Attachment B. Station assessment category resulting from each possible MLOE combination

LOE Category Combination	Sediment Chemistry Exposure	Benthic Community Condition	Sediment Toxicity	Station Assessment
1	Minimal	Reference	Nontoxic	Unimpacted
2	Minimal	Reference	Low	Unimpacted
3	Minimal	Reference	Moderate	Unimpacted
4	Minimal	Reference	High	Inconclusive
5	Minimal	Low	Nontoxic	Unimpacted
6	Minimal	Low	Low	Likely unimpacted
7	Minimal	Low	Moderate	Likely unimpacted
8	Minimal	Low	High	Possibly impacted
9	Minimal	Moderate	Nontoxic	Likely unimpacted
10	Minimal	Moderate	Low	Likely unimpacted
11	Minimal	Moderate	Moderate	Possibly impacted
12	Minimal	Moderate	High	Likely impacted
13	Minimal	High	Nontoxic	Likely unimpacted
14	Minimal	High	Low	Inconclusive
15	Minimal	High	Moderate	Possibly impacted
16	Minimal	High	High	Likely impacted
17	Low	Reference	Nontoxic	Unimpacted
18	Low	Reference	Low	Unimpacted
19	Low	Reference	Moderate	Likely unimpacted
20	Low	Reference	High	Possibly impacted
21	Low	Low	Nontoxic	Unimpacted
22	Low	Low	Low	Likely unimpacted
23	Low	Low	Moderate	Possibly impacted
24	Low	Low	High	Possibly impacted
25	Low	Moderate	Nontoxic	Likely unimpacted
26	Low	Moderate	Low	Possibly impacted
27	Low	Moderate	Moderate	Likely impacted
28	Low	Moderate	High	Likely impacted
29	Low	High	Nontoxic	Likely unimpacted
30	Low	High	Low	Possibly impacted
31	Low	High	Moderate	Likely impacted
32	Low	High	High	Likely impacted
33	Moderate	Reference	Nontoxic	Unimpacted
34	Moderate	Reference	Low	Likely unimpacted
35	Moderate	Reference	Moderate	Likely unimpacted
36	Moderate	Reference	High	Possibly impacted
37	Moderate	Low	Nontoxic	Unimpacted
38	Moderate	Low	Low	Possibly impacted
39	Moderate	Low	Moderate	Possibly impacted
40	Moderate	Low	High	Possibly impacted
41	Moderate	Moderate	Nontoxic	Possibly impacted
42	Moderate	Moderate	Low	Likely impacted
43	Moderate	Moderate	Moderate	Likely impacted
44	Moderate	Moderate	High	Likely impacted

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LOE Category Combination	Sediment Chemistry Exposure	Benthic Community Condition	Sediment Toxicity	Station Assessment
45	Moderate	High	Nontoxic	Possibly impacted
46	Moderate	High	Low	Likely impacted
47	Moderate	High	Moderate	Likely impacted
48	Moderate	High	High	Likely impacted
49	High	Reference	Nontoxic	Likely unimpacted
50	High	Reference	Low	Likely unimpacted
51	High	Reference	Moderate	Inconclusive
52	High	Reference	High	Likely impacted
53	High	Low	Nontoxic	Likely unimpacted
54	High	Low	Low	Possibly impacted
55	High	Low	Moderate	Likely impacted
56	High	Low	High	Likely impacted
57	High	Moderate	Nontoxic	Likely impacted
58	High	Moderate	Low	Likely impacted
59	High	Moderate	Moderate	Clearly impacted
60	High	Moderate	High	Clearly impacted
61	High	High	Nontoxic	Likely impacted
62	High	High	Low	Likely impacted
63	High	High	Moderate	Clearly impacted
64	High	High	High	Clearly impacted

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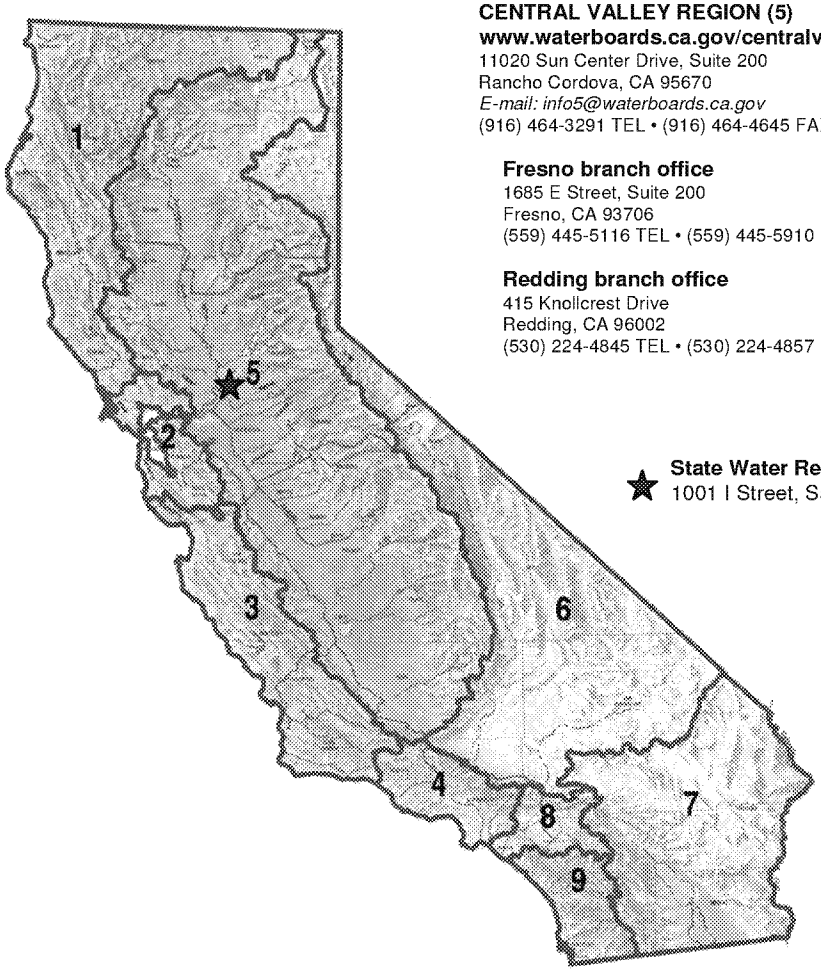

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Arnold Schwarzenegger, Governor

California Environmental Protection Agency
Linda S. Adams, Secretary

State Water Resources Control Board
Charles R. Hoppin, Chair

APPENDIX H:

ATTACHMENT A TO RESOLUTION NO. R11-008

Amendment to the Water Quality Control Plan – Los Angeles Region

to Incorporate the

Total Maximum Daily Load for Toxic Pollutants in Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters

Adopted by the California Regional Water Quality Control Board, Los Angeles Region on May 5, 2011

Amendments

Table of Contents
Add:

Chapter 7. Total Maximum Daily Loads (TMDLs)
7-40 Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL

List of Figures, Tables, and Inserts
Add:

Chapter 7. Total Maximum Daily Loads (TMDLs)
Tables
7-40 Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL
7-40.1 Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL – Elements
7-40.2 Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL – Implementation Schedule

Chapter 7. Total Maximum Daily Loads (TMDLs)
Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on **May 5, 2011.**

This TMDL 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].**
This TMDL is effective on **[Insert date].**

The elements of the TMDL are presented in Table 7-40.1 and the Implementation Plan in Table 7-40.2.

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7-40.1 Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL – Elements

TMDL Element	Regulatory Provisions
Problem Statement	The waters of Dominguez Channel and the Greater Los Angeles and Long Beach Harbor area[1] are impaired by heavy metals and organic pollutants. These water bodies are included on the State's Clean Water Act 303(d) impaired waters list for one or more of the following pollutants: cadmium, chromium, copper, mercury, lead, zinc, chlordane, dieldrin, toxaphene, DDT, PCBs, certain PAH compounds, benthic community effects and toxicity. These impairments exist in one or more environmental media—water, sediment, or tissue. Impairments in fish tissue are for DDT, PCBs, toxaphene, chlordane and dieldrin. Beneficial uses designated in these waters to protect aquatic life include the marine habitat use (MAR) and rare, threatened or endangered species habitat use (RARE). In addition, the estuaries (EST) are recognized as areas for spawning, reproduction and/or early development (SPWN), migration of aquatic organisms (MIGR), and wildlife habitat (WILD). Dominguez Channel also has an existing designated use of warm freshwater habitat (WARM) and the Los Angeles River Estuary has the designated use of wetland habitat (WET). Beneficial uses associated with human use of these waters include recreational use for water contact (REC1), non-contact water recreation (REC2), industrial service supply (IND), navigation (NAV), commercial and sport fishing (COMM), and shellfish harvesting (SHELL). Because of the impairments, these waterbodies fail to fully support the designated beneficial uses. The goal of this TMDL is to protect and restore fish tissue, water and sediment quality in Dominguez Channel and Greater Los Angeles and Long Beach Harbor waters by remediating contaminated sediment and controlling the sediment loading and accumulation of contaminated sediment in the Harbors.
Numeric Targets	Applicable water quality objectives for this TMDL are narrative objectives for Chemical Constituents, Bioaccumulation, Pesticides, and Toxicity in the Basin Plan and the numeric water quality criteria promulgated in 40 CFR section 131.38 (the California Toxics Rule (CTR)). In addition, sediment condition objectives were determined using the State Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1 Sediment Quality (SQO Part 1) and the sediment quality guidelines.[2] The following tables provide the water, sediment and fish tissue targets for the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDLs. **<u>Water Column Targets</u>** Water targets were determined by this Basin Plan and the California Toxics Rule (CTR). Site-specific conversion factors were developed to convert CTR acute dissolved metal criteria to total recoverable metals using *The Metals Translator Guidance for Calculating a Total Recoverable Permit Limit From a Dissolved Criterion* EPA 823-B-96-007. Because exceedances of CTR criteria were only observed in freshwaters of the Dominguez

[1] Dominguez Channel includes the Dominguez Channel Estuary and Torrance Lateral Channel and Greater Los Angeles/Long Beach Harbor waters include Inner and Outer Harbor, Main Channel, Consolidated Slip, Southwest Slip, Fish Harbor, Cabrillo Marina, Inner Cabrillo Beach, Los Angeles River Estuary, and San Pedro Bay.

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TMDL Element	Regulatory Provisions

Channel during wet weather, targets are set for wet weather only. Site-specific wet-weather conversion factors were calculated using paired dissolved and total metals data and the statistical method outlined in the Guidance.

Dissolved Metals and Organic Compounds Targets

Pollutant	Criteria for the Protection of Aquatic Life (µg/L)				Criteria for Protection of Human Health (µg/L) For consumption of:
	Freshwater		Saltwater		Organisms only
	Acute	Chronic	Acute	Chronic	
Dissolved Metals					
Copper	6.99*	4.95*	4.8	3.1	-
Lead	30.14*	1.17*	210	8.1	-
Zinc	65.13*	65.66*	90	81	-
Mercury	-	-	-	-	0.051
Organic Compounds					
Chlordane	n/a	n/a	0.09	0.004	0.00059
4,4'-DDT	1.1	0.001	0.13	0.001	0.00059
Total PCBs	-	0.014	-	0.03	0.00017
Benzo[a]pyrene**	-	-	-	-	0.049
Dieldrin	0.24	0.056	0.71	0.0019	0.00014

*Freshwater aquatic life criteria for Cu, Pb and Zn are expressed as a function of total hardness (mg/L) in the water body. Values presented correspond to median hardness from 2002 to 2010 of 50 mg/L based upon Los Angeles County Department of Public Works data from Station ID S28 (n = 35).
- means that no criteria were established for California.

**CTR human health criteria were not established for total PAHs. Therefore, the CTR criteria for individual PAHs of 0.049 µg/L are applied individually to benzo(a)pyrene, benzo(a)anthracene, and chrysene. The CTR human health criterion for Pyrene is 11,000 µg/L. Other PAH compounds in the CTR shall be screened as part of the TMDL monitoring.

Total Recoverable Metals, Freshwater Targets

Metal	Acute Dissolved CTR Criteria	Conversion Factor*	Acute Total Recoverable Metals
Copper	6.99	0.722	9.7
Lead	30.14	0.706	42.7
Zinc	65.13	0.935	69.6

* Site-specific conversion factors were calculated using Los Angeles County Department of Public Works data from Station ID S28 using the data record 2002-2010 (n = 35), which had a median hardness of 50 mg/L. Site-specific conversion factors maybe recalculated based on updated data at the time of permit issuance, modification, or renewal.

[2] Long, ER, LJ Field and DD MacDonald. 1998. *Predicting Toxicity in Marine Sediments with Numerical Sediment Quality Guidelines*, *Environ. Toxicol. Chem.* **17**:4, 714-727. MacDonald, DD, CG Ingersoll and TA Berger. 2000. *Development and evaluation of consensus-based sediment quality guidelines for freshwater ecosystems*. Arch. Environ. Contam. Toxicol. **39**:20-31.

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TMDL Element	Regulatory Provisions

Freshwater toxicity target: This TMDL also establishes a numeric toxicity target of 1.0 toxicity unit, chronic (1.0 TUc) to address toxicity.

TU_c = Toxicity Unit, chronic = 100/NOEC (no observable effects concentration)

Targets based on new toxicity criteria that achieve the narrative Toxicity objective of Chapter 3 of this Basin Plan may substitute for the TU_c of 1, when those new criteria are adopted and in effect.

Sediment Targets

Sediment targets were determined by the narrative standards of this Basin Plan, the SQO Part 1 and the sediment quality guidelines of Long et al. (1998) and MacDonald et al. (2000), which are recommended by the State Listing Policy. The fresh water sediment numeric targets for Dominguez Channel are based on the freshwater Threshold Effect Concentration (TEC) sediment guidelines compiled by the National Oceanic and Atmospheric Administration (NOAA) in the Screening Quick Reference Tables (SQuiRTs). The marine sediment quality guidelines of Effect Range Low (ERL), also from NOAA SQuiRTs, were used to establish the numeric targets for marine sediment for the greater Los Angeles and Long Beach Harbor waters. These TECs and ERLs are set as the sediment quality thresholds for the calculation of loading capacity and allocations. This TMDL anticipates that revisions to specific sediment quality targets may be determined by development of site-specific sediment quality values (SQV).

Sediment targets

Metals	Freshwater Sediment (mg/kg)	Marine Sediment (mg/kg)
Cadmium	n/a	1.2
Copper	31.6	34
Lead	35.8	46.7
Mercury	n/a	0.15
Zinc	121	150
Chromium	n/a	81
Organics	**Marine Sediment (µg/kg)**	
Chlordane, total	0.5	
Dieldrin	0.02	
Toxaphene	0.10*	
Total PCBs	22.7	
Benzo[a]anthracene	261	
Benzo[a]pyrene	430	
Chrysene	384	
Pyrene	665	
2-methylnaphthalene	201	
Dibenz[a,h]anthracene	260	
Phenanthrene	240	

TMDL Element	Regulatory Provisions

Hi MW PAHs	1700
Lo MW PAHs	552
Total PAHs	4,022
Total DDT	1.58

*Toxaphene value from *Technical Guidance for Screening Contaminated Sediments*, New York State, Department of Environmental Conservation, Division of Fish, Wildlife and Marine Resources (1999), assumes 1% TOC.
n/a indicates that a fresh water sediment target is not established in this TMDL for this constituent, since impairments for the constituent is in saltwater only.

These sediment targets are not intended to be used as 'clean-up standards' for navigational, capital or maintenance dredging or capping activities; rather they are long-term sediment concentrations that should be attained after reduction of external loads, targeted actions addressing internal reservoirs of contaminants, and environmental decay of contaminants in sediment. In addition, the categories designated in the SQO Part 1 as **Unimpacted** and **Likely Unimpacted** by the interpretation and integration of multiple lines of evidence shall be considered as the protective narrative objective for sediment toxicity and benthic community effects. The thresholds established in the SQO Part 1 are based on statistical significance and magnitude of the effect. Therefore, this TMDL implicitly includes sediment toxicity and benthic community targets by its use of the SQO Part 1.

Fish Tissue and Associated Sediment Targets

Fish tissue targets were determined from *Fish Contaminant Goals and Advisory Tissue Levels for Common Contaminants in California Sport Fish: Chlordane, DDTs, Dieldrin, Methylmercury, PCBs, Selenium, and Toxaphene*, developed by OEHHA (2008) to assist agencies in developing fish tissue-based criteria for pollution mitigation or elimination and to protect humans from consumption of contaminated fish. Associated sediment targets required to achieve the fish tissue targets were determined from several sources depending on the contaminant.

Fish Tissue and Associated Sediment Targets

Pollutant	Fish Tissue Target (µg/kg wet)	Associated Sediment Target (µg/kg dry)
Chlordane	**5.6**	**1.3** [b]
Dieldrin	**0.46**	**n/a**
Total DDT	**21**	**1.9** [b]
Total PCBs	**3.6**	**3.2** [c]
Total PAHs	**5.47** [a]	**n/a**
Toxaphene	**6.1**	**0.1** [d]

[a] Total PAHs in fish from EPA screening value.
[b] Chlordane and total DDT associated sediment values from SFEI (2007) "Indicator development and framework for assessing indirect effects of sediment contaminants", SFEI Contribution #524.
[c] Total PCBs - associated sediment target from Gobas, F. and J. Arnot (2010) "Food Web Bioaccumulation Model for Polychlorinated Biphenyls in San Francisco Bay, California, USA", ET&C **29**:6, 1385-95.
[d] Toxaphene value from New York State (1999), assumes 1% TOC.
n/a indicates that an associated sediment target is not established in this TMDL at this time because there is no BSAF in literature to use in the calculation. If BSAFs are developed in the future, associated sediment targets for dieldrin and/or PAHs may be added during reconsideration of the TMDL.

Source Analysis	Monitoring data from NPDES discharges and land use runoff coefficients were used to estimate the magnitude of metals, organo-chlorine pesticides, PCBs, and PAHs loads to Dominguez

TMDL Element	Regulatory Provisions
	Channel and Greater Los Angeles and Long Beach Harbor waters. PCBs, DDT, dieldrin, and chlordane are legacy pollutants for the most part, yet, they remain present in the environment, bound to fine-grained particles. Because they are legacy pollutants and are subject to environmental decay, their concentrations are gradually decreasing over time. When these particles become waterborne, the chemicals are ferried to new locations. Urban runoff and rainfall higher in the watersheds mobilize the particles, which are then washed into storm drains and channels that discharge to the Dominguez Channel and greater Harbor waters. Metals and PAHs are currently generated or deposited in the watersheds and are then washed into storm drains and channels that discharge to the Dominguez Channel and greater Harbor waters. Briefly there are several categories of pollutant sources to the waters of concern in these TMDLs. Point sources include stormwater and urban runoff (MS4) and other NPDES discharges, including but not limited to Port operations, Terminal Island Water Reclamation Plant (TIWRP), refineries, and generating plants. Nonpoint sources include existing contaminated sediments and direct (air) deposition. **Dominguez Channel waters:** The major point sources of organo-chlorine pesticides, PCBs, and metals into Dominguez Channel are stormwater and urban runoff discharges. Nonpoint sources include atmospheric deposition and fluxes from contaminated sediments into the overlying water. Current loads of metals into Dominguez Channel were estimated using Loading Simulation Program in C++ (LSPC) model output from simulated flows for 1995-2005. Monitoring data from NPDES discharges and land use runoff coefficients were analyzed along with Channel stream flow rates to estimate the magnitude of metal loadings. In recognition of the wide variety of stream flow rates generated by various rainfall conditions, flow duration curves were utilized to analyze the metals loading during wet weather. **Greater Los Angeles and Long Beach Harbor waters:** A variety of activities over the past decades in the four contributing watersheds (Dominguez Channel, Los Angeles River, San Gabriel River and the nearshore watershed) and in the Harbors themselves have contributed to the sediment contamination. The contaminated sediments are a reservoir of historically deposited pollutants. Stormwater runoff from manufacturing, military facilities, fish processing plants, wastewater treatment plants, oil production facilities, and shipbuilding or repair yards in both Ports discharged untreated or partially treated wastes into Harbor waters. Current activities also contribute pollutants to Harbor sediments. In particular, stormwater runoff from port facilities, commercial vessels (ocean going vessels and harbor craft), recreational vessels, and the re-suspension of contaminated sediments via natural processes and/or anthropogenic activities including (ship) propeller wash within the Ports also contributes to transport of pollutants within the Harbors. Loadings from the four contributing watersheds are also potential sources of metals, pesticides, PCBs, and PAHs to the Harbors. The major nonpoint source of pesticides and PCBs to the greater Harbor waters is the current sediments. The re-suspension of these sediments contributes to the fish tissue impairments. In addition, atmospheric deposition may be a potential nonpoint source of metals to the watershed, through either direct deposition or indirect deposition.

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TMDL Element	Regulatory Provisions
	Current loading of metals, PAHs, DDT and PCBs to contaminated sediments within the Dominguez Channel Estuary and Greater Harbor waters was estimated using monitoring data from special studies and water body surface area for air deposition; discharge results for refineries and TIWRP; and Environmental Fluid Dynamics Code (EFDC) model output for 2002-2005. Model inputs included the existing average sediment concentration in the top 5 cm of bed sediments and the total sediment deposition rate per waterbody.
Linkage Analysis	The linkage analysis connects pollutant loads to the numeric targets and protection of beneficial uses of Dominguez Channel and Greater Los Angeles and Long Beach Harbor waters. To represent the linkage between source contributions and ambient water and sediment response, two dynamic water quality models were developed to simulate source loadings and transport of the listed pollutants in Dominguez Channel and Greater Los Angeles and Long Beach Harbor waters. The Environmental Fluid Dynamics Code (EFDC) and Loading Simulation Program in C++ (LSPC) models were selected to simulate the pollutants in this TMDL. **LSPC for freshwater loadings of metals and total PAHs, DDT, and PCBs.** LSPC was developed for Dominguez Channel based on information initially provided by SCCWRP for this watershed. In addition, Los Angeles River and San Gabriel River LSPC models were updated from earlier TMDL models. Model development throughout the Los Angeles Region relies on Event Mean Concentrations (EMC) as well as simulated flows to estimate pollutant loadings. Flow data records for 1995-2005 were used to calibrate LSPC models for each watershed; similar simulation time frames were used to generate simulated flows for each watershed. Dominguez Channel freshwater metals TMDLs examined only wet weather flows; however, LSPC output for dry and wet weather conditions was applied to all estuarine and marine receiving waters. The nearshore watershed was analyzed and modeled using LSPC by breaking it into 67 subwatersheds that discharge directly to the Greater Los Angeles and Long Beach Harbor waters. These sub-watersheds were then aggregated by receiving waterbody; e.g. nearshore contributions to Inner Harbor consisted of stormdrains and surface (sheet) flows that discharge directly into the Inner Harbor. The table below shows total loads from the four contributing watersheds to the Greater Harbor waters. Overall, the Los Angeles River is the largest freshwater contributor of pollutants to the greater Harbor waters; flows from the Los Angeles River primarily impact water quality in eastern San Pedro Bay. The Inner Harbor receives the bulk of the loading from the nearshore watershed. Comparative Watershed Loading to Greater Harbor Waters

Contaminant	LSPC Modeled Existing Loading by Watershed (1995-2005)							
	Dominguez Channel		Los Angeles River		San Gabriel River		Nearshore Watershed	
	Percent of Total Loading	Average Daily Load (kg/day)	Percent of Total Loading	Average Daily Load (kg/day)	Percent of Total Loading	Average Daily Load (kg/day)	Percent of Total Loading	Average Daily Load (kg/day)
Wet Conditions								
Sediment	5.6%	1.88E+05	72.0%	2.79E+06	20.4%	4.90E+05	1.9%	6.54E+04
Total Copper	4.3%	3.58E+01	81.1%	7.85E+02	12.5%	7.51E+01	2.1%	1.78E+01
Total Lead	3.0%	2.08E+01	71.5%	5.67E+02	23.3%	1.15E+02	2.2%	1.53E+01

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TMDL Element	Regulatory Provisions

Total Zinc	5.0%	3.56E+02	72.2%	5.89E+03	20.2%	1.02E+03	2.6%	1.84E+02
Total DDT	9.2%	2.20E-02	89.5%	2.46E-01	0.7%	1.15E-03	0.7%	1.59E-03
Total PAH	8.0%	2.04E+00	70.2%	2.07E+01	16.1%	2.95E+00	5.8%	1.50E+00
Total PCB	2.3%	1.38E-02	97.5%	6.86E-01	0.1%	3.11E-04	0.2%	9.92E-04
Dry Conditions								
Sediment	0.7%	8.57E+01	19.0%	2.27E+03	80.1%	1.01E+04	0.1%	1.54E+01
Total Copper	2.6%	2.56E-01	48.7%	4.69E+00	40.8%	4.18E+00	8.0%	7.78E-01
Total Lead	0.9%	3.48E-02	19.8%	7.86E-01	72.9%	3.07E+00	6.5%	2.59E-01
Total Zinc	0.9%	5.65E-01	30.4%	1.90E+01	62.6%	4.15E+01	6.2%	3.89E+00
Total DDT	7.7%	1.90E-05	83.0%	2.01E-04	9.3%	2.38E-05	0.0%	2.88E-10
Total PAH	6.8%	7.06E-02	62.7%	6.39E-01	30.4%	3.29E-01	0.0%	4.18E-05
Total PCB	1.8%	1.06E-05	97.1%	5.59E-04	1.1%	6.43E-06	0.0%	1.45E-10

The EFDC was used to model hydrodynamics and water and sediment quality of the greater Los Angeles and Long Beach Harbor waters. The EFDC model applied a simulated time period of 2002-2005. The model was calibrated with numerous sediment monitoring studies, including Los Angeles and Long Beach Harbor's 2006 sediment characterization study, which yielded sediment, porewater and overlying water concentrations as well as results from highly sensitive monitoring devices for detecting DDT, PCBs, and PAHs in the water column. The EFDC model also considered ocean water (outside breakwater) conditions and fine and coarse sediment transport and deposition. Ultimately the EFDC model was integrated with LSPC output – hourly for three watersheds, daily for nearshore watersheds – to model metals, PAHs, PCBs, and DDT (total) sediment concentrations in the receiving waters. The annual total (clean) sediment deposition rate for the top 5 cm (active sediment layer) was multiplied by the corresponding existing sediment pollutant level or the TMDL sediment quality target to yield pollutant load within each waterbody.

Annual (clean) Sediment Deposition Rates per (salt)Waterbody

Waterbody Name	TMDL Zone	Area (acres)[1]	Area (m^2)[1]	Total Deposition (kg/yr)[2]
Dominguez Channel Estuary	01	140	567,900	2,470,201
Consolidated Slip	02	36	147,103	355,560
Inner Harbor - POLA	03	1,539	6,228,431	1,580,809
Inner Harbor - POLB	08	1,464	5,926,130	674,604
Fish Harbor	04	91	368,524	30,593
Cabrillo Marina	05	77	310,259	38,859
Cabrillo Beach	06	82	331,799	27,089
Outer Harbor - POLA	07	1,454	5,885,626	572,349
Outer Harbor - POLB	09	2,588	10,472,741	1,828,407
Los Angeles River Estuary	10	207	837,873	21,610,283
San Pedro Bay	11	8,173	33,073,517	19,056,271

[1] Area obtained from GIS layer of the 2006 303(d) list. Available at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_lists2006_gis.shtml

[2] Sediment deposition rates were calculated by approximating the average mass of total sediment (fine and coarse particles) deposited in each waterbody annually based on 2002-2005 EFDC output. Sediment flux for each grid cell,

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	which is dependent on watershed inputs as well as tidal movements between waterbodies, was obtained from the EFDC model output. These values were summarized across each TMDL waterbody, resulting in the average deposition of both sediment fines and sand by waterbody. The total deposition rate is simply the sum of the rates for fines and sand and this value is the waterbody-specific average annual (clean) sediment deposition rate. The EFDC model was used to evaluate several management scenarios and relative contributions from various inputs to support water quality management decisions in Dominguez Channel and Greater Los Angeles and Long Beach Harbor waters. Preliminary results for two scenarios indicate that reducing freshwater input loads may not be sufficient to achieve target concentrations in water and sediments; thus reductions in contaminant levels in bed sediments may be required.
Loading Capacity	Loading capacity was calculated for both Dominguez Channel (wet weather) and in the Dominguez Channel Estuary and Greater Harbor waters (dry and wet weather). <u>Dominguez Channel wet weather metals TMDLs</u>: During wet weather, the loading capacity is a function of the volume of water in the Channel. Given the variability in wet-weather flows, the concept of a single critical flow was not justified. Instead, a load duration curve approach was used to establish the wet-weather loading capacity. The load duration curve was developed by multiplying the wet-weather flows by the in-stream numeric targets. The resulting curves identify the allowable load for a given flow. The wet-weather TMDLs for copper and zinc are defined by these load duration curves. Loading capacities were calculated by multiplying the daily volume by the appropriate numeric water quality target or, in the case of lead, the observed existing average concentration. The wet-weather loading capacity applies to any day when the maximum daily flow measured at a location within the Dominguez Channel is equal to or greater than 62.7 cfs, which is the 90th percentile of annual flow rates from estimated/modeled flow rates. The freshwater toxicity TMDL is equal to 1 TUc. <u>Dominguez Channel Estuary and Greater Harbor waters, metals and organics in sediment TMDLs:</u> Loading capacities for Dominguez Channel Estuary and Greater Harbor waters were calculated by estimating the sediment load (based on modeled sediment deposition rates) multiplied by the sediment quality target. The active sediment layer was defined as the top 5 cm of sediment; the habitat of approximately 95% of benthic organisms. In addition, chlordane, dieldrin, toxaphene and mercury TMDLs were defined for specific waterbodies as equivalent to the concentration-based sediment quality target.
Waste Load and Load Allocations	Final waste load allocations (WLA) are assigned to stormwater dischargers (MS4, California Department of Transportation (Caltrans), general construction and general industrial dischargers), and other NDPES dischargers. Final load allocations (LAs) are assigned to direct atmospheric deposition and bed sediments in both wet and dry weather. Dominguez Channel freshwater allocations are set for wet weather only because exceedances have only been observed in wet weather. Mass-based allocations have been set where sufficient data was available to calculate mass-based allocations, otherwise, concentration-based allocations have

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	been set. Interim WLA and LA are intended to not allow any decrease in current facility performance. Interim allocations shall be met upon the effective date of the TMDL. Interim and final WLAs and LAs shall be included in permits and/or other Board orders in accordance with state and federal regulations and guidance. **INTERIM ALLOCATIONS** **1. Dominguez Channel Freshwater Interim Allocations** **A. Freshwater Toxicity Interim Allocation wet weather** An interim allocation of 2 TUc applies to each source, including all point sources assigned a WLA and all nonpoint sources assigned a LA. The freshwater toxicity interim allocation is set at 2 TUc based on current monitoring results performed by the Los Angeles County Department of Public Works, which have shown average values of less than 2 TUc. The fresh water interim allocation shall be implemented as a trigger requiring initiation and implementation of the TRE/TIE process as outlined in US EPA's "Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System Program" (2000) and current NPDES permits. The fresh water interim allocation shall be implemented in accordance with US EPA, State Board and Regional Board resolutions, guidance and policy at the time of permit issuance, modification or renewal. **B. Freshwater Metals Interim Allocations - wet weather only** Interim water allocations are assigned to stormwater dischargers (MS4, Caltrans, general construction and general industrial stormwater dischargers) and other NPDES dischargers. Interim water allocations are based on the 95th percentile of total metals data collected from January 2006 to January 2010 using a log-normal distribution. The use of 95th percentile values to develop interim allocations is consistent with NPDES permitting methodology. Regardless of the interim allocations below, permitted dischargers shall ensure that effluent concentrations and mass discharges do not exceed levels that can be attained by performance of the facility's treatment technologies existing at the time of permit issuance, reissuance or modification. Concentration-based Dominguez Channel and Torrance Lateral freshwater interim metal allocations **Total Copper** / **Total Lead** / **Total Zinc** **allocation (µg/L)**: 207.51 / 122.88 / 898.87 **2. Dominguez Channel Estuary and Greater Los Angeles and Long Beach Harbor Waters:** Interim sediment allocations are assigned to stormwater dischargers (MS4, Caltrans, general construction and general industrial stormwater dischargers) and other NPDES dischargers. Interim sediment allocations are based on the 95th percentile of sediment data collected from 1998-2006. The use of 95th percentile values to develop interim allocations is consistent with NPDES permitting methodology. For waterbodies where the 95th percentile value has been equal to, or lower than, the numeric target, then the interim allocation is set equal to the final allocation. Regardless of the interim sediment allocations below, permitted dischargers shall

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ensure that effluent concentrations and mass discharges do not exceed levels that can be attained by performance of the facility's treatment technologies existing at the time of permit issuance, reissuance or modification.

Sediment, interim concentration-based allocations

Waterbody	Pollutant (mg/kg sediment)					
	Copper	Lead	Zinc	DDT	PAHs	PCBs
Dominguez Channel Estuary	220.0	510.0	789.0	1.727	31.60	1.490
Long Beach Inner Harbor	142.3	50.4	240.6	0.070	4.58	0.060
Los Angeles Inner Harbor	154.1	145.5	362.0	0.341	90.30	2.107
Long Beach Outer Harbor (inside breakwater)	67.3	**46.7**	**150**	0.075	**4.022**	0.248
Los Angeles Outer Harbor (inside breakwater)	104.1	**46.7**	**150**	0.097	**4.022**	0.310
Los Angeles River Estuary	53.0	**46.7**	183.5	0.254	4.36	0.683
San Pedro Bay Near/Off Shore Zones	76.9	66.6	263.1	0.057	**4.022**	0.193
Los Angeles Harbor - Cabrillo Marina	367.6	72.6	281.8	0.186	36.12	0.199
Los Angeles Harbor - Consolidated Slip	1470.0	1100.0	1705.0	1.724	386.00	1.920
Los Angeles Harbor - Inner Cabrillo Beach Area	129.7	**46.7**	163.1	0.145	**4.022**	0.033
Fish Harbor	558.6	116.5	430.5	40.5	2102.7	36.6

Numbers in **bold** are also the final allocation.

Compliance with the interim concentration-based sediment allocations may be demonstrated via any one of three different means:

1. Demonstrate that the sediment quality condition of **Unimpacted** or **Likely Unimpacted** via the interpretation and integration of multiple lines of evidence as defined in the SQO Part 1, is met; or
2. Meet the interim allocations in bed sediment over a three-year averaging period; or
3. Meet the interim allocations in the discharge over a three-year averaging period.

FINAL ALLOCATIONS

1. Dominguez Channel Freshwater Allocations

A. **Freshwater Toxicity Allocation in wet weather**

A final allocation of 1 TUc, or its equivalent based on any Statewide Toxicity Policy, applies to each source, including all point sources assigned a WLA and all nonpoint sources assigned a LA.

B. **Freshwater Metals Allocations in wet weather**

Wet-weather allocations are assigned to Dominguez Channel and all upstream reaches and tributaries of Dominguez Channel (above Vermont Avenue).

Allocations are assigned to both point (WLA) and nonpoint sources (LA). A mass-based LA has been developed for direct atmospheric deposition. A mass-based waste load allocation (WLA) is divided between the MS4 permittees and Caltrans under its NPDES stormwater

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permit by subtracting the other stormwater or NPDES waste load allocations, air deposition and the margin of safety from the total loading capacity. Concentration-based WLAs are assigned for the other point sources including but not limited to General Construction, General Industrial, Power Generating stations, minor permits and irregular dischargers, and other NPDES dischargers.

Mass-based Dominguez Channel Wet-weather Final Allocations

	Total Copper (g/day)	Total Lead (g/day)	Total Zinc (g/day)
TMDL	1,485.1	6,548.8	10,685.5
Waste Load Allocations:			
MS4 – LA County Permittees	1,300.3	5,733.7	9,355.5
MS4 - Caltrans	32.3	142.6	232.6
Load Allocations:			
Air Deposition	4.0	17.7	28.9
Margin of Safety			
MOS (10%)	148.5	654.9	1,069.6

Based on total recoverable metal targets, a hardness of 50 mg/L, and 90th percentile of annual flow rates (62.7 cfs) in Dominguez Channel. Recalculated mass-based allocations using ambient hardness and flow rate at the time of sampling are considered consistent with the assumptions and requirements of these waste load allocations. In addition to the wasteload allocations above, samples collected during flow conditions less than the 90th percentile of annual flow rates must demonstrate that the acute and chronic hardness dependent water quality criteria provided in the CTR are achieved.

Concentration-based Dominguez Channel Wet-weather Final Allocations (µg/L)

	Total **Copper**	Total **Lead**	Total **Zinc**
Other stormwater/NPDES	**9.7**	**42.7**	**69.7**

Based on hardness = 50 mg/L. Recalculated concentration-based allocations using ambient hardness at the time of sampling are considered consistent with the assumptions and requirements of these waste load allocations. In addition to the wasteload allocations above, samples collected during flow conditions less than the 90th percentile of annual flow rates must demonstrate that the acute and chronic hardness dependent water quality criteria provided in the CTR are achieved.

2. Torrance Lateral Freshwater and Sediment Allocations

Torrance Lateral is a subwatershed that flows directly into Dominguez Channel Estuary. Allocations are assigned to the ExxonMobil Torrance Refinery and all other dischargers. Mass-based sediment allocations are assigned to the ExxonMobil Torrance Refinery. This allocation has been developed based on an average discharge frequency of once every 7 years. If, at the end of Phase I of implementation, due to an increase in discharge frequency or volumes, it appears that the allocations are not supportive of the TMDL, these allocations may be revised. Sediment waste load allocations are assigned to all other dischargers to Torrance Lateral equal to the concentration-based sediment targets.

Torrance Lateral Wet-weather Waste Load Allocations and Sediment Waste Load Allocations, concentration-based

Media	Total Copper	Total Lead	Total Zinc
Water (unfiltered) (µg/L)	9.7	42.7	69.7
Sediment (mg/kg dry)	31.6	35.8	121

Hardness = 50 mg/L. Recalculated concentration-based allocations using ambient hardness at the time of sampling are considered consistent with the assumptions and requirements of these

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waste load allocations. In addition to the wasteload allocations above, samples collected during flow conditions less than the 90th percentile of annual flow rates must demonstrate that the acute and chronic hardness dependent water quality criteria provided in the CTR are achieved.

Waste Load Allocations for ExxonMobil Torrance Refinery into Torrance Lateral, mass-based

Media	Total Copper	Total Lead	Total Zinc
Water (unfiltered) (kg/yr)	1.36	5.98	9.75

Based on Q = 3.7 MGD for 7 days/year; and total metals targets
No allocation for PAHs is assigned to ExxonMobil; however, discharges should not exceed existing water quality criteria for those compounds and monitoring shall continue.

Compliance with the freshwater metals allocations for Dominguez Channel and Torrance Lateral may be demonstrated via any one of three different means:
a. Final allocations are met.
b. CTR total metals criteria are met instream.
c. CTR total metals criteria are met in the discharge.

Dominguez Channel Estuary and Greater Harbor Waters Allocations

Concentration-based WLAs for point sources in Dominguez Channel Estuary and Greater Harbor Waters (including refineries) for metals, PAHs, and bioaccumulative compounds in water.

Non-MS4 point sources such as General Construction, General Industrial, individual industrial permittees, including power generating stations, minor permits and irregular dischargers into Dominguez Channel Estuary and Greater Harbor Waters are assigned concentration-based allocations. Mass-based WLA for other refineries based on appropriate data maybe considered during the TMDL reconsideration. (Refineries which have provided discharge flow data along with monitoring results are assigned mass-based allocations, whereas other refineries are assigned concentration-based allocations because no discharge flow data has been provided.) Any future minor NPDES permits or enrollees under a general NPDES permit are also assigned the concentration-based waste load allocations. The allocations are set equal to the saltwater targets for metals and equal to the human health targets for the organic compounds in CTR. The averaging period for the concentration-based WLAs shall be consistent with that specified in the regulation establishing the criterion or objective or relevant implementation guidance published by the establishing agency.

Receiving (salt) Water Column Concentration-Based Waste Load Allocations

Constituents	Copper* (µg/L)	Lead* (µg/L)	Zinc* (µg/L)	PAHs (µg/L)	Chlordane (µg/L)	4,4'-DDT (µg/L)	Dieldrin (µg/L)	Total PCBs (µg/L)
Dominguez Channel Estuary	3.73	8.52	85.6	0.049**	0.00059	0.00059	0.00014	0.00017
Greater Harbor Waters	3.73	8.52	85.6			0.00059		0.00017

* Total Concentration-based WLAs for metals are converted from saltwater dissolved CTR criteria using CTR saltwater default translators.
** CTR human health criteria were not established for total PAHs. Therefore, the CTR criterion for individual PAHs of 0.049 µg/L is applied individually to benzo(a)anthracene, benzo(a)pyrene, and chrysene. The CTR criterion for

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	Pyrene of 11,000 µg/L is assigned as an individual WLA to Pyrene. Other PAH compounds in the CTR shall be screened as part of the TMDL monitoring. A. **Mass-based allocations for metals and PAHs compounds** Mass-based WLAs are assigned to the Terminal Island Water Reclamation Plant (TIWRP) (based on current discharge volume) and other point sources that have sufficient discharge flow data. Municipal stormwater sources, including the Los Angeles, Long Beach, Caltrans and other MS4 co-permittees, are assigned a mass-based allocation for each permit in place at the time of TMDL adoption, depending on the waterbody. Discharges from the Port of Los Angeles (POLA) and Port of Long Beach (POLB) are grouped with the MS4 dischargers. Mass-based WLAs are applied as annual limits. Individual mass-based WLAs for an individual MS4 Permittee will be calculated based on its share, on an area basis, of the mass-based WLA or other approved approach available at the time final mass-based WLAs are in effect and incorporated into the permit. TMDLs and allocations were developed based on existing sediment concentrations in the active sediment layer defined herein as the top 5 cm of bed sediment concentrations. Load Allocations are assigned to existing sediments and direct air deposition. All allocations assigned to point sources and non-point sources are subtracted from the loading capacity and the remaining allocatable amount is assigned to the bed sediments. Direct air deposition allocations have been set equal to existing load estimates for Cu, Zn and PAHs based on atmospheric monitoring results collected in 2006. The Pb air deposition allocation has been developed by using the SCAQMD air quality Pb criteria (2010) multiplied by the surface area of each waterbody to produce direct air deposition allocations. Future changes to Cu, Zn and PAH air quality criteria, other regulation such as brake pad requirements, or other improvement in air quality may allow for re-calculations of air deposition allocations in future revisions to the TMDL. If, at some point in the future, a nonpoint source is considered subject to NPDES or WDR regulations, then the corresponding load allocation established herein may be considered a waste load allocation for purposes of implementation and enforcement through a permit or other Board order. Air deposition allocations for copper and zinc are based on existing loads; by assuming no direct deposition reductions, this consumes or partially consumes the available loading capacity. As a result, copper and zinc load allocations for bed sediments are negative values, in Inner and Outer Harbor, indicating that copper and zinc loads must be reduced. (Each negative copper and zinc bed sediment allocation may alternatively be interpreted as zero, or not adversely affecting benthic organisms.) The amount of copper and zinc load reduction may be revised based on future monitoring results. If future air deposition studies show lower existing air deposition copper and zinc loads, or if future copper and zinc sediment characterization studies show lower bed sediment copper and zinc loads, then copper and zinc allocations may be adjusted. The bed sediment LA is assigned to the City of Los Angeles (including the Port of Los Angeles), the City of Long Beach (including the Port of Long Beach) and the State Lands Commission. After remediation activities that address existing sediment contamination are complete and when LAs are attained, if bed sediments are recontaminated as a result of continued polluted discharge from the surrounding watersheds, the WLA compliance monitoring data will be used, along with other available information, to assess the relative contribution of watershed dischargers and determine their responsibility and allocations for secondary remediation activities.

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Final, mass-based TMDLs and Allocations for metals and PAHs (Kg/year)

Waterbody/source	*Total Cu*	*Total Pb*	*Total Zn*	*Total PAHs*
DomCh Estuary - TMDL	84	115.4	370.5	9.94
WLAs				
MS4- LA County et al.	22.4	54.2	271.8	0.134
MS4- City of Long Beach	0.6	1.52	7.6	0.0038
MS4- CalTrans	0.384	0.93	4.7	0.0023
LAs				
Air deposition	4.6	0.031	33.2	0.051
Bed sediments	56.0	58.7	53.3	9.7
Current Load	327.6	457.9	1799.0	28.1
Overall reduction	74%	75%	79%	65%
Consolidated Slip - TMDL	12.1	16.6	53.3	1.43
WLAs				
MS4- LA County et al.	2.73	3.63	28.7	0.0058
MS4 CalTrans	0.043	0.058	0.5	0.00009
LAs				
Air deposition	1.2	0.008	8.6	0.013
Bed sediments	8.13	12.9	15.57	1.41
Current Load	92.1	127.3	398.9	11.5
Overall reduction	*87%*	*87%*	*87%*	*88%*
Inner Harbor - TMDL	76.7	105.3	338.3	9.1
WLAs				
MS4- LA County et al.	1.7	34.0	115.9	0.088
MS4 City of Long Beach	0.463	9.31	31.71	0.024
MS4 CalTrans	0.032	0.641	2.18	0.0017
LAs				
Air deposition	97.6	0.67	710	1.08
Bed sediments	(23.1)	60.7	(521.3)	7.88
Current Load	178.4	105.9	542.1	3.524
Overall reduction	57%	1%	38%	0%
Outer Harbor - TMDL	81.6	112.1	360.1	9.7
WLAs				
MS4- LA County et al.	0.91	26.1	81.5	0.105
MS4 City of Long Beach	0.63	18.1	56.4	0.073
MS4 CalTrans	0.0018	0.052	0.162	0.00021
TIWRP = POTW	80.4	183.6	1845	1.056

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	*(CTR & MGD***)*				
	LAs				
	Air deposition *Bed sediments*	17.9 (18.2)	0.9 (116)	108.1 (1731)	1.5 6.964
	Current Load	119.0	66.7	403.4	0.626
	Overall reduction	31%	0%	11%	0%
	Fish Harbor - TMDL	1.04	1.43	4.59	0.123
	WLAs				
	MS4- LA County et al. (POLA)	0.00017	0.54	1.62	0.007
	MS4 CalTrans	0.0000005	0.00175	0.0053	0.000021
	LAs				
	Air deposition *Bed sediments*	0.4 0.636	0.02 0.87	2.4 0.5	0.033 0.084
	Current Load	1.43	0.60	4.2	0.003
	Overall reduction	27%	0%	0%	0%
	Cabrillo Marina -TMDL	1.32	1.81	5.8	0.156
	WLAs				
	MS4- LA County et al. (POLA)	0.0196	0.289	0.74	0.00016
	MS4 CalTrans	0.00019	0.0028	0.007	0.0000016
	LAs				
	Air deposition *Bed sediments*	0.34 1.0	0.017 1.506	2.05 3.03	0.028 0.1285
	Current Load	9.2	2.3	9.14	0.236
	Overall reduction	86%	21%	36%	34%
	San Pedro Bay - TMDL	648	890	2858	76.6
	WLAs				
	MS4- LA County et al.	20.3	54.7	213.1	1.76
	MS4 City of Long Beach	137.9	372.2	1449.7	12.0
	MS4 CalTrans	0.88	2.39	9.29	0.077
	*MS4 Orange County***	9.8	26.4	102.9	0.85
	LAs				
	Air deposition *Bed sediments*	36 442.9	1.8 432	219 865	2.9 59.0
	Current Load	1251	1737	8167	3.63
	Overall reduction	48%	49%	65%	0%
	LA River Estuary - TMDL	735	1009	3242	86.9
	WLAs				
	*LAR Estuary dischargers**	[Cu SQV]	[Pb SQV]	[Zn SQV]	[PAH SQV]

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MS4- LA County et al.	35.3	65.7	242.0	2.31
MS4 City of Long Beach	375.8	698.9	2572.7	24.56
MS4 CalTrans	5.1	9.5	34.8	0.333
LAs				
Air deposition	6.7	0.046	48.9	0.075
Bed sediments	311.8	235.0	343.0	59.6
Current Load	1612	2641	20096	8.72
Overall reduction	54%	62%	84%	0%

Note: Cu and Zn air deposition load allocations are set equal to existing load with no reductions anticipated. Negative (values) for bed sediments indicate that bed sediment loads are expected to be reduced; the amount of reduction may be revised with additional monitoring results.

*SQVs are currently set at ERLs
**Orange County MS4 Permit is issued by the Santa Ana Regional Board. The allocations included, here, for the Seal Beach nearshore area, are for TMDL calculation purposes only, and an allocation is not assigned.
***For TIWRP, the discharge volume at the time of permit modification or reissuance shall be used to calculate the mass-based effluent limitations consistent with the assumptions and requirements of these WLAs. Studies may be conducted to determine the portion of the discharged pollutants that is deposited on bed sediment. The results of any such Executive Officer approved studies shall be evaluated at the TMDL reconsideration to modify these WLAs as appropriate.

Consolidated Slip and Fish Harbor are impaired for mercury in sediments and the average sediment concentration (1.1 mg/kg dry) is significantly higher than the target concentration (0.15 mg/kg dry). Consolidated Slip and Dominguez Channel Estuary are impaired for cadmium in sediments, and Consolidated Slip is also impaired for chromium in sediments.

Final Concentration-Based Sediment WLAs for metals in Dominguez Channel Estuary, Consolidated Slip and Fish Harbor

Concentration-based Sediment WLAs (mg/kg dry sediment)		
Cadmium	Chromium	Mercury
1.2	81	0.15

Mercury applies to both Consolidated Slip and Fish Harbor; Cd applies to Dominguez Channel Estuary and Consolidated Slip, and Cr applies to Consolidated Slip only.

Compliance with these sediment TMDLs for Cu, Pb, Zn, Cd, Cr, Hg and total PAHs may be demonstrated via any one of three different means:

a. Final sediment allocations, as presented above, are met.
b. The qualitative sediment condition of **Unimpacted** or **Likely Unimpacted** via the interpretation and integration of multiple lines of evidence as defined in the SQO Part 1, is met, with the exception of Cr, which is not included in the SQO Part 1.
c. Sediment numeric targets are met in bed sediments over a three-year averaging period.

Compliance with mass-based WLAs shall be measured at designated discharge points. Compliance with concentration-based WLAs for existing sediment shall be determined by pollutant concentrations in ambient sediment in each waterbody. The average ambient bulk sediment level within a waterbody at or below the sediment quality target is considered compliance with these TMDLs.

B. **Mass-based Allocations for Bioaccumulative Compounds**

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	Fish tissue levels of certain bioaccumulative compounds are above desired numeric targets. These TMDLs are designed to reduce contaminated sediment levels, which will result in lower corresponding pollutant levels in fish tissue. These sediment allocations have been derived to support lowering fish tissue levels using biota-sediment accumulation factors (BSAFs) or ERLs, whichever is more protective. For chlordane and dieldrin, the ERL values are lower and more protective than BSAF values. The DDT sediment values are comparable (ERL = 1.58, BSAF = 1.9); the more stringent one was used for calculation. The PCBs sediment value associated with fish tissue is more stringent than the ERL sediment value for PCBs. Mass-based WLAs are assigned for TIWRP and other point sources that have sufficient discharge flow data. Municipal stormwater sources, including the Los Angeles, Long Beach, Caltrans and other MS4 co-permittees, are assigned a single, mass-based allocation by permit, depending on the waterbody. Discharges from the Port of Los Angeles (POLA) and Port of Long Beach (POLB) are grouped with the MS4 dischargers. Mass-based WLAs are applied as annual limits. Individual mass-based WLAs for an individual MS4 Permittee will be calculated based on its share, on an area basis, of the mass based WLA or other approved approach available at the time final mass-based WLAs are in effect and incorporated into the permit. Mass-based LAs are identified for bed sediments and direct air deposition. Direct air deposition allocations for total DDT are based on estimates of existing loads using atmospheric monitoring results collected close to Los Angeles/Long Beach Harbor at SCAQMD Wilmington Station in 2006. Pollutant-specific air deposition values (DDT = 29 ng/m2/day) were multiplied by the surface area of each waterbody to produce direct deposition allocations. Direct deposition allocations for PCBs are not included since air deposition has been measured to be less than water-to-air fluxes. DDT load allocations for bed sediments are negative values, with the exception of those for the Los Angeles River Estuary, indicating that DDT loads must be reduced. (Each negative DDT bed sediment allocation may alternatively be interpreted as zero, or interpreted as minimal bioaccumulation into the food web.) The amount of DDT load reduction may be revised based on future monitoring results. If future air deposition studies show lower existing air deposition DDT loads, or if future DDT sediment characterization studies show lower bed sediment DDT loads, then DDT load allocations may be adjusted. The Greater Harbor Waters (excluding LA River Estuary and Consolidated Slip) bed sediment LA is assigned to the City of Los Angeles (including the Port of Los Angeles), the City of Long Beach (including the Port of Long Beach) and the State Lands Commission. After remediation activities that address existing sediment contamination are complete and when LAs are attained, if bed sediments are recontaminated as a result of continued polluted discharge from the surrounding watersheds, the WLA compliance monitoring data will be used, along with other available information, to assess the relative contribution of watershed dischargers and determine their responsibility and allocations for secondary remediation activities. DDT and PCBs (total) TMDLs apply to all estuarine and marine waters in Greater Harbor area, including Inner Cabrillo Beach, Los Angeles River Estuary and Eastern San Pedro Bay.

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Final mass-based TMDLs and Allocations for total DDT and total PCBs (g/yr)

Waterbody/source	*DDT total*	*PCBs total*
DomCh Estuary – TMDL	3.90	7.90
WLAs		
MS4- LA County et al	0.250	0.207
MS4 City of Long Beach	0.007	0.006
MS4 CalTrans	0.004	0.004
LAs		
Air deposition *Bed sediments*	6.01 (2.4)	n/a 7.7
Current Load	54.0	57.5
Overall reduction	93%	86%
Consolidated Slip - TMDL	0.56	1.14
WLAs		
MS4- LA County et al	0.009	0.004
MS4 CalTrans	0.00014	0.00006
LAs		
Air deposition *Bed sediments*	1.56 (1.00)	n/a 1.13
Current Load	49.0	83.9
Overall reduction	99%	99%
Inner Harbor - TMDL	3.56	7.22
WLAs		
MS4- LA County et al	0.051	0.059
MS4 City of Long Beach	0.014	0.016
MS4 CalTrans	0.0010	0.0011
LAs		
Air deposition *Bed sediments*	129 (125)	n/a 7.14
Current Load	21.67	29.51
Overall reduction	84%	76%
Outer Harbor - TMDL	3.79	7.68
WLAs		
MS4- LA County et al	0.005	0.020
MS4 City of Long Beach	0.004	0.014
MS4 CalTrans	0.000010	0.00004
*TIWRP = POTW (CTR & MGD***)*	12.7	0.37

TMDL Element	Regulatory Provisions		
	LAs		
	Air deposition *Bed sediments*	173 (182)	n/a 7.28
	Current Load	30.8	34.7
	Overall reduction	88%	78%
	Fish Harbor - TMDL	0.048	0.098
	WLAs		
	MS4- LA County et al	0.0003	0.0019
	MS4 CalTrans	0.0000010	0.000006
	LAs		
	Air deposition *Bed sediments*	3.9 (3.85)	n/a 0.10
	Current Load	0.168	0.075
	Overall reduction	71%	0%
	Cabrillo Marina -TMDL	0.061	0.124
	WLAs		
	MS4- LA County et al	0.000028	0.000025
	MS4 CalTrans	0.00000028	0.00000024
	LAs		
	Air deposition *Bed sediments*	3.3 (3.22)	n/a 0.12
	Current Load	1.66	1.06
	Overall reduction	96%	88%
	Inner Cabrillo Beach - TMDL	0.04	0.09
	WLAs		
	MS4- LA County et al	0.0001	0.0003
	LAs		
	Air deposition *Bed sediments*	3.5 (3.5)	n/a 0.09
	Current Load	0.98	0.31
	Overall reduction	96%	72%
	San Pedro Bay - TMDL	30.1	61.0
	WLAs		
	MS4- LA County et al	0.049	0.44
	MS4 City of Long Beach	0.333	3.01
	MS4 CalTrans	0.002	0.019
	*MS4 Orange County***	0.024	0.213
	LAs		

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Air deposition *Bed sediments*	350 (320)	n/a 57.3
Current Load	205.2	110.7
Overall reduction	85%	45%
LA River Estuary - TMDL	34.1	69.2
WLAs		
MS4- LA County et al	0.100	0.324
MS4 City of Long Beach	1.067	3.441
MS4 CalTrans	0.014	0.047
LAR Estuary dischargers	[DDT SQV]	[PCBs SQV]
LAs		
Air deposition *Bed sediments*	8.9 24.09	n/a 65.3
Current Load	231.6	402.2
Overall reduction	85%	83%

Note: DDT air deposition load allocation is set equal to existing load with no reductions anticipated. Negative values for bed sediments indicate that DDT bed sediment loads are expected to be reduced; the amount of reduction may be revised with additional monitoring results.
*SQVs are currently set at the more protective of ERLs or fish tissue associated sediment targets.
**Orange County MS4 Permit is issued by the Santa Ana Regional Board. The allocations included, here, for the Seal Beach nearshore area, are for TMDL calculation purposes only, and an allocation is not assigned.
***For TIWRP, the discharge volume at the time of permit modification or reissuance shall be used to calculate the mass-based effluent limitations consistent with the assumptions and requirements of these WLAs. Studies may be conducted to determine the portion of the discharged pollutants that is deposited on bed sediment. The results of any such Executive Officer approved studies shall be evaluated at the TMDL reconsideration to modify these WLAs as appropriate.

In addition, bed sediment concentration-based allocations are assigned for chlordane in Dominguez Channel Estuary, Consolidated Slip, Fish Harbor, Los Angeles River Estuary and Eastern San Pedro Bay. Bed sediment concentration-based allocations are also assigned for dieldrin in Dominguez Channel Estuary and Consolidated Slip. Bed sediment concentration allocations are also assigned for toxaphene in Consolidated Slip. The TMDLs and allocations are set at target sediment concentrations: chlordane = 0.5, dieldrin = 0.02, toxaphene = 0.10 µg/kg dry sediment.

Compliance with these bioaccumulative TMDLs may be demonstrated via any of four different means:

a. Fish tissue targets are met in species resident to the TMDL waterbodies[3].
b. Final sediment allocations, as presented above, are met.
c. Sediment numeric targets to protect fish tissue are met in bed sediments over a three-year averaging period.
d. Demonstrate that the sediment quality condition protective of fish tissue is achieved per the Statewide Enclosed Bays and Estuaries Plan, as amended to address contaminants in resident finfish and wildlife.

[3] A site-specific study to determine resident species shall be submitted to the Executive Officer for approval.

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	3. <u>Diazinon</u> Los Angeles County monitoring data in Dominguez Channel freshwaters show diazinon exceedences from 2002-2005, but none from 2006-2010. This timing is concurrent with EPA's ban on urban use of diazinon, effective Dec. 31, 2005. Based these results, no diazinon TMDLs are developed at this time.
Margin of Safety	The Dominguez Channel freshwater allocations included an explicit margin of safety (MOS) equal to 10% of the loading capacity or existing load to account for any additional uncertainty in the wet-weather TMDLs. The 10% MOS was subtracted from the loading capacity or existing load, whichever was smaller. Applying an explicit margin of safety is reasonable because a number of uncertain estimates are offset by the explicit margin of safety. While the observed dissolved-to-total metals ratios are not similar to CTR default conversion values, there appears to be very poor correlation between the fraction of particulate metals and TSS. Also, there is added uncertainty regarding stream flow rates during wet weather conditions, when the highest metal loads occur, thus an explicit margin of safety is justified. An implicit margin of safety exists in the final allocations to Dominguez Channel Estuary and Greater Harbor waters. The implicit margin of safety is based on the selection of multiple numeric targets, including targets for water, fish tissue and sediment among other conservative modeling assumptions. An additional explicit margin of safety must be considered and may be applied if any chemical-specific sediment quality target is revised or updated contingent on future sediment quality studies. That is, there may be uncertainty associated with revised sediment quality values, which may warrant including an additional explicit margin of safety.
Seasonal Variations and Critical Conditions	Wet weather events may produce extensive sediment redistribution and transport sediments to the harbors and the CTR-based water column targets are protective of this condition. This would be considered the critical condition for loading. No correlation with flow or seasonality (wet vs. dry season) was found to exist in sediment or tissue data. Given that allocations for this TMDL are expressed in terms pesticides, PCBs, PAHs, and metals concentrations in sediment, a critical condition is not identified based upon flow or seasonality. Because the adverse effects of pesticides, PCBs, PAHs, and metals are related to sediment accumulation and bioaccumulation in the food chain over long periods of time, short term variations in concentrations are less likely to cause significant impacts upon beneficial uses.
Monitoring Plan	Monitoring by assigned responsible parties is required in three waterbody areas: 1. Dominguez Channel, Torrance Lateral, and Dominguez Channel Estuary 2. Greater Los Angeles and Long Beach Harbor Waters (including Consolidated Slip) 3. Los Angeles River and San Gabriel River Monitoring shall be conducted under technically appropriate Monitoring and Reporting Plans (MRPs) and Quality Assurance Project Plans (QAPPs). The MRPs shall include a requirement that the responsible parties report compliance and non-compliance with waste load and load allocations as part of annual reports submitted to the Regional Board. The QAPPs shall include protocols for sample collection, standard analytical procedures, and laboratory certification. All samples shall be collected in accordance with SWAMP protocols. Monitoring Plans shall be submitted twenty (20) months after the effective date of the TMDL for public review and,

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	subsequently, Executive Officer approval. Monitoring shall begin six months after the monitoring plan is approved by the Executive Officer. Responsible parties assigned both WLAs and LAs may submit one document that addresses the monitoring requirements (as described below) and implementation activities for both WLAs and LAs. Responsible parties shall submit annual monitoring reports. The Regional Board Executive Officer may reduce, increase, or modify monitoring and reporting requirements, as necessary, based on the results of the TMDL monitoring program. Currently, several of the constituents of concern have numeric targets that are lower than the readily available detection limits. As analytical methods and detection limits continue to improve (i.e., development of lower detection limits) and become more environmentally relevant, responsible parties shall incorporate new method detection limits in the MRP and QAPP. 1. Dominguez Channel, Torrance Lateral, and Dominguez Channel Estuary Compliance Monitoring Program For Dominguez Channel, Dominguez Channel Estuary, and Torrance Lateral, water and total suspended solids samples shall be collected at the outlet of the storm drains discharging to the channel and the estuary. Fish tissue samples shall be collected in receiving waters of the Dominguez Channel Estuary. Sediment samples shall also be collected in the estuary. • Water Column Monitoring Water samples and total suspended solids samples shall be collected during two wet weather events and one dry weather event each year. The first large storm event of the season shall be included as one of the wet weather monitoring events. Water samples and total suspended solid samples shall be analyzed for a suite of compounds including, at a minimum, metals, including lead, zinc, and copper, DDT, PCBs, Benzo[a] anthrancene, Benzo[a]pyrene, Chrysene, Phenanthrene, and Pyrene. Sampling shall be designed to collected sufficient volumes of suspended solids to allow for analysis of the pollutants in the bulk sediment. In addition to TMDL constituents, general water chemistry (temperature, dissolved oxygen, pH, and electrical conductivity) and a flow measurement will be required at each sampling event. General chemistry measurements may be taken in the laboratory immediately following sample collection, if auto samplers are used for sample collection or if weather conditions are unsuitable for field measurements. In addition, toxicity shall be tested for in the freshwater portion of Dominguez Channel. • Sediment Monitoring A sediment monitoring program shall be developed consistent with the selected method for compliance and all samples shall be collected in accordance with SWAMP protocols. a) If compliance will be determined based on achieving sediment quality targets, sediment chemistry samples shall be collected every two years for analysis of general sediment quality constituents and the full chemical suite as specified in SQO Part 1. In addition, benthic community effects shall be assessed in the Dominguez Channel Estuary.

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	b) If compliance will be determined based on the SQO compliance method, sediment chemistry samples shall also be collected every five years (in addition to, and in between, the sediment triad sampling events as described below), beginning after the first sediment triad event, to evaluate trends in general sediment quality constituents and listed constituents relative to sediment quality targets. Chemistry data without accompanying sediment triad data shall be used to assess sediment chemistry trends and shall not be used to determine compliance. Sediment quality objective evaluation as detailed in the SQO Part 1 (sediment triad sampling) shall be performed every five years in coordination with the Biological Baseline and Bight regional monitoring programs, if possible. Sampling and analysis for the full chemical suite, two toxicity tests and four benthic indices as specified in SQO Part 1 shall be conducted and evaluated. If moderate toxicity as defined in the SQO Part 1 is observed, results shall be highlighted in annual reports and further analysis and evaluation to determine causes and remedies shall be required in accordance with the EO approved monitoring plan. Locations for sediment triad assessment and the methodology for combining results from sampling locations to determine sediment conditions shall be specified in the MRP to be approved by the Executive Officer. The sampling design shall be in compliance with the SQO Part 1 Sediment Monitoring section (VII.E.). • Fish Tissue Monitoring Fish tissue samples shall be collected every two years from the Dominguez Channel Estuary and analyzed for chlordane, dieldrin, toxaphene, DDT, and PCBs. The target species in the Dominguez Channel Estuary shall be selected based on residency, local abundance and fish size at the time of field collection. Tissues analyzed shall be based on the most common preparation for the selected fish species. The Dominguez Channel responsible parties are each individually responsible for conducting water, sediment, and fish tissue monitoring. However, they are encouraged to collaborate or coordinate their efforts to avoid duplication and reduce associated costs. Dischargers interested in coordinated monitoring shall submit a coordinated MRP that identifies monitoring to be implemented by the responsible parties. Under the coordinated monitoring option, the compliance point for the stormwater WLAs shall be storm drain outfalls or a point(s) in the receiving water that suitably represents the combined discharge of cooperating parties. The details of the monitoring program including sampling locations and all methods shall be specified in the MRP to be approved by the Executive Officer. 2. Greater Los Angeles and Long Beach Harbor Waters Compliance Monitoring Program At a minimum, compliance monitoring shall be conducted at the locations and for the constituents listed in the table below for water column, total suspended solids, and sediment. The exact locations of monitoring sites shall be specified in the MRP to be approved by the Executive Officer. During aspects of the remedial action(s) for the Montrose Superfund Site that may mobilize sediments and associated pollutants from the on- or near-property soils or "Neighborhood Areas", it is recommended that US EPA, as the regulatory oversight agency, require that Potentially Responsible Parties (PRP) implement monitoring to evaluate pollutant loads and concentrations leaving the site and surrounding area, as well as pollutant

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concentrations in the bed sediments of Dominguez Channel Estuary and Consolidated Slip and coordinate such monitoring with other TMDL compliance monitoring.

- Water Column Monitoring

Water samples and total suspended solids samples shall be collected during two wet weather events and one dry weather event each year. TSS shall be collected at several depths during wet weather events. The first large storm event of the season shall be included as one of the wet weather monitoring events. General water chemistry (temperature, dissolved oxygen, pH, and salinity) and a flow measurement shall be required at each sampling event.

- Sediment Monitoring

Sediment chemistry samples shall be collected every five years (in addition to, and in between, the sediment triad sampling events as described below), beginning after the first sediment triad event, to evaluate trends in general sediment quality constituents and listed constituents relative to sediment quality targets. Chemistry data without accompanying sediment triad data shall be used to assess sediment chemistry trends and shall not be used to determine compliance.

Sediment chemistry monitoring requirements

Water Body Name	Station Id	Station Location	Sample Media	
			WATER/TSS	SEDIMENT
Consolidated Slip	01	Center of Consolidated Slip	Metals, PCBs, DDT	Metals, Chlordane, DDT PCBs, PAHs
Los Angeles Inner Harbor	02	East Turning Basin	Metals, PCBs, DDT	Metals, Toxicity, Benthic Community Effect
	03	Center of the POLA West Basin	Metals, PCBs, DDT	
	04	Main Turning Basin north of Vincent Thomas Bridge	Metals, PCBs, DDT	
	05	Between Pier 300 and Pier 400	Metals, PCBs, DDT	Metals, Toxicity, Benthic Community Effect
	06	Main Channel south of Port O'Call	Metals, PCBs, DDT	Metals, Toxicity, Benthic Community Effect
Fish Harbor	07	Center of inner portion of Fish Harbor	Metals, PCBs, DDT	Metals, Toxicity, PCBs, DDT, Chlordane, PAHs
Los Angeles Outer Harbor	08	Los Angeles Outer Harbor between Pier 400 and middle breakwater	Metals, PCBs, DDT	Toxicity
	09	Los Angeles Outer Harbor between the southern end of the reservation point and the San Pedro breakwater	Metals, PCBs, DDT	Toxicity
Cabrillo Marina	10	Center of west Channel	Metals, PCBs, DDT	
Inner Cabrillo	11	Center of Inner	Metals, PCBs,	Metals

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Beach		Cabrillo Beach	DDT	
Long Beach Inner Harbor	12	Cerritos Channel between the Heim Bridge and the Turning Basin	Metals, PCBs, DDT	Metals, Toxicity, Benthic Community Effect
	13	Back Channel between Turning Basin and West Basin	Metals, PCBs, DDT	Metals, Toxicity, Benthic Community Effect
	14	Center of West Basin	Metals, PCBs, DDT	Metals, Toxicity, Benthic Community Effect
	15	Center of Southeast Basin	Metals, PCBs, DDT	Metals, Toxicity, Benthic Community Effect
Long Beach Outer Harbor	16	Center of Long Beach Outer Harbor	Metals, PCBs, DDT	Toxicity
	17	Between the southern end of Pier J and the Queens Gate	Metals, PCBs, DDT	Toxicity
San Pedro Bay	18	Northwest of San Pedro Bay near Los Angeles River Estuary	Metals, PCBs, DDT	Metals, Chlordane, PAHs, Toxicity
	19	East of San Pedro Bay	Metals, PCBs, DDT	Metals, Chlordane, PAHs, Toxicity
	20	South of San Pedro Bay inside breakwater	Metals, PCBs, DDT	Metals, Chlordane, PAHs, Toxicity
Los Angeles River Estuary	21	Los Angeles River Estuary Queensway Bay	Metals, PCBs, DDT	Metals, Chlordane, DDT, PCBs
	22	Los Angeles River Estuary	Metals, PCBs, DDT	Metals, Chlordane, DDT, PCBs

Sediment quality objective evaluation as detailed in the SQO Part 1 (sediment triad sampling) shall be performed every five years in coordination with the Biological Baseline and Bight regional monitoring programs, if possible. Sampling and analysis for the full chemical suite, two toxicity tests and four benthic indices as specified in SQO Part 1 shall be conducted and evaluated. If moderate toxicity as defined in the SQO Part 1 is observed, results shall be highlighted in annual reports and further analysis and evaluation to determine causes and remedies shall be required in accordance with the EO approved monitoring plan. Locations for sediment triad assessment and the methodology for combining results from sampling locations to determine sediment conditions shall be specified in the MRP to be approved by the Executive Officer. The sampling design shall be in compliance with the SQO Part 1 Sediment Monitoring section (VII.E.).

- Fish Tissue Monitoring
  Fish tissue samples shall be collected every two years in San Pedro Bay, Los Angeles Harbor, and Long Beach Harbor, and analyzed for chlordane, dieldrin, toxaphene, DDT, and PCBs. At a minimum, three species shall be collected, including white croaker, a sport

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	fish, and a prey fish. The Greater Los Angeles and Long Beach Harbors[3] responsible parties are each individually responsible for conducting water, sediment, and fish tissue monitoring. However, they are encouraged to collaborate or coordinate their efforts to avoid duplication and reduce associated costs. Dischargers interested in coordinated compliance monitoring shall submit a coordinated MRP that identifies monitoring to be conducted by the responsible parties. Under the coordinated compliance monitoring option, the compliance point for the stormwater WLAs shall be storm drain outfalls or a point(s) in the receiving water that suitably represents the combined discharge of cooperating parties. The Consolidated Slip sub-group responsible parties are responsible for conducting water, sediment, and fish tissue monitoring in Consolidated Slip. The details of the monitoring program including sampling locations and all methods shall be specified in the MRP to be approved by the Executive Officer. 3. Los Angeles River and San Gabriel River Compliance Monitoring Program Los Angeles River Watershed and San Gabriel River Watershed responsible parties identified in effective metals TMDLs for Los Angeles River and San Gabriel River are responsible for conducting water and sediment monitoring above the Los Angeles River Estuary and at the mouth of the San Gabriel River, respectively, to determine the Rivers' contribution to the impairments in the Greater Harbor waters. • Water Column Monitoring Water samples and total suspended solids samples shall be collected at, at least one site during two wet weather events and one dry weather event each year. The first large storm event of the season shall be included as one of the wet weather monitoring events. Water samples and total suspended solid samples shall be analyzed for metals, DDT, PCBs, and PAHs. Sampling shall be designed to collect sufficient volumes of suspended solids to allow for analysis of the listed pollutants in the bulk sediment. General water chemistry (temperature, dissolved oxygen, pH, and electrical conductivity) and a flow measurement shall be required at each sampling event. General chemistry measurements may be taken in the laboratory immediately following sample collection if auto samplers are used for sample collection or if weather conditions are unsuitable for field measurements. • Sediment Monitoring For sediment chemistry, sediment samples shall be collected at, at least one site every two years for analysis of general sediment quality constituents and the full chemical suite as specified in SQO Part 1. All samples shall be collected in accordance with SWAMP protocols. The details of the monitoring program including sampling locations and all methods shall be specified in the MRP to be approved by the Executive Officer.

Implementation Plan	The regulatory mechanisms to implement the TMDL include, but are not limited to, general NPDES permits, individual NPDES permits, MS4 Permits covering jurisdictions and flood control districts within these waters, the Statewide Industrial Storm Water General Permit, the Statewide Construction Activity Storm Water General Permit, the Statewide Stormwater Permit for Caltrans Activities, and the authority contained in Sections 13263, 13267 and 13383 of the Cal. Water Code. For each discharger assigned a WLA, the appropriate Regional Board Order shall be reopened or amended when the order is reissued, in accordance with applicable laws, to incorporate the applicable WLA(s) as a permit requirement consistent with federal regulation and related guidance (40 CFR 144.22(d)(1)(vii)(B); US EPA Memorandum "Revisions to the November 22, 2002 Memorandum 'Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs'" (November 12, 2010)). LAs will be implemented in a manner consistent with federal and state laws, regulations and policies, including the Nonpoint Source Implementation and Enforcement Policy. Implementation by assigned responsible parties is required in three waterbody areas: 1. Dominguez Channel, Torrance Lateral, and Dominguez Channel Estuary 2. Greater Los Angeles and Long Beach Harbor waters (including Consolidated Slip) 3. Los Angeles River and San Gabriel River Actions to achieve WLA and LA may be implemented in phases with information from each phase being used to inform the implementation of the next phase. These sediment targets are not intended to be used as 'clean-up standards' for navigational, capital or maintenance dredging or capping activities; rather they are long-term sediment concentrations that should be attained after reduction of external loads, targeted actions addressing internal reservoirs of contaminants, and environmental decay of contaminants in sediment. The implementation may be adjusted, as necessary, based on information gained during each phase. Table 7-40.2 contains the schedule for responsible parties to develop and implement TMDL implementation plans and sediment management plans to comply with the TMDL. 1. ***Dominguez Channel, Torrance Lateral, and Dominguez Channel Estuary*** Responsible parties can implement a variety of implementation strategies to meet the required WLAs and LAs, such as non-structural and structural BMPs, diversion and treatment to reduce sediment transport from the watershed to Dominguez Channel and Greater Harbor waters, and sediment removal activities. Nonpoint source elements include legacy sediments and air deposition across Dominguez Channel and Harbor waters. The responsible parties identified in the Allocation section and in part 6. *Application of Allocations to Responsible Parties* of this section are assigned sediment load allocations and responsibility for remediation of the contaminated sediments to attain the load allocations. ▪ Phase I The purpose of the Phase I implementation is to reduce the amount of sediment transport from point sources that directly or indirectly discharge to Dominguez Channel and the Harbor waters. Phase I should include watershed-wide implementation actions. Important components of Phase I should be to secure the relationships and agreements between cooperating parties and to develop a detailed scope of work with priorities.

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Potential watershed-wide non-structural BMPs include more frequent and appropriately timed storm drain catch basin cleaning, improved street cleaning by upgrading to vacuum type sweepers, and educating residents and industries about good housekeeping practices. Structural BMPs may include the placement of stormwater treatment devices designed to reduce sediment loading, such as infiltration trenches, vegetated swales, and/or filter strips at critical points in the watershed. Structural BMPs may also include diversion and treatment facilities to divert runoff directly, or provide capture and storage of runoff and then diversion to a location for treatment. Treatment options to reduce sediment could include sand or media filters.

The Los Angeles County Flood Control District (District) owns and operates Dominguez Channel; therefore, the District and the cities that discharge to Dominguez Channel shall each be responsible for conducting implementation actions to address contaminated sediments in Dominguez Channel. Responsible parties in Dominguez Channel shall develop a Sediment Management Plan to address contaminated sediment in Dominguez Channel and Dominguez Channel Estuary.

Sediment conditions shall be evaluated through the Sediment Quality Objective (SQO) process detailed in the SQO Part 1. If chemicals within sediments are contributing to an impaired benthic community or toxicity, then causative agent(s) shall be determined using SQO recommended procedures, SQO Part 1 (VII.F.). Impacted sediments shall be included in the list of sites to be managed.

- Phase II

Phase II should include the implementation of additional BMPs and site remedial actions, as determined to be effective based on the success of upstream source control, evaluation of TMDL monitoring data collected during Phase I, and targeted source reduction activities as identified in Phase I. Regional responsible parties should develop, prioritize, and implement Phase II elements based on data from the TMDL monitoring program and other available information from special studies. Possible actions include implementation of additional structural and non-structural BMPs throughout the watershed by municipalities, LA County, Caltrans, and others. Phase II should include the implementation of site-specific cleanup actions for areas identified as high priority in the Dominguez Channel Estuary and in accordance with the Sediment Management Plan.

- As management actions are planned for a contaminated site, site-specific cleanup criteria should be determined following protocols that are consistent with state and national guidance. The site improvements should be confirmed through a sediment monitoring program.
- There are two Superfund sites located within Dominguez Channel Watershed: the Montrose Superfund Site and the Del Amo Superfund Site. The US EPA has not yet reached a final remedial decision with respect to certain of the Montrose Superfund Site Operable Units (OUs) that remain contaminated with DDT, including the on- and near-property soils (OU1), the current storm water pathway (OU2), and the "Neighborhood Areas" (OU4 and OU6). The TMDL, its waste load and load allocations, and other regulatory provisions of this TMDL may be applicable or relevant and appropriate requirements (ARARs) as set forth in Section 121(d) of the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. §§ 9621(d)) for those OUs. Whether provisions within the TMDL are ARARs will be determined in accordance with CERCLA

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when US EPA develops Records of Decision for the Superfund sites. The TMDL for DDT should be taken into account in the course of the remedial decision-making process. The City of Los Angeles and/or Los Angeles County, should they decide to take action that impacts one of the OUs, shall consult with US EPA's Superfund Division in advance of such action. Detection of DDT compounds in water or sediment samples collected within Torrance Lateral shall trigger additional monitoring, by parties to be determined by the Executive Officer, in coordination with EPA, to evaluate potential contribution from contaminated soils related to upstream Montrose operable units discharging via the Kenwood storm drain. Upon reconsideration of the TMDL, all monitoring results for DDT compounds collected by responsible parties or other entities shall be considered as part of source analysis and to determine potential future allocation(s) that may be necessary to minimize impacts to downstream waters and restore beneficial uses in TMDL waterbodies.

- Phase III

Phase III should include implementation of secondary and additional remediation actions as necessary to be in compliance with final allocations by the end of the implementation period. TMDLs to allocate additional contaminant loads between dischargers in the Dominguez Channel, Torrance Lateral and Dominguez Channel Estuary subwatersheds may also be developed, if necessary.

2. ***Greater Los Angeles and Long Beach Harbor Waters (including Consolidated Slip)***

Responsible parties can implement a variety of implementation strategies to meet the required WLAs, such as non-structural and structural BMPs, and/or diversion and treatment to reduce sediment transport from the nearshore watershed to the Greater Harbor waters.

- Phase I

The purpose of Phase I implementation is to reduce the amount of sediment transport from point sources that directly or indirectly discharge to the Harbor waters. Phase I should include actions to be implemented throughout the nearshore watershed and specific implementation actions at the Ports. Important components of Phase I should be to secure the relationships and agreements between cooperating parties and to develop a detailed scope of work with priorities.

Potential watershed-wide non-structural BMPs include more frequent and appropriately timed storm drain catch basin cleaning, improved street cleaning by upgrading to vacuum type sweepers, and educating residents and industries about good housekeeping practices. Structural BMPs may include the placement of stormwater treatment devices designed to reduce sediment loading, such as infiltration trenches, vegetated swales, and/or filter strips at critical points in the watershed. Structural BMPs may also include diversion and treatment facilities to divert runoff directly, or provide capture and storage of runoff and then diversion to a location for treatment. Treatment options to reduce sediment could include sand or media filters.

Implementation actions at the Ports should be developed to address different sources that contribute loading to the Harbors such as Port-wide activities and associated control measures for water and sediment, control measures to reduce the discharges from various

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