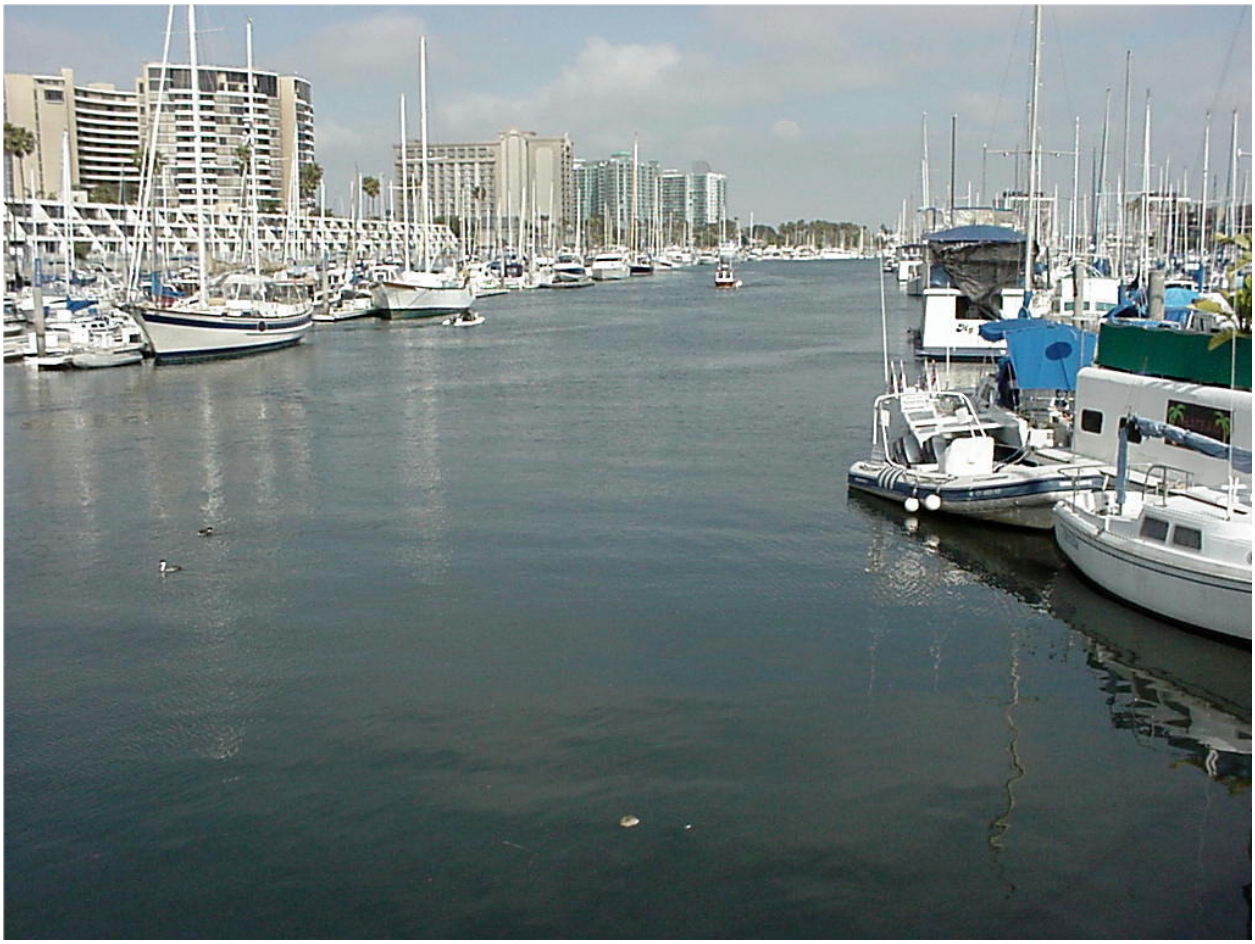
RECONSIDERATION OF CERTAIN ASPECTS OF THE TOTAL MAXIMUM DAILY LOAD FOR TOXIC POLLUTANTS IN MARINA DEL REY HARBOR-SECOND REVISION



PREPARED BY
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

~~April 2024~~
June 2024

Table of Contents

List of Tables

List of Figures

1. Introduction

This staff report presents technical analyses in support of recommendations to reconsider aspects of the Marina del Rey Harbor Toxic Pollutants Total Maximum Daily Load (TMDL) established by the Los Angeles Regional Water Quality Control Board (Los Angeles Water Board), specifically to incorporate a site-specific objective (SSO) for copper, and to update the load allocation for discharges of copper from boats by incorporating the SSO and using additional salinity data. The regulatory background, beneficial uses to be protected, environmental setting and complete TMDL elements along with supporting analysis are described in the staff report and amendment to the Los Angeles Region Water Quality Control Plan (Basin Plan) for the TMDL adopted in 2005 (LARWQCB, 2005c) and the staff report and amendment to the Basin Plan for revisions to the TMDL adopted in 2014 (LARWQCB, 2014) (2014 Reconsideration) and are not repeated herein. These documents and other supporting documents can be found at http://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/tmdl_list.shtml.

While the Los Angeles Water Board can amend the Basin Plan to adjust a TMDL at any time, TMDLs in the Los Angeles Region have often included scheduled "reconsiderations" by the Los Angeles Water Board at specific points during implementation. These date-specific reconsiderations have been included so that aspects of the TMDL, or the TMDL implementation schedule, could be adjusted based on anticipated new information or methods. This approach has allowed the Los Angeles Water Board to establish TMDLs with all the required elements, including numeric targets, allocations, and implementation schedules, so that responsible parties could begin implementing the TMDL to improve water quality, while acknowledging the potential benefit of refining certain technical elements of the TMDL or the implementation schedule after additional study and data collection were completed.

The Marina del Rey Harbor Toxic Pollutants TMDL implementation schedule established in 2005 included a reconsideration six years after the effective date. Therefore, the TMDL was revised 2014 in order to add DDT in sediment and copper in the water column as impairments and to incorporate sediment quality objectives. The 2014 revision also included a provision for a special study to examine a water effect ratio (WER) for the purpose of developing a SSO) for copper in the water column. That special study has now been completed, along with additional special studies. The objective of the current reconsideration is to revise the TMDL and amend the basin plan again to incorporate this expanded location-specific information.

2. History and Status of the TMDL

Marina del Rey Harbor was constructed in the 1960s by the Army Corps of Engineers and is the largest artificial small-craft harbor in the United States. The greater harbor complex consists of 8 sub-basins and a main channel (Figure 2.1). Basins D, E, and F are located furthest from the harbor mouth and considered “back basins” based on drainage area. Basins A, B, C, G and H (also grouped by drainage area) are located closer to the harbor mouth and referred to as “front basins”. Due to the local weather patterns and areal configuration of the harbor, the harbor has a long residence time and multiple environmental issues. More details on the environmental setting can be found in the 2005 Marina del Rey Harbor Toxics TMDL and 2014 Reconsideration.

Figure 2-1 Marina del Rey Harbor, including basins and drainage areas.

The Marina del Rey Harbor Toxic Pollutants TMDL was adopted by the Los Angeles Water Board on October 6, 2005 (Los Angeles Water Board Resolution No. R05-2012), approved by the State Water Resources Control Board (State Water Board) on January 13, 2006 (State Water Board Resolution No. 2006-0006), and approved by the United States Environmental Protection Agency (U.S. EPA) on March 16, 2006.

The 2005 TMDL addressed impairments of copper, zinc, chlordane and PCBs in the back basins of the harbor. The waste load allocations (WLAs) and other associated requirements of the TMDL were implemented in the National Pollution Discharge Elimination System (NPDES) permits authorizing point source discharges within the Marina del Rey Watershed, including Municipal Separate Storm Sewer System (MS4) permits. Data evaluated during the 2005 TMDL development indicated the possibility that additional impairments were occurring in the water column and other portions of the harbor. Therefore, the TMDL included a reconsideration six years after the effective date.

The 2005 TMDL also required the identified responsible parties to develop and implement a Coordinated Monitoring Plan (CMP) and implementation plans. Two separate implementation plans were submitted: one plan from the County of Los Angeles and one plan from the City of Los Angeles, Culver City and the Department of Transportation. In addition, the TMDL anticipated two special studies: a Low Detection Level Study and a Partitioning Study. Two additional recommended studies were also completed: the Marina del Rey Sediment Characterization Study and a best management practice (BMP) effectiveness study.

In 2014, the Los Angeles Water Board reconsidered the 2005 TMDL. The reconsideration included the following changes:

Expanded the geographical extent of impairment (to include the front basins);
Incorporated copper water impairment;
Established a final numeric target for water column PCBs;
Established fish tissue numeric targets; and
Incorporated sediment load allocations for nonpoint sources (Cu, Pb, Zn, Chlordane, 4,4'-DDE, Total DDT, Total PCBs)

The 2014 Reconsideration found that copper-based anti-fouling paints used on boats moored in the Harbor are the primary source of dissolved copper to the water column. Copper based anti-fouling paints work by slowly releasing dissolved copper into the water surrounding the boat hull to prevent "fouling organisms" (barnacles, bivalves, algae, tunicates, hydroids, etc.) from attaching to the boat hull. The 2014 Reconsideration established a load allocation of 547 kg/year for discharges of dissolved copper from boats and specified that compliance with the load allocation could be demonstrated by any one of three means:

a. Meeting numeric targets in the water column, or

b. Demonstrating that 85% of boats in the harbor are using copper free hull paints, or

c. Another acceptable means of demonstrating compliance as approved by the Executive Officer of the Los Angeles Water Board that would result in attainment of copper numeric targets in the water column (e.g., demonstrating that 100% of boats in the harbor are using hull paint that discharges 85% less copper than the baseline load).

The reconsidered TMDL was adopted by Los Angeles Water Board on Feb 6, 2014, and approved by the State Water Board on September 9, 2014, and U.S. EPA on October 16, 2015. The reconsidered TMDL became effective on October 16, 2015.

In 2021, the Los Angeles Water Board revised final implementation deadlines for nine TMDLs, including the Marina del Rey Harbor Toxics TMDL (Resolution No. R21-001) (LARWQCB, 2021). The implementation deadlines for MS4 permittees for sediment were extended six years for the back basins and three years for the front basins, with a final date of July 15, 2024 for both basins. The water column load allocations for discharges of dissolved copper from boats remained March 22, 2024.

3. Implementation Actions since the 2014 Reconsideration

A series of implementation actions to address water column copper impairments have been initiated since the 2014 Reconsideration. This includes a statewide action completed by the California Department of Pesticide Regulation (DPR) and a number of implementation actions specific to Marina del Rey Harbor that have been initiated by the Los Angeles County Department of Beaches and Harbors (DBH) and Los Angeles Department of Public Works (DPW).

Conversion to Low-Leach Rate Copper Paints

In California, regulation of anti-fouling paints is the under the purview of the DPR. Starting in 2010, DPR began a re-evaluation of anti-fouling paints. DPR staff collected data from harbors and marinas throughout the state and conducted modeling using a series of marina scenarios (including variations of 9 key parameters such as number of vessels, size and physiochemical properties). They also included various hull cleaning regimes.

In 2014, DPR issued a memo (DPR, 2014) outlining the determination of a maximum allowable leach rate and mitigation recommendations. The maximum allowable leach rate for anti-fouling paints that requires in-water hull cleaning was lowered to 9.5 ug/cm^2/day (Category 1 low-leach rate copper paint). DPR specified that the new copper standard would be protective of marinas with as many as 1,270 boats but also included the recommendation that hull cleaning should be limited to once monthly or less. DPR also recommended that an SSO for copper in Marina del Rey be considered. The new regulation became effective July 1, 2018.

Boat lifts and In-Water Dry Docks

In June 2017, the State Water Board awarded DBH a Clean Water Act section 319(h) grant to subsidize the purchase of inflatable boat lifts in Marina del Rey Harbor. The use of boat lifts reduces the passive loading of copper from boats while they are moored in the harbor. In the report supporting the SSO request (DPW, 2017), subsidizing 200 inflatable boat lifts was proposed, which would have resulted in an estimated 142 kg/year dissolved copper reduction (DPW, 2021b). Unfortunately, a series of issues impeded the effort, resulting in the State Water Board grant being terminated and the effort abandoned. While there are 25 traditional boats lifts privately installed throughout Marina del Rey Harbor, no inflatable boat lifts have been installed in the marina.

Following the termination of the effort to subsidize the inflatable boat lifts, DPW and DPH continued exploring other boat storage options that would have similar reductions of passive leaching. In-water dry docks provide a similar benefit by storing boats in a synthetic slip that has been pumped dry. These devices are successfully deployed in other parts of the world and show promise for southern California marinas, but their use is limited currently due to scale and reach of manufacturers and maintenance companies. Three in-water dry docks were deployed in Marina del Rey Harbor; however, system failures necessitated the removal of two of them with one remaining currently in use.

In Water Hull Cleaning Ordinance

The Los Angeles County Board of Supervisors adopted ordinance number 18-0021 on June 12, 2018, to regulate hull cleaning in Marina del Rey Harbor. The ordinance became effective on July 12, 2018. The new ordinance requires people conducting hull cleaning in Marina del Rey Harbor to be BMP certified. It also prohibited hull cleaning resulting in a visible paint plume and set penalties for violations of the ordinance.

DBH has continued to develop a robust program to implement the ordinance. Originally DBH coordinated certification courses with the California Professional Diver's Association (CPDA), and two trainings were offered in 2019 with a follow-up plan to offer the courses every 4 years. However, due to the COVID-19 emergency and operational needs, DBH made a program pivot and have launched their own online BMP certification program for hull cleaners. Certified and registered hull cleaners will receive a burgee which they can fly on the cleaning vessels so that boaters can recognize the cleaning vessels' certification. This will result in more straightforward consumer participation in making informed choices and while also making enforcement more transparent and efficient.

Paint Flyer

In an effort to promote boater awareness and participation in reducing copper inputs from AFPs, DBH developed an outreach flyer providing information on the impacts of traditional AFPs and actions boaters can easily take to reduce their copper impacts. The flyer has been distributed to boaters and posted on public boards.

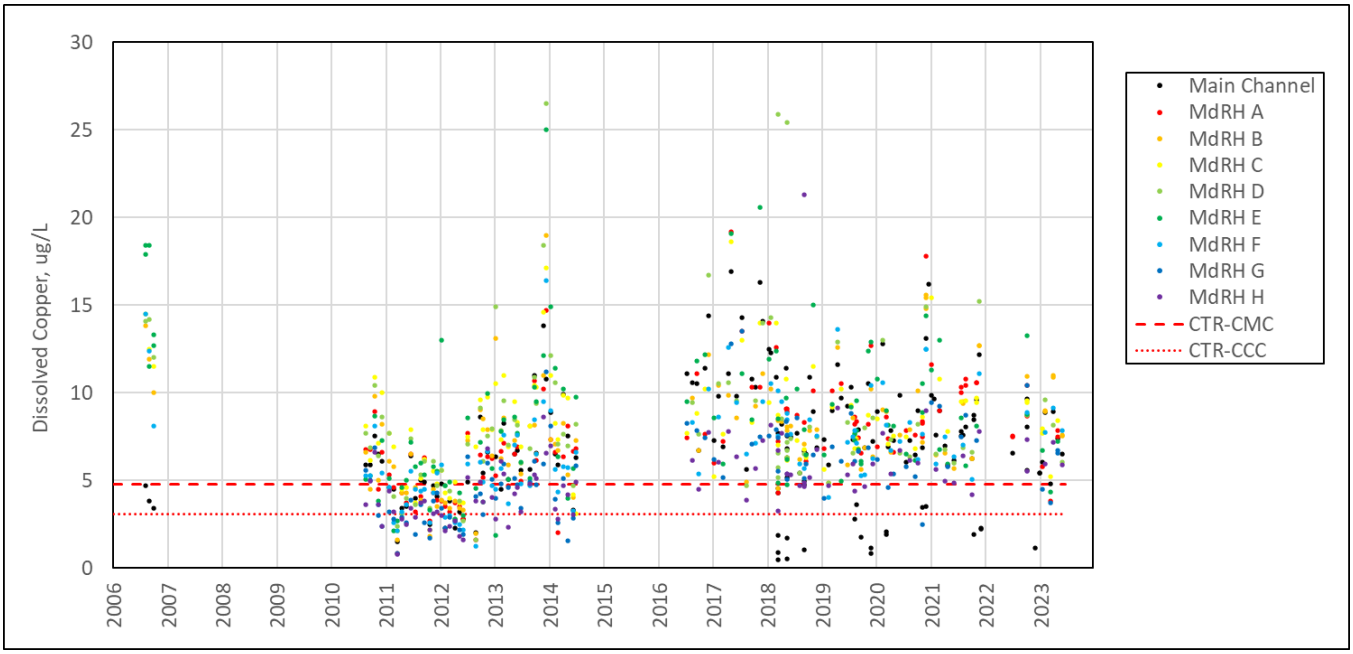
4. Current Status of Water Quality

In this section, historic and recent water column copper data is evaluated compared to the numeric targets in the existing TMDL. The numeric targets for copper in the water

column are equal to the California Toxics Rule saltwater copper criteria for the protection of aquatic life. For acute conditions (single sample maximum), the target is 4.8 ug/L (also referred to as the ‘‘criterion maximum concentration” or “CTR-CMC”). The target for chronic conditions is 3.1 ug/L (four-day average, also referred to as “criterion continuous concentration” or “CTR-CCC”). These U.S. EPA-approved numeric targets are based on laboratory tests for toxicity of copper on a wide-range of aquatic organisms, including ones resident in Marina del Rey Harbor, but do not account for site specific conditions.

The earliest available water column copper data for Marina del Rey Harbor is from 2006, with the bulk of the data from 2011 onward. Figure 4.1 displays water column copper concentrations collected from the Marina del Rey Harbor from 2006 through 2023, broken out by location. A significant number of samples are above both the CTR-CCC and CTR-CMC, reflecting the continued impairment of the waterbody. Copper concentrations from early data collections show samples from a variety of sites meeting both numeric targets. However, data collected after 2016 show most sites having samples above both the acute and chronic targets, with those few samples meeting the targets to be from the main channel.

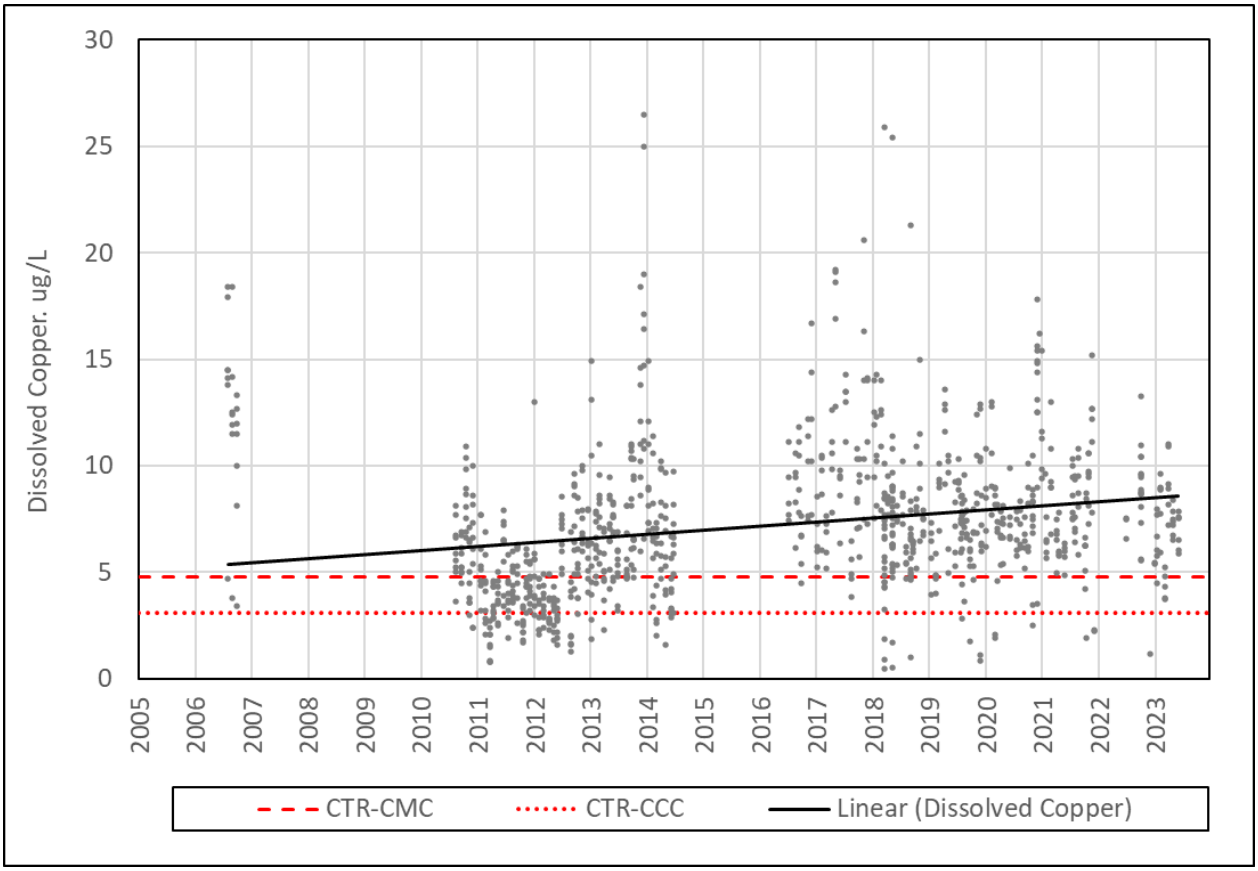
Figure 4-1. Dissolved copper concentrations in Marina del Rey Harbor water column samples, collected 2006 through 2023.



Looking at the available data from 2006 through 2023 for the waterbody as a whole (Figure 4.2), the water column samples show the dissolved copper concentrations overall trending upward. However, the trend is not consistent across the entire time-series. Figure 4.2 shows the dissolved copper concentrations from samples collected between 2010 and 2012 clustered around the CMC and CCC thresholds. Breaking the data into

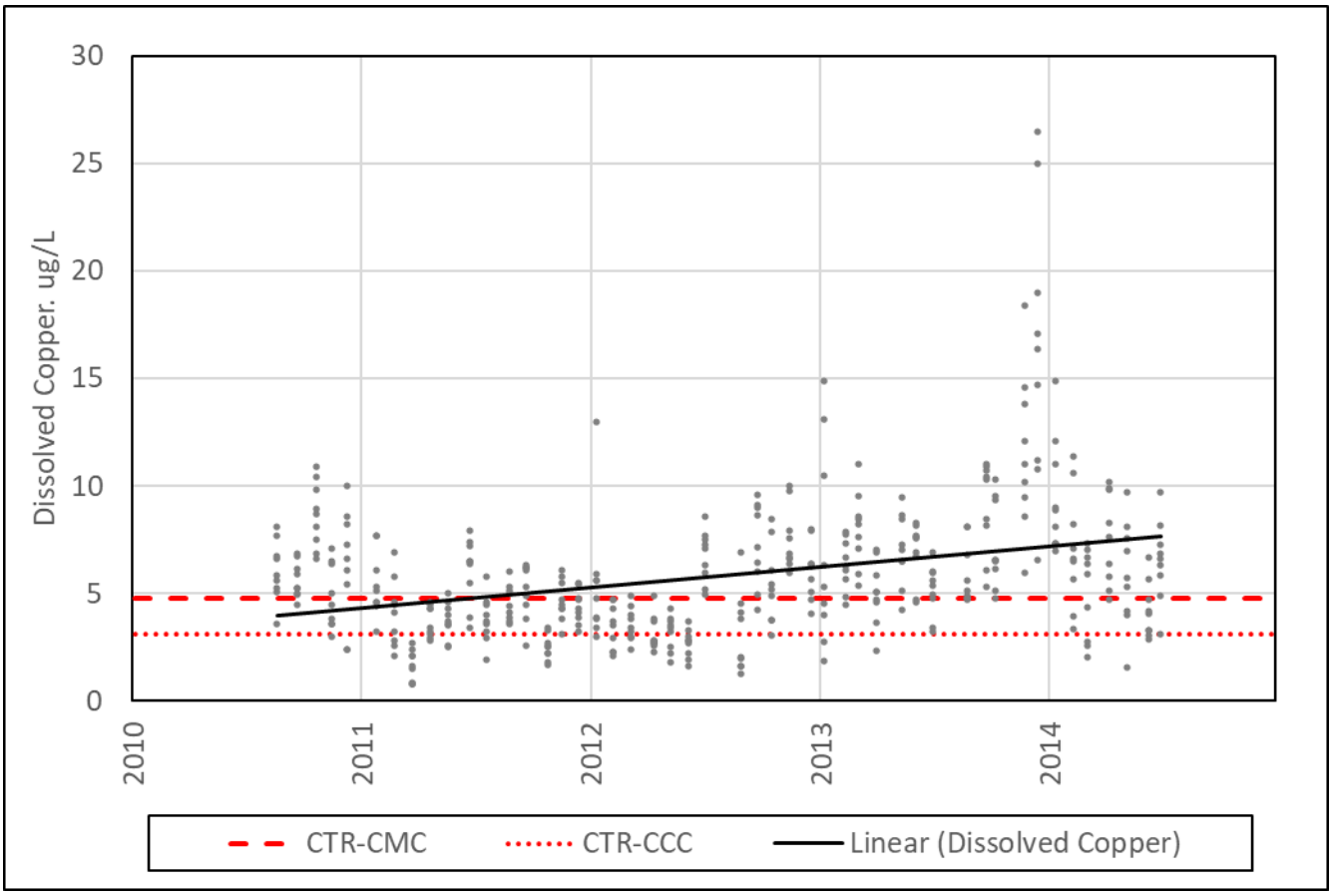
smaller time periods allows for deeper analysis of copper concentration trends (Figure 4.3 and Figure 4.4).

Figure 4-2. Dissolved copper concentrations in Marina del Rey Harbor water column samples from 2006 through 2023 and the dissolved copper trendline.



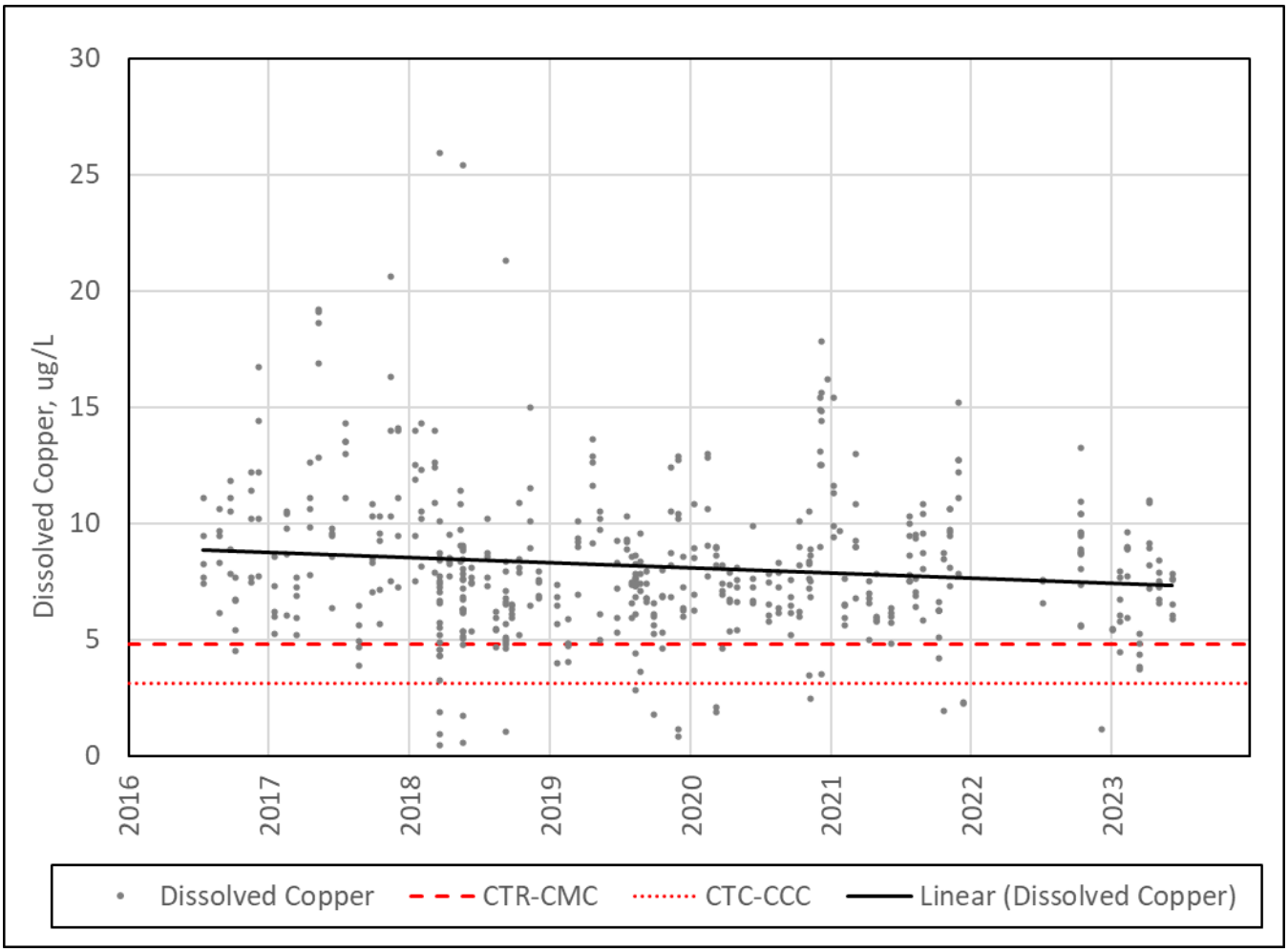
Data collected from 2010 through 2014 (Figure 4.2) show overall dissolved copper concentrations trending upward. Most samples collected in 2011 and early 2012 met the CTR-CMC with a number of them also meeting the CTR-CCC. Midway through 2012 there is a noticeable increase in the observed concentrations and the observed range for concentrations.

Figure 4-3. Dissolved copper concentrations in Marina del Rey Harbor water column samples from 2010 through 2014 and the copper trendline.



Data from 2016 onward (Figure 4-4), show most of the samples collected exceed both the CMC and CCC, with the Main Channel being the only site that was observed to have samples regularly meet the standard (Figure 4-1). While the samples collected from 2016 to present show water column copper concentrations are regularly exceeding both the CMC and CCC, the data do show a slight downward trend (Figure 4-4).

Figure 4-4. Dissolved copper concentrations in Marina del Rey Harbor water column samples from 2016 through 2023 and the copper trendline.



While data from water column samples collected recently show a slight lowering of dissolved copper concentrations in Marina del Rey Harbor, overall, the data show (Figures 4.1 through 4.4) consistent and wide-spread impairments throughout the waterbody, exceeding both the chronic and acute numeric targets.

5. Special Studies

Several studies (Table 5) have been completed since the 2014 TMDL Reconsideration to further address the water column copper impairments. These studies focused on reducing copper loading through more effective anti-fouling paint choices and identifying a WER so that site-specific objectives could be developed.

Table 5-1. Hull Paint and Water Effect Ratio Studies completed to address water column copper concentrations in Marina del Rey Harbor.

Study	Completion Date
Phase I: 2018 Pilot Hull Paint Study	March 2019
Phase I: 2021 Pilot Hull Paint Study II	October 2022
Special Study: Copper WER Study	August 2021

5.1 Phase I and II Pilot Paint Study

Anti-fouling paints remain the main source of dissolved copper into the water column of Marina del Rey Harbor. Commercially available boat hull paints are available with a wide range of leach rates ranging from zero (noncopper based paint) to 9.5 ug/cm^2/day (the highest leach rate allowed by DPR in California). The leach rate of each paint is always transparent to boat owners attempting to make more conscientious decisions. In an effort to encourage boat owners to choose more environmentally friendly hull paints, DBH has studied different low and non-copper paints (DBH, 2019). Similar past research was conducted by Port of San Diego and others to field test available paints. The studies conducted by DBH include more currently available paints and are intended to be more specific to conditions in Marina del Rey Harbor by testing the paints in Marina del Rey Harbor. The pilot study had a final "goal of converting 100 boats to non-biocidal paints and the continuation of the public education and outreach" (DPW, 2017). The work was divided into two phases- Pilot Paint Study I (converting County-owned vessels to non-biocide hull paints) and Pilot Paint Study II (converting the paint on an additional 100 boats). The work is a continuation of DBH efforts that began in 2013, when four boats belonging to the County were converted to non-copper biocide-based paints (DPW, 2017).

The goal of the Phase I Pilot Paint Study was to examine performance and cost of non-biocide paints under local conditions and constraints (DBH, 2019). Included in the study was a survey of boater knowledge and attitudes regarding hull paint. Seventeen boats participated in the Marina del Rey Harbor Pilot Hull Paint Conversion Program, all belonging to different county departments. There were also an additional 2 boats who voluntarily converted to non-biocide paint (belonging to LA Waterkeeper and Cal Yacht Club; DPW, 2021b).

In Phase I of the study, DBH concluded that most of the hull paint alternatives examined did not perform well enough to successfully replace the use of standard copper-based hull paint. One paint performed well but was more expensive than traditional copper-based alternatives. It is also not marketed for non-commercial vessels (DBH, 2019) so limited information is available on maintenance and longevity when used on recreational vessels. Therefore, DBH decided to continue the study into a second round.

In Summer 2021, Phase I Pilot Paint Study-Part 2 was initiated with four additional boats painted with four new paint formulations and monitored by a contracted hull cleaner for performance and ease of cleaning. Results of Part 2 of the study indicated some of the newly-included paints demonstrated more promising results than those included in the

first part of the study. One challenge highlighted by the Pilot Paint Study is that paint manufacturers frequently change the formulations of commercially available paints and may not continue to produce previously available paints. This makes it difficult for boat yards to recommend paints and for boat owners to make informed choices (DBH, 2021). DBH proposed a rebate program to incentivize private boat owners to participate in the study, but have not yet implemented the rebate program to lack of identified funding.

In 2024, DBH in conjunction with the Port of San Diego, started a new study to examine the effectiveness of a recently released new non-biocide paint that has been advertised to rival traditional anti-fouling paints in performance and cost, without leaching contaminants to the water column (DBH, 2024). The study is just beginning but is evidence that there is continued interest in new paint formulations.

5.2 Copper WER Study

As discussed in Section 4, the 2014 Reconsideration incorporated water column numeric targets from the California Toxic Rule, which are based on laboratory toxicity testing.

In August 2015, DPW requested approval from the Los Angeles Water Board to conduct a WER study in Marina del Rey Harbor in order to begin the process of determining an SSO for copper in the water column of Marina del Rey Harbor.

SSOs adjust water quality objectives to account for site-specific conditions by using site-specific information and applicable U.S. EPA and California guidance. A WER is a common method of calculating an SSO, which adjusts objectives to account for a site's water chemistry. Other methods include the Recalculation Procedure which adjusts objectives on the basis of the assemblage of species found at that particular site, and the Resident Species Procedure (EPA, 1994).

As required by the State Water Board per the State Implementation Policy (SIP), DPW submitted the *State Implementation Policy Justification Report Site-Specific Objective for Dissolved Copper to Support Implementation of the Marina del Rey Toxics Total Maximum Daily Load* (DPW, 2015; "Justification Report"). The Justification Report presented the justification for developing a site-specific copper objective. It analyzed the available data and also demonstrated difficulties reaching compliance with the copper objective derived from the California Toxics Rule.

In September 2017, the Los Angeles Water Board conditionally approved the Justification Report and allowed DPW to conduct the copper WER study (LARWQCB, 2017). The conditional approval required DPW to implement four actions proposed and detailed in the Justification Report. These actions were:

a. A boat lift program, where the County would subsidize the purchase of boat lifts for use by 200 boaters through grant funding or other sources;

b. A Pilot Paint Program, converting 100 boats to non-biocide hull paint (25 within 6 months, 100 within two years) and the continuation of public education and outreach;
c. Conversion to lower-leach rate copper paints in compliance with the copper paint restrictions imposed by DPR; and
d. In-water hull cleaning ordinance that requires the use of hull cleaning BMPs.

This approval was revised in June 2018 (LARWQCB, 2018). The revised approval extended the deadline by which the actions needed to be completed but specified those actions were to be finished before the Los Angeles Water Board would consider the results of the SSO study.

The approved workplan for the development of an SSO was based on the WER Procedure included in the 1994 *EPA Water Quality Standards Handbook* (EPA, 1994). The study methods included in the workplan were based on previous SSO studies conducted in California (DPW et al, 2021. This included the San Francisco Bay copper and nickel SSO, the San Diego Bay copper bioavailability and toxicity studies and the Los Angeles River and tributaries copper SSO study (which resulted in a copper SSO for the Los Angeles River).

A technical advisory committee (TAC) was established incorporating three academic experts and staff from the Southern California Coastal Water Research Project were engaged to conduct the field and lab work. Public engagement in the process was continued throughout the project, including two public workshops (DPW et al, 2021).

Prior to conducting the main WER study, a Site Characterization Study (Parks et al, 2021) was conducted to analyze field condition variability that could affect the WER study itself. One of the most important components of this initial phase was focused on identifying the critical condition which is the condition of greatest bioavailability and presumably highest toxicity. Analyses of the field samples indicated that the critical condition was associated with the lowest dissolved organic carbon (DOC) concentrations and that DOC was found to generally be lowest during dry weather periods (Parks et al, 2019). This finding and the rest of the Site Characterization Study helped guide the development of the WER workplan and ensured appropriate geographical and temporal representation.

Sampling for the WER study began August 2019 and concluded December 2020. Whereas U.S. EPA guidance recommends a minimum of three sampling events, six successful sampling events were completed. Water column samples were collected throughout the marina under a number of different conditions while simultaneously recording field measurements. These samples were subjected to chemistry analysis and toxicity testing. Toxicity testing utilizing *Mytilus galloprovincialis* embryos was run on field water and reference water samples (Parks et al, 2021).

This process resulted in a median effective concentration (EC50) for site and reference waters. The WER is a ratio of the two EC50s, such that:

WER= EC50 Site Water
EC50 Reference Water

A WER was calculated for each site and for each sampling event. This sample WER is denoted as “sWER”, of which 5 were calculated. Then a final WER (denoted “fWER”) was derived from the geometric mean of all the sWERs collected during the study.

The TAC recommended calculating the fWER in two different ways (Table 2-4). The first method was by calculating the geometric mean of all the samples resulting in a WER of 1.4. The second method was to use a weather-weighted geometric mean resulting in a WER of 1.32. The two methods produced similar fWERs, with the weather weighted fWER slightly lower, reflecting that site conditions are dominated by dry weather throughout a majority of the year.

Table 5-2. Toxicity-based sample WER (sWER) values calculated for each of the sampling events (Parks et al, 2019).

	sWER						**fWER**	**fWER** (Weather-weighted)
Station	WER 1 (summer, dry, neap tide)	WER 2 (summer dry, spring tide)	WER 3 (wet)	WER 5 (wet)	WER 6 (winter dry, neap tide)	WER 7 (winter dry, spring tide)		
MdRH-MC3	1.28	1.33	--*	1.62 (mean)*	1.0	1.27		
MdRH-A	1.30	1.35	1.54	1.72	0.925 (mean)*	--		
MdRH-B	1.34	1.35	1.59	1.76	1.01	--*		
MdRH-E	1.28 (mean)*	1.44 (mean)*	1.59	1.94	--	--		
MdRH-F	1.36	1.44	1.57	2.04	1.09	--		
Geometric Mean	**1.31**	**1.38**	**1.57**	**1.81**	**1.0**	**--**	**1.4**	**1.32**

*The mean sWER is reported for the station with the field duplicate.
Note: Missing values indicate a WER could not be calculated.

The completed WER study was submitted to the Los Angeles Water Board in August 2021, even though not all of the actions proposed in the Justification Report were successfully completed. Ultimately, implementation actions and the paint conversion part of action b, were not fully implemented, mostly due to market constraints. These constraints include both normal commercial issues such as frequent reformulations and responses to market demands and extraordinary commercial issues that occurred due to the COVID-19 emergency (such as supply chain disruptions). However, DBH has exceeded expectations on the public education and outreach portion of action b. They

have also gone beyond the ordinance requirement of action d and built a comprehensive program to include boater and hull cleaner participation in the ordinance and make enforcement more widespread and transparent. Given these efforts and the fact the WER (and the SSOs based on the WER) are more reflective of conditions in the water column Marina del Rey Harbor, the Los Angeles Water Board staff are supportive of considering the results of the WER study.

5.2.1 Salinity Update

In addition to conducting the WER study, DPW also re-examined salinity concentrations in the harbor by collecting more current salinity data. Salinity was used in the 2014 TMDL revision to model steady-state copper in order to calculate the load allocation (LARWQCB, 2014). An additional 177 dry-weather salinity samples were collected from March 2018 through July 2020 (DPW, 2021c). The data ranged from 31.76 ppt to 35.70 ppt with a median of 33.90 ppt.

6. Proposed Changes

To determine what near-future action(s) best address the water column copper impairment to beneficial uses in Marina del Rey Harbor, Los Angeles Water Board staff examined a broad range of resources. This included the results of the proposed mitigation measures outlined in the justification of the WER study (DPW, 2017), a review of all available data collected and evaluated for the site, the regulatory and practical history of SSOs in the Los Angeles Region (and other regions), the results of WER study and the recommendations of the TAC.

6.1 WER and Development of SSO

As discussed in section 5.2, the SCCWRP study (Parks et al, 2021) resulted in two WER options, based on two slightly different mathematical calculations for deriving the final WER,1.32 (~~weather weight~~ weather-weighted geometric mean) and 1.4 (traditional geometric mean), as per the recommendation of the TAC.

At the time the "TAC agreed a single fWER should be calculated for MdR but did not reach consensus on the final WER (fWER) calculation…Without consensus, the TAC left the decision on which fWER to use to the regulated and regulatory stakeholders during the implementation phases". While the two fWERs do differ as a result of the mathematical formulas employed, the ratios are very close and the effect on the numeric targets and implementation is minor.

Furthermore, the application of either WER is protective of aquatic life due to the fact both fWERs are derived from a rigorous scientific study that followed (and actually exceeded) federal guidance, followed previous peer-reviewed works, and was subject to the examination of a TAC and involvement of stakeholders.

As per the SCWWRP Report, while "the TAC members did not reach consensus on which calculation method was ***most*** appropriate" (emphasis added), the inclusion of both in the report is a reflection of the fact either fWER included in the report is protective of aquatic life." The passage goes on to further the support of the protectiveness and validity of either fWER by stating, "The majority opinion favored the weather-weighted fWER and the minority opinion favored the unweighted fWER. The TAC did agree that ***both*** the unweighted and weather-weighted fWERs should be presented in this report and, ultimately, ***the regulated and regulatory stakeholders should pick which fWER is appropriate*** as part of the implementation plan" (emphasis added).

With the submittal of the completed WER Study and accompanying Implementation report, DPW advocated the use of the higher WER value, as the unweighted geometric mean has been used in previous WER studies and adopted SSOs. DPW stated in the Implementation report (2021),

> "for determining the protectiveness level of the SSO relative to the CTR criteria, the method used for the Los Angeles River and tributaries copper was applied. The studies in the Los Angeles River and tributaries and in San Francisco Bay resulted in SSO for copper that were successfully adopted by regulatory authorities for use in TMDLs".

Given the minor differences between and the protectiveness of both fWERs, Los Angeles Water Board staff examined the historical files of the Marina del Rey Harbor TMDL, the administrative program notes for the WER study and looked at other local WER and SSO actions to make the regulatory decision as to which fWER should be recommended.

Of particular note, the method used in the Los Angeles River SSO was the traditional geometric mean WER calculation. Furthermore, the U.S. EPA Guidance specifically includes the traditional geomean calculation method but not the weather-weighted geomean formula. However, the Guidance provides flexibility for use of study approaches and methods not specifically included.

As reflected in the publicly noticed version of this Staff Report and associated TMDL draft documents, released and posted on April 2, 2024, Los Angeles Water Board staff ~~agrees~~ agreed with DPW and ~~recommends~~ recommended that the traditional geometric mean WER be used to calculate the water column dissolved copper SSOs in Marina del Rey Harbor, as it was the method previously subject to peer and public review and is a vetted method. The April 2024 staff recommendation also was based on the fact that the WER Study, while designed to take into consideration seasonal variations, was not designed to derive a weather-weighted WER and the calculation was not included in the WER Study Workplan.

The Staff Report and TMDL documents were posted for public review and comment on April 2, 2024. Several commentors disagreed with the use of the traditional geomean derived WER and argued that it was unprotective, not supported by the TAC and not in keeping with the U.S. EPA Guidance. As discussed above, those points of argument are

not supported by the record as the traditional geomean derived WER was consistent with the guidance, the workplan and included as a recommendation of the TAC.

However, one of the comment letters was submitted by a consortium of environmental advocacy groups, including Heal the Bay and Los Angeles Water Keeper (HtB/LAWK). HtB/LAWK were active stakeholder participants during the WER Study Workplan development. During the outreach process that occurred throughout the study duration, HtB/LAWK expressed concern that seasonal effects be considered in the study and incorporated in the resultant WER. These concerns were included in written correspondence and meeting presentations and conversations.

The comment letter from the consortium of environmental advocacy groups urged that the lower, weather-weighted WER be adopted instead of the higher WER, because the weather-weighted WER is more representative of seasonal conditions in the Marina del Rey Harbor. Given the extended participation of HtB/LAWK in the Marina del Rey Harbor copper WER study effort and the HtB/LAWK concerns consistently expressed during workplan development, Los Angeles Water Board staff re-evaluated its April 2024 WER recommendation. As discussed previously, both WERs are science and guidance based and protective of aquatic life, leaving the final WER selection a regulatory choice rather than a scientific directive. In light of this, staff has updated the recommendation to use the lower, weather-weighted, WER of 1.32.

The weather-weighted fWER is approximately six percent lower than the traditionally derived fWER. It will have minor effects on the overall implementation efforts that will be necessary to address the water column dissolved copper TMDL, but it does provide an additional margin of safety to the overall water column dissolved copper TMDL effort and further conservatively protects beneficial uses.

~~Based on this WER,~~ Therefore, Los Angeles Water Board staff recommends the following changes to the TMDL:

Update the Basin Plan to include Marina del Rey Harbor copper SSOs, using a WER of ~~1.4~~ 1.32.

Specifically:

a. SSO_{acute} = CMC x WER

where CMC = 4.8 mg/L, therefore

SSO_{acute} = 4.8 x ~~1.4~~ 1.32 = ~~**6.7 ug/L**~~ **6.3 ug/L**

b. $SSO_{chronic}$ = CCC x WER

where CCC = 3.1 mg/L, therefore

$SSO_{chronic}$ = 3.1 x ~~1.4~~ 1.32 = ~~**4.3 ug/L**~~ **4.1 ug/L**

The proposed Basin Plan amendments includes updating the Basin Plan Chapter 3, Water Quality Objectives, Table 3-11 *Site-specific Water-Effect Ratios for Copper*, to include a WER for Marina del Rey of ~~1.4~~ 1.32 and updating Chapter 7, Section 7-18, *Marina del Rey Harbor Toxic Pollutants TMDL*, establishing the numeric targets for dissolved copper in the water column of Acute (single sample maximum): ~~6.7~~ 6.3 µg/L and Chronic (four-day average): ~~4.3~~ 4.1 µg/L.

6.2 Update Load Allocations to Incorporate Updated Salinity Data and the SSOs

The 2014 Reconsideration used a box model to estimate the maximum load the harbor could assimilate and still meet beneficial uses (LARWQCB, 2014).

The model was originally developed for Shelter Island Yacht Basin in San Diego Bay, which was facing similar water column copper impairments. For the 2014 Reconsideration, the model was adjusted to incorporate the specifics of Marina del Rey (such as waterbody shape and size, salinity and evaporation rate). The model required an input of salinity for the harbor ("box" component) and the water outside the harbor ("boundary" component). During the 2014 model calculations, salinity data collected from Marina del Rey Harbor in 2007-2008 was available for use. Twelve in-harbor averaged data point were available, ranging from 31.1 ppt to 33.57 ppt. For the modeling effort completed during the 2014 reconsideration, the minimum salinity value was chosen to be utilized as the box concentration. As per the 2014 Reconsideration staff report,

> *"A value of 31.1 ppt was used as a conservative value in the model as inputting the lower end of the salinity range maximizes the difference in salinity between the two areas."*

During the data collection efforts for the WER study, DPW also conducted an expanded salinity survey, the results of which were submitted alongside the results of the WER study. The newly submitted data set included total of 177 salinity measurements collected from March 2018 through July 2020 (DPW, 2021c). Samples were collected from within the marina to be used for the "box" condition and from the main channel mouth which was used as the "boundary" condition. The data ranged from 31.76 ppt to 35.90 ppt with a median of 33.90 ppt for the box condition. While the minimum salinity observed in the updated data set (31.76 ppt) is not much higher than the minimum salinity from the 2007-2008 data set (31.1 ppt), the range was notably higher (2.65 ppt difference in 2014

compared to a 4.14 ppt difference in the updated data set). Additionally, most of the data points were above 34 ppt.

For the current reconsideration, the box model was re-run, but updated with the SSO copper concentration based on the WER study and the most recent salinity data set (Table 6-1). The value used for the boundary condition was about the same (33.75 ppt vs 33.30 ppt) in both model runs. While the 2014 reconsideration utilized the minimum salinity from the 2007-2008 data for the box condition, the medium salinity was used for the box condition in the updated modeling. This was due to the fact there was a significantly greater number of samples included in the recent data set, the distribution of which suggests the minimum value of 31.76 was an outlier compared to the rest of the data set.

Table 6.1 Salinity values used in the Box Model in 2014 and 2024.

		Salinity, ppt				
Time Period	**Box Model component**	**Average**	**Median**	**Minimum**	**Maximum**	**Value used in model**
2007-08	Boundary					33.75
	Box					31.1
2018-20	Boundary	34.00	33.70	33.30	35.80	33.70
	Box	33.90	33.90	31.76	35.90	33.90

The utilization of the median salinity concentration for the box condition is also supported by the calculation of residence time that is included in the box model. As seen in Table 6-2, the previous model runs (with the lower harbor salinities) resulted in a negative calculated residence time (-126.8 days), which does not match other previously calculated residence times for the harbor (~9 days, DPW, 2021). The salinity data collected during the WER study showed higher in-harbor salinity values compared to open water and, when included in the model, resulted in a calculated residence time (9.6 days) similar to previous studies.

The minimum salinity value was used in 2014 as a conservative modeling assumption that could be applied as a margin of safety. In addition to the use of the minimum salinity as a conservative assumption the model also included the additional conservative assumptions of a maximum number of boats present, that all boats are painted with antifouling paint and all cleaning is completed in-water. Those assumptions are carried over in the current modeling calculations.

The 2014 Reconsideration determined Marina del Rey Harbor could assimilate 554 kg/year of copper and still meet the beneficial uses of the waterbody (Table 6-2). Several additional scenarios were inputted into the box model so that the relative impacts of the changes to the proposed numeric target could be separated. Updating the model with the proposed chronic SSO increases the assimilative capacity of the harbor to ~~776~~ 738 kg/year. Using the recent salinity data and setting the water column concentration to

the chronic dissolved copper site-specific objective of ~~6.72~~ 4.1 ug/L results in a total assimilative capacity of ~~1626~~ 1569 kg/year.

Table 6-2. Copper Concentration Box Model Results for Marina del Rey Harbor and TMDL calculations.

Model Parameters	Units		2014 Model Calculations	2024 Model Calculations	
				Incorporating SSO	Incorporating Updated Salinity and SSO
Inputs:					
S1: boundary salinity	ppt	S1=	33.75	33.7	33.7
S2: box salinity	ppt	S2=	31.1	33.9	33.9
C1: boundry concentration	ug/L	C1=	0.5	0.5	0.5
Ac: cross sectional area at boundary	m2	Ac=	1463	1463	1463
As: surface area of box	m2	As=	1200000	1200000	1200000
e: evaporation rate	cm/d	e=	0.33	0.33	0.33
dx: gradeint length scale	m	dx=	1310	1310	1310
V2: box volume	m3	V2=	6400800	6400800	6400800
RL: loss rate to sediment	%/d	kL=	7	7	7
RS: input rate to box	kg/d	RS=	1.83	1.83	5.37
Outputs:					
K: dispersion coeffcient	m2/s	K=	0.52	0.53	6.92
dS/dx: salinity gradient	psu/m	dS/dx=	0.00202	0.00198	0.00015
Ue: evaporative advective velo	m/s	Ue=	0.0000314	0.0000314	0.0000314
Tres: residence time	d	Tres=	-126.76	-124.55	9.58
C2: box concentration	ug/L	C2=	3.73	5.18	5.11
C2o: box concentration (no los	ug/L	C2o=	36.78	50.38	8.54
F: flushing rate to bay	kg/d	F=	0.16	0.24	3.08
LS: sediment loading	kg/d	LS=	1.67	2.32	2.29
Cu TMDL Calculations					
Ratio dissolved Cu to total Cu			0.83	0.83	0.83
RS dissolved	kg/d		1.52	2.13	4.46
Dissolved Cu TMDL to achieve CT	kg/yr		554	776	1626
Dissolved Annual Load from AFP	kg/yr		3608.59	3608.59	3608.59
% Cu reduction required	%		85	80	54

				2024 Model Calculations		
			2014 Model Calculations	Scenario WER=1.32 only	Scenario Updated Salinity only	Scenario Updated Salinity and WER=1.32
Model Parameters	Units					
Inputs:						
S1: boundary salinity	ppt	S1=	33.75	33.75	33.7	33.7
S2: box salinity	ppt	S2=	31.1	31.1	33.9	33.9
C1: boundry concentration	ug/L	C1=	0.5	0.5	0.5	0.5
Ac: cross sectional area at boundary	m2	Ac=	1463	1463	1463	1463
As: surface area of box	m2	As=	1200000	1200000	1200000	1200000
e: evaporation rate	cm/d	e=	0.33	0.33	0.33	0.33
dx: gradeint length scale	m	dx=	1310	1310	1310	1310
V2: box volume	m3	V2=	6400800	6400800	6400800	6400800
RL: loss rate to sediment	%/d	kL=	7	7	7	7
RS: input rate to box	kg/d	RS=	1.83	2.44	3.83	5.12
Outputs:						
K: dispersion coeffcient	m2/s	K=	0.52	0.52	6.92	6.90
dS/dx: salinity gradient	psu/m	dS/dx=	0.00202	0.00202	0.00015	0.00015
Ue: evaporative advective velocity	m/s	Ue=	0.0000314	0.0000314	0.0000314	0.0000314
Tres: residence time	d	Tres=	-126.8	-126.8	9.58	9.60
C2: box concentration	ug/L	C2=	3.73	4.94	3.73	4.94
C2o: box concentration (no loss)	ug/L	C2o=	36.78	48.77	6.22	8.25
F: flushing rate to bay	kg/d	F=	0.16	0.22	2.15	2.97
LS: sediment loading	kg/d	LS=	1.67	2.21	1.67	2.21
Cu TMDL Calculations						
Ratio dissolved Cu to total Cu			0.83	0.83	0.83	0.83
RS dissolved	kg/d		1.52	2.02	3.17	4.30
Dissolved Cu TMDL to achieve CTR	kg/yr		554	738	1158	1569
Dissolved Annual Load from AFP	kg/yr		3608.59	3608.59	3608.59	3608.59
% Cu reduction required	%		85	80	68	57

The 2014 Reconsideration calculations indicated that at least an 85% reduction in water column dissolved copper would be required to meet the TMDL. However, the updated modeling completed during the current reconsideration (incorporating the SSO and revised salinity) results in a higher TMDL, which could be met through at least a ~~54%~~ 57% reduction in water column dissolved copper.

6.3 Implementation and Compliance Schedule

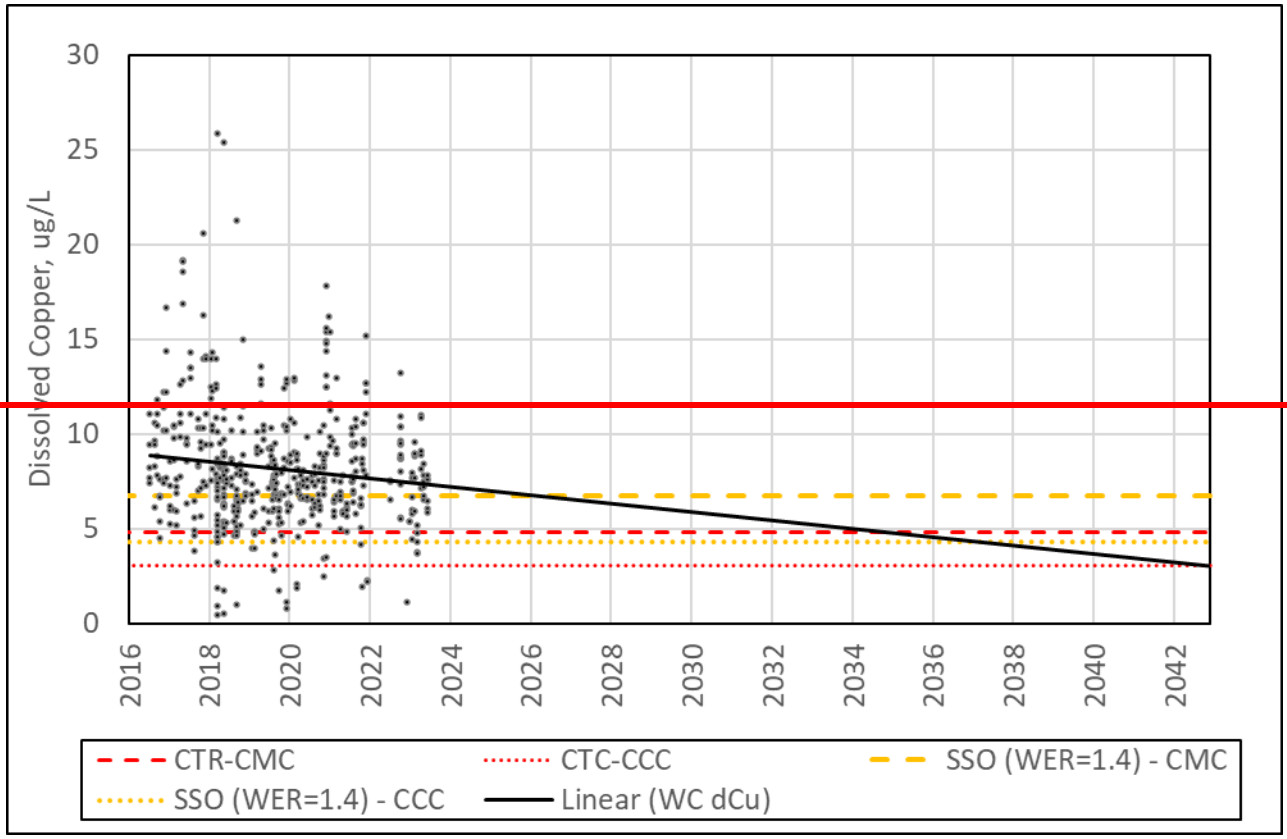
Implementation

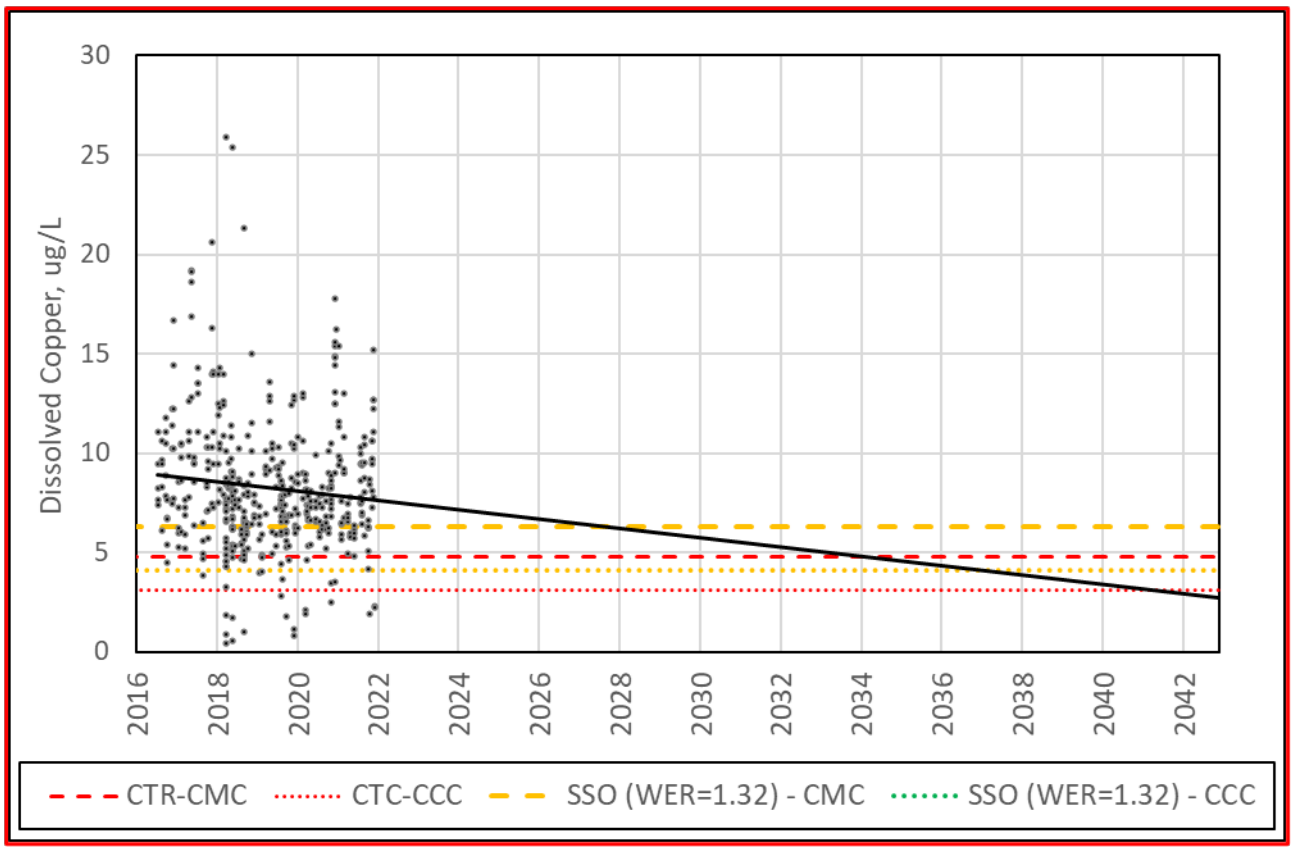
Anti-fouling paints remain the major source of dissolved copper in the water column. The 2014 Reconsideration (Los Angeles Water Board, 2014) stated,

> "….Discharges of copper from boats shall achieve compliance with LAs by 2024. This schedule assumes that copper-based antifouling pants are replaced with non-toxic paints over a ten-year period and takes into account time to develop a regulatory program, outreach to boat owners, and the time and resources needed to replace paint on 85% of boats in the Marina or to implement an alternative that would result in attainment of copper numeric targets in the water column (e.g. demonstrating that 100% of boats in the harbor are using hull paint that discharges 85% less copper)."

As discussed in section 2, DPR did lower the legal copper leach rate of anti-fouling paints to 9.5 ug/cm^2/day in 2014, but this effort has not been enough to significantly reduce dissolved copper inputs to Marina del Rey Harbor. Figure 4-4 shows the recent trend of copper concentrations in the water column slowly decreasing. However, data from the harbor shows dissolved concentrations are highly variable and most samples remain elevated compared to existing and proposed WQOs (Figure 6-1).

Figure 6-1. Marina del Rey Harbor Water Column Copper concentrations and trendline compared to the existing water quality objectives and the proposed water quality objectives.





The 2014 Reconsideration specified that compliance with the load allocation could be demonstrated by any one of three means:

a. Meeting numeric targets in the water column, or

b. Demonstrating that 85% of boats in the harbor are using copper free hull paints, or

c. Another acceptable means of demonstrating compliance as approved by the Executive Officer of the Los Angeles Water Board that would result in attainment of copper numeric targets in the water column (e.g. demonstrating that 100% of boats in the harbor are using hull paint that discharges 85% less copper than the baseline load).

Based on the proposed changes in Section 5, Staff recommend that the compliance with the load allocation be updated to:

a. Meeting numeric targets in the water column, or
b. Demonstrating that ~~54%~~ 57% of boats in the harbor are using non biocide hull paints, or
c. Another acceptable means of demonstrating compliance as approved by the Executive Officer of the Los Angeles Water Board that would result in attainment of copper numeric targets in the water column (e.g. demonstrating

that 100% of boats in the harbor are using hull paint that discharges ~~54%~~ 57% less copper than the baseline load).

The proposed changes to the compliance options reflect the lower calculated copper reduction required to meet the updated TMDL (from the changes due to the SSO and the upgraded salinity) and a change from “copper free hull paints” to “non biocide paints”. This change reflects increased awareness that non-copper hull paints have similar environmental impacts due to the leaching of other toxicants (State of Washington, 2017).

The 2014 Reconsideration implementation schedule included an action item for the Los Angeles Water Board to “Develop regulatory mechanism for implementation of LAs for discharges of dissolved copper from boats.” This action has not been completed. Both DPR (214) and the State Water Board (during its approval of the 2014 Reconsideration, REF SWRCB, 2014) advocated for a WER study to be completed for copper in Marina del Rey Harbor. Los Angeles Water Board staff paused the development of a regulatory mechanism until DPW completed the WER study as an effective regulatory mechanism would require the incorporation of an uncontroverted water quality objective. It took more than two years for DPW to submit enough documentation in its Justification Report (DPW, 2015; DPW, 2017) to meet the requirements of the SIP so that the Los Angeles Water Board could approve the WER workplan. The study results were not submitted until Summer 2021.

The revised Basin Plan amendment (for Chapter 7) completed for the current reconsideration does not include an updated action item of developing a regulatory mechanism. However, given the ongoing documented copper impairments in Marina del Rey Harbor (see section 4), a regulatory mechanism is still needed to address the problem. In keeping with the SIP (SWRCB, 2004) and the Los Angeles Water Board experience in addressing wide-spread and complex nonpoint source pollution issues, the regulatory mechanism would likely be general Waste Discharge Requirements (WDRs).

The WDRs would most likely be developed to address the copper impairment by implementing the load allocations as benchmarks to be addressed through iterative management practices or phased repainting of boats and subsequent individual discharge limits if the impairment is not resolved. As in the case of previous regulatory mechanisms for addressing nonpoint source pollution in the Los Angeles Region (such as the past Agricultural waivers and current Agricultural Order), any WDRs or other regulatory mechanism to address copper discharges from boats would be developed in collaboration with stakeholders in an accessible, transparent manner.

Schedule

The 2014 Reconsideration set the compliance deadline for the LAs for discharges of dissolved copper from boats to be attained as of March 22, 2024.

DPR's 2018 reduction of the allowable copper leach rate should help lower water column copper concentrations. However, the allowable leach rate is not low enough to attain water quality objectives for Southern California coastal marinas and harbors, including in Marina del Rey Harbor. Furthermore, while DPR's most recent regulations on copper leach rates of antifouling-paints became effective in 2018, boatyards had until 2020 to consume previously purchased high leach rate paints before fully transitioning to the lower leach rate paints. As evidenced by the analyses in section 4, the load allocations were not attained by the compliance deadline.

As part of the current reconsideration process, it is recommended to extend the compliance deadline for the TMDL water column LAs to March 22, 2026. This extension would allow additional time to evaluate:

- Long-term effects of the updated leach rate reduction
- Effectiveness of DBH's increased enforcement of hull cleaning BMPs
- Whether recent (post-2016) downward trends in copper concentrations remain steady

An extension would also provide time for Los Angeles Water Board staff to collaborate with stakeholders to develop WDRs or another regulatory mechanism.

7. Technical and Stakeholder Input

Stakeholder and technical input were solicitated before and during the WER development process. To ensure technical rigor while conducting the WER study, a technical advisory committee (TAC) was established to independently review the study design, results and final report (DPW, 2021). The TAC members came from recommendations from Water Board staff and environmental groups. TAC review meetings were open to the public. The draft workplan was released to the public for a 30-day public review and was followed by a public workshop for questions and answers. A second public workshop was held after completion of the study.

Following receipt of the completed WER and SSO documents in 2021, Los Angeles Water Board staff has conducted outreach regarding the proposed Basin Plan amendment to a variety of stakeholders. A stakeholder kickoff meeting was held virtually on October 25, 2023. On March 1, 2024, Los Angeles Water Board Staff sent formal letters to tribes that are traditionally and culturally affiliated with the geographic area of the Basin Plan amendment notifying them of the proposed Basin Plan amendment, regulatory

background and the project location, and inviting feedback and consultation. No requests for further information or discussion were received.

8. Antidegradation analysis

Both U.S. EPA (40 CFR 131.12) and the State of California (State Water Board Resolution No. 68-16) have adopted antidegradation policies. The Los Angeles Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. The Los Angeles Water Board must ensure that its actions are consistent with the federal and State antidegradation policies. This section of the Staff Report documents that the proposed WER and site-specific objectives are consistent with federal and State antidegradation policies.

8.1 Federal Antidegradation Policy

The federal antidegradation policy provides, in part (40 CFR §131.12(a)):

1. Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

2. Where the quality of waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control. The analysis of alternatives shall evaluate a range of practicable alternatives that would prevent or lessen the degradation associated with the proposed activity. When the analysis of alternatives identifies one or more practicable alternatives, the State shall only find that a lowering is necessary if one such alternative is selected for implementation.

3. Where high quality waters constitute an outstanding National resource, such as waters of National and States parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

8.2 State Antidegradation Policy

Antidegradation provisions of State Water Board Resolution No. 68-16 ("Statement of Policy with Respect to Maintaining High Quality of Waters in California") state, in part:

1. Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.

2. Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

Marina del Rey Harbor is not a high-quality water as defined in State and federal antidegradation policies. The waterbody has long suffered from numerous water quality impairments (including copper) and portions of the harbor have been included on the Clean Water Act 303(d) list since 1996.

Where, like here, the water quality objective is not being met, existing beneficial uses and the water quality necessary to protect the uses must be maintained or achieved under State and federal antidegradation policies. The Basin Plan amendments are not expected to lower the water quality in Marina del Rey and therefore comply with the requirement to be consistent with the maximum benefit to the people of the State. Adopting the site-specific objectives reflect on-site water conditions. Since the Basin Plan amendments are not expected to lower water quality, there will be no effects on present and anticipated beneficial uses of Marina del Rey Harbor nor will implementation of the Basin Plan Amendments result in water quality less than prescribed in the Boards' policies.

9. Water Code Section 13241 considerations for the Site-Specific Objective

In setting site-specific objectives, Water Code section 13241 requires consideration of six factors. These factors are (1) past, present, and probable future beneficial uses of water; (2) environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto; (3) water quality conditions that could reasonably

be achieved through the coordinated control of all factors which affect water quality in the area; (4) economic considerations; (5) the need for developing housing within the region; and (6) the need to develop and use recycled water.

9.1 Past, present, and probable future beneficial uses of water

Existing and potential beneficial uses designated for Marina del Rey Harbor are REC-1, REC-2, NAV, COMM, MAR, WILD, and SHELL, REC-1, REC-2. Each beneficial use is fully defined in the Basin Plan.

Probable future beneficial uses of surface waters in Marina del Rey are likely to remain consistent with past and present uses. In March 2022, the Water Board adopted three new beneficial uses: Tribal Tradition and Culture (CUL), Tribal Subsistence Fishing (T-SUB), and Subsistence Fishing (SUB). The designation process is currently ongoing. Currently, the only objectives specifically associated with CUL, T-SUB, and SUB are for mercury. When waterbody designations for CUL, T-SUB, and SUB are made, copper objectives are not expected to negatively affect the new beneficial uses.

As demonstrated through the WER study, the proposed site-specific water quality objectives for water column dissolved copper of ~~4.34~~ 4.1 ug/L (CCC) and ~~6.72~~ 6.3 ug/L (CMC) will be protective of the existing and potential beneficial uses in Marina del Rey Harbor.

9.2 Environmental characteristics

The environmental setting of the proposed Basin Plan amendment is described in Chapters 1-3 of the Basin Plan and also described in the staff report and amendment to the Basin Plan establishing the TMDL that the Los Angeles Water Board adopted in 2005 (LARWQCB, 2005c). As part of this reconsideration, the environmental characteristics of Marina del Rey Harbor were considered, including the effect of site-specific physical and chemical properties on the toxicity of copper, as reflected in the WER study.

9.3 Water quality conditions that could reasonably be achieved

Water quality conditions that reasonably could be achieved through the coordinated control of all factors which affect water quality in the area have been considered. The environmental conditions affecting water quality and beneficial uses of the Los Angeles Region are discussed in Chapter 1 of the Basin Plan. The proposed Basin Plan amendment will supersede the current objectives in Chapter 3 and load allocations in Chapter 7 of the Basin Plan as the baseline or benchmark of water quality conditions that can reasonably be achieved. Like those in the 2014 Reconsideration, the proposed SSOs can be achieved through a combination of management measures, including the use of non-biocide hull paints, which were demonstrated to be technically feasible in the Phase I and II Pilot Pain Study, boat lifts, and dry docks.

9.4 Economic considerations

Adoption of the proposed Basin Plan amendment would not require additional capital investment for boaters in Marina del Rey Harbor beyond that required by the 2014 Reconsideration. The proposed action will not require any additional implementation measures compared to the existing water quality objectives and load allocations in the TMDL.

9.5 The need to develop housing

The proposed water quality objective would not restrict the development of housing near Marina del Rey because it would not result in discharge requirements that affect housing or any economic costs related to housing development.

9.6 The need to develop and use recycled water

The proposed water quality objective would not affect the need to develop and use recycled water in Marina del Rey because it would not result in discharge requirements for such efforts.

9.7 Water Code Sections 189.7 and 14149.2 Considerations

The Los Angeles Water Board has satisfied the outreach requirements set forth in Water Code section 189.7 by conducting outreach in potentially affected disadvantaged and tribal communities. When adopting or modifying water quality objectives, section 13149.2 of the California Water Code requires the Los Angeles Water Board to make a concise, programmatic finding on potential environmental justice, tribal impact, and racial equity considerations related to the adoption. The Los Angeles Water Board expects no water quality impacts from the proposed adoption of the site-specific objective to tribal and disadvantaged communities because the proposed site-specific objectives reflect on-site water conditions and is not expected to result in any impact to the beneficial uses of the waters of Marina del Rey Harbor. The site-specific objectives are based on scientific studies that demonstrate higher water column copper concentrations can be tolerated by sensitive species without detrimental effects.

No identified disadvantaged communities are present in Marina del Rey Harbor or the near-harbor drainage areas surrounding the harbor. Los Angeles Water Board staff reached out by written correspondence to fourteen tribal communities that have historical and/or current ties to the area or have previously requested to be notified of all new projects. None of the tribes contacted requested additional information or meetings on the project.

10. California Environmental Quality Control Act

Adoption of the proposed Basin Plan amendments included in the current reconsideration constitutes a change to an existing "project" under the California Environmental Quality Act (CEQA), Public Resources Code section 21000 et seq. The Los Angeles Water Board is the lead agency for this revised project under CEQA.

On February 6, 2014, the Los Angeles Water Board adopted the 2014 Reconsideration and approved the *Substitute Environmental Document for Toxic Pollutants in Marina del Rey Harbor Waters Total Maximum Dail Load* (SED) under the California Environmental Quality Act (CEQA) requirements of a Certified Regulatory Program (LARWQCB, 2013) (14 Cal. Code Regs. sec. 15251(g); 23 Cal. Code Regs. sec. 3777(a)). The CEQA checklist and other portions of the substitute environmental documents contained significant analysis and numerous findings related to impacts and mitigation measures. The SED concluded that the specific economic, legal, social, technological, and other benefits of the 2014 Reconsideration outweighed the unavoidable adverse environmental effects, and that such adverse environmental effects were acceptable under the circumstances. The SED therefore included a statement of overriding considerations. The Los Angeles Regional Board found that the 2014 Basin Plan amendment could have a significant adverse effect on the environment but also that there were feasible alternatives and/or feasible mitigation measures that would substantially lessen any significant adverse impact.

Since the 2014 Reconsideration SED was adopted, CEQA has been amended to require a lead agency's evaluation of a proposed project's environmental impacts to include consideration of potential effects on tribal cultural resources. The adoption of the WER and WER-derived SSOs will have no impacts to tribal cultural resources in Marina del Rey Harbor, as the WER is developed to be as protective the previous CTR-derived water quality objectives.

The current reconsideration of the Marina del Ray Harbor Toxics TMDL is a change to the 2014 project and proposes a revision to the numeric targets for dissolved copper in the water column based on the WER (Acute (single sample maximum) from 4.8 to ~~6.7 µg/L~~ 6.3 ug/L and Chronic (four-day average) from 3.1 to ~~4.3 πg/L)~~ 4.1ug/L; a revision to the load allocations for copper in the water column of based on WER and the model update (LAs for discharges of dissolved copper from boats from a 85% reduction to a ~~55%~~ 57% reduction); a revision of the implementation for load allocations for dischargers of dissolved copper (compliance may be demonstrated by the percentage of boats using copper free hull paints from 85% to ~~55%~~ 57%); and extension of the compliance schedule deadline to March 22, 2026. These changes to the project are not expected to result in any significant or potentially significant adverse environmental impacts not previously identified, analyzed, and discussed in the 2014 Reconsideration SED. Moreover, no additional implementation methods, beyond what was already analyzed as part of the 2014 Reconsideration SED, are expected in response to the current reconsideration efforts and the adoption of the WER-derived SSOs. Accordingly, consistent with California

Code of regulations, title 14, section 15162, the changes to the project, through the proposed Basin Plan amendment, do not require any subsequent or supplemental environmental documents.

11. Summary

Staff recommend revising the Basin Plan with a WER for copper water quality criteria of ~~1.4~~ 1.32 for Marina del Rey and revising the *Marina del Rey Harbor Toxic Pollutants TMDL* with:

1. Revise~~d~~ Numeric Targets for Dissolved Copper in the Water Column based on the WER (Acute (single sample maximum): from 4.8 to ~~6.7 µg/L~~ 6.3 ug/L and Chronic (four-day average): from 3.1 to ~~4.3 µg/L~~ 4.1 ug/L)
2. Revise~~d~~ Load Allocations for copper in the water column of based on WER and the model update (LAs for discharges of dissolved copper from boats from an 85% reduction to a ~~55%~~ 57% reduction) and
3. Revise~~d~~ Implementation for Load Allocations for dischargers of dissolved copper (Indication that compliance may be demonstrated by the percentage of boats using copper free hull paints from 85% to ~~55%~~ 57%)
4. Extend the compliance schedule deadline to March 22, 2026.

12. References

County of Los Angeles Department of Beaches and Harbors. 2019. Marina del Rey Pilot Hull Paint Study Final Report.

County of Los Angeles Department of Beaches and Harbors (DBH). 2024. Personal communication with Elisha Wakefield on March 28, 2024.

County of Los Angeles Department of Public Works (DPW). 2015. State Implementation Policy Justification Report Site-Specific Objective for Dissolved Copper to Support Implementation of the Marina del Rey Toxics Total Maximum Dail Load.

County of Los Angeles Department of Public Works (DPW). 2017. Revised State Implementation Policy Justification Report Site-Specific Objective for Dissolved Copper to Support Implementation of the Marina del Rey Toxics Total Maximum Dail Load.

County of Los Angeles Department of Public Works, County of Los Angeles Department of Beaches and Harbors and Moffat and Nichol. 2021a. Implementation Report for Marina del Rey Harbor Copper Site-Specific Objective.

County of Los Angeles Department of Public Works, County of Los Angeles Department of Beaches and Harbors and Moffat and Nichol. 2021b. Marina del Rey SSO

Implementation Report Appendix B, Marina del Rey Mitigation Measures Implementation Status Report.

County of Los Angeles Department of Public Works, County of Los Angeles Department of Beaches and Harbors and Moffat and Nichol. 2021c. Marina del Rey SSO Implementation Report Appendix C: Recalculation of Load Allocation, Marina del Rey Mitigation Measures Implementation Status Report.

Department of Pesticide Regulation-State of California (DPR), 2014. Memorandum – Determination of Maximum Allowable Leach Rate and Mitigation Recommendations for Copper Antifouling Paints Per AB 425. Prepared for B.R. Leahy, Director of DPR. Prepared by D. Duncan, Environmental Program Manager II. January 30, 2014.

Los Angeles Regional Water Quality Control Board. 2005. Marina del Rey Harbor Toxics TMDL Staff Report. October 6, 2005.

Los Angeles Regional Water Quality Control Board. 2005a. Marina del Rey Harbor Toxics TMDL Attachment A to Resolution No. 2005-012. Amendment to the Water Quality Control Plan – Los Angeles Region to incorporate the
Marina del Rey Harbor Toxic Pollutants TMDL

Los Angeles Regional Water Quality Control Board. 2013. Substitute Environmental Document for Toxic Pollutants in Marina del Rey Harbor Water Total Maximum Daily Load. Prepared under the California Environmental Quality Act (CEQA) Requirements of a Certified Regulatory Program. November 5, 2013.

Los Angeles Regional Water Quality Control Board. 2014. Reconsideration of the Total Maximum Daily Load for Toxic Pollutants in Marina del Rey Harbor

Los Angeles Regional Water Quality Control Board. 2017. Conditional Approval to Proceed with Study to Develop Site-Specific Objectives for Dissolved Copper in Marina del Rey Harbor.

Los Angeles Regional Water Quality Control Board. 2018. Revised Conditional Approval to proceed with Study to Develop Site-Specific Objectives for Dissolved Copper in Marina del Rey Harbor.

LARWQCB, 2021. Amendments to the Water Quality Control Plan for the Los Angeles Region (Basin Plan) to Revise the Implementation Schedules for Municipal Separate Storm Sewer System (MS4) Dischargers, including Caltrans, Subject to Total Maximum Daily Loads (TMDLs) in the Los Angeles Region (the Santa Monica Bay Beaches Bacteria TMDL; the Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL; the Malibu Creek and Lagoon Bacteria TMDL; the Malibu Creek Nutrients TMDL; the Malibu Creek and Lagoon Sedimentation and Nutrients TMDL to Address Benthic Community Impairments; the Ballona Creek Estuary Toxic Pollutants TMDL; the Marina del Rey

Harbor Toxic Pollutants TMDL; the Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL; and the Ballona Creek Metals TMDL)

Parks, A.N., Greenstein, D.J. and K.C. Schiff. 2021. Southern California Coastal Water Research Project, Marina del Rey Harbor Site-specific Objective Study, Technical Report 1208.

Parks, A.N., Greenstein, D.J. and S. Bay. 2019. Marina del Rey Harbor Site-Specific Objective Study. Southern California Coastal Water Research Project. Technical Report 1208.

State of Washington-Department of Ecology. 2017. Report to the Legislature on Non-copper Antifouling Paints for Recreational Vessels in Washington. Publication 17-04-039.

State Water Resources Control Board (SWRCB). 2004. Policy for Implementation and Enforcement of the Nonpoint Source Control Program.

State Water Resources Control Board (SWRCB). 2014. Resolution No. 2014-0049. Approving an Amendment to the Water Quality Control Plan for the Los Angeles Region to Revise a Total Maximum Daily Load for Toxic Pollutants in Marina del Rey Harbor.

United States EPA. 1994. Water Quality Standards Handbook