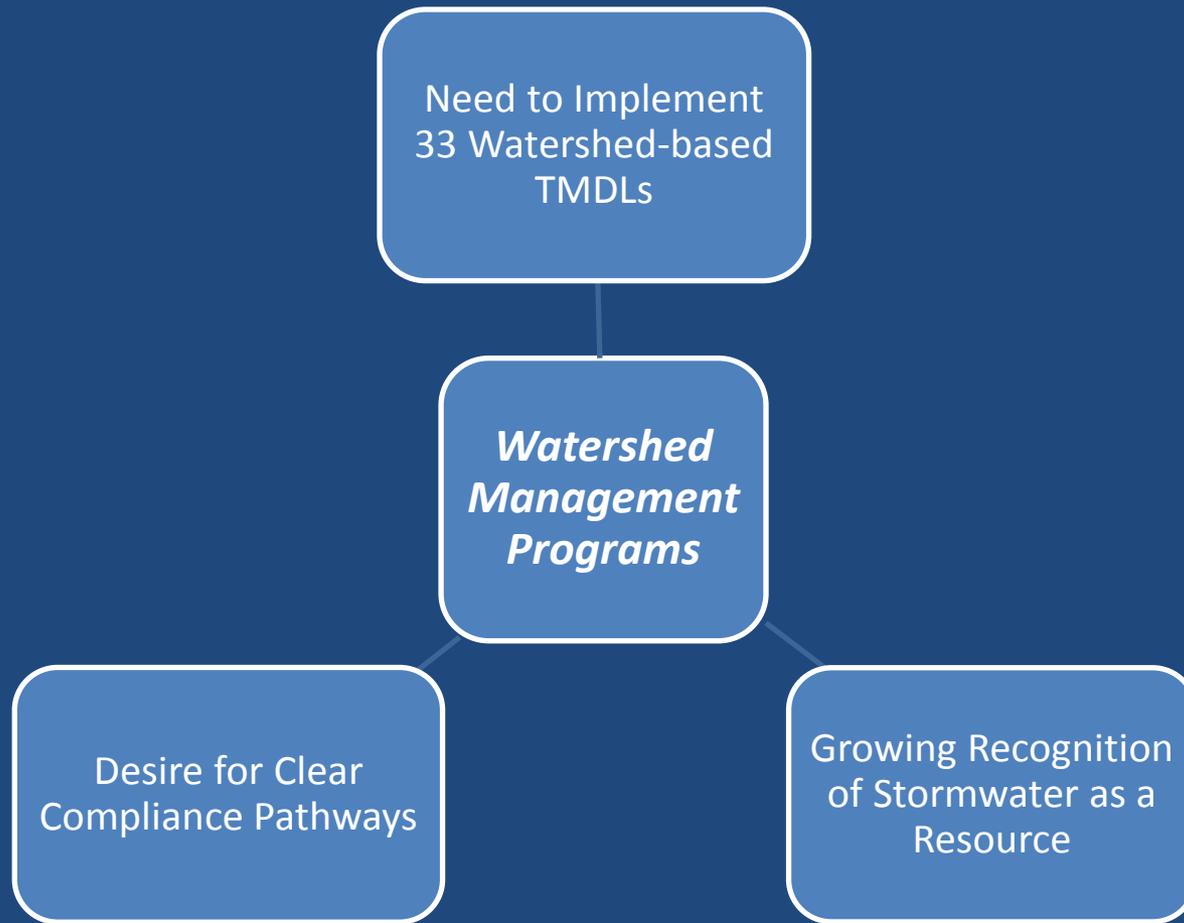


***A New Paradigm for MS4 Permits:
Watershed Management Programs &
Reasonable Assurance Analyses***

Renee Purdy, Environmental Program Manager
Los Angeles Regional Water Quality Control Board



Drivers for a MS4 Paradigm Shift



2001 PERMIT

NON-
STORMWATER
DISCHARGE
PROHIBITIONS

RECEIVING WATER
LIMITATIONS

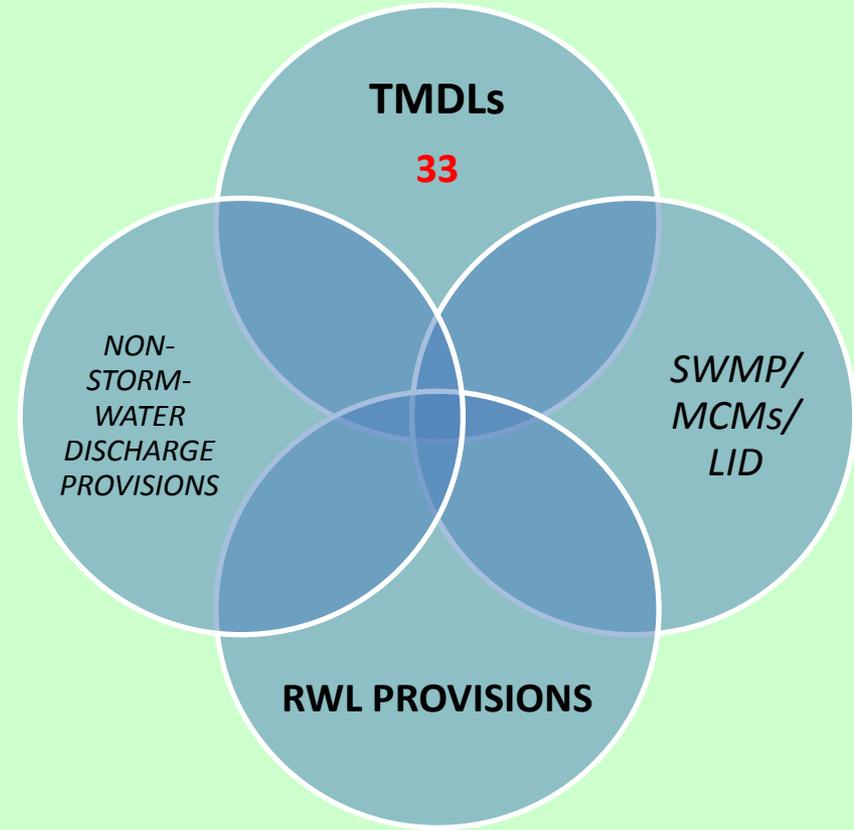
SWMP/MINIMUM
CONTROL
MEASURES

RECEIVING WATER
MONITORING
REQUIREMENTS

TMDL PROVISIONS
2

CURRENT PERMIT

WATER QUALITY DRIVEN WATERSHED MANAGEMENT PROGRAM



OUTFALL & RECEIVING WATER MONITORING

MS4 Permit Themes

- *Water Quality Outcomes*
 - Proactively implements 33 TMDLs & RWLs
 - Provides Clear Compliance Pathways
 - Emphasizes Use of Stormwater Retention
- *Watershed Management*
 - Sound Science
 - Flexibility to Tailor Requirements
 - Collaboration
 - Cost Effectiveness
- *Multi-Benefit*
 - Water Supply Resiliency
 - Urban Greening
 - Recreation
 - Habitat

Permittee Options

1. *Watershed Management Program (WMP)*
 - a. Individual Basis
 - b. Collaborative among Permittees within a watershed
2. *Enhanced Watershed Management Program (EWMP)*
 - a. Assumes collaboration among Permittees and other partners (e.g., water suppliers) within a watershed
3. *No Watershed Management Program*



Locations of WMPs

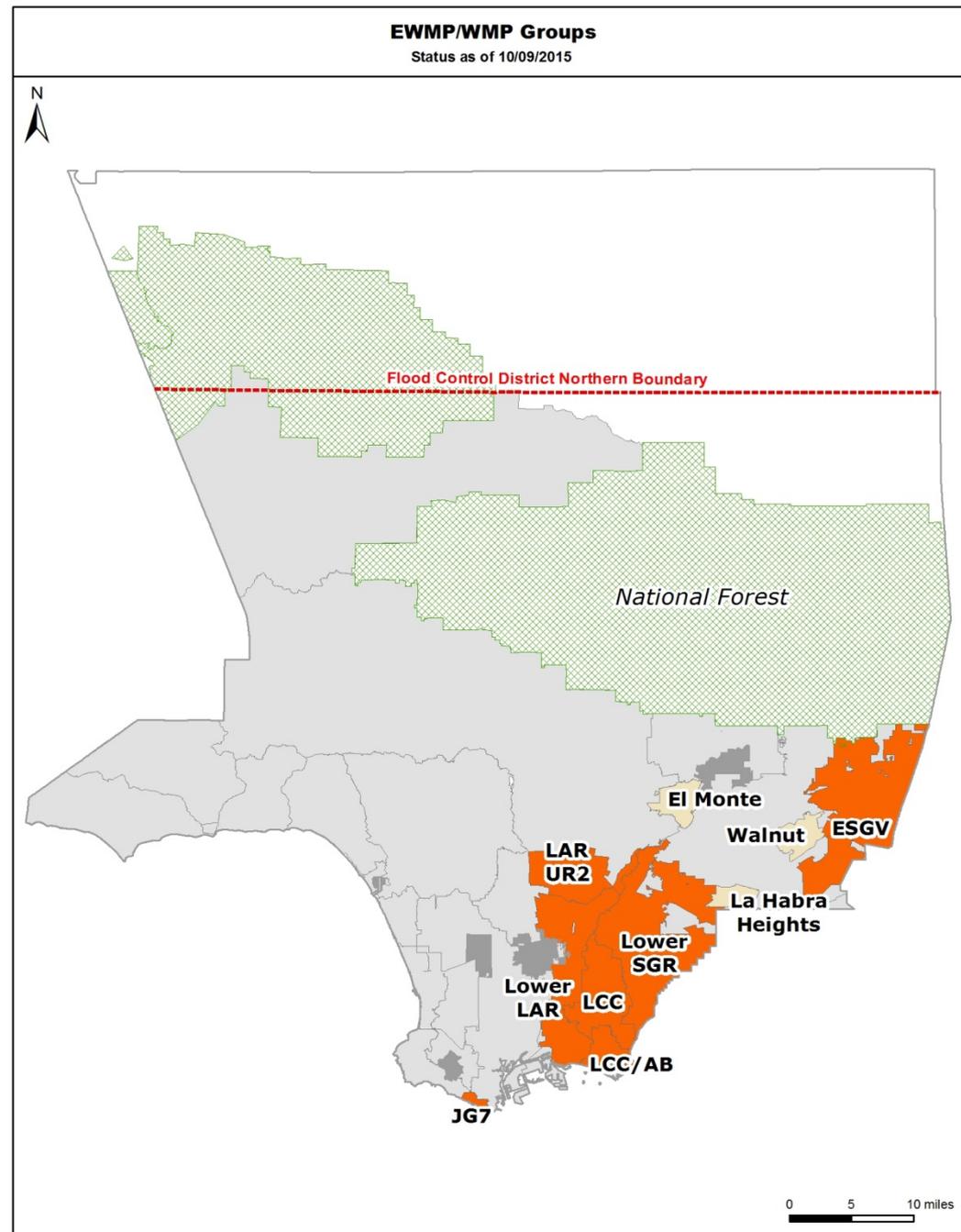
Lower San Gabriel River

Alamitos Bay/Los Cerritos Channel

Lower Los Angeles River

Portions of PV Peninsula

Portions of San Gabriel Valley

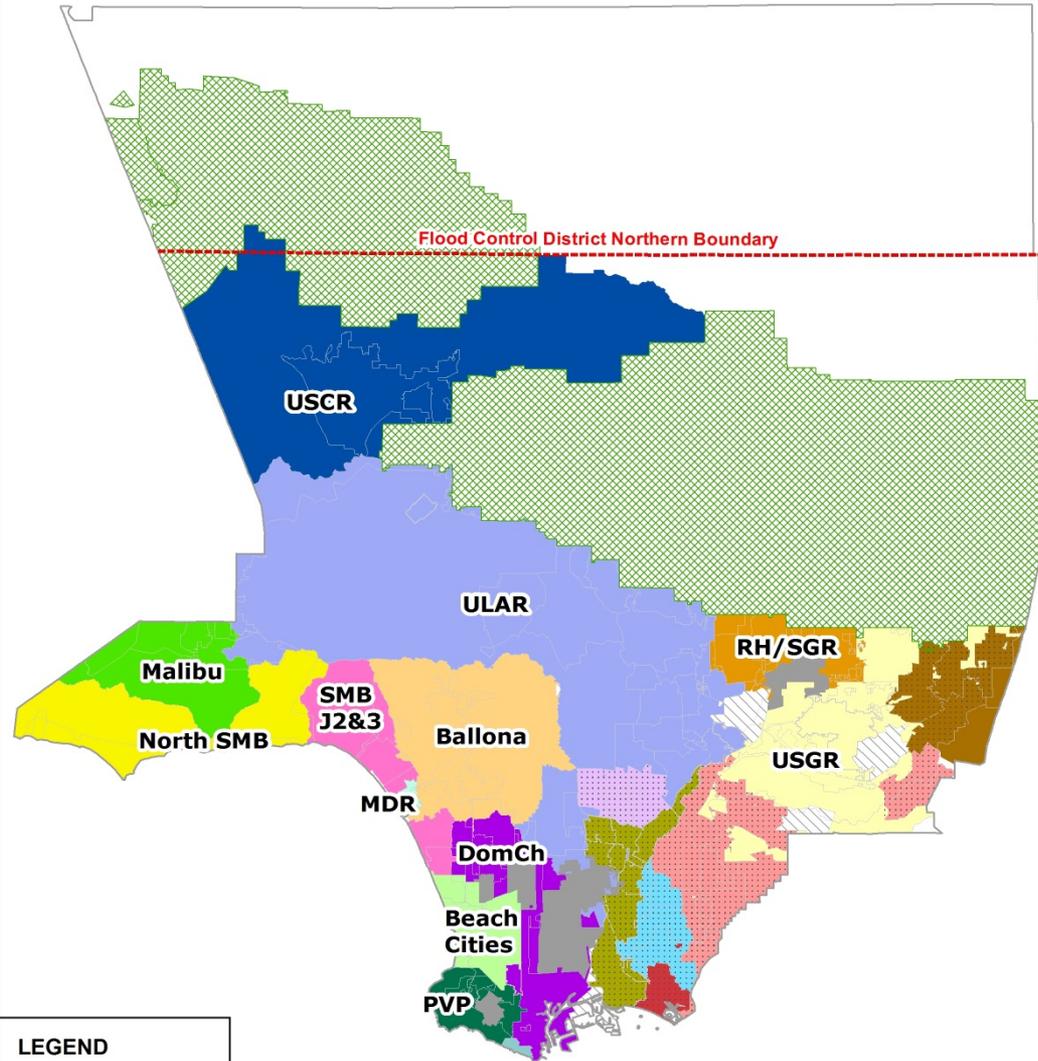


What is an *Enhanced* Watershed Management Program?

... one that comprehensively evaluates opportunities ... in a watershed management area, for collaboration ... on multi-benefit regional projects that, wherever feasible, retain ... all storm water runoff from the 85th percentile, 24-hour storm event for the drainage areas ... while also achieving other benefits including flood control and water supply ...

EWMP/WMP Groups

Status as of 06/29/2015



LEGEND

- No WMP
- National Forest
- Collaborative WMP
- Individual WMP

0 5 10 miles

Benefits of Watershed Management Programs

Water Quality Benefits

- Significant Reduction in Stormwater Loads
- Elimination of Non-stormwater Loads

Compliance Demonstration

- Phased implementation for RWLs
- Action based compliance demonstration per WMP/EWMP
- Retention of the design storm constitutes compliance

Economic & Community Benefits

- Opportunity to pool resources
- Partnerships with non-permittees
- Multiple benefits with economic value

WMP/EWMP Elements



Reasonable Assurance Analysis

Part VI.C.5.b.iv(5) - RAA Provisions

- (5) Permittees shall conduct a Reasonable Assurance Analysis for each water body-pollutant combination addressed by the Watershed Management Program. A Reasonable Assurance Analysis (RAA) shall be quantitative and performed using a peer-reviewed model in the public domain. Models to be considered for the RAA, without exclusion, are the Watershed Management Modeling System (WMMS), Hydrologic Simulation Program-FORTRAN (HSPF), and the Structural BMP Prioritization and Analysis Tool (SBPAT). The RAA shall commence with assembly of all available, relevant subwatershed data collected within the last 10 years, including land use and pollutant loading data, establishment of quality assurance/quality control (QA/QC) criteria, QA/QC checks of the data, and identification of the data set meeting the criteria for use in the analysis. Data on performance of watershed control measures needed as model input shall be drawn only from peer-reviewed sources. These data shall be statistically analyzed to determine the best estimate of performance and the confidence limits on that estimate for the pollutants to be evaluated. The objective of the RAA shall be to demonstrate the ability of Watershed Management Programs and EWMPs to ensure that Permittees' MS4 discharges achieve applicable water quality based effluent limitations and do not cause or contribute to exceedances of receiving water limitations.
- (a) Permittees shall demonstrate using the RAA that the activities and control measures identified in the Watershed Control Measures will achieve applicable water quality-based effluent limitations and/or receiving water limitations in Attachments L through R with compliance deadlines during the permit term.
- (b) Where the TMDL Provisions in Part VI.E and Attachments L through R do not include interim or final water quality-based effluent limitations and/or receiving water limitations with compliance deadlines during the permit term, Permittees shall identify interim milestones and dates for their achievement to ensure adequate progress toward achieving interim and final water quality-based effluent limitations and/or receiving water limitations with deadlines beyond the permit term.
- (c) For water body-pollutant combinations not addressed by TMDLs, Permittees shall demonstrate using the RAA that the activities and control measures identified in the Watershed Control Measures will achieve applicable receiving water limitations as soon as possible.

RAA Guidance



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GOVERNOR

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COMMISSIONER OF WATER RESOURCES

Los Angeles Regional Water Quality Control Board

**GUIDELINES FOR CONDUCTING REASONABLE ASSURANCE ANALYSIS
IN A WATERSHED MANAGEMENT PROGRAM, INCLUDING
AN ENHANCED WATERSHED MANAGEMENT PROGRAM**

MARCH 25, 2014

**PREPARED BY
THANHLOAN NGUYEN
DR. C.P. LAI
IVAR RIDGEWAY
DR. JUN ZHU**

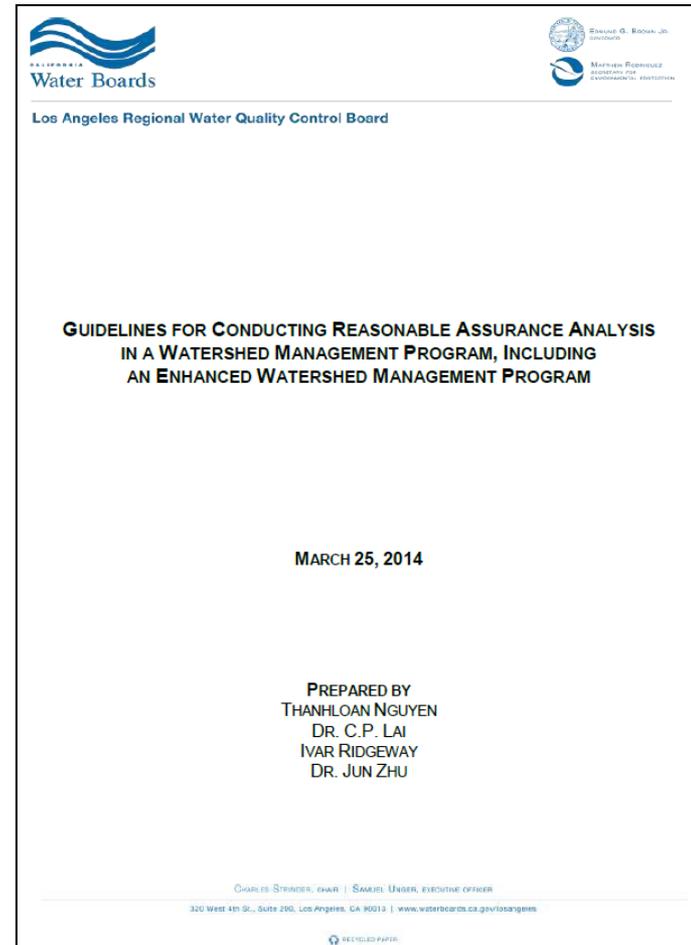
CHARLES SWANSON, CHAIR | SAMUEL UNGER, EXECUTIVE OFFICER

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RECYCLED PAPER

Approach to Initial RAAs in LA MS4

- WMPs used regionally (countywide) calibrated models
 - Precipitation
 - Stream flow
 - Rainfall-runoff relationships
 - Water quality data
- Models reflect best engineering judgment & available data
- Re-calibration & local refinement w/ monitoring data
- Complete update of RAA by 2021



Measurable Milestones

Location Schedule

Type

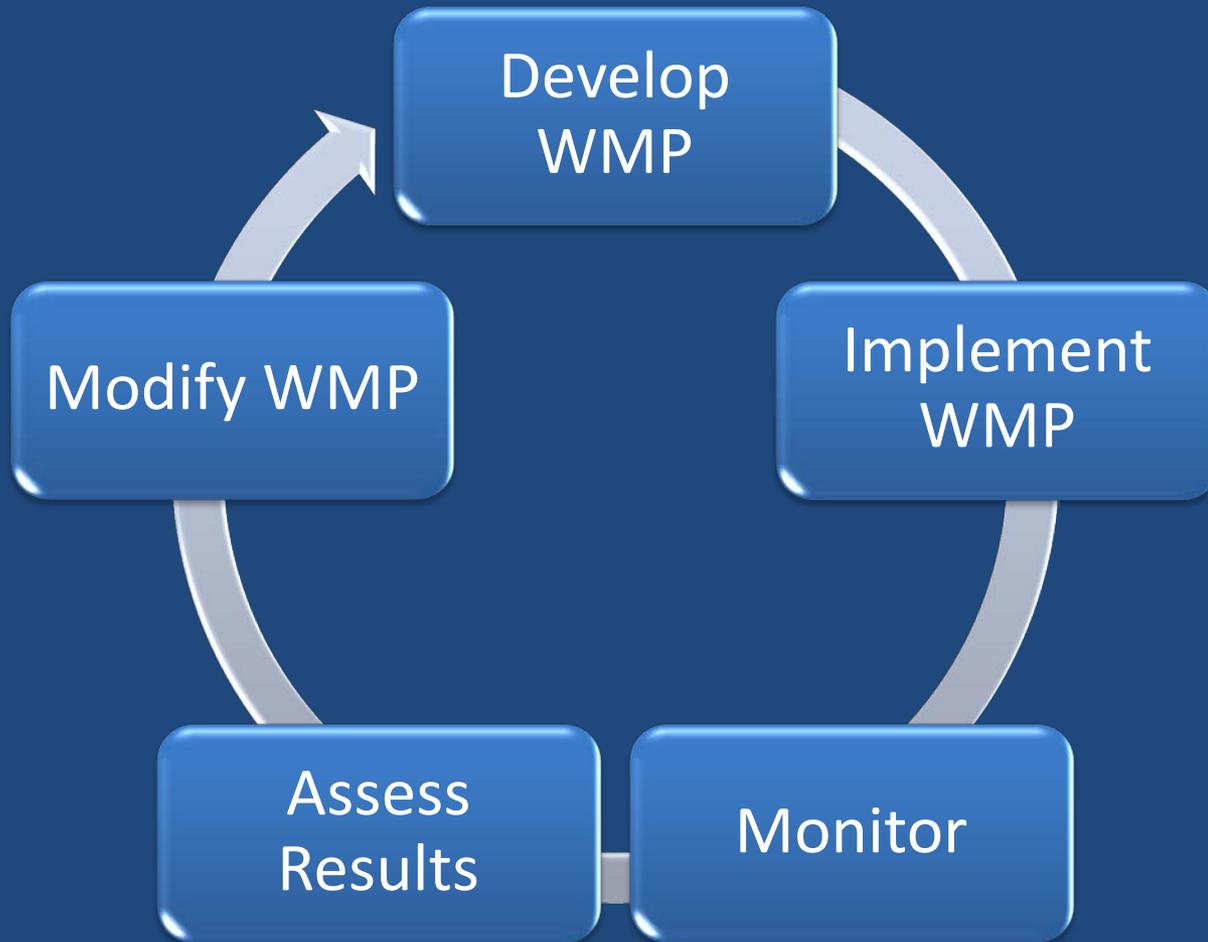
Table 9-4. Lower Los Angeles River Pollutant Reduction Plan for Attainment of Interim and Final Limits

Jurisdiction	Milestone	COMPLIANCE TARGET		Existing Distributed BMP Volume (acre-ft)	POLLUTANT REDUCTION PLAN					
		Remaining MS4 Responsible Critical Year Storm Volume* (acre-ft/year)			Total Estimated Right-of-Way BMP Volume (acre-ft)		Estimated Potential LID on Public Parcels Volume (acre-ft)		Remaining BMP Volume (Potentially Regional BMPs) (acre-ft)	
		Incremental	Cumulative		Incremental	Cumulative	Incremental	Cumulative	Incremental	Cumulative
Downey	31%	143.8	143.8	1.1	12.2	12.2	0.7	0.7	7.1	7.1
	50%	187.1	330.9	0.7	2.5	14.7	10.1	10.8	0.6	7.7
	Final	323.9	654.7	2.0	31.2	45.9	4.4	15.3	10.7	18.4
Lakewood	31%	7.9	7.9	NA	1.1	1.1	0.0	0.0	-	-
	50%	-	7.9		-	1.1	-	0.0	-	-
	Final	-	7.9		-	1.1	-	0.0	-	-
Long Beach	31%	6.5	6.5	NA	1.0	1.0	0.0	0.0	-	-
	50%	67.0	573.5		40.3	41.3	7.5	7.5	24.7	24.7
	Final	1,832.7	2,406.2		113.4	154.6	20.8	28.3	111.5	136.2
Lynwood	31%	235.9	235.9	NA	18.4	18.4	2.7	2.7	13.1	13.1
	50%	334.9	370.8		12.8	31.2	3.8	6.5	0.1	13.2
	Final	297.2	667.9		22.7	53.9	4.5	11.1	17.3	30.5
Paramount	31%	163.7	163.7	0.1	9.0	9.0	1.7	1.7	10.2	10.2
	50%	65.7	229.4		7.4	16.4	0.8	2.5	0.3	10.4
	Final	176.6	606.1		14.9	31.2	2.1	4.7	30.2	40.6
Pico Rivera	31%	275.3	275.2	NA	11.5	11.5	0.5	0.5	27.4	27.4
	50%	-	275.2		-	11.5	-	0.5	-	27.4
	Final	12.0	287.2		1.3	12.8	0.0	0.5	0.5	27.9
Signal Hill	31%	8.5	8.5	0.2	0.8	0.8	0.2	0.2	0.2	0.2
	50%	105.8	114.3		7.0	7.8	0.9	1.1	5.9	6.1
	Final	51.9	166.2		2.2	10.0	0.0	1.1	4.9	11.0
South Gate	31%	229.3	229.3	4.7	23.2	23.2	0.9	0.9	6.5	6.5
	50%	198.1	427.4		15.0	38.3	0.8	1.7	12.6	19.1
	Final	746.9	1,174.3		49.3	87.5	5.1	6.8	54.7	73.8

Number



Implementation Cycle



State Board Order WQO 2015-0075

- Guiding Principles for MS4 Permits:
 - Require compliance with Receiving Water Limitations/TMDLs
 - Allow time to achieve RWLs/TMDLs
 - Encourage watershed based approaches
 - Encourage multi-benefit regional stormwater projects
 - Encourage use of green infrastructure/LID
 - Rigor, accountability, transparency
 - Robust adaptive management, but with finite path

Lesson Learned

- New Level of Effort
- Balancing Length of Planning Period with Start of Implementation
 - Value of Early Actions during Planning
- Data Considerations, RAA, Monitoring & Adaptive Management
 - Use of Best Professional Judgment
- Appropriate Degree of BMP Specificity vs. Flexibility
 - Nearer term vs. Longer term deadlines
- Importance of a Financial Strategy as a Next Step
- Establishing Partnerships
- Stakeholder Input