

Procedure for Estimating the Zinc Loads from Certain CII Sources in Alamitos Bay/Los Cerritos Channel and Dominguez Channel and Los Angeles/Long Beach Inner Harbor Watersheds in Los Angeles County (Composite for Both Watersheds)

Following below we demonstrate how the various figures in Appendix 1 of Region 9's preliminary designation memorandum were derived. These figures include estimates for the zinc loads from various types and sizes of CII sources, the number of such sources in the Watersheds and how the loads compare with the total load in the Watersheds.

A. Information Sources Used

- 1) Memorandum dated February 21, 2021 from Paradigm Environmental to EPA Region 9 concerning Dominguez Channel and Los Cerritos Channel CII Metals Load Analysis.
- 2) Paradigm Environmental Excel spreadsheet of zinc loading data for CII parcels along with data for parcel impervious cover – file named “parcels with HRU area V.4.”
- 3) Paradigm Environmental Excel spreadsheet of zinc loading data for CII parcels – file named “all parcels loads.”
- 4) Paradigm Environmental table of number of CII parcels versus parcel size and impervious cover (Alamitos Bay/Los Cerritos Channel Watershed).
- 5) Paradigm Environmental table of number of CII parcels versus parcel size and impervious cover (Dominguez Channel and Los Angeles/Long Beach Inner Harbor Watershed).
- 6) File with Excel spreadsheet data for CII facilities at the Port of Long Beach (provided by the Port of Long Beach).
- 7) File with Excel spreadsheet data for CII facilities at the Port of Los Angeles (provided by the Port of Los Angeles).
- 8) File with Excel spreadsheet of data for facilities covered by industrial general permit No. CAS000001 for the Alamitos Bay/Los Cerritos Channel and Dominguez Channel and Los Angeles/Long Beach Inner Harbor Watersheds; file provided by the Los Angeles Regional Water Board.
- 9) Paradigm Environmental tagging classification scheme for parcels within the Watersheds.
- 10) Excel spreadsheet of NONA information from the State Water Board.

B. Steps for Estimated Zinc Loads from CII Sources (Excluding the Ports of Long Beach And Los Angeles)

Step 1 – Estimate zinc load from unpermitted CII facilities that are privately-owned.

The loading information in the Paradigm Environmental memorandum included data for CII that are not privately-owned. These facilities are tagged SCH (public school), COL (public college/university and GOV (government). The loads for the public CII sources were subtracted from the total loads as provided by Paradigm Environmental memorandum (Table 3-2) leading to the following figures for zinc loads and number of parcels for privately-owned, unpermitted CII sources for both watersheds combined.

Parcel Size – Acres of Impervious Cover	# of Parcels	Zinc Load (kg/yr)
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>10	125	2310.7998
>5	432	4156.1651
>1	3,072	8,638.1821
All parcels	19,717	11,621.577

Step 2 – Estimate the loads from CII sources in the Ports of Long Beach and Los Angeles

Since the WMMS loading model used by Paradigm Environmental did not cover the Ports of Long Beach and Los Angeles, Region 9 obtained information concerning the number of CII sources at the Ports and the types and sizes of these sources directly from the Ports (files 6 and 7 listed above in section A). Since the Ports only provided information concerning total area of the sources, the preliminary designation is based on total area of the sources rather than impervious cover as above for parcels.

Paradigm had estimated zinc loading at the Ports assuming an industrial land use and using zinc loading information (approximately 0.92 kg/yr zinc per acre) from nearby parcels that resembled land use at the Ports. The Port of Long Beach also provided information concerning the fraction of transportation-related industrial facilities that were considered unpermitted under the State Water Board's industrial general permit (about 79%). The information from the Port of Los Angeles is less complete than for the Port of Long Beach and Region 9 extrapolated from the Port of Long Beach where necessary in generating loading estimates for the Port of the Los Angeles. The above zinc loading estimate (0.92 kg/yr) provided by Paradigm Environmental and the information on sources from the Ports led to the following estimates for the zinc load from unpermitted CII sources at the Ports and the unpermitted portions of industrial facilities at the Ports.

Unpermitted Portion of CII Facilities at the Ports Addressed by the State Board's IGP

Facility Size – Total Acres	# of Parcels	Zinc Load (kg/yr)
>10	26	3073.154
>5	30	3097.823
>1	40	3112.979
All parcels	40	3112.979

CII Facilities at the Ports Not Addressed by the State Board's IGP

Facility Size – Total Acres	# of Parcels	Zinc Load (kg/yr)
>10	11	435.7413
>5	22	498.6729
>1	52	560.6087
All parcels	100	577.2975

Step 3 – Estimate the Unpermitted Loads from Privately-Owned CII Sources that Are Addressed by the State Water Board’s Industrial General Permit (IGP).

1) Load from Unpermitted Portions of IGP Permitted Facilities

The Water Board’s spreadsheet of facilities covered by the IGP provides data for total facility size and the area considered covered by the Permit. Subtracting the industrial area from the total area gives the non-industrial area that would be subject to the preliminary designation.

The Paradigm Environmental spreadsheet provides zinc loading data for facilities tagged as WDD (permitted under the IGP). For facilities that are five or more acres in size, we next determine the average zinc loading per acre. This was determined to be 0.79 kg/yr. Multiplying the total number of unpermitted acres by the average load per acre led to the estimate of 2,000 kg/yr for the unpermitted portion of privately-owned industrial facilities with a total size of five or more acres. The number of such facilities is approximately 160.

2) Loads from Facilities Submitting No Exposure Certifications (NECs) Under the IGP

The Regional Water Board’s spreadsheet of facilities covered by the IGP provides information concerning facilities submitting NECs under the IGP, including the size of these facilities in acres. The Paradigm Environmental spreadsheet provides zinc loading data for parcels that are tagged as NECs. For NEC facilities that are five acres or more, we determine the average zinc loading per acre; this was determined to be 0.7 kg/yr. Multiplying the total area of these facilities by the average zinc loading per acre led to an estimate of 1,200 kg/yr for zinc. The number of such facilities is approximately 30.

3) Loads from Facilities Submitting Notices of Non-Applicability (NONAs) Under the IGP

Region 9 obtained information concerning NONAs from the State Water Board (file). There are two facilities that are five or more acres in size within the Alamitos Bay/Los Cerritos Channel and Dominguez Channel and Los Angeles/Long Beach Inner Harbor Watersheds. These are the Phillips 66 and Cooper and Bain facilities. The Cooper and Bain facility is actually six separate facilities (permitted as one facility) and only four of these are in the Watersheds of interest; for these Watersheds, the total unpermitted area was estimated as 23.6 acres. Using an estimate of 0.7 kg/yr zinc loading (same as for NECs), leads to a zinc loading estimate of 16.5 kg/yr for zinc.

Step 4 - Estimate the Total Zinc Loading from All Sources in the Watersheds and the Responsibility of MS4s Without the Preliminary Designation

The total zinc load from all sources was estimated by adding the loading estimate from the Paradigm Environmental memorandum for the Watersheds and Region 9’s estimate for the loading from the Ports and Long Beach and Los Angeles. The Paradigm Environmental memorandum provides the following figures for the non-Port portions of the Watersheds.

Total Zinc Loading from all Sources:

Dominguez Channel and Los Angeles/Long Beach Inner Harbor	– 22,757 kg/yr
Alamitos Bay/Los Cerritos Channel	- 4,453
Ports of Long Beach and Los Angeles	<u>- 7,072</u>
Total loading	- 34,300

MS4 Responsibility with No Designation

The load responsibility of the MS4s in the Watersheds would consist of the total loading total less the load responsibility of other permitted entities in the Watersheds such as Caltrans and industrial facilities.

The unpermitted load was estimated as follows:

Dominguez Channel and Los Angeles/Long Beach Inner Harbor	- 15,044 kg/yr
Alamitos Bay/Los Cerritos Channel	- 3,712
Ports of Long Beach and Los Angeles	- 5,907
Unpermitted portion of permitted IGP facilities	- 1,295
IGP facilities (NECs)	- 534
IGP facilities (NONAs)	<u>- 16</u>
Total	- 26,500

In estimating the load from the unpermitted portion of permitted IGP facilities, it was first necessary to estimate the average fraction of an industrial facility that is non-industrial and unpermitted. This was estimated from the Regional Water Board IGP database at about 58%. The load responsibility of MS4s was estimated by multiplying the load from parcels tagged by Paradigm Environmental as WDD (permitted under the IGP) by the sum of the load from all such parcels (2,222 kg/yr x 0.5826 = 1,295 kg/yr). The load from NECs was estimating by summing the load from all parcels tagged as NEC by Paradigm.

Step 5 – Estimate the Total Load Addressed by the Preliminary Designation

The total load addressed by the preliminary designation is the sum of the following as determined from above in Steps 1 through 3:

Unpermitted portion of Port IGP facilities	- 3,100 kg/yr
Unpermitted portion of non-Port IGP facilities	- 2,000
CII facilities (non-IGP and non-Port)	- 4,156
CII facilities (non-IGP for Ports)	- 499
NEC facilities	- 1,200
NONA facilities	<u>- 16</u>
	11,000 kg/yr

The number of CII sources address by the preliminary designation is the sum of the following as determined from above in Steps 1 through 3:

Unpermitted portion of IGP facilities	- 160
CII facilities (non-IGP and non-Port)	- 430
CII facilities (non-IGP for Ports)	- 22
NEC facilities	- 30
NONA facilities	<u>- 2</u>
	640