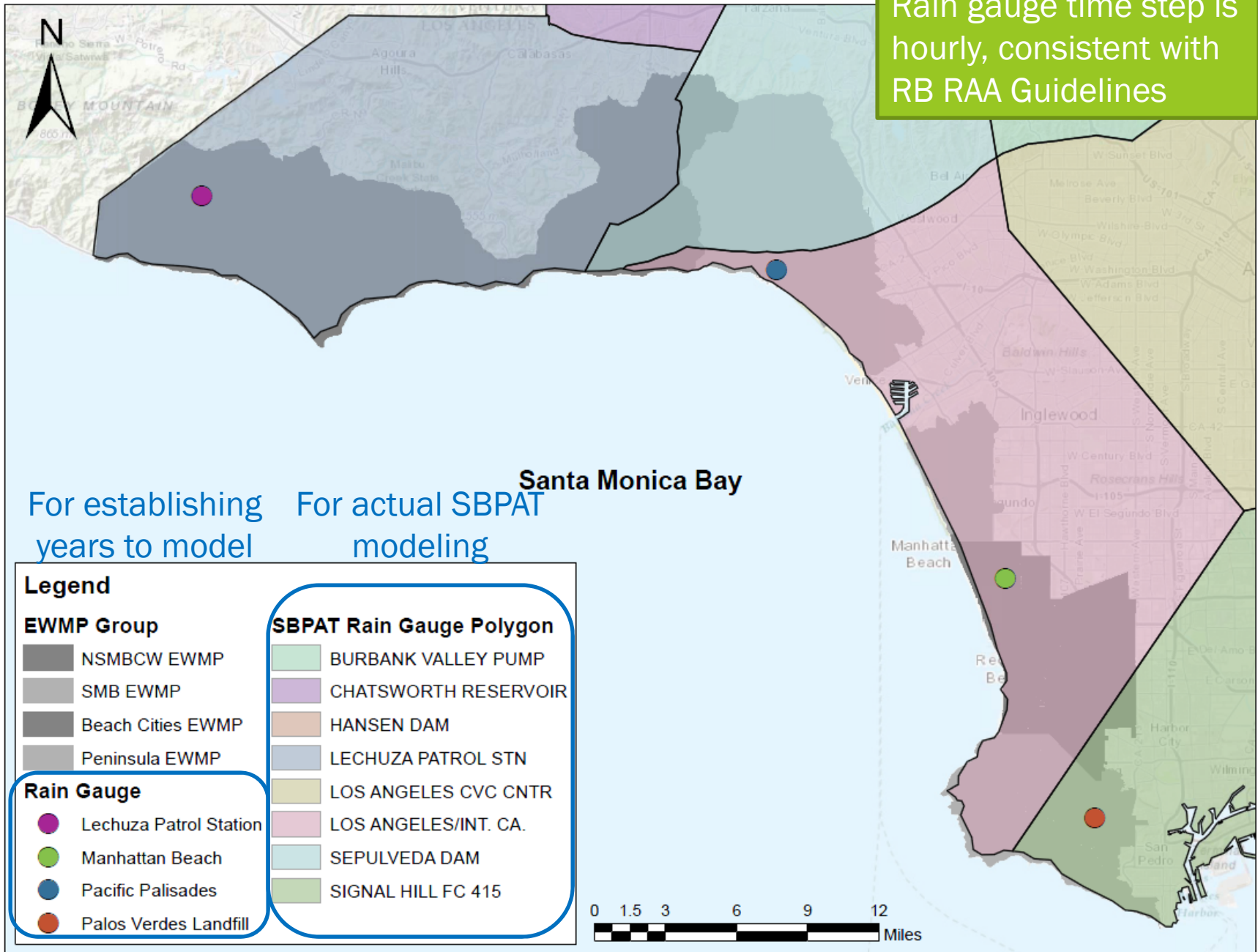
Average and critical years used to set TLRs consistent with RB RAA Guidelines

Note: SMB had 86 wet days in 1995

EWMP WMG	Using Number of Wet Days*		Using Total Annual Rainfall*	
	50 th Percentile TMDL Year	90 th Percentile TMDL Year	50 th Percentile TMDL Year	90 th Percentile TMDL Year
NSMBCW	2010 (59) (15.3")	1995 (85) (31.1")	1996 (13.3")	2005 (28.2")
SMB	1999 (52) (7.3")	2005 (78) (36.6")	2008 (15.3")	1995 (33.1")
Beach Cities	1996 (58) (10.2")	1995 (73) (22.0")	2004 (10.9")	2005 (21.9")
Peninsula	2006 (54) (9.1")	1995 (81) (29.5")	2008 (12.7")	2005 (26.5")

EWMP WMG	LACFCD Hourly Rain Gage Selected	Elevation (ft)	Justification
NSMBCW	D253 Lechuza Patrol Station	1620	Influences most area
SMB	D491 Pacific Palisades	293	Elevation is most representative
Beach Cities	D1070 Manhattan Beach	182	Influences most area
Peninsula	D1252 Palos Verdes Landfill	400	Influences most area

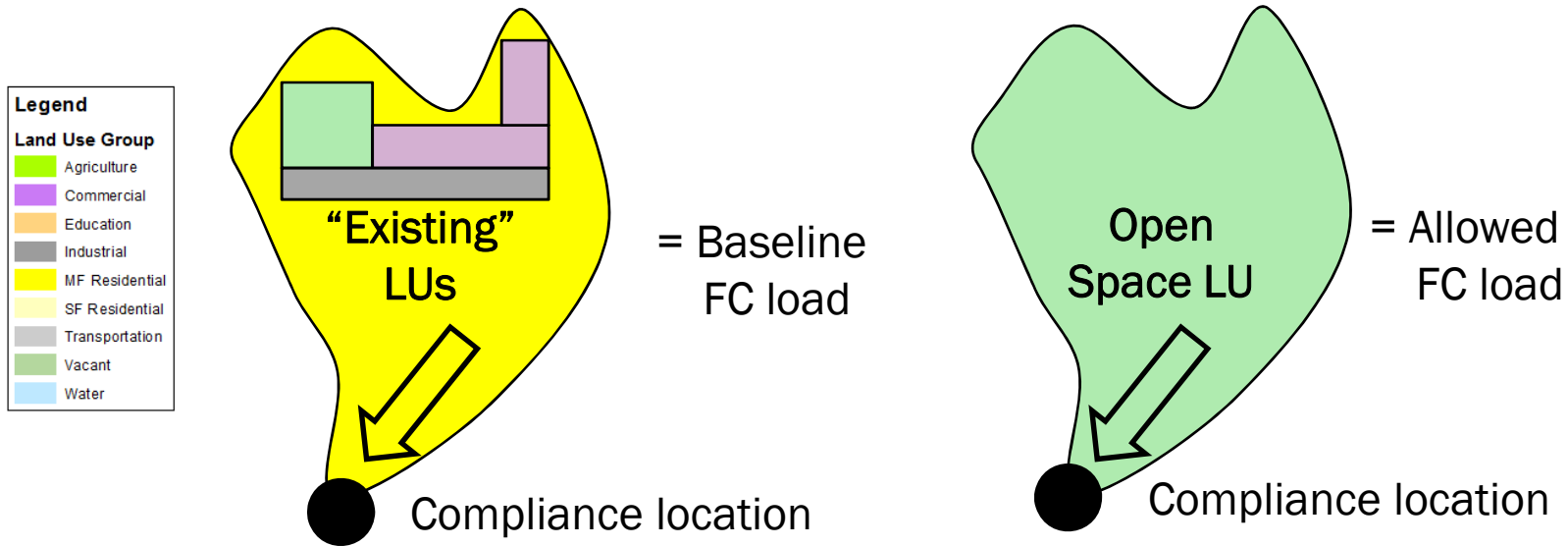
*Period of record: 1989 – 2011 TMDL years (Nov 1 – Oct 31)



Rain gauge time step is hourly, consistent with RB RAA Guidelines

Setting Target Load Reductions (TLRs) for Bacteria

Land use-based approach using SBPAT to meet required AEDs that are based on reference watershed.



$$\text{Baseline Load} - \text{Allowed Load} = \text{TLR}$$

Approach for Addressing Other Pollutants

- No other TLRs will be developed, however BMP load reductions can be reported for all modeled WBPCs:
 - Bacteria (FC)
 - Nutrients (TP and TN, or NO₃ + TKN)
 - Metals (TCu, TPb, TZn)
 - Particulate associated toxics (TSS as surrogate), if necessary
- Debris/trash is not addressed in RAA due to alternate compliance mechanisms
- Non-MS4 pollutants are not addressed in RAA (e.g., pH, sulfate, selenium, odor, etc.)
- Toxicity or non-particulate toxicants will not be modeled

NSMBCW WBPCs

WBPCs qualitatively evaluated in RAA are greyed out

Category	Water Body	Pollutant
1	SMB	Trash/Debris
		DDTs/PCBs*
	SMB Beaches	Dry Weather Bacteria, Wet Weather Bacteria
	Malibu Creek and Lagoon	Indicator Bacteria
		Nutrients
Malibu Creek	Trash	
2	Topanga Canyon Creek	Lead
	Malibu Creek	Sulfates & Selenium
	Malibu Lagoon	pH
3	None	None

* If we need to quantify load reductions, model TSS as a surrogate

SMB WBPCs

WBPCs qualitatively evaluated in RAA are greyed out

Category	Water Body	Pollutant
1	SMB Beaches	Dry Weather Bacteria, Wet Weather Bacteria
	SMB	PCBs/DDTs*
	SMB Offshore/ Nearshore	Debris
2	Santa Monica Canyon Channel	Lead
		Indicator Bacteria
3	None	None

* If we need to quantify load reductions, model TSS as a surrogate

Beach Cities WBPCs

WBPCs qualitatively evaluated in RAA are greyed out

Category	Water Body	Pollutant	
1	SMB Beaches	Dry Weather Bacteria, Wet Weather Bacteria	
		Trash/Debris	
	SMB	DDTs/PCBs*	
		Dominguez Channel (including Torrance Lateral)	Toxicity
		Total Copper, Total Lead, Total Zinc	
2	Dominguez Channel (including Torrance Lateral)	Indicator Bacteria	
3	Dominguez Channel (including Torrance Lateral)	Cyanide	
		pH	
		Selenium	
		Mercury	

* If we need to quantify load reductions, model TSS as a surrogate

Peninsula WBPCs

WBPCs qualitatively evaluated in RAA are greyed out

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R**

Category	Water Body	Pollutant
1	SMB Beaches	Dry Weather Bacteria, Wet Weather Bacteria
	SMB	Trash/Debris
		DDTs/PCBs*
	Machado Lake	Trash
		DDTs/PCBs*
		Chlordane*
		Dieldrin*
		Odor, Eutrophic Conditions, Algae, Nitrogen, Phosphorus, Ammonia, Chlorophyll a, Dissolved Oxygen
	Inner Harbor, Outer Harbor, Cabrillo Marina, Fish Harbor	Copper, Lead, Mercury, Zinc
		PAHs*
DDTs/PCBs*		
2	Wilmington Drain	Copper, Lead
		Coliform Bacteria
	Machado Lake	ChemA (fish tissue)
	Palos Verdes Shoreline Park	Pesticides
3	SMB	Sediment Toxicity
	None	None

BMPs and Pollutants Modeled in SBPAT

BMPs*	Pollutants*
Constructed Wetland / Wetpond (with Extended Detention)	Total suspended solids (TSS)
Constructed Wetland / Wetpond (without Extended Detention)	Total phosphorus (TP)
Dry Extended Detention Basin	Dissolved phosphorus as P (DP) ²
Hydrodynamic Separator	Ammonia as N (NH ₃)
Media Filter	Nitrate as N (NO ₃)
Sub-surface Flow Wetland	Total Kjeldahl nitrogen as N (TKN)
Treatment Plant	Dissolved copper (DCu)
Vegetated Swale	Total copper (TCu)
Biofiltration	Total lead (TPb)
Bioretention (volume reduction only)	Dissolved zinc (DZn)
Cistern (volume reduction only)	Total zinc (TZn)
Green Roof (volume reduction only)	Fecal Coliform (FC)
Porous Pavement (volume reduction only)	
Infiltration Basin (volume reduction only)	

¹ All pollutants are addressed for all BMPs that provide treatment (i.e., excluding those identified as “volume reduction only”).

² Dissolved phosphorus and orthophosphate data sets were combined to provide a larger dataset because the majority of orthophosphate is typically dissolved and many datasets either report dissolved phosphorus or orthophosphate, but not both.

* Modeling for the RAA will be limited to Category 1 and 2 WBPCs

SBPAT EMCs

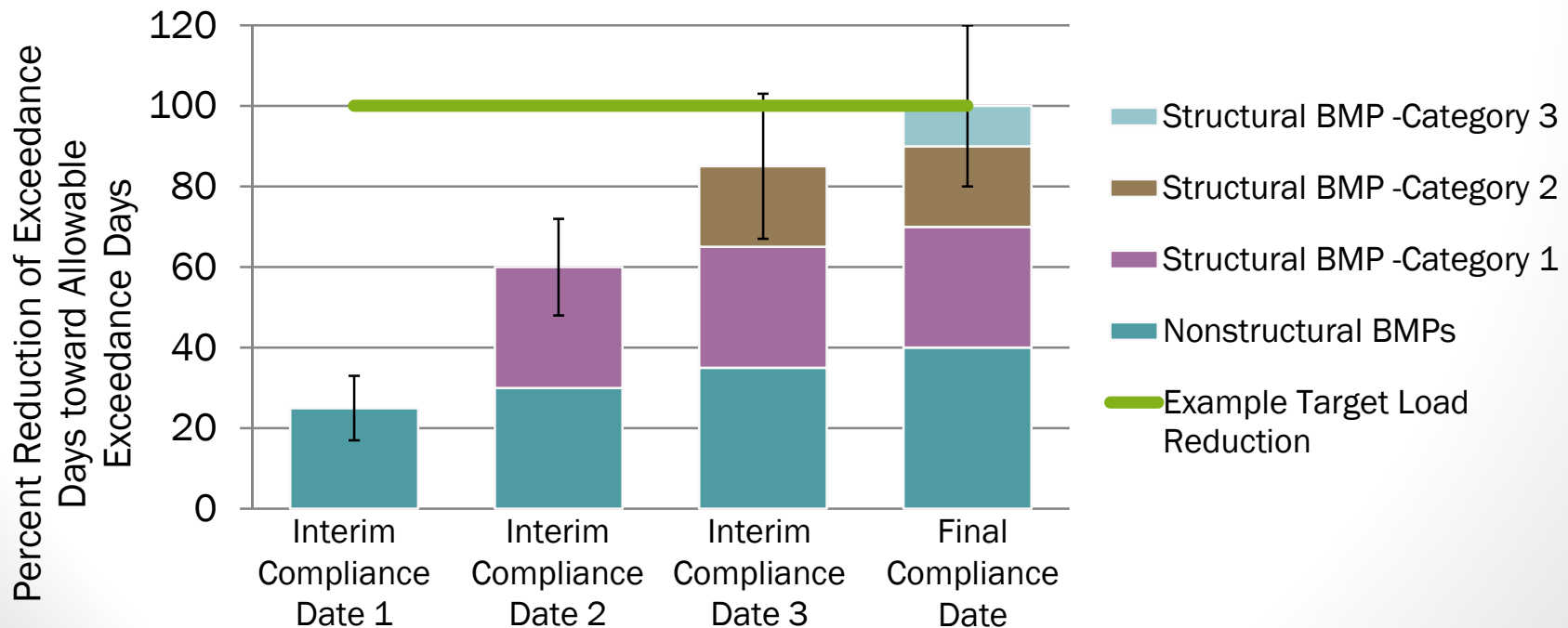
Model inputs consistent with
RB RAA Guidelines

- Land use EMCs and BMP effluent EMCs are based on references listed in the RAA Guidance Document, with the following exceptions:
- BMP Effluent
 - SSF wetland effluent is the lowest of all IBD categories; except for Fecal Coliform where 90% removal is used (SSF wetlands are generally capable of a 1 to 2 log reduction in fecal coliforms per [USEPA 1993, Sleytr et al 2007, Edwards et al 1993, Geosyntec 2009, and Puigagut et al 2007])
 - BMP effluent data was analyzed in 2012 based on the 2011 interim release of the IBD
- Land Use EMCs
 - Open space fecal coliform EMC revised based on Arroyo Sequit samples
 - The “single-family residential” EMC for fecal coliform is based on the SCCWRP dataset for “low-density residential”
 - The “multi-family residential” EMC for fecal coliform is based on the SCCWRP dataset for “high-density residential”
 - The “education” EMC for fecal coliform is based on the “multi-family residential” land use since the educational land use is not available in the SCCWRP fecal coliform dataset

Estimating BMP Load Reductions

Goal is to meet TLRs using combination of both structural and nonstructural BMPs

- Structural BMPs: Use SBPAT to model regional and distributed BMPs
- Non-Structural BMPs: Use SBPAT, spreadsheet calcs, or assume general load reduction percent for non-modeled BMPs



Structural BMPs

- Distributed BMPs will be generally planned
- Regional BMPs will be sited
- Regional EWMP BMPs meeting the 85th percentile criteria for future conditions (e.g., after LID is implemented in the watershed until final limits become effective) will not be modeled for RAA, but sizing will be confirmed through use of hydrologic calculations or model

Distributed BMPs

Would you like to include distributed BMPs in your evaluation? Yes No

Select Distributed BMP Catchments within Study Area
Select by Catchment ID (Note 1)

2041102	>	2041106
2041134	<	
2041135	<<	
2041141	<<<	
2041148	<<<<	
2041149	<<<<<	

Distributed BMPs - Percent of Study Area Treated By Distributed BMPs (Note 3)

% of area treated by distributed BMPs (STUDY AREA TOTAL) Allow Edits Hit enter after editing each grid cell to commit changes

Land Use	Area (ac)	Swales (%)	Cisterns (%)	Bioretention (%)	Perm. Pavement (%)	Green Roofs (%)	Media Filters (%)
Commercial	7.0	0	0	0	0	0	0
Multi-Family Residential	0.3	0	0	0	0	0	0
Single Family Residential	22.1	0	0	0	0	0	0

Regional BMPs

Would you like to have a Regional BMP at the outlet of the study area? Yes No

Regional BMP Parameters

Select regional BMP type (Note 1): Advanced Options...

Select sizing criteria (Note 2):

Specify Sizing Parameters (Note 3)

Parameter	Units	Value
Design Storm	in	0.75
Average Depth	ft	6
Drawdown Time	hr	48
Diversion Flowrate	cfs	10000
Infiltration Rate (in/hr)	in/hr	0
Infiltration Adjustment Factor	unitless	0

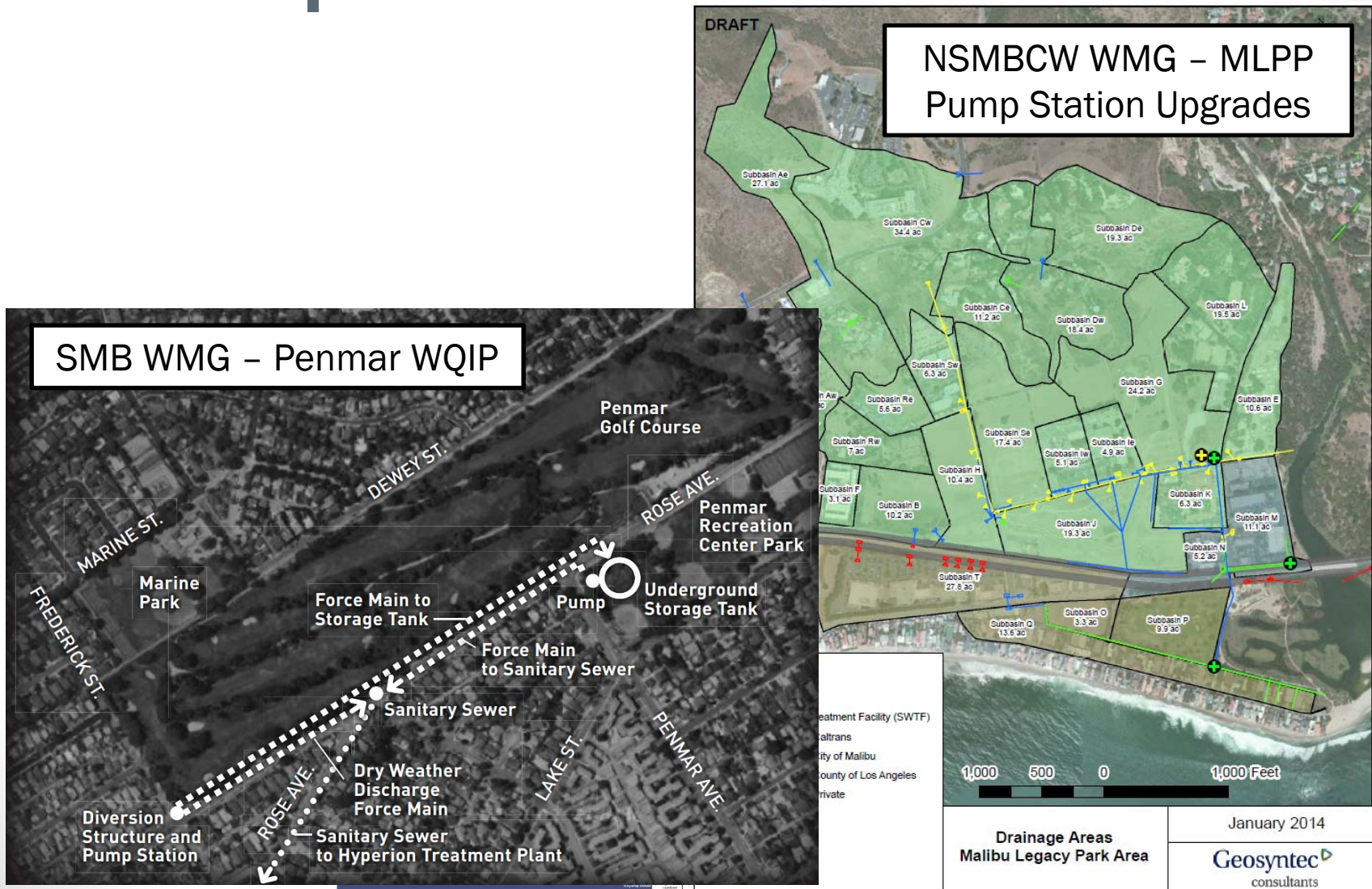
Regional BMP Catchment Properties

Watershed	Catch. ID	D/S Catch. ID	Area (ac)	Slope (ft/ft)	Rain Gage ID	Sat. Hyd Cond (in/hr)	Init M-Deficit
Ballona Creek & Urban Santa Monica Bay WMA	206266	206283	50	0	45115	0.35	0.24

Regional BMP Tributary Area Properties

Area(ac)	Slope(ft/ft)	Imperv%
319	0.3	57

Regional EWMP BMPs - Examples



Non-Structural BMPs

- Inspection of IGP and other non-MS4 NPDES permittee parcels: Model in SBPAT by setting these land use EMCs to WQS in all conditions
- LID Ordinances: Model by applying retention BMPs to applicable redevelopment area
 - Assume retention sized to 85th percentile storm
 - Assume applicable redevelopment area based on rates (as % of area, by land use) provided by agencies, otherwise use values from City of LA from Ballona TMDL Implementation Plans
 - Allow greater rate if agencies adopt more stringent applicability threshold
 - Estimate total redeveloped area between ordinance date and effective date of final limits
- LID Programs:
 - E.g., rain barrels, downspout disconnects, rain gardens
 - Model by assuming percent (~10%) of residential parcels implement this over compliance period

Non-Structural BMPs (cont'd)

- Copper brake pad phase-out (SB346): Assume 50-60% reduction per CASQA/Moran analysis
- Other NS BMPs: Calculate individual load reductions consistent with SoCal Comprehensive Load Reduction Plans and Water Quality Implementation Plans (referencing available SoCal studies), or assume 5-10% bulk percent load reduction, e.g.:
 - Pet waste controls (ordinance, signage, education/outreach, mutt mitt stations, etc.)
 - Human waste source tracking and remediation (homeless source controls, leaking sewer investigations, etc.)
 - Enhanced street sweeping (e.g., 100% vacuum sweepers, increased frequency)
 - Increased catch basin and storm drain cleaning

Demonstrating “Reasonable Assurance”

- Report BMP load reductions as average expected values and low-high ranges (i.e., 25th-75th percentile values, driven by variability in land use EMCs and BMP performance)
- Hypothetical example:

Subwatershed	Pollutant	Target Load Reduction	Sum of NS Load Reductions (low-high range)	Sum of Structural Load Reductions (low-high range)	Total Estimated Load Reductions (low-high range)
1	Fecal coliform	100	17 (12-20)	60 (40-85)	77 (52-105)
2	Fecal coliform	75	15 (11-19)	60 (40-85)	75 (51-104)

- For some WBPCs, agencies may elect to use the high load reduction value for RAA demonstration

Example Output

Pollutant	Units	Average Annual MS4 Loads and Volumes			% of MS4 Load Removed	
		Base-line	w/Dist. BMPs	w/ Dist. + Reg. BMPs	w/Dist. BMPs	w/ Dist. + Reg. BMPs
Total runoff volume	Ac-ft	220	172	172	22%	22%
DCu	lbs	8.8	6.9	6.8	22%	23%
DP	lbs	170	125	118	27%	30%
DZn	lbs	163	73	63	55%	62%
FC	10 ¹² MPN	52.8	35.4	24.3	33%	54%
NH3	lbs	435	276	190	37%	56%
NO3	lbs	500	384	378	23%	25%
TCu	lbs	18.9	10.7	8.1	43%	57%
TKN	lbs	1645	1257	1194	24%	27%
TPb	lbs	7.63	4.18	3.54	45%	54%
TP	lbs	235	140	98	41%	58%
TSS	Tons	42	19	12	54%	71%
TZn	lbs	218	101	66	54%	70%

Ranges not shown here.
Not all pollutants may be reported.

RB RAA Guidance

- Proposed approach is consistent with RAA Guidance
 - Only Permit-approved model will be used (SBPAT)
 - Targets will be set based on average (50th percentile) and critical conditions (90th percentile)
 - Key model input datasets will be consistent with Guidance, e.g.:
 - Land use EMCs (updated)
 - BMP performance data (updated)
 - Rainfall (1-hour timesteps)
 - SBPAT calibration will be documented in RAA memo
 - Output variability will be characterized
- Request for approval of minor variations
 - Updated EMCs
 - Updated BMP performance data
 - Model output consistent with model capabilities (e.g., SBPAT does not produce continuous time series output for load reductions, pollutographs, hydrographs, etc.)
 - WMGs intend to define “baseline” as the TMDL effective date

Summary

- For dry weather, decision tree approach
- For wet weather, SBPAT for SMB watersheds
- SBPAT calibration using Topanga
- Targets will only be set for:
 - pollutants associated with MS4 discharges
 - pollutants with load reduction required
 - reference watershed-based beaches (not antidegradation sites)
- Define baseline loads based on TMDL effective date
- Bacteria TLRs based on open space (using data from reference watershed)
- Open beaches do not require modeling
- For non-structural: model LID, take bulk credit for remaining BMPs
- For some WBPCs, agencies may consider using the predicted load reduction range for RAA demonstration
- Standard SBPAT output will be provided for the RAA WBPCs

Questions

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(44)

INLAND WATER BODIES

Reasonable Assurance Analysis (RAA) Approach for Enhanced Watershed Management Programs (EWMPs): LSPC plus SBPAT

Los Angeles Regional Water Quality
Control Board

April 9, 2014

Geosyntec 
consultants

engineers | scientists | innovators

(45)

Model Approaches

Model selection consistent with RB RAA Guidelines

Watershed	Set TLR	Model BMPs
Santa Monica Bay	SBPAT	SBPAT
Machado Lake	SBPAT	SBPAT
LA Harbor	SBPAT	SBPAT
Dominguez Channel	LSPC	SBPAT

Target Load Reduction Approach

Dominguez Channel

- **Bacteria:** LSPC to set TLRs by “dialing down” EMCs by % until AEDs are met
 - REC-2 with High Flow Suspension
- **Other Pollutants:** LSPC to set TLRs based on WQS
- **Calibration:** LSPC is pre-calibrated
- **TLR set based on higher of 50th/90th percentile years:** Based on wet days for bacteria, based on total rainfall for other pollutants

Average and Critical Years to be Modeled

Average and critical years used to set TLR consistent with RB RAA Guidelines

EWMP WMG	Using Number of Wet Days*		Using Total Annual Rainfall*	
	50 th Percentile TMDL Year	90 th Percentile TMDL Year	50 th Percentile TMDL Year	90 th Percentile TMDL Year
Beach Cities	1996 (58)	1995 (73)	2004 (10.9")	2005 (21.9")

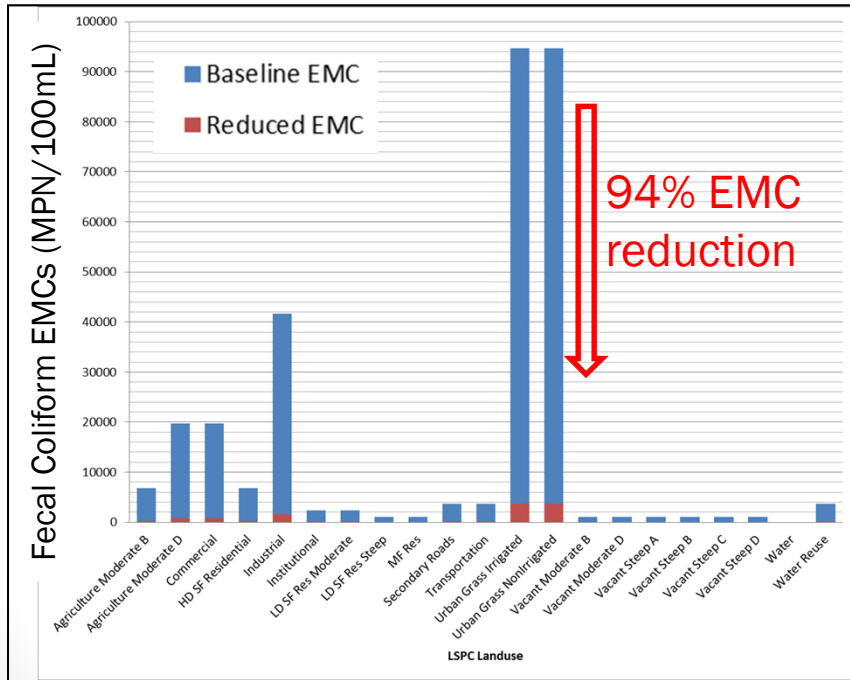
EWMP WMG	LACFCD Hourly Rain Gage Selected	Elevation (ft)	Justification
Beach Cities	D1070 Manhattan Beach	182	Influences most area

*Period of record: 1989 – 2011 TMDL years (Nov 1 – Oct 31)

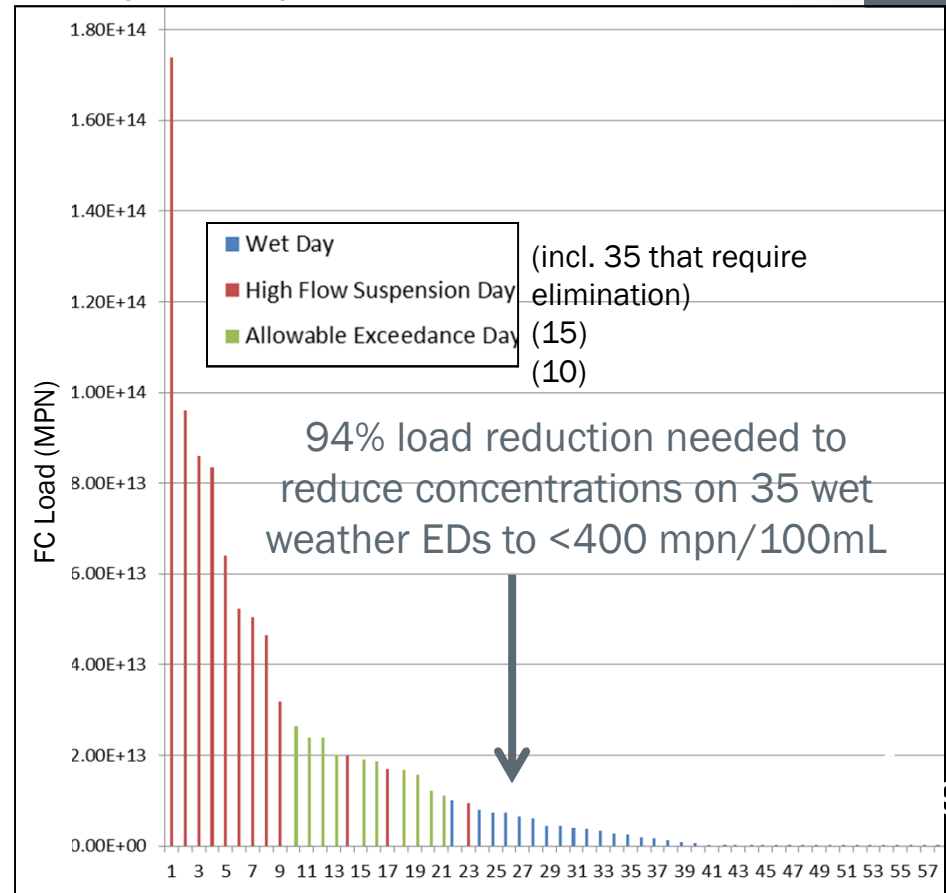
Bacteria TLR Approach Illustrated

LA River Example
Baseline Conditions
90th percentile year (2011)

Input Adjustment

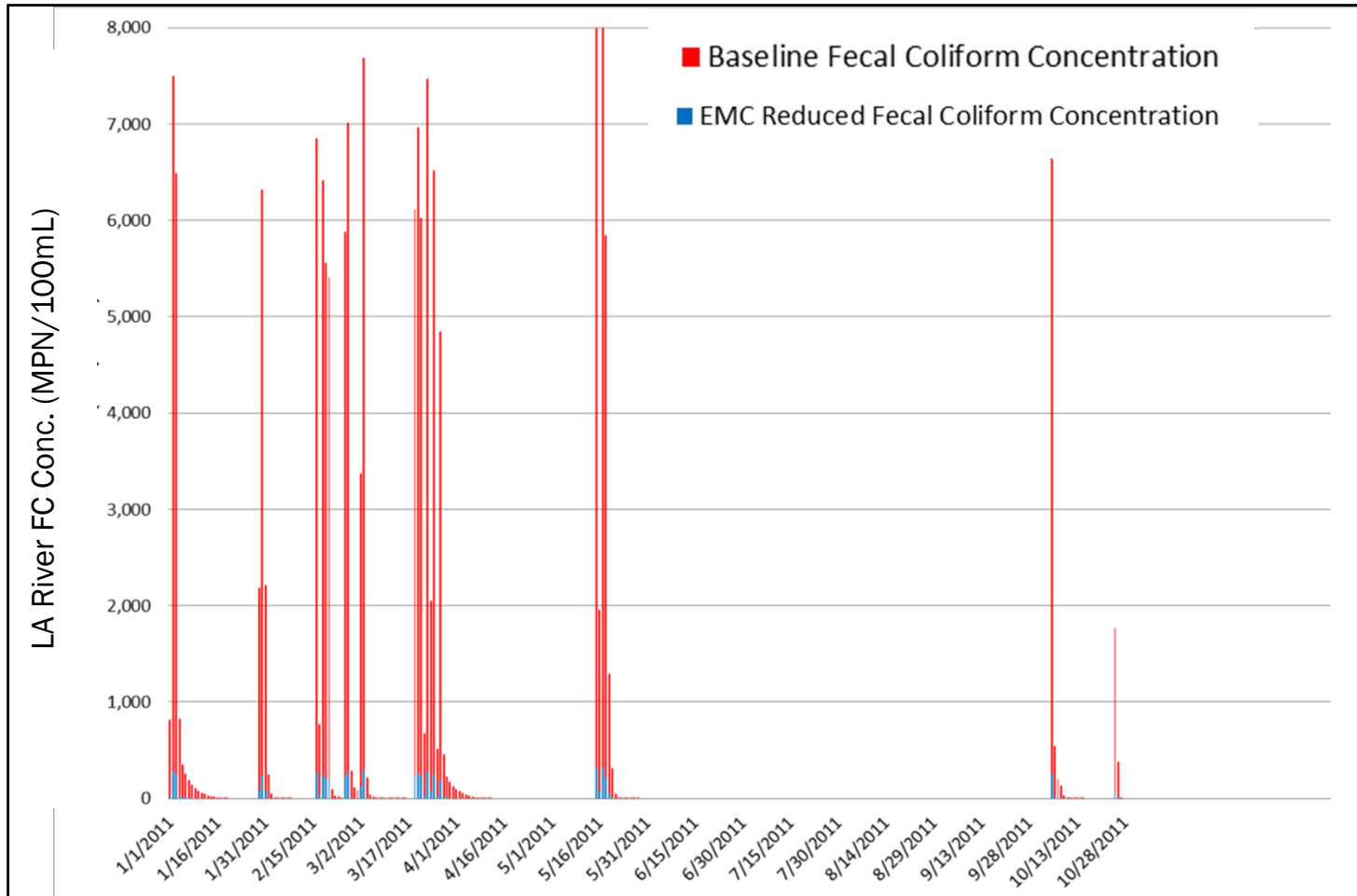


Output Response



Bacteria TLR Approach Illustrated

LSPC concentration timeseries output



Questions

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(51)

Meeting Attendance Sheet

Subject: North Santa Monica Bay

Date: 12/7/15 (10AM-11AM)

Location: California Regional Water Quality Control Board
 Los Angeles Region
 320 West 4th Street, Suite 200, Los Angeles, CA 90013

	Name	Agency/ Company/ or Resident	Email Address	Telephone
1	Renee Purdy	Los Angeles Regional Water Quality Control Board	Renee.Purdy@waterboards.ca.gov	(213) 576-6622
2	Ivar Ridgeway <i>Ivar K Ridgeway</i>	Los Angeles Regional Water Quality Control Board	Ivar.Ridgeway@waterboards.ca.gov	(213) 620-2150
3	Deborah Brandes	"	Deborah.Brandes@... ..	213 576-6688
4	Armando D'Angelo	LA COUNTY DPW	adangelo@dpu.lacounty.gov	626-458-7145
5	Giles Coon	LA COUNTY DPW	gcoon@dpu.lacounty.gov	626-458-7111
6	Jennifer Vocada Brown	City of Malibu	jbrown@malibuwater.org	(310) 456-2189 x275
7	Chris Wessel	Geosyntec	cwessel@geosyntec.com	(310) 957-6117
8	Brandon Steets	Geosyntec	bsteets@geosyntec.com	(805) 897-3800
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NORTH SANTA MONICA BAY COASTAL WATERSHEDS

ENHANCED WATERSHED MANAGEMENT PROGRAM (EWMP)

MEETING TO DISCUSS COMMENTS ON EWMP

Monday, December 7, 2015 10:00 – 11:00 AM

Meeting Location – Los Angeles Regional Water Quality Control Board

ATTENDEES:

Los Angeles Regional Water Quality Control Board

City of Malibu

County of Los Angeles

Geosyntec Consultants

1. Comments Related to ASBS Incorporation

“As part of the EWMP, provide specificity on the number of MS4 outfalls and their ownership within the ASBS 24 area. Ensure consistency with “Area of Special Biological Significance 24, Compliance Plan for the County of Los Angeles and City of Malibu, September 20, 2015” (ASBS 24 Compliance Plan).”

The Group will incorporate the ASBS plan into the EWMP, but would like to discuss the request to specify outfall ownership

2. Comments Related to Trash Monitoring

“2a. A TMRP from the County of Los Angeles on behalf of itself and the Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village was approved on May 30, 2014. Implementation of the monitoring program should have begun as of that date. The first interim deadline for the trash/debris TMDL is March 20, 2016. Therefore, permittees must use whatever monitoring data are available (and should have been since May 2014) to assess and achieve compliance with the interim deadline of a 20% reduction of the baseline load by March 20, 2016.

2b. The EWMP presents no monitoring data for trash. It states that a TMRP was not approved and therefore monitoring did not begin. This is not accurate for one was approved for SMB on 5/30/2014. (The approval letter is attached herein.)”

The Group would like clarification on the comments, as there seems to be a confusion between the Malibu Creek TMRP and the Santa Monica Bay TMRP (which has not yet been approved).

3. Comment Related to Financial Information

“Provide estimated costs of the non-structural BMPs which includes Minimum Control Measures (MCMs). Also include a summary of existing/ past funding sources/amounts in the revised EWMP. These funding sources may include general or dedicated funds from the City, County & FCD, as well as grants/loans. General funds are mentioned, but the amount of general funds must be quantified for the last several years (FY13-14, 14-15) by Permittee.”

The Group would like to discuss the feasibility of presenting the requested cost information, based on available data.

4. Comment Related to Co-Mingled Discharges

“Indicate how the Permittees will control the contributions of pollutants from MS4s owned by Caltrans and State Parks (if any in the EWMP area) to their MS4s through interagency agreements or other means.”

The Group would like to discuss this request and its implications.

5. Comment Related to Interim Compliance

“The EWMP does not address compliance vis-a-vis interim limits. Tables 27 and 31 discuss compliance but only with the final limits. Attachment C-1 provides further detail in terms of target load reduction by blocks of years (2003-2015 and 2015-2021) but it does not correspond with the next interim deadline for bacteria, which is 2018 for Santa Monica Bay. Revise the EWMP to include analysis demonstrating a

reasonable assurance that interim limits for Santa Monica Bay Beaches bacteria will be met."

Section 7.2 of the EWMP demonstrates that interim compliance with applicable TMDL deadlines is already being achieved, based on an evaluation of historical monitoring data. The Group would like the Board's approval that this demonstration is sufficient, and that no additional modeling is necessary.

6. Comments Related to the RAA

"6a. Present the model results of the baseline condition for daily runoff volume, bacteria concentration, and daily load relative to exceedance days during the critical year for each analysis region, including MCW, in the EWMP report or shown in Appendix C - RAA summary data."

The Group would like clarification on this request, since SBPAT is an approved model that assesses annual loading.

6b. Provide the flow duration curve of flow data in the receiving water body (Topanga Creek at gauge reference ID F54C-R) using the most recent 10-year period of data. Also provide the time series of flow data for this same location at 10-year period."

The Group would like clarification on this request: is daily data being requested?

Subject: conf call on revised EWMPs with HTB, LAWK & NRDC
Location: library

Start: Mon 2/29/2016 2:00 PM
End: Mon 2/29/2016 3:00 PM

Recurrence: (none)

Organizer: Purdy, Renee@Waterboards