Attachment B to Resolution No. R15-XXX

Amendment to the *Water Quality Control Plan for the Los Angeles Region* to Revise the Los Angeles River and Tributaries Metals TMDL

Adopted by the California Regional Water Quality Control Board, Los Angeles Region on [*insert date*].

Amendments:

Chapter 7. Total Maximum Daily Loads (TMDLs) Summaries, Section 7-13 (Los Angeles River and Tributaries Metals TMDL)
Add:

This TMDL revision was adopted by

The Regional Water Quality Control Board on [*insert date*].

This TMDL revision was approved by:

The State Water Resources Control Board on [*insert date*].
The Office of Administrative Law on [*insert date*].
The U.S. Environmental Protection Agency on [*insert date*].

The following table includes the elements of this TMDL.

Table 7-13.1 Los Angeles River and Tributaries Metals TMDL: Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Segments of the Los Angeles River and its tributaries are on the Clean Water Act section 303(d) list of impaired waterbodies for copper, cadmium, lead, zinc, aluminum and selenium. The metals subject to this TMDL are toxic pollutants, and the existing water quality objectives for the metals reflect national policy that the discharge of toxic pollutants in toxic amounts be prohibited. When one of the metals subject to this TMDL is present at levels exceeding the existing numeric objectives, then the receiving water is toxic. The beneficial uses impaired by metals in the Los Angeles River and its tributaries are those associated with aquatic life and water supply, including wildlife habitat, rare, threatened or endangered species, warm freshwater habitat, wetlands, and groundwater recharge. TMDLs are developed for reaches on the 303(d) list and for reaches where recent data indicate additional impairments. Addressing the impairing metals throughout the Los Angeles River watershed will ensure that the metals do not contribute to an impairment elsewhere in the watershed. Metals allocations are therefore developed for upstream reaches and tributaries that drain to impaired reaches. These TMDLs address wet- and dry-weather discharges of copper, lead, zinc and selenium and wet-weather discharges of cadmium. Impairments related to cadmium only occur during wet weather. Impairments related to selenium are confined to Reach 6 and its tributaries. Dry-weather impairments related to zinc only occur in Rio Hondo Reach 1. The aluminum listing was based on water quality objectives set to support the municipal water supply beneficial use (MUN). MUN is a conditional use in the Los Angeles River watershed. The United States Environmental Protection Agency (USEPA) has determined that TMDLs are not required for impairments of conditional uses.
Numeric Target *(Interpretation of the numeric water quality objective, used to calculate the waste load allocations)*	Numeric water quality targets are based on the numeric water quality criteria established by the California Toxics Rule (CTR). The targets are expressed in terms of total recoverable metals. There are separate targets for dry and wet weather because hardness values and flow conditions in the Los Angeles River and tributaries vary between dry and wet weather. The dry-weather targets apply to days when the maximum daily flow in the River is less than 500 cfs. The wet-weather targets apply to days when the maximum daily flow in the River is equal to or greater than 500 cfs. The dry-weather targets for copper ~~and lead~~ are based on chronic CTR criteria. The dry-weather targets for lead are based on recalculated chronic lead criteria. The dry-weather targets for zinc are based on acute CTR criteria. Copper, lead and zinc targets are dependent on hardness and a water~~-~~-effect~~s~~ ratio (WER), which are both factors built into the CTR criteria to adjust for site specific conditions, and conversion factors to convert between dissolved and total recoverable metals. Copper and lead dry-weather targets are based on 50th percentile hardness values. The ~~Z~~zinc dry-weather target~~s~~ ~~are~~is based on 10th

Element	Key Findings and Regulatory Provisions
	percentile hardness values. Site-specific copper conversion factors are applied immediately downstream of the Tillman and LA-Glendale water reclamation plants (WRP). CTR default conversion factors are used for copper, lead, and zinc in all other cases. The dry-weather target for selenium is independent of hardness or conversion factors.

Dry-weather conversion factors:

	Default	Below Tillman WRP	Below LA-Glendale WRP
Copper	0.96	0.74	0.80
Lead	0.79		
Zinc	0.61		

Dry-weather numeric targets (µg total recoverable metals/L)

	Cu	Pb	Zn	Se
Reach 5, 6 and Bell Creek	WER[1] x 30	WER[1] x ~~19~~170		5
Reach 4	WER[2] x 26	WER[1] x ~~10~~83		
Tujunga Wash	WER[3] x 20	WER[1] x 83		
Reach 3 above LA-Glendale WRP ~~and Verdugo~~	WER[2] x 23	WER[1] x ~~12~~102		
Verdugo Wash	WER[4] x 23	WER[1] x 102		
Reach 3 below LA-Glendale WRP	WER[2] x 26	WER[1] x ~~12~~100		
Burbank Western Channel (above WRP)	WER[~~2~~5] x 26	WER[1] x ~~14~~126		
Burbank Western Channel (below WRP)	WER[~~2~~5] x 19	WER[1] x ~~9.1~~75		
Reach 2 ~~and Arroyo Seco~~	WER[2] x 22	WER[1] x ~~11~~94		
Arroyo Seco	WER[6] x 22	WER[1] x 94		
Reach 1	WER[2] x 23	WER[1] x ~~12~~102		
Compton Creek	WER[~~1~~7] x 19	WER[1] x ~~8.9~~73		
Rio Hondo Reach 1	WER[~~1~~8] x 13	WER[1] x ~~5.0~~37	WER[1] x 131	
Monrovia Canyon		WER[1] x ~~8.2~~66		

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent in this reach is 3.9~~6~~7.
[3] The WER for this constituent in this reach is 8.28.
[4] The WER for this constituent in this reach is 2.18.
[5] The WER for this constituent in this reach is 4.75.
[6] The WER for this constituent in this reach is 1.32.
[7] The WER for this constituent in this reach is 3.36.
[8] The WER for this constituent in this reach is 9.69.

The wet-weather targets for cadmium, copper, ~~lead~~ and zinc are based on acute CTR criteria ~~and the 50th percentile hardness values for storm water collected at the Wardlow gage station, multiplied by a WER~~. For lead, the wet-weather target is based on the recalculated acute lead criterion. Numeric targets for all metals are adjusted based on the 50th

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td></td><td>
percentile hardness values for storm water collected at the Wardlow gage station, multiplied by a WER. Conversion factors for copper, lead and zinc are based on a regression of dissolved metals values to total recoverable metals values collected at Wardlow. The CTR default conversion factor is applied to cadmium. The wet-weather target for selenium is independent of hardness or conversion factors.

Wet-weather conversion factors:
Cadmium 0.94
Copper 0.65
Lead 0.82
Zinc 0.61

Wet-weather numeric targets (μg total recoverable metals/L)
<table>
<tr><th>Cd</th><th>Cu</th><th>Pb</th><th>Zn</th><th>Se</th></tr>
<tr><td>WER[1] x 3.1</td><td>WER[2] x 17</td><td>WER[1] x ~~62~~94</td><td>WER[1] x 159</td><td>5</td></tr>
</table>
[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent is 3.9~~6~~7.
</td></tr>
<tr><td>Source Analysis</td><td>
There are significant differences in the sources of metals loadings during dry weather and wet weather. During dry weather, most of the metals loadings are in the dissolved form. The three major publicly owned treatment works (POTWs) that discharge to the river (Tillman WRP, LA-Glendale WRP, and Burbank WRP) constitute the majority of the flow and metals loadings during dry weather. The storm drains also contribute a large percentage of the loadings during dry weather because although their flows are typically low, concentrations of metals in urban runoff may be quite high. The remaining portion of the dry weather flow and metals loadings represents a combination of tributary flows, groundwater discharge, and flows from other permitted NPDES discharges within the watershed.

During wet weather, most of the metals loadings are in the particulate form and are associated with wet-weather storm water flow. On an annual basis, storm water contributes about 40% of the cadmium loading, 80% of the copper loading, 95% of the lead loading and 90% of the zinc loading. This storm water flow is permitted through two municipal separate storm sewer system (MS4) permits, a separate statewide storm water permit for the California Department of Transportation (Caltrans) ~~MS4 permit~~, a general construction storm water permit and a general industrial storm water permit.

Nonpoint sources of metals may include tributaries that drain the open space areas of the watershed. Direct atmospheric deposition of metals on the river is also a small source. Indirect atmospheric deposition on the land surface that is washed off during storms is a larger source, which is accounted for in the estimates of storm water loadings.

The sources of selenium appear to be related to natural levels of selenium in soils in the upper watershed. Separate studies are underway to evaluate whether selenium levels represent a "natural condition" for this watershed.
</td></tr>
</table>

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Loading Capacity</td><td>

Dry Weather

Dry-weather TMDLs are developed for the following pollutant waterbody combinations (allocations are developed for upstream reaches and tributaries to meet TMDLs in downstream reaches):

- Copper for the Los Angeles River Reaches 1, 2, 3, 4, and 5, Burbank Channel, Compton Creek, Tujunga Wash, Rio Hondo Reach 1.
- Lead for the Los Angeles River Reaches 1, 2, 3, 4, and 5, Burbank Channel, Rio Hondo Reach 1, Compton Creek, Monrovia Canyon Creek.
- Zinc for Rio Hondo Reach 1.
- Selenium for Reach 6, Aliso Creek, Dry Canyon Creek, McCoy Canyon Creek.

For dry weather, loading capacities are equal to reach-specific numeric targets multiplied by reach-specific critical dry-weather flows. Summing the critical flows for each reach and tributary, the critical flow for the entire river is 203 cfs, which is equal to the combined design flow of the three POTWs (169 cfs) plus the median flow from the storm drains and tributaries (34 cfs). The median storm drain and tributary flow is equal to the median flow at Wardlow (145 cfs) minus the existing median POTW flow (111 cfs). The dry-weather loading capacities for each impaired reach include the critical flows for upstream reaches. The dry-weather loading capacity for Reach 5 includes flows from Reach 6 and Bell Creek, the dry-weather loading capacity for Reach 3 includes flows from Verdugo Wash, and the dry-weather loading capacity for Reach 2 includes flows from Arroyo Seco.

Dry-weather loading capacity (total recoverable metals)

	Critical Flow (cfs)	Cu (kg/day)	Pb (kg/day)	Zn (kg/day)
LA River Reach 5	8.74	WER[1] x 0.65	WER[1] x ~~0.39~~3.6	
LA River Reach 4	129.13	WER[2] x 8.1	WER[1] x ~~3.2~~26	
LA River Reach 3	39.14	WER[2] x ~~2.3~~2.5	WER[1] x ~~1.01~~9.6	
LA River Reach 2	4.44	WER[2] x ~~0.16~~0.24	WER[1] x ~~0.084~~1.02	
LA River Reach 1	2.58	WER[2] x 0.14	WER[1] x ~~0.075~~0.64	
Tujunga Wash	0.15	WER[~~1~~3] x 0.007	WER[1] x ~~0.0035~~0.029	
Burbank Channel	17.3	WER[~~2~~4] x 0.80	WER[1] x ~~0.39~~3.2	
Rio Hondo Reach 1	0.50	WER[~~1~~5]x 0.015	WER[1]x0.045~~061~~	WER[1]x0.16
Compton Creek	0.90	WER[6~~1~~] x 0.041	WER[1] x ~~0.020~~0.16	

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent in this reach is 3.9~~6~~7.
[3] The WER for this constituent in this reach is 8.28.
[4] The WER for this constituent in this reach is 4.75.
[5] The WER for this constituent in this reach is 9.69.
[6] The WER for this constituent in this reach is 3.36.

No dry-weather loading capacities are calculated for lead in Monrovia Canyon Creek or selenium in Reach 6 or its tributaries. Concentration-

</td></tr>
</table>

Element	Key Findings and Regulatory Provisions
	based allocations are assigned for these metals in these reaches.

Wet Weather

Wet-weather TMDLs are calculated for cadmium, copper, lead, and zinc in Reach 1. Allocations are developed for all upstream reaches and tributaries to meet these TMDLs.

Wet-weather loading capacities are calculated by multiplying daily storm volumes by the wet-weather numeric target for each metal. The resulting curves identify the load allowance for a given flow.

Wet-weather loading capacity (total recoverable metals)

Metal	Load Duration Curve (kg/day)
Cadmium	Daily storm volume x WER[1] x 3.1 µg/L
Copper	Daily storm volume x WER[2] x 17 µg/L
Lead	Daily storm volume x WER[1] x ~~62~~ 94 µg/L
Zinc	Daily storm volume x WER[1] x 159 µg/L

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent is 3.9~~6~~7.

***Load Allocations** (for nonpoint sources)*

Dry Weather

Dry-weather nonpoint source load allocations (LAs) for copper and lead apply to open space and direct atmospheric deposition to the river. Dry-weather open space load allocations are equal to the critical flow for the upper portion of tributaries that drain open space, multiplied by the numeric targets for these tributaries.

Open space dry-weather LAs (total recoverable metals)

	Critical Flow	Cu (kg/day)	Pb (kg/day)
Tujunga Wash	0.12	WER[~~1~~2] x 0.0056	WER[1] x 0.024~~028~~
Arroyo Seco	0.33	WER[~~1~~3] x 0.018	WER[1] x 0.075~~09~~

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent in this reach is 8.28.
[3] The WER for this constituent in this reach is 1.32.

Load allocations for direct atmospheric deposition to the entire river are obtained from previous studies (3 kg/year for copper, 2 kg/year for lead and 10 kg/year for zinc.) Loads are allocated to each reach and tributary based on their length. The ratio of the length of each river segment to the total length of the river is multiplied by the estimates of direct atmospheric loading to the entire river.

Element	Key Findings and Regulatory Provisions

Direct air deposition dry-weather LAs (total recoverable metals)

	Cu (kg/day)	Pb (kg/day)	Zn(kg/day)
LA River Reach 6	~~WER[1] x~~ $3.3x10^{-4}$	~~WER[1] x~~ $2.2x10^{-4}$	
LA River Reach 5	~~WER[1] x~~ $3.6x10^{-4}$	~~WER[1] x~~ $2.4x10^{-4}$	
LA River Reach 4	~~WER[1] x~~ $8.1x10^{-4}$	~~WER[1] x~~ $5.4x10^{-4}$	
LA River Reach 3	~~WER[1] x~~ $6.04x10^{-4}$	~~WER[1] x~~ $4.03x10^{-4}$	
LA River Reach 2	~~WER[1] x~~ $1.4\ x10^{-3}$	~~WER[1] x~~ $9.5x10^{-4}$	
LA River Reach 1	~~WER[1] x~~ $4.4x10^{-4}$	~~WER[1] x~~ $2.96x10^{-4}$	
Bell Creek	~~WER[1] x~~ $2.98x10^{-4}$	~~WER[1] x~~ $1.99x10^{-4}$	
Tujunga Wash	~~WER[1] x~~ $7.4x10^{-4}$	~~WER[1] x~~ $4.9x10^{-4}$	
Verdugo Wash	~~WER[1] x~~ $4.7x10^{-4}$	~~WER[1] x~~ $3.2x10^{-4}$	
Burbank Channel	~~WER[1] x~~ $7.1x10^{-4}$	~~WER[1] x~~ $4.7x10^{-4}$	
Arroyo Seco	~~WER[1] x~~ $7.3x10^{-4}$	~~WER[1] x~~ $4.9x10^{-4}$	
Rio Hondo Reach 1	~~WER[1] x~~ $6.4x10^{-4}$	~~WER[1] x~~ $4.2x10^{-4}$	~~WER[1] x~~ $2.1x10^{-3}$
Compton Creek	~~WER[1] x~~ $6.5x10^{-4}$	~~WER[1] x~~ $4.3x10^{-4}$	

~~[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.~~

A dry-weather concentration-based load allocation for lead equal to the dry-weather numeric target (WER[1] x ~~8.2~~66 µg/L) applies to Monrovia Canyon Creek. The load allocation is not assigned to a particular nonpoint source or group of nonpoint sources.
[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.

A dry-weather concentration-based load allocation for selenium equal to the dry-weather numeric target (5 µg/L) is assigned to Reach 6 and its tributaries. The load allocation is not assigned to a particular nonpoint source or group of nonpoint sources.

Wet Weather

Wet-weather load allocations for open space are equal to the percent metals loading from open space (predicted by the wet-weather model) multiplied by the total loading capacity, then by the ratio of open space located outside the ~~storm drain system~~municipal separate storm sewer systems (MS4s) to the total open space area. There is no load allocation for cadmium because open space is not believed to be a source of the wet-weather cadmium impairment in Reach 1.

Wet-weather open space LAs (total recoverable metals)

Metal	Load Allocation (kg/day)
Copper	WER[~~1~~2] x $2.6x10^{-10}$ µg /L/day x daily storm volume(L)
Lead	WER[1] x $2.4x10^{-10}$ µg /L/day x daily storm volume(L)
Zinc	WER[1] x $1.4x10^{-9}$ µg /L/day x daily storm volume(L)

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent is 3.97.

Wet-weather load allocations for direct atmospheric deposition are equal to the percent area of the watershed comprised by surface water (0.2%) multiplied by the total loading capacity.

Element	Key Findings and Regulatory Provisions
	Wet-weather direct air deposition LAs (total recoverable metals)

Metal	Load Allocation (kg/day)
Cadmium	WER[1] x 6.2×10^{-10} µg /L/day x daily storm volume(L)
Copper	WER[~~1~~2] x 3.4×10^{-10} µg /L/day x daily storm volume(L)
Lead	WER[1] x 1.~~2~~88x10^{-10} µg /L/day x daily storm volume(L)
Zinc	WER[1] x 3.2×10^{-9} µg /L/day x daily storm volume(L)

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent is 3.97.

A wet-weather concentration-based load allocation for selenium equal to the dry-weather numeric target (5 µg/L) is assigned to Reach 6 and its tributaries. The load allocation is not assigned to a particular nonpoint source or group of nonpoint sources.

***Waste Load Allocations** (for point sources)*

Dry Weather

Dry-weather point source waste load allocations (WLAs) apply to the three POTWs (Tillman, Glendale, and Burbank). A grouped waste load allocation applies to the storm water permittees (Los Angeles County MS4 permittees, Long Beach MS4 permittee, Caltrans, General Industrial and General Construction permittees), which is calculated by subtracting load allocations (and waste load allocations for reaches with POTWs) from the total loading capacity. Concentration-based waste load allocations are developed for other point sources in the watershed.

Mass- and concentration-based waste load allocations for Tillman, Los Angeles-Glendale and Burbank WRPs are developed to meet the dry-weather targets for copper and lead in Reach 4, Reach 3 and the Burbank Western Channel, respectively.

POTW dry-weather WLAs (total recoverable metals)*:

	Cu	Pb
Tillman		
Concentration-based (µg/L)	WER[2] x 26	WER[1] x ~~10~~83
Mass-based (kg/day)	WER[2] x 7.8	WER[1] x ~~3.03~~25
Glendale		
Concentration-based (µg/L)	WER[2] x 26	WER[1] x ~~12~~100
Mass-based (kg/day)	WER[2] x 2.0	WER[1] x ~~0.88~~7.6
Burbank		
Concentration-based (µg/L)	WER[~~2~~3] x 19	WER[1] x ~~9.1~~75
Mass-based (kg/day)	WER[~~2~~3] x 0.64	WER[1] x ~~0.31~~2.6

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent is 3.9~~6~~7.
[3] The WER for this constituent is 4.75.
~~Regardless of the WER, effluent limitations shall ensure that effluent concentrations and mass discharges do not exceed the levels of water quality that can be attained by performance of this facility's treatment technologies existing at the time of permit issuance, reissuance, or modification~~.
*Regardless of the WER, for discharges regulated under this TMDL with concentrations below WER-adjusted allocations, effluent limitations shall ensure that effluent concentrations do not exceed the levels of water quality that can be reliably maintained by the facility's applicable treatment

Element	Key Findings and Regulatory Provisions
	technologies existing at the time of permit issuance, reissuance, or modification unless anti-backsliding requirements in Clean Water Act section 402(o) and anti-degradation requirements are met. Permit compliance with anti-degradation and anti-backsliding requirements shall be documented in permit fact sheets.

Dry-weather waste load allocations for storm water permittees are equal to storm drain flows (critical flows minus median POTW flows minus median open space flows) multiplied by reach-specific numeric targets, minus the contribution from direct air deposition.

Storm water Permittees' dry-weather WLAs (total recoverable metals)*

	Critical Flow (cfs)	Cu (kg/day)	Pb (kg/day)	Zn (kg/day)
LA River Reach 6	7.20	WER[1] x 0.53		WER[1] x ~~0.33~~3.0
LA River Reach 5	0.75	WER[2~~1~~] x 0.05		WER[1] x ~~0.03~~0.31
LA River Reach 4	5.13	WER[2~~1~~] x 0.32		WER[1] x ~~0.12~~1.04
LA River Reach 3	4.84	WER[2~~1~~] x 0.06		WER[1] x ~~0.03~~1.18
LA River Reach 2	3.86	WER[2~~1~~] x 0.13		WER[1] x ~~0.07~~0.89
LA River Reach 1	2.58	WER[2~~1~~] x 0.14		WER[1] x ~~0.07~~0.64
Bell Creek	0.79	WER[1] x 0.06		WER[1] x ~~0.04~~0.33
Tujunga Wash	0.03	WER[3~~1~~] x 0.001		WER[1] x ~~0.0002~~0.0053
Burbank Channel	3.3	WER[4~~1~~] x 0.15		WER[1] x ~~0.07~~0.61
Verdugo Wash	3.3	WER[5~~1~~] x 0.18		WER[1] x ~~0.10~~0.82
Arroyo Seco	0.25	WER[6~~1~~] x 0.01		WER[1] x ~~0.01~~0.06
Rio Hondo Reach 1	0.50	WER[7~~1~~] x 0.01	WER[1] x0.0~~06~~45	WER[1] x 0.16
Compton Creek	0.90	WER[8~~1~~] x 0.04		WER[1] x ~~0.02~~0.16

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.

[2] The WER for this constituent is 3.97.

[3] The WER for this constituent is 8.28.

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[5] The WER for this constituent is 2.18.

[6] The WER for this constituent is 1.32.

[7] The WER for this constituent is 9.69.

[8] The WER for this constituent is 3.36.

* For MS4 discharges regulated under this TMDL with concentrations below WER-adjusted allocations, MS4 Permittees shall track trends in concentrations and loads and, where increasing trends are observed shall conduct an evaluation of the cause(s) of the increasing trends in concentration and/or load within the contributing drainage area(s). If the increasing trend is caused by the MS4 Permittees, the MS4 Permittees shall then identify additional watershed control measures and corresponding time schedules for implementation to arrest the increasing trend(s). MS4 Permittees shall report on trends and evaluations of the cause(s) of any increasing trends in their annual reports and shall include actions to arrest increasing trends in their annual reports and/or as part of their adaptive management process in an approved Watershed Management Program or Enhanced Watershed Management Program. Further, regardless of the WER, Permit compliance with anti-degradation and anti-backsliding requirements shall be documented in permit fact sheets.

Element	Key Findings and Regulatory Provisions

A zero waste load allocation is assigned to all general industrial and construction storm water permittees during dry weather. The remaining waste load allocations are shared by the MS4 permittees and Caltrans.

Other NPDES Permits

Concentration-based dry-weather waste load allocations apply to the other NPDES permits* that discharge to the reaches and tributaries in the following table.

* "Other NPDES permits" refers to minor NPDES permits, general non-storm water NDPES permits, and major permits other than the Tillman, LA-Glendale, and Burbank POTWs.

Other dry-weather WLAs (µg total recoverable metals/L)

	Cu	Pb	Zn	Se
Reach 5, 6 and Bell Creek 5	WER[1] x 30	WER[1] x ~~19~~170		
Reach 4	WER[2~~1~~] x 26	WER[1] x ~~10~~83		
Tujunga Wash	WER[3] x 20	WER[1] x 102		
Reach 3 above LA-Glendale WRP and Verdugo	WER[2~~1~~] x 23	WER[1] x ~~12~~102		
Verdugo Wash	WER[4] x 23	WER[1] x 100		
Reach 3 below LA-Glendale WRP	WER[2~~1~~] x 26	WER[1] x ~~12~~100		
Burbank Western Channel(above WRP)	WER[5~~1~~] x 26	WER[1] x ~~14~~126		
Burbank Western Channel (below WRP)	WER[5~~1~~] x 19	WER[1] x ~~9.~~751		
Reach 2 ~~and Arroyo Seco~~	WER[~~1~~2] x 22	WER[1] x ~~11~~94		
Arroyo Seco	WER[6] x 22	WER x 94		
Reach 1	WER[2~~1~~] x 23	WER[1] x ~~12~~102		
Compton Creek	WER[7~~1~~] x 19	WER[1] x ~~8.9~~73		
Rio Hondo Reach 1	WER[8~~1~~] x 13	WER[1] x ~~5.0~~37	WER[1] x 131	

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[2] The WER for this constituent in this reach is 3.97.
[3] The WER for this constituent in this reach is 8.28.
[4] The WER for this constituent in this reach is 2.18.
[5] The WER for this constituent in this reach is 4.75.
[6] The WER for this constituent in this reach is 1.32.
[7] The WER for this constituent in this reach is 3.36.
[8] The WER for this constituent in this reach is 9.69.

*Regardless of the WER, for discharges regulated under this TMDL with concentrations below WER-adjusted allocations, effluent limitations shall

Element	Key Findings and Regulatory Provisions
	ensure that effluent concentrations do not exceed the levels of water quality that can be reliably maintained by the facility's applicable treatment technologies existing at the time of permit issuance, reissuance, or modification unless anti-backsliding requirements in Clean Water Act section 402(o) and anti-degradation requirements are met. Permit compliance with anti-degradation and anti-backsliding requirements shall be documented in permit fact sheets.

Wet Weather

During wet-weather, POTW allocations are based on dry-weather in-stream numeric targets because the POTWs exert the greatest influence over in-stream water quality during dry weather. During wet weather, the concentration-based dry-weather waste load allocations apply but the mass-based dry-weather allocations do not apply when influent flows exceed the design capacity of the treatment plants. Additionally, the POTWs are assigned reach-specific allocations for cadmium and zinc based on dry weather targets to meet the wet-weather TMDLs in Reach 1.

POTW wet-weather WLAs (total recoverable metals):

	Cd	Cu	Pb	Zn
Tillman				
Concentration-based (µg/L)	WER[1]x4.7	WER[2]x26	WER[1]x~~10~~83	WER[1]x212
Mass-based (kg/day)	WER[1]x1.4	WER[2]x7.8	WER[1]x ~~3.03~~25	WER[1]x64
Glendale				
Concentration-based (µg/L)	WER[1]x5.3	WER[2]x26	WER[1]x~~12~~100	WER[1]x253
Mass-based (kg/day)	WER[1]x0.40	WER[2]x2.0	WER[1]x~~0.88~~7.6	WER[1]x19
Burbank				
Concentration-based (µg/L)	WER[1]x4.5	WER[~~2~~3]x19	WER[1]x~~9.1~~75	WER[1]x 212
Mass-based (kg/day)	WER[1]x0.15	WER[~~2~~3]x0.64	WER[1]x~~0.31~~2.6	WER[1]x7.3

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent is 3.9~~6~~7.
[3] The WER for this constituent is 4.75.
Regardless of the WER, for discharges regulated under this TMDL with concentrations below WER-adjusted allocations, effluent limitations shall ensure effluent concentrations do not exceed the level of water quality that can be reliably maintained by the facility's applicable treatment technologies existing at the time of permit issuance, reissuance, or modification unless anti-backsliding requirements in Clean Water Act section 402(o) and anti-degradation requirements are met. Permit compliance with anti-degradation and anti-backsliding requirements shall be documented in permit fact sheets.~~Regardless of the WER, effluent limitations shall ensure that effluent concentrations and mass discharges do not exceed the levels of water quality that can be attained by performance of this facility's treatment technologies~~

Element	Key Findings and Regulatory Provisions
	~~existing at the time of permit issuance, reissuance, or modification.~~

Wet-weather waste load allocations for the grouped storm water permittees are equal to the total loading capacity minus the load allocations for open space and direct air deposition and the waste load allocations for the POTWs. Wet-weather waste load allocations for the grouped storm water permittees apply to all reaches and tributaries.

Storm water wet-weather WLAs (total recoverable metals):

Metal	Waste Load Allocation (kg/day)
Cadmium	WER[1] x 3.1×10^{-9} x daily volume(L) – 1.95
Copper	WER[~~1~~2] x 1.7×10^{-8} x daily volume (L) – 10
Lead	WER[1] x ~~6.2~~9.4x10^{-8} x daily volume (L) – ~~4.2~~35
Zinc	WER[1] x 1.6×10^{-7} x daily volume (L) – 90

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent is 3.97.

The combined storm water waste load allocation is apportioned between the different storm water categories by their percent area of the portion of the watershed served by storm drains.

MS4 wet-weather WLAs (total recoverable metals):

Metal	Waste Load Allocation (kg/day)
Cadmium	WER[1] x 2.8×10^{-9} x daily volume(L) – 1.8
Copper	WER[~~1~~2] x ~~1.5~~8.5x10^{-8} x daily volume (L) – ~~9.5~~32
Lead	WER[1] x 5.6×10^{-8} x daily volume (L) – 3.85
Zinc	WER[1] x 1.4×10^{-7} x daily volume (L) – 83

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent is 3.97.
*For municipal separate storm sewer system (MS4) discharges regulated under this TMDL with concentrations below WER-adjusted allocations, MS4 Permittees shall track trends in concentrations and loads and, where increasing trends are observed shall conduct an evaluation of the cause(s) of the increasing trends in concentration and/or load within the contributing drainage area(s). MS4 Permittees shall then identify additional watershed control measures and corresponding time schedules for implementation to arrest the increasing trend(s). MS4 Permittees shall report on trends and evaluations of the cause(s) of any increasing trends in their annual reports and shall include actions to arrest increasing trends in their annual reports and/or as part of their adaptive management process in an approved Watershed Management Program or Enhanced Watershed Management Program. Further, regardless of the WER, Permit compliance with anti-degradation and anti-backsliding requirements shall be documented in permit fact sheets.

Caltrans wet-weather WLAs (total recoverable metals):

Metal	Waste Load Allocation (kg/day)
Cadmium	WER[1] x 5.3×10^{-11} x daily volume(L) – 0.03
Copper	WER[~~1~~2] x 2.9×10^{-10} x daily volume (L) – 0.2
Lead	WER[1] x ~~1.06~~1.6x10^{-9} x daily volume (L) – ~~0.07~~0.6
Zinc	WER[1] x 2.7×10^{-9} x daily volume (L) – 1.6

Element	Key Findings and Regulatory Provisions
	[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved. [2] The WER for this constituent is 3.97. *For municipal separate storm sewer system (MS4) discharges regulated under this TMDL with concentrations below WER-adjusted allocations, MS4 Permittees shall track trends in concentrations and loads and, where increasing trends are observed shall conduct an evaluation of the cause(s) of the increasing trends in concentration and/or load within the contributing drainage area(s). MS4 Permittees shall then identify additional watershed control measures and corresponding time schedules for implementation to arrest the increasing trend(s). MS4 Permittees shall report on trends and evaluations of the cause(s) of any increasing trends in their annual reports and shall include actions to arrest increasing trends in their annual reports and/or as part of their adaptive management process in an approved Watershed Management Program or Enhanced Watershed Management Program. Further, regardless of the WER, Permit compliance with anti-degradation and anti-backsliding requirements shall be documented in permit fact sheets.

General Industrial wet-weather WLAs (total recoverable metals):

Metal	Waste Load Allocation (kg/day)
Cadmium	WER[1] x 1.6x10^{-10} x daily volume(L) – 0.11
Copper	WER~~[1]~~[2] x 8.8x10^{-10} x daily volume (L) – 0.5
Lead	WER[1] x ~~3.3~~4.9x10^{-9} x daily volume (L) – ~~0.22~~1.9
Zinc	WER[1] x 8.3x10^{-9} x daily volume (L) – 4.8

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent is 3.97.

General Construction wet-weather WLAs (total recoverable metals):

Metal	Waste Load Allocation (kg/day)
Cadmium	WER[1] x 5.9x10^{-11} x daily volume(L) – 0.04
Copper	WER~~[1]~~[2] x 3.2x10^{-10} x daily volume (L) – 0.2
Lead	WER[1] x ~~1.2~~1.8x10^{-9} x daily volume (L) – ~~0.08~~0.68
Zinc	WER[1] x 3.01x10^{-}9 x daily volume (L) – 4.8

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent is 3.97.

Each storm water permittee under the general industrial and construction storm water permits will receive individual waste load allocations per acre based on the total acres of their facility.

Individual General Construction or Industrial Permittees WLAs (total recoverable metals):

Metal	Waste Load Allocation (g/day/acre)
Cadmium	WER[1] x 7.6x10^{-12} x daily volume(L) – 4.8x10^{-6}
Copper	WER[1] x 4.2x10^{-11} x daily volume (L) – 2.6x10^{-5}
Lead	WER[1] x ~~1.5~~2.3x10^{-10} x daily volume (L) – ~~1.04~~8.7x10^{-5}
Zinc	WER[1] x 3.9x10^{-10} x daily volume (L) – 2.2x10^{-4}

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent is 3.97.
*Regardless of the WER, for discharges regulated under this TMDL with concentrations below WER-adjusted allocations, effluent limitations shall ensure effluent concentrations do not exceed the level of water quality that can

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td></td><td>be reliably maintained by the facility’s applicable treatment technologies existing at the time of permit issuance, reissuance, or modification unless anti-backsliding requirements in Clean Water Act section 402(o) and anti-degradation requirements are met. Permit compliance with anti-degradation and anti-backsliding requirements shall be documented in permit fact sheets

Other NPDES Permits
Concentration-based wet-weather waste load allocations apply to the other NPDES permits* that discharge to all reaches of the Los Angeles River and its tributaries.

Wet-weather WLAs for other permits (total recoverable metals)
<table>
<tr><th>Cadmium (µg /L)</th><th>Copper (µg /L)</th><th>Lead (µg /L)</th><th>Zinc (µg /L)</th></tr>
<tr><td>WER[1] x 3.1</td><td>WER[~~1~~2] x 17</td><td>WER[1] x ~~62~~94</td><td>WER[1] x 159</td></tr>
</table>
[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent is 3.97.
*Regardless of the WER, for discharges regulated under this TMDL with concentrations below WER-adjusted allocations, effluent limitations shall ensure effluent concentrations do not exceed the level of water quality that can be reliably maintained by the facility’s applicable treatment technologies existing at the time of permit issuance, reissuance, or modification unless anti-backsliding requirements in Clean Water Act section 402(o) and anti-degradation requirements are met. Permit compliance with anti-degradation and anti-backsliding requirements shall be documented in permit fact sheets.

* “Other NPDES permits” refers to minor NPDES permits, general non-storm water NDPES permits, and major permits other than the Tillman, LA-Glendale, and Burbank POTWs.</td></tr>
<tr><td>Margin of Safety</td><td>There is an implicit margin of safety that stems from the use of conservative values for the translation from total recoverable to the dissolved fraction during the dry and wet periods. In addition, the TMDL includes a margin of safety by evaluating wet-weather conditions separately from dry-weather conditions, which is in effect, assigning allocations for two distinct critical conditions. Furthermore, the use of the wet-weather model to calculate load allocations for open space can be applied to the margin of safety because it tends to overestimate loads from open spaces, thus reducing the available waste load allocations to the permitted discharges. Conservative assumptions were made in the development of site-specific WERs, such as the use of the Streamlined Procedure calculation method, which results in a lower WER. ~~An additional explicit margin of safety is provided in Reaches 1-4 and Burbank Western Channel for which a site specific WER has been developed. Specifically, while the copper targets and loading capacity are adjusted based on the final WER of 3.96, only the WLAs for Tillman WRP, LA Glendale WRP, and Burbank WRP are adjusted using the site specific WER until additional data are collected to determine whether the site specific WER is fully protective of aquatic life in all reaches and can be appropriately applied to all LAs and WLAs.~~</td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Implementation	The regulatory mechanisms used to implement the TMDL will include the municipal separate storm sewer system NPDES permits that cover MS4 discharges within the Los Angeles River Watershed, including the Los Angeles County Municipal Separate Storm Sewer System (MS4)~~Water~~ NPDES Permit~~ (MS4)~~, the City of Long Beach MS4 NPDES Permit, and the Caltrans NPDES Statewide ~~s~~Storm ~~w~~Water ~~p~~Permit~~,~~; major NPDES permits, including individual industrial storm water permits; minor NPDES permits~~,~~; general NPDES permits, including the general permit for discharges of potable water from water supply distribution systems; general industrial storm water NPDES permits~~,~~; and general construction storm water NPDES permits. Nonpoint sources will be regulated through the authority contained in sections 13263 and 13269 of the Water Code, in conformance with the State Water Resources Control Board's Nonpoint Source Implementation and Enforcement Policy (May 2004). Each NPDES permit assigned a WLA shall be reopened or amended at reissuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. ~~The Regional Board shall reconsider this TMDL by January 11, 2011 based on additional data obtained from special studies.~~ Table 7-13-2 presents the implementation schedule for the responsible permittees. **Implementation of WERs** ~~The copper WER of 3.96 for Reaches 1-4 of the Los Angeles River and Burbank Western Channel shall apply until this TMDL is reconsidered. At the time this TMDL is reconsidered, the~~ Site-specific WERs ~~for Reaches 1-4 and Burbank Western Channel~~ may be modified or revert back to a default of 1.0 ~~unless additional~~if data indicate that the WERs are not protective of either the beneficial uses of the waterbody to which they apply or downstream beneficial uses~~have been collected that support application of a WER to all WLAs and LAs, or confirm continued application of the site specific WER to the WLAs for the POTWs only~~. Any WER that is incorporated into a discharger's permit shall include an appropriate reopener that authorizes the Regional Board to modify the WER as appropriate to accommodate new information. **~~Non storm water~~Other NPDES permits (including POTWs, other major, minor, and general permits):** Permit writers may translate applicable waste load allocations into daily maximum and monthly average effluent limits for the major, minor and general NPDES permits by applying the effluent limitation procedures in Section 1.4 of the State Water Resources Control Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (2000) or other applicable engineering practices authorized under federal regulations. Permittees that hold individual NPDES permits and solely discharge storm water may be allowed (at Regional Board discretion) compliance

Element	Key Findings and Regulatory Provisions
	schedules up to January 11, 2016 to achieve compliance with final WLAs.

General industrial storm water permits:

Waste load allocations will be incorporated into the State Board general permit upon renewal or ~~T~~the Regional Board will develop a watershed-specific general industrial storm water permit to incorporate waste load allocations.

Dry-weather implementation

Non-storm water flows authorized by Order No. 97-03 DWQ, or any successor order, including Order No. 2014-0057-DWQ, are exempt from the dry-weather waste load allocation equal to zero. Instead, these authorized non-storm water flows shall meet the reach-specific concentration-based waste load allocations assigned to the "other NPDES permits". The dry-weather waste load allocation equal to zero applies to unauthorized non-storm water flows, which are prohibited by Order No. 97-03 DWQ and Order No. 2014-0057-DWQ.

It is anticipated that the dry-weather waste load allocations will be implemented by requiring improved best management practices (BMPs) to eliminate the discharge of non-storm water flows. However, permit writers must provide adequate justification and documentation to demonstrate that specified BMPs are expected to result in attainment of the numeric waste load allocations.

Wet-weather implementation

General industrial storm water permittees are allowed interim wet-weather concentration-based waste load allocations based on benchmarks contained in EPA's Storm Water Multi-sector General Permit for Industrial Activities. The interim waste load allocations apply to all industry sectors and apply until no later than January 11, 2016.

Interim wet-weather WLAs for general industrial storm water permittees (total recoverable metals)*

Cd (µg/L)	Cu(µg/L)	Pb(µg/L)	Zn(µg/L)
15.9	63.6	81.6	117

*Based on USEPA benchmarks for industrial storm water sector

~~Until~~ Prior to January 11, 2011, interim waste load allocations will not be interpreted as enforceable permit conditions. If monitoring demonstrates that interim waste load allocations are being exceeded, the permittee shall evaluate existing and potential BMPs, including structural BMPs, and implement any necessary BMP improvements. It is anticipated that monitoring results and any necessary BMP improvements would occur as part of an annual reporting process. After January 11, 2011, interim waste load allocations shall be translated into

Element	Key Findings and Regulatory Provisions
	enforceable permit conditions. Compliance with permit conditions may be demonstrated through the installation, maintenance, and monitoring of Regional Board-approved BMPs. If this method of compliance is chosen, permit writers must provide adequate justification and documentation to demonstrate that BMPs are expected to result in attainment of interim waste load allocations. The general industrial storm water permits shall achieve final wet-weather waste load allocations no later than January 11, 2016, which shall be expressed as NPDES water quality-based effluent limitations. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs if adequate justification and documentation demonstrate that BMPs are expected to result in attainment of waste load allocations. **General construction storm water permits:** Waste load allocations will be incorporated into the State Board general permit upon renewal or into a watershed-specific general permit developed by the Regional Board. Dry-weather implementation Non-storm water flows authorized by the General Permit for Storm Water Discharges Associated with Construction Activity (Water Quality Order No. 99-08 DWQ), or any successor order, including Order No. 2009-0009-DWQ, are exempt from the dry-weather waste load allocation equal to zero as long as they comply with the provisions of sections C.3.and A.9 of the Order No. 99-08 DWQ, and sections III, V.A., and VI of Order No. 2009-0009-DWQ, which state that these authorized non-storm discharges shall be (1) infeasible to eliminate (2) comply with BMPs as described in the Storm Water Pollution Prevention Plan prepared by the permittee, and (3) not cause or contribute to a violation of water quality standards, or comparable provisions in any successor order. Unauthorized non-storm water flows are already prohibited by Order No. 99-08 DWQ and Order No. 2009-0009-DWQ. Wet-weather implementation By January 11, 2013, the construction industry will submit the results of BMP effectiveness studies to determine BMPs that will achieve compliance with the final waste load allocations assigned to construction storm water permittees. Regional Board staff will bring the recommended BMPs before the Regional Board for consideration by January 11, 2014. General construction storm water permittees will be considered in compliance with final waste load allocations if they implement these Regional Board approved BMPs. All permittees must implement the approved BMPs by January 11, 2015. If no effectiveness studies are conducted and no BMPs are approved by the Regional Board by January 11, 2014, eEach general construction storm water permit holder will be subject to site-specific BMPs and monitoring

Element	Key Findings and Regulatory Provisions
	requirements to demonstrate compliance with final waste load allocations. **MS4 and Caltrans permits** Applicable CTR limits are being met most of the time during dry weather, with episodic exceedances. Due to the expense of obtaining accurate flow measurements required for calculating loads, concentration-based permit limits may apply during dry weather. These concentration-based limits would be equal to dry-weather reach-specific numeric targets. Each municipality and permittee will be required to meet the storm water waste load allocations shared by the ~~two~~ MS4~~s~~ and Caltrans permittees at the designated TMDL effectiveness monitoring points. A phased implementation approach, using a combination of non-structural and structural BMPs may be used to achieve compliance with the waste load allocations. The administrative record and the fact sheets for the MS4 and Caltrans storm water permits must provide reasonable assurance that the BMPs selected will be sufficient to implement the waste load allocations. The implementation schedule for the MS4 and Caltrans permittees consists of a phased approach. The watershed is divided into five jurisdictional groups based on the subwatersheds of the tributaries that drain to each reach of the river, as presented in Table 7-13-3. Each jurisdictional group shall achieve compliance in prescribed percentages of its subwatershed(s), with total compliance to be achieved within 22 years. Jurisdictional groups can be reorganized or subdivided upon approval by the Executive Officer.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for dry weather and wet weather. For dry weather, critical flows for each reach are established from the long-term flow records (1988-2000) generated by stream gages located throughout the watershed and in selected reaches. The median dry-weather urban runoff plus the combined design capacity of the three major POTWs is selected as the critical flow since most of the flow is from effluent which results in a relatively stable dry-weather flow condition. In areas where there are no flow records, an area-weighted approach is used to assign flows to these reaches. Wet-weather allocations are developed using the load-duration curve concept. The total wet-weather waste load allocation for wet weather varies by storm. Given this variability in storm water flows, no justification was found for selecting a particular sized storm as the critical condition.
Compliance Monitoring and Special Studies	Effective monitoring will be necessary to assess the condition of the Los Angeles River and its tributaries and to assess the on-going effectiveness of efforts by dischargers to reduce metals loading to the Los Angeles River. Special studies may also be appropriate to provide further information about new data, new or alternative sources, and

Element	Key Findings and Regulatory Provisions
	(continued below)

revised scientific assumptions. Below the Regional Board identifies the various goals of monitoring efforts and studies. The programs, reports, and studies will be developed in response to subsequent orders issued by the Executive Officer.

~~Ambient~~ Receiving Water Monitoring

A~~n ambient~~ receiving water monitoring program is necessary to assess water quality throughout the Los Angeles River and its tributaries and the progress being made to remove the metals impairments. The MS4 and Caltrans storm water NPDES permittees in each jurisdictional group are jointly responsible for implementing the ~~ambient~~ receiving water monitoring program. The responsible agencies shall sample for total recoverable metals, dissolved metals, including cadmium and zinc, and hardness once per month at each ~~ambient~~ receiving water monitoring location at least until the TMDL is re-considered at year 5. The reported detection limits shall be below the hardness adjusted CTR criteria. Eight ~~ambient~~ receiving water monitoring points currently exist in the Los Angeles River and its tributaries as part of the City of Los Angeles Watershed Monitoring Program. These monitoring points could be used to assess water quality.

~~Ambient~~Receiving Water Monitoring Points	Reaches and Tributaries
White Oak Avenue	LA River 6, Aliso Creek, McCoy Creek, Bell Creek
Sepulveda Boulevard	LA River 5, Bull Creek
Tujunga Avenue	LA River 4, Tujunga Wash
Colorado Boulevard	LA River 3, Burbank Western Channel, Verdugo Wash
Figueroa Street	LA River 3, Arroyo Seco
Washington Boulevard	LA River 2
Rosecrans Avenue	LA River 2, Rio Hondo (gage just above Rio Hondo)
Willow Street	LA River 1, Compton Creek (gage at Wardlow)

TMDL Effectiveness Monitoring

The MS4 and Caltrans storm water NPDES permittees in each jurisdictional group are jointly responsible for assessing progress in reducing pollutant loads to achieve the TMDL. Each jurisdictional group is required to submit for approval by the Executive Officer a coordinated monitoring plan that will demonstrate the effectiveness of the phased implementation schedule for this TMDL (See Table 7-13.2), which requires attainment of the applicable waste load allocations in prescribed percentages of each subwatershed over a 22-year period. The

Element	Key Findings and Regulatory Provisions
	monitoring locations specified for the ambient receiving water monitoring program may be used as effectiveness monitoring locations. The MS4 and Caltrans storm water NPDES permittees will be found to be effectively meeting dry-weather waste load allocations if the in-stream pollutant concentration or load at the first downstream monitoring location is equal to or less than the corresponding concentration- or load-based waste load allocation. Alternatively, effectiveness of the TMDL may be assessed at the storm drain outlet based on the waste load allocation for the receiving water. For storm drains that discharge to other storm drains, the waste load allocation will be based on the waste load allocation for the ultimate receiving water for that storm drain system. The MS4 and Caltrans storm water NPDES permittees will be found to be effectively meeting wet-weather waste load allocations if the loading at the downstream monitoring location is equal to or less then the wet-weather waste load allocation. The general industrial storm water permit shall contain a model monitoring and reporting program to evaluate BMP effectiveness. A permittee enrolled under the general permit shall have the choice of conducting individual monitoring based on the model program or participating in a group monitoring effort. MS4 permittees are encouraged to take the lead in group monitoring efforts for industrial facilities within their jurisdiction because compliance with waste load allocations by these facilities will in many cases translate to reductions in metals loads to the MS4 system. The Tillman, LA-Glendale, and Burbank POTWs, and the remaining permitted discharges in the watershed will have effluent monitoring requirements to ensure compliance with waste load allocations. **Monitoring to Determine Ongoing Protectiveness of WERs** Additionally, tThe Tillman, LA-Glendale, and Burbank POTWs, and the Caltrans, Los Angeles County MS4, and Long Beach MS4 permittees shall conduct additional receiving water monitoring to verify that water quality conditions are similar to those of the 2008 and 2014 copper WER study periods. Monitoring is also required to determine if the WER-based copper WLAs will achieve downstream water quality standards. This additional monitoring shall be required through the POTWs' NPDES permit monitoring and reporting programs and the Los Angeles County and Long Beach MS4 Permits' monitoring and reporting programs or the Integrated Monitoring Programs and/or Coordinated Integrated Monitoring Programs, where approved by the Executive Officer of the Regional Board in lieu of the MS4 permits' monitoring and reporting programs, or other Regional Board required monitoring programs. Copper WER evaluation monitoring will consist of receiving water monitoring for key chemical parameters needed for estimates of WERs utilizing the Biotic Ligand Model (BLM). The Regional Board will evaluate the WER-based copper WLAs based on potential changes in the chemical characteristics of the water body that could impact the calculation or application of the WER and will revise

Element	Key Findings and Regulatory Provisions
	the WERs and copper WLAs, if necessary, to ensure protection of beneficial uses. **Special Studies** The implementation schedule (see Table 7-13.2) allows time for special studies that may serve to refine the estimate of loading capacity, waste load and/or load allocations, and other studies that may serve to optimize implementation efforts. The Regional Board will re-consider the TMDL by January 11, 2011 in light of the findings of these studies. Studies may include: • Refined flow estimates for the Los Angeles River mainstem and tributaries where there presently are no flow gages and for improved gaging of low-flow conditions. • Water quality measurements, including a better assessment of hardness, water chemistry data (e.g., total suspended solids and organic carbon) that may refine the use of metals partitioning coefficients. • Effects studies designed to evaluate site-specific toxic effects of metals on the Los Angeles River and its tributaries. • Source studies designed to characterize loadings from background or natural sources • Review of water quality modeling assumptions including the relationship between metals and total suspended solids as expressed in the potency factors and buildup and washoff and transport coefficients. • Evaluation of aerial deposition and sources of aerial deposition. • POTWs that are unable to demonstrate compliance with final waste load allocations must conduct source reduction audits by January 11, 2008. • POTWs that will be requesting the Regional Board to extend their implementation schedule to allow for the installation of advanced treatment must prepare work plans, with time schedules to allow for the installation advanced treatment. The work plan must be submitted January 11, 2010.

Table 7-13.2 Los Angeles River and Tributaries Metals TMDL: Implementation Schedule

Date	Action
January 11, 2006	Regional Board permit writers shall incorporate waste load allocations into NPDES permits. Waste load allocations will be implemented through NPDES permit limits in accordance with the implementation schedule contained herein, at the time of permit issuance, renewal, or re-opener.
January 11, 2010	Responsible jurisdictions and agencies shall provide to the Regional Board results of the special studies. POTWs that will be requesting the Regional Board to extend their implementation schedule to allow for the installation of advanced treatment must submit work plans.
January 11, 2011	The Regional Board shall reconsider this TMDL to re-evaluate the waste load allocations and the implementation schedule.
~~NON-STORM WATER~~ OTHER NPDES PERMITS (INCLUDING POTWS, OTHER MAJOR, MINOR, AND GENERAL PERMITS)	
Upon permit issuance, renewal, or re-opener	The ~~non-storm water~~other NPDES permits shall achieve waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Permit writers may translate applicable waste load allocations into daily maximum and monthly average effluent limits for the major, minor and general NPDES permits by applying the effluent limitation procedures in Section 1.4 of the SIP or other applicable engineering practices authorized under federal regulations. Effluent limitations based on WER-adjusted WLAs shall ensure that effluent concentrations and mass discharges do not exceed the levels of water quality that can be attained by performance of a facility's treatment technologies existing at the time of permit issuance, reissuance, or modification. Permittees that hold individual NPDES permits and solely discharge storm water may be allowed (at Regional Board discretion) compliance schedules up to January 11, 2016 to achieve compliance with final WLAs.
GENERAL INDUSTRIAL STORM WATER PERMITS	
Upon permit issuance, renewal, or re-opener	The general industrial storm water permittees shall achieve dry-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs. Permittees shall begin to install and test BMPs to meet the interim wet-weather WLAs. BMP effectiveness monitoring will be implemented to determine progress in achieving interim wet-weather waste load allocations.

Date	Action
January 11, 2011	The general industrial storm water permits shall achieve interim wet-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs. Permittees shall begin an iterative BMP process including BMP effectiveness monitoring to achieve compliance with final waste load allocations.
January 11, 2016	The general industrial storm water permits shall achieve final wet-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.
GENERAL CONSTRUCTION STORM WATER PERMITS	
Upon permit issuance, renewal, or re-opener	Non-storm water flows not authorized by Order No. 99-08 DWQ, or any successor order, including Order No. 2009-0009-DWQ, shall achieve dry-weather waste load allocations of zero. Waste load allocations shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.
~~January 11, 2013~~	~~The construction industry will submit the results of wet weather BMP effectiveness studies to the Regional Board for consideration. In the event that no effectiveness studies are conducted and no BMPs are approved, permittees shall be subject to site-specific BMPs and monitoring to demonstrate BMP effectiveness.~~
~~January 11, 2014~~	~~The Regional Board will consider results of the wet weather BMP effectiveness studies and consider approval of BMPs.~~
January 11, 2015	All general construction storm water permittees shall be subject to site-specific BMPs and monitoring requirements to demonstrate compliance with final waste load allocations.~~implement Regional Board-approved BMPs.~~
MS4 AND CALTRANS STORM WATER PERMITS	
April 11, 2007	In response to an order issued by the Executive Officer, each jurisdictional group must submit a coordinated monitoring plan, to be approved by the Executive Officer, which includes both TMDL effectiveness monitoring and ambient monitoring. Once the coordinated monitoring plan is approved by the Executive Officer ambient monitoring shall commence within 6 months.

Date	Action
January 11, 2010 (Draft Report) July 11, 2010 (Final Report)	Each jurisdictional group shall provide a written report to the Regional Board outlining the how the subwatersheds within the jurisdictional group will achieve compliance with the waste load allocations. The report shall include implementation methods, an implementation schedule, proposed milestones, and any applicable revisions to the TMDL effectiveness monitoring plan.
January 11, 2012	Each jurisdictional group shall demonstrate that 50% of the group's total drainage area served by the storm drain system is effectively meeting the dry-weather waste load allocations and 25% of the group's total drainage area served by the storm drain system is effectively meeting the wet-weather waste load allocations.
January 11, 2020	Each jurisdictional group shall demonstrate that 75% of the group's total drainage area served by the storm drain system is effectively meeting the dry-weather WLAs.
January 11, 2024	Each jurisdictional group shall demonstrate that 100% of the group's total drainage area served by the storm drain system is effectively meeting the dry-weather WLAs and 50% of the group's total drainage area served by the storm drain system is effectively meeting the wet-weather WLAs.
January 11, 2028	Each jurisdictional group shall demonstrate that 100% of the group's total drainage area served by the storm drain system is effectively meeting both the dry-weather and wet-weather WLAs.

Table 7-13.3 Los Angeles River and Tributaries Metals TMDL: Jurisdictional Groups

Jurisdictional Group	Responsible Jurisdictions & Agencies		Subwatershed(s)
1	Carson County of Los Angeles City of Los Angeles Compton Huntington Park Long Beach Lynwood Signal Hill Southgate Vernon		Los Angeles River Reach 1 and Compton Creek
2	Alhambra Arcadia Bell Bell Gardens Bradbury Carson Commerce Compton County of Los Angeles Cudahy Downey Duarte El Monte Glendale Huntington Park Irwindale La Canada Flintridge	Long Beach City of Los Angeles Lynwood Maywood Monrovia Montebello Monterey Park Paramount Pasadena Pico Rivera Rosemead San Gabriel San Marino Sierra Madre South El Monte South Pasadena Southgate Temple City Vernon	Los Angeles River Reach 2, Rio Hondo, Arroyo Seco, and all contributing sub watersheds
3	City of Los Angeles County of Los Angeles Burbank Glendale La Canada Flintridge Pasadena		Los Angeles River Reach 3, Verdugo Wash, Burbank Western Channel
4-5	Burbank Glendale City of Los Angeles County of Los Angeles San Fernando		Los Angeles River Reach 4, Reach 5, Tujunga Wash, and all contributing subwatersheds
6	Calabasas City of Los Angeles County of Los Angeles Hidden Hills		Los Angeles River Reach 6, Bell Creek, and all contributing subwatersheds