(424) 526-7777 • 13837 Fiji Way, Marina del Rey, CA 90292 • beaches.lacounty.gov

Caring for Your Coast

**Gary Jones**
Director

**Kerry Silverstrom**
Chief Deputy

**John Kelly**
Deputy Director

**Amy M. Caves**
Deputy Director

August 26, 2021

Ms. Renee Purdy
Executive Officer
California Regional Water Quality
Control Board - Los Angeles Region
320 West 4th St., Ste 200
Los Angeles, CA 90013

Attention: Mr. Jun Zhu

**IMPLEMENTATION REPORT FOR THE MARINA DEL REY HARBOR COPPER SITE-SPECIFIC OBJECTIVE**

Dear Ms. Purdy:

Enclosed is the Implementation Report for the Marina del Rey (MdR) Harbor Copper Site-Specific Objective (SSO). Consistent with State Water Board Resolution 2014-0049, the County of Los Angeles (County) spearheaded an effort to conduct an SSO study, including development of the State Implementation Policy Justification Report, which was conditionally approved by the Regional Board on September 12, 2017 and June 25, 2018. Subsequently, a study workplan was approved by the Regional Board on May 24, 2019.

The Implementation Report includes the SSO study results, which were carried out with extensive involvement of stakeholders, including non-governmental organizations and the MdR boating community. Concurrent with the study, the County also implemented four copper mitigation measures as required for the SSO study results to be considered by the Regional Board. The progress report for these mitigation measures is also included in the Implementation Report.

With this submittal, the County requests the Regional Board to reopen the revised MdR Toxics Total Maximum Daily Load (TMDL) (Resolution R14-004) to incorporate the proposed SSO and a TMDL schedule extension. We are available to discuss in detail the scope of the TMDL reconsideration. Please contact us with any questions or concerns.

Sincerely,

Michael Tripp Digitally signed by Michael Tripp Date: 2021.08.26 08:05:47 -07'00'

Michael Tripp
Chief, Planning Division
County of Los Angeles
Department of Beaches and Harbors
(424) 526-7747

Paul Alva
Assistant Deputy Director
Stormwater Quality Division
County of Los Angeles Public Works
(626) 458-4325

Enc.

# IMPLEMENTATION REPORT FOR MARINA DEL REY HARBOR COPPER SITE-SPECIFIC OBJECTIVE

**Prepared by**

Los Angeles County
Public Works
900 South Fremont Avenue
Alhambra, California 91803

Los Angeles County
Department of Beaches and Harbors
13837 Fiji Way
Marina del Rey, California 90292

Moffatt & Nichol
555 Anton Boulevard, Suite 400
Costa Mesa, CA 92626

**August 2021**

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Appendix A. Marina del Rey Harbor Site-specific Objective Study

Appendix B. Marina del Rey Harbor Copper Mitigation Measures Implementation Progress Report

Appendix C. Recalculation of Load Allocation

# Glossary

| | |
|---|---|
| AFP | antifouling paints |
| Basin Plan | Water Quality Control Plan for the Los Angeles Region |
| BLM | Biotic Ligand Model |
| BMP | best management practice |
| CCC | criterion continuous concentration |
| CFR | Code of Federal Regulations |
| County | Los Angeles County |
| CTR | California Toxics Rule |
| DPR | California Department of Pesticide Regulation |
| EPA | United States Environmental Protection Agency |
| LA | load allocation |
| MdR | Marina del Rey |
| µg/L | micrograms per liter |
| PCB | polychlorinated biphenyl |
| Regional Water Board (RWQCB) | Los Angeles Regional Water Quality Control Board |
| SIP | Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California |
| SSO | site-specific objective |
| State Water Board | State Water Resources Control Board |
| TMDL | total maximum daily load |
| WER | Water-Effect Ratio |

# Executive Summary

State Water Board Resolution 2014-0049 provided options for stakeholders to develop alternative numeric targets if the targets could be shown to be protective of beneficial uses in Marina del Rey (MdR). Resolution 2014-0049 states that the EPA-approved Water Effects Ratio (WER) method may be used to derive site-specific water quality objectives that will supersede the current chronic and acute CTR as the water quality standard for dissolved copper in MdR if adopted by the Regional Water Board and approved by the State Water Board, Office of Administrative Law, and EPA. Thus, a site-specific objective (SSO) for dissolved copper in MdR Harbor was developed using EPA-approved WER methods. This report (referred to as the Implementation Report) documents how the results of the SSO study can be incorporated into the Water Quality Control Plan for the Los Angeles Region (Basin Plan) and can be used to amend the Marina del Rey Harbor Toxics TMDL (Los Angeles RWQCB Resolution R14-004). The intent of the Implementation Report is to provide all information necessary to fulfill the Regional Water Board's requirements for implementing site-specific objectives.

The SSO study determined two site-specific WER of 1.40 and 1.32, depending on method used to summarize testing results. The first method calculates the final WER (fWER) as the geometric mean of all 24 site WERs (sWERs), resulting in 1.40. This approach is consistent with previous fWER calculations in San Francisco and San Diego Bay and is consistent with a year-round application of the SSO. The second fWER was calculated as a geometric mean weighted by time in wet versus dry weather conditions, resulting in a fWER of 1.32. Since both WERs were generated through the study which is consistent with the EPA guidance, either WER value reflects the intended level of protection for MdR.

This Implementation Report proposes the implementation of the fWER of 1.40, which would modify the site-specific chronic copper criterion from 3.1 µg/L to 4.3 µg/L and the acute copper criterion from 4.8 µg/L to 6.7 µg/L. Given that the fWER of 1.4 has been determined using the EPA-approved method, attainment of that value will ensure the intended level of protection. However, to provide yet a higher level of assurance, upon attainment of the SSO with the fWER of 1.4, further analysis will be performed to ensure there is no further impairment of the beneficial uses. In the highly unlikely event that any such impairment is still indicated (e.g. toxicity is observed), then the SSO will be adjusted to the lower fWER of 1.32.

Thus, the proposed criteria are as follows:

1. acute copper criteria: 4.8 x 1.40 = 6.7 µg/L
2. chronic copper criteria: 3.1 x 1.40 = 4.3 µg/L

The loading capacity and load allocation are revised to be 1,666 kg/year, or 54% copper load reduction from the baseline loading, resulting from the model parameter update incorporating the proposed chronic SSO (WER=1.40) and recent salinity data.

California Water Code (CWC) Section 13241 requires that Regional Water Boards "ensure the reasonable protection of beneficial uses" by considering the potential effects of changes to water quality objectives to the following six factors:

- Past, present, and probable future beneficial uses of water;
- Environmental characteristics of the hydrographic unit, including the quality of water available thereto;
- Water quality conditions that could be reasonably achieved through the coordinated control of all factors which affect water quality in the area;
- Economic considerations;
- The need for developing housing within the region; and,
- The need to develop and use recycled water.

Overall, the proposed changes to the MdR Toxics TMDL were evaluated against the six factors contained in CWC 13241 and determined that the requirements are met.

The implementation of the proposed SSO does not require an anti-degradation analysis as the SSO is not expected to lower the existing water quality of the waterbodies. As discussed in Section 4, the EPA-approved WER method (used to determine the SSO) provides the level of protectiveness of beneficial uses originally intended for the national criteria. Anti-backsliding requirements are not applicable to the proposed SSO developed for dissolved copper because there is no prior permit with effluent limitations applicable to copper discharges from boats in MdR Harbor being renewed, reissued or modified.

The monthly dissolved copper monitoring in MdR currently being implemented to support the Toxics TMDL will be expanded to include monthly monitoring of dissolved organic carbon, dissolved oxygen, pH, and temperature. Comparisons between these water quality metrics and the ranges of observed conditions associated with the SSO study will confirm that the proposed SSO continues to be appropriately applied and representative of site-specific conditions. If basin-average water quality parameters are measured outside of the ranges associated with the SSO study, this would suggest that the conditions in MdR have sufficiently changed such that a re-evaluation or modification of the proposed SSO may be necessary.

# 1. Introduction

The Marina del Rey (MdR) Harbor Toxics total maximum daily load (TMDL) was promulgated in 2005 by the Los Angeles Regional Water Quality Control Board (Regional Water Board) to address the impairments of copper, lead, zinc, chlordane, polychlorinated biphenyl (PCBs), and toxicity in bed sediment and PCBs in fish tissue (Los Angeles RWQCB Resolution 2005-012). The TMDL became effective on March 16, 2006, upon approval by the State Water Resources Control Board (State Water Board) and the U.S. Environmental Protection Agency (EPA).

As part of the TMDL monitoring requirement, the MS4 dischargers monitored dissolved copper in the water column in MdR. The results of the monitoring program found dissolved copper concentrations frequently exceeded the chronic (4-day average) criterion (also referred to as criterion continuous concentration [CCC]) of 3.1 micrograms per liter (µg/L), as specified in the California Toxics Rule (CTR).

## 1.1. Revised MdR Harbor Toxics TMDL

To address the dissolved copper impairment in the harbor, the Regional Water Board adopted a revised Toxics TMDL on February 6, 2014, which became effective on October 16, 2015. The revised Toxics TMDL included a dissolved copper numeric target and load allocation (LA) for the County of Los Angeles (County), individual anchorages, and persons owning boats anchored in the marina.

To demonstrate compliance with LA for dissolved copper, the TMDL requires one of the following:

- Meet the numeric target (CTR dissolved copper concentration) in the water column; or
- Demonstrate that 85% of boats in the harbor are using copper-free hull paints; or,
- Another acceptable means of demonstrating compliance, as approved by the Executive Officer of the Regional 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 TMDL requires that the LA for discharges of dissolved copper from boats be attained by March 22, 2024.

## 1.2. Site-specific Objective for Copper

The State Water Board (Resolution 2014-0049[1]) provided an opportunity for stakeholders to develop alternative numeric targets if they can be shown to be protective of beneficial

[1] State Water Board Resolution 2014-0049, p. 3: "*13. There are a number of U.S. EPA approved tools that can be utilized to derive site specific water quality objectives such as the water effects ratio method and Biotic Ligand Model (BLM). The Los Angeles Water Board will consider*

uses in MdR Harbor. The Resolution states that the EPA-approved Water Effects Ratio (WER) method may be used to derive site-specific water quality objectives that will supersede the current chronic and acute CTR as the water quality standard for dissolved copper in MdR Harbor if adopted by the Regional Water Board and approved by the State Water Board, Office of Administrative Law, and EPA.

In response to the State Water Board Resolution 2014-0049, a site-specific objective (SSO) for dissolved copper in MdR Harbor was developed using EPA-approved WER methods. This report (referred to as the Implementation Report) documents how the results of the SSO study can be incorporated into the Water Quality Control Plan for the Los Angeles Region (Basin Plan) and can be used to amend the Marina del Rey Harbor Toxics TMDL (Los Angeles RWQCB Resolution R14-004). The intent of the Implementation Report is to provide all information necessary to fulfill the Regional Water Board's requirements for implementing site-specific objectives[2]. Consequently, this report is organized as follows:

Section 2. SSO background;
Section 3. SSO results;
Section 4. Revisions necessary to incorporate the SSO results into the TMDL;
Section 5. Specific topics required in the RWQCB review per California Water Code Section 13241;
Section 6. Anti-degradation review;
Section 7. Anti-backsliding review; and,
Section 8. Proposed monitoring and reporting procedures.

Specific details concerning the methods and results of the SSO study are contained within Appendix A, the *Marina del Rey Harbor Site-specific Objective Study (SCCWRP 2021)*.

*revisions to the existing dissolved copper water quality objective and corresponding TMDL numeric target that are developed using the BLM if it is approved by the U.S. EPA for use in marine waters….. Following the County of Los Angeles' submittal of the dissolved copper site-specific objective study for the marina, the Los Angeles Water Board will consider site-specific objectives for Marina del Rey Harbor that, if adopted by the Los Angeles Water Board, and approved by the State Water Board, Office of Administrative Law and U.S. EPA, will supersede the applicable dissolved copper criterion in 40 C.F.R. section 131.38 ('California Toxics Rule') as the enforceable water quality standard."*

[2] Per the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP) Section 5.2: "*Water quality objectives shall be developed in a manner consistent with State and federal law and regulations. In accordance with the State's Porter-Cologne Water Quality Control Act (Division 7 of the Water Code), objectives must provide for the reasonable protection of beneficial uses based on consideration of the factors listed in Water Code Section 13241. In accordance with federal law (CWA) and regulations (40 CFR 131.11, revised as of July 1, 1997), the objectives must be based on sound scientific rationale and protect the designated beneficial uses of the receiving water. The RWQCB shall use scientifically defensible methods appropriate to the situation to derive the objectives. Such methods may include U.S. EPA-approved methods (e.g., Water Effects Ratio [WER] procedure, recalculation procedure, a combination of recalculation and WER procedures, Resident Species Procedure), and/or other methods specified in the workplan.*"

# 2. Background

Section 304(a)(1) of the Clean Water Act requires that numerical water quality criteria accurately reflect the latest scientific knowledge[3]. The Clean Water Act also allows modification of the water quality standards as appropriate (Section 303[c][1])[4], such as to reflect improved scientific knowledge from new data. SSO studies are intended to determine if it may be appropriate to modify standards by using new site-specific information. The MdR SSO study uses new data collected in MdR Harbor to propose modifications to the CTR criteria for dissolved copper; therefore, the MdR SSO is consistent with the standard modification allowed in the Clean Water Act.

The MdR SSO is also consistent with federal regulations regarding water quality standards criteria. 40 Code of Federal Regulations [CFR] Section 131.11(b)(1)(ii)[5] of the federal water quality regulations provides states with the opportunity to adopt water quality criteria that are "modified to reflect site-specific conditions."

## 2.1. Accepted Procedures for Calculating Site-Specific Criteria

Procedures for modifying water quality criteria are provided in the EPA's *Water Quality Standards Handbook* (EPA 1994). Section 3.7 of the handbook states that the national criteria may not apply to all watersheds, and it is sometimes necessary to develop site-specific objectives to address local conditions:

> *"Site-specific criteria are allowed by regulation and are subject to EPA review and approval… Site-specific criteria, as with all water quality criteria, must be based on a sound scientific rationale in order to protect the designated use. Existing guidance and practice are that EPA will approve site-specific criteria developed using appropriate procedures.*
>
> *A site-specific criterion is intended to come closer than the national criterion to providing the intended level of protection to the aquatic life at the site, usually by taking into account the biological and/or chemical conditions (i.e., the species composition and/or water quality characteristics) at the site."*

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[3] Clean Water Act Section 304. (a)(1): *"The Administrator, after consultation with appropriate Federal and State agencies and other interested persons, shall develop and publish, within one year after the date of enactment of this title (and from time to time thereafter revise) criteria for water quality accurately reflecting the latest scientific knowledge …"*

[4] Clean Water Act Section 303. (c)(1): *"The Governor of a State or the State water pollution control agency of such State shall from time to time (but at least once each three year period beginning with the date of enactment of the Federal Water Pollution Control Act Amendments of 1972) hold public hearings for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards. Results of such review shall be made available to the Administrator."*

[5] 40 CFR 131.11 (b): "***Form of Criteria**: In establishing criteria, States should:*

*(1) Establish numerical values based on:*

*i. 304(a) Guidance; or*

*ii. 304(a) Guidance modified to reflect site-specific conditions; or*

*iii. Other scientifically defensible methods;*

(2) *Establish narrative criteria or criteria based upon biomonitoring methods where numerical criteria cannot be established or to supplement numerical criteria."*

Three procedures are approved by the EPA for use in developing site-specific objectives. These procedures are described as follows in Section 3.7.1 of the *Water Quality Standards Handbook* (EPA 1994):

- the **Recalculation Procedure**, which was developed to consider relevant differences between the *sensitivities* of the aquatic organisms in the national dataset and the sensitivities of organisms that occur at a given site;
- the **Water-Effect Ratio (WER) Procedure**, which was developed to consider relevant differences between the *toxicities* of the chemical in laboratory dilution water and in on-site water; and,
- the **Resident Species Procedure**, which was developed to consider *both* on-site species sensitivity differences and the on-site toxicity of a material due to variability in the chemical characteristics of the water at the site.

## 2.2. Procedure for Site-Specific Copper Criteria

As mentioned in Section 1.2 of the SSO study, the WER procedure was determined to be most appropriate for MdR. The WER procedure has been shown to be effective in predicting protective objectives in similar California studies. The MdR Harbor SSO study design and method selection were based on two studies of dissolved copper: (a) the San Francisco Bay copper and nickel SSO derivation (Looker 2007); and (b) copper bioavailability and toxicity studies in San Diego Bay (Bosse et al. 2014). For determining the protectiveness level of the SSO relative to the CTR criteria, the method used for the Los Angeles River and tributaries copper SSO study 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.

The County submitted the State Implementation Policy (SIP) Justification Report for the SSO study to the Regional Board, which was approved on September 12, 2017 with the condition that the County implement four implementation actions concurrently with the study. Briefly, those implementation actions included:

1. A pilot program to convert 100 boats to non-biocide hull paint;
2. A boat lift program to place 200 boats on boat lifts;
3. Conversion to the low-leach rate copper paints per the California Department of Pesticide Regulation (DPR)'s copper paint restrictions; and,
4. An in-water hull cleaning ordinance.

Over the past three years, the County provided monthly status reports to the Regional Board. The progress of the implementation actions is summarized in Appendix B.

The County submitted a workplan for the MdR SSO study to the Regional Board, which was approved on May 24, 2019. In accordance with the workplan, a technical advisory committee (TAC) was established to provide scientific review and guidance for the SSO study. Three scientists with expertise in metal speciation, bioavailability, toxicology, ecology, and water quality modeling comprised the TAC. The TAC members were

selected based on recommendations from Regional Board staff and environmental groups. Each of the TAC members have international and national recognition as leaders in their field, extensive publication records, and a mixture of local and international experience. The TAC provided an independent review of the study design, study results, and final report. The TAC also provided a resource for questions or concerns from stakeholders requiring application of expert judgment.

Public participation was actively sought during the SSO study. Various stakeholders including non-governmental organizations (NGOs), boaters, marina operators, Harbor lessees, and other interested parties were invited to listen in and ask questions during TAC review meetings and two public workshops. The first public workshop was scheduled after the completion of a draft work plan and concurrent with the 30-day public work plan review. The second workshop was scheduled after the completion of the study to explain the outcomes of the SSO study. All key documents from the SSO study, including the draft work plan and draft final report were available for public review.

# 3. Proposed Site-Specific Objective

This section summarizes the technical results of the MdR Harbor Site-specific Objective (SSO) Study, which used the WER method to evaluate the potential impacts of site-specific conditions on the bioavailability of copper and develop a scientifically defensible copper SSO for MdR Harbor that remains protective of aquatic life and associated beneficial uses.

The study was designed to capture a representative range of the water quality conditions that exist in the Harbor, accounting for seasonality (e.g., summer vs. winter), stormwater discharge (wet vs. dry weather), hydrology (tides or water depth), and spatial variability. It was important to collect samples from a range of conditions as the relative importance of individual environmental factors in controlling or influencing bioavailability of copper in MdR Harbor is not well-known. The effects of environmental variability were examined through six unique sampling events: two winter wet weather events (≥ 0.5 inches rain), two winter dry weather events (spring and neap tides), and two summer dry weather events (spring and neap tides). During each event, samples were collected at five locations: two within back basins, two within front basins, and one in the main channel near the mouth of the Harbor. This follows EPA (1994) guidance, namely to collect samples from multiple stations over a minimum of three separate sampling events that include different seasons and locations.

Two final WERs (fWERs) were recommended by the TAC using different methods to calculate the geometric mean of the sample WERs (sWERs). The first method calculates the fWER as the geometric mean of all 24 sWERs, resulting in 1.40. This approach is consistent with previous fWER calculations in San Francisco and San Diego Bay, and is consistent with a year-round application of the SSO. The second fWER was calculated as a geometric mean weighted by time in wet versus dry weather conditions, resulting in a fWER of 1.32. Since both WERs were generated through the study which is consistent with the EPA guidance, either WER value reflects the intended level of protection for MdR.

This Implementation Report proposes the implementation of the fWER of 1.40, which would modify the site-specific chronic copper criterion from 3.1 µg/L to 4.3 µg/L and the acute copper criterion from 4.8 µg/L to 6.7 µg/L. Given that the fWER of 1.4 has been determined using the EPA-approved method, attainment of that value will ensure the intended level of protection. However, to provide yet a higher level of assurance, upon attainment of the SSO with the fWER of 1.4, further analysis will be performed to ensure there is no further impairment of the beneficial uses. In the highly unlikely event that any such impairment is still indicated (e.g. toxicity is observed), then the SSO will be adjusted to the lower fWER of 1.32.

The WER method as applied is consistent with EPA guidance and is “based directly on the guidelines for deriving national aquatic life criteria” (EPA 1994). EPA guidance further

states that the WER method provides a more appropriate[6] and accurate[7] level of protectiveness for an individual site than the national standard. The EPA notes that the increases in acute and chronic criteria associated with the use of a WER are due to the "reduction or elimination of the general overprotection associated with application of a national criterion to individual bodies of water" (EPA 1994). Thus, "site-specific criteria, properly determined, will fully protect existing uses" (EPA 1994). Since both WERs were generated through the study which is consistent with EPA guidance, either WER value reflects the intended level of protection for MdR.

The MdR SSO study included additional measures to increase the margin of safety associated with the proposed WER. First, the most sensitive species in the EPA database, *Mytilus galloprovincialis*, was used as the target species for copper concentrations. Secondly, as part of the SSO study, the protectiveness of the proposed SSO based on the fWER of 1.4 was evaluated. Using the toxicity data collected during the study, the lowest measured EC50 value in a winter dry weather sample (8.95 µg/L) was divided by the proposed SSO (4.34 µg/L) to calculate the protectiveness ratio. The ratio of greater than 2.0 is considered that the proposed SSO is as protective as the national criterion. The ratio for this example is 2.1; therefore, the proposed SSO remains protective of the most sensitive endpoint for dissolved copper in marine environments across the full range of conditions observed within MdR during the SSO study.

In addition, the implementation of either WER value would still necessitate the ongoing implementation of copper reduction activities in MdR Harbor (see Appendix B for further details) in conjunction with copper reductions in legal paint formulations to attain the respective SSOs.

[6] Interim Guidance on Determination and Use of Water-Effect Ratios for Metals (EPA 1994): *"A site-specific criterion is intended to come closer than the national criterion to providing the intended level of protection to the aquatic life at the site, usually by taking into account the biological and/or chemical conditions (i.e., the species composition and/or water quality characteristics) at the site."*

[7] "*Because a WER is expected to appropriately take into account (a) the site-specific toxicity of the metal, and (b) synergism, antagonism, and additivity with other constituents of the site water, using a WER is more likely to provide the intended level of protection than not using a WER.*" (EPA 1994)

# 4. Incorporating the SSO into the Toxics TMDL

## 4.1. Numeric Targets for Dissolved Copper in the Water Column

The acute (single sample maximum) and chronic (four-day average) criteria for dissolved copper in the Toxics TMDL are 4.8 µg/L and 3.1 µg/L, respectively. These criteria are expressed as a function of the WER, which has a default value of 1.0. The SSO study determined that a WER value of 1.40 is sufficiently protective of aquatic life in MdR.

Thus, the proposed criteria are as follows:

1. acute dissolved copper criteria: 4.8 x 1.40 = 6.7 µg/L
2. chronic dissolved copper criteria: 3.1 x 1.40 = 4.3 µg/L

## 4.2. Loading Capacity and Load Allocation

The loading capacity (554 kg/year) was established in the MdR Copper TMDL based on a steady-state copper model used in the Shelter Island Yacht Basin (SIYB) Copper TMDL (SDRWQCB 2005). Load Allocation was assigned to non-point sources of the water column copper impairment, including the discharge of dissolved copper from boat hulls through passive leaching and hull cleaning. Wasteload allocations were not developed because the source analysis determined that copper-based anti-fouling paints were the primary source of dissolved copper to the water column. Therefore, the whole loading capacity was allocated as a load allocation. By estimating the baseline copper loading from boat hulls (3609 kg/year), the TMDL required an 85% copper reduction by 2024.

The steady-state copper model was developed based on mass-balance in and out of the harbor, and the main mechanism of transport and dispersion is tidal flushing which is driven by salinity gradient between inside and outside of the harbor; as a result, model results were strongly influenced by the salinity gradient. In the MdR TMDL, the salinity gradient was determined from an average salinity value in ocean samples and a minimum value of the MdR samples taken from 2007 and 2008, resulting in very different model outputs from those of SIYB (Table 1). A study has shown that the residence time of water at MdR ranges from 7.5 days to 11.2 days (Appendix C, Moffatt and Nichol 2000).

Table 1. Comparison of model inputs and outputs.

| | Outside Salinity (ppt) | Inside Salinity (ppt) | Salinity Gradient (ppt) | Dispersion Coefficient ($m^2/s$) | Residence Time (days) |
|---|---|---|---|---|---|
| SIYB TMDL | 33.46 | 33.62 | 0.16 | 15.4 | 4.7 |
| MdR TMDL | 33.75 | 31.1 | 2.65 | 0.52 | -126.8 |
| Update | 33.70 | 33.90 | 0.20 | 6.9 | 9.6 |

The MdR SSO study conducted a large-scale water quality data collection over the three-year period (2018-2020), which provided an opportunity to update salinity values in the model to more accurately reflect the current condition in MdR Harbor. The median salinity values of the 2018-2020 data were determined most representative for inside and outside of the harbor (Table 1, Update).

The loading capacity and load allocation are revised to be 1666 kg/year, or 54% copper load reduction from the baseline loading, resulting from the model parameter update incorporating the proposed SSO of 4.3 µg/L and recent salinity data. Details of the model update are described in Appendix C.

# 5. California Water Code Section 13241

California Water Code Section 13241 requires that Regional Water Boards "ensure the reasonable protection of beneficial uses" by considering the potential effects of changes to water quality objectives to the following six factors:

- Past, present, and probable future beneficial uses of water;
- Environmental characteristics of the hydrographic unit, including the quality of water available thereto;
- Water quality conditions that could be reasonably achieved through the coordinated control of all factors which affect water quality in the area;
- Economic considerations;
- The need for developing housing within the region; and,
- The need to develop and use recycled water.

The effect of implementing the MdR Harbor SSO for dissolved copper on each of these factors is discussed in sections below.

## 5.1. Past, present, and probable future beneficial uses of water

The existing beneficial uses for the MdR Harbor include water contact recreation, non-water contact recreation, navigation, commercial and sport fishing, marine habitat, wildlife habitat, and shellfish harvesting, per Table 2-3 and Table 2-3a of the Basin Plan[8]. As MdR Harbor has always been a man-made marina and is expected to remain a marina for the foreseeable future, these beneficial uses represent past and probable future beneficial uses of the site as well.

The most restrictive (lowest) criterion for dissolved copper concentrations in MdR Harbor is associated with the protection of aquatic life for beneficial uses such as fishing, marine habitat, and shellfish harvesting. Therefore, the criterion that is developed to protect the aquatic life beneficial uses will be protective of other beneficial uses.

The MdR Harbor SSO study was developed with the EPA-approved WER procedure, which was explicitly developed to account for the site-specific toxicity of dissolved copper on aquatic life. The SSO study also used the most sensitive endpoint for dissolved copper in marine environments – the larval development of *Mytilus galloprovincialis* – as the toxicity test species to develop the site-specific WER, and the SSO study sampling design explicitly took into account both spatial and temporal variabilities of harbor conditions. As a result, the proposed SSO provides conservative estimates of acute and chronic dissolved copper target concentrations that protect beneficial uses associated with aquatic life.

[8] The Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties can be found here: https://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/basin_plan_documentation.html

## 5.2. Environmental characteristics of the hydrographic unit

The present environmental characteristics of the hydrographic unit are described in detail in Chapters 1-3 of the Basin Plan. MdR Harbor does not have a local source of freshwater aside from surface runoff and local storm drains.

Copper bioavailability and toxicity is highly dependent on local water chemistry, as dissolved copper ions may be bound by organic and inorganic substances in the water column (Blossom 2015). Consequently, site-specific factors including salinity, suspended sediment concentration, and pH may substantially alter the local bioavailability and toxicity of dissolved copper. The EPA-developed WER method specifically accounts for this site-specific variability to ensure that the environmental characteristics of the site, including aquatic life health and associated beneficial uses, are fully protected in the implementation of an SSO.

## 5.3. Water quality conditions that could be reasonably achieved through the coordinated control of all factors which affect water quality in the area

The environmental setting and factors affecting water quality and beneficial uses in MdR is described in the revised MdR Toxics TMDL. The Staff Report for the Los Angeles River and tributary Metals TMDL incorporating SSOs for copper and lead (LARWQCB 2014) describes that the SSOs are considered as the baseline or benchmark for water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect water quality in the area. The proposed SSO preserves the intended level of protection for aquatic life beneficial uses and can be attained through the implementation of the MdR copper mitigation measures.

## 5.4. Economic considerations

The proposed SSO is as protective of aquatic life as the existing CTR criteria and will not cause the water quality to degrade from the current condition; therefore, no changes are foreseen in costs associated with environmental degradation. Also, the implementation of the SSO will not require additional control beyond what is currently required.

However, the cost of compliance for the MdR boating community is still high. The 54% copper reduction goal under the proposed SSO would still require over 2,500 boats to convert to non-copper or non-biocide paints or use alternative mitigation measures. Conversion from a copper AFP to a non-biocide hull paint can cost $10,000 to $15,000 for averaged sized boat (35 ft in length), whereas repainting with a copper AFP costs on the order of $2,000 to $3,000, assuming no stripping is required. The difference in repainting cost of up to $12,000 per average-sized boat would cost boat owners up to $30 million for 2,500 boats.

With the statewide prohibition of high leach rate copper AFPs, a portion of the copper loading (approximately 18%) is reduced through the required transition to low leach rate copper paints. Additionally, a portion of the copper loading (approximately 20%) is reduced through implementation of in-water hull cleaning best management practices

(BMPs). The remainder of the copper load reduction under the proposed SSO (approximately 16%) will need to be achieved through use of non-copper-based antifouling paints (AFP), non-biocide paints, or purchase and use of boat lifts or in-water dry docks. This remaining load reduction equates to approximately 1,190 boats using alternative (non-copper leaching) paints or boat lifts or in-water dry docks. See Appendix B for a detailed discussion of the mitigation measures and associated copper load reductions. Assuming an average cost difference of $12,000 per boat, this conversion would cost the MdR boating community over $14 million to convert 1,190 boats from copper AFP to non-biocide hull paints[9]. Purchase of an in-water dry dock or boat lift would have comparable or higher capital costs for boat owners (e.g., $14,000 minimum for a 35 ft boat), but could also have potential lifecycle cost savings due to the reduced cost of hull maintenance (e.g., reduced hull cleaning and repainting).

### 5.5. The need for developing housing within the region

The implementation of the SSO will not affect the development of housing in Los Angeles County. Implementation of the SSO will not increase discharge requirements for wastewater treatment or stormwater management associated with housing development.

### 5.6. The need to develop and use recycled water

The implementation of the SSO will not have impact on the quality or quantity of wastewater available for recycling or reclamation in the Los Angeles County, and it will not restrict the development or use of recycled water.

Overall, the proposed changes to the MdR Toxics TMDL were evaluated against the six factors contained in CWC 13241 and determined that the requirements were met.

[9] based on present cost. It does not take into account the potential price change of the paints becoming readily available.

# 6. Anti-degradation Review

Anti-degradation policies are intended to protect and maintain the existing water quality and beneficial uses of waterbodies. The State of California anti-degradation policy (Resolution No. 68-16) applies with respect to "maintaining high quality waters in California" and is incorporated into the state policy for water quality control and all regional water quality control plans. Thus, the state anti-degradation policy applies where there is a determination that the receiving water is "high quality water" and the activity will discharge waste into the receiving water (*Asociacion de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Board* (2012) 210 Cal.App.4th 1255, 1272.) Once applicable, the State's anti-degradation policy forbids discharges that may result in lower water quality unless findings are made that the lowered water quality is consistent with the maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water, will not result in water quality less than that prescribed in state policies, and uses the best practicable treatment or control of the discharge necessary to avoid a pollution or nuisance and to maintain the highest water quality consistent with the maximum benefit of the people of the State. (*Id*. at p. 1278.) Federal water quality regulations for anti-degradation similarly require the protection of existing water quality (40 CFR 131.12[a][1]). California's anti-degradation policy incorporates the federal policy where it applies under federal law.

The implementation of the proposed SSO does not require an anti-degradation analysis as the SSO is not expected to lower the existing water quality of the waterbodies. As discussed in Section 3, the EPA-approved WER method (used to determine the SSO) provides the level of protectiveness of beneficial uses originally intended for the national criteria[10]. As a result, the use of the EPA-approved WER method in the SSO ensures that the water quality upon reaching the SSO target dissolved copper concentrations will be the same as the water quality intended by the national guidelines. Consequently, there will be no degradation associated with the implementation of the MdR Harbor SSO for dissolved copper.

[10] Interim Guidance on Determination and Use of Water-Effect Ratios for Metals (EPA 1994): *"A site-specific criterion is intended to come closer than the national criterion to providing the intended level of protection to the aquatic life at the site, usually by taking into account the biological and/or chemical conditions (i.e., the species composition and/or water quality characteristics) at the site."* In addition, "*because a WER is expected to appropriately take into account (a) the site-specific toxicity of the metal, and (b) synergism, antagonism, and additivity with other constituents of the site water, using a WER is more likely to provide the intended level of protection than not using a WER.*" (EPA 1994)

# 7. Anti-backsliding Review

Anti-backsliding requirements apply when an NPDES permit is renewed, reissued or modified. (33 U.S.C. § 1342(o).) The Clean Water Act Anti-backsliding provision and associated Federal Regulations require that effluent limitations are at least as stringent as the comparable effluent limitations in the previous permit. (*Ibid;* 40 CFR 122.44(l)(1).) Anti-backsliding provisions also include specified exceptions, including but not limited to new information which was not available at the time of permit issuance, events over which the permittee has no control and for which there is no reasonably available remedy, and properly operated and maintained treatment facilities that have been unable to achieve the previous effluent limitations.[11]

Anti-backsliding requirements are not applicable to the MdR SSO developed for dissolved copper because there is no prior permit with effluent limitations applicable to copper discharges from boats in MdR Harbor being renewed, reissued or modified.

[11] 33 U.S.C. §1342(o)(2): "*A permit with respect to which paragraph (1) applies may be renewed, reissued, or modified to contain a less stringent effluent limitation applicable to a pollutant if—*

*(A) material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of a less stringent effluent limitation;*

*(B) (i) information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance; or*

*(ii) the Administrator determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under subsection (a)(1)(B);*

*(C) a less stringent effluent limitation is necessary because of events over which the permittee has no control and for which there is no reasonably available remedy;*

*(D) the permittee has received a permit modification under section 1311(c), 1311(g), 1311(h), 1311(i), 1311(k), 1311(n), or 1326(a) of this title; or*

*(E) the permittee has installed the treatment facilities required to meet the effluent limitations in the previous permit and has properly operated and maintained the facilities but has nevertheless been unable to achieve the previous effluent limitations, in which case the limitations in the reviewed, reissued, or modified permit may reflect the level of pollutant control actually achieved (but shall not be less stringent than required by effluent guidelines in effect at the time of permit renewal, reissuance, or modification).*"

# 8. Monitoring and Reporting

The monthly dissolved copper monitoring in MdR currently being implemented to support the Toxics TMDL will be expanded to include monthly monitoring of dissolved organic carbon, dissolved oxygen, pH, and temperature. Comparisons between these water quality metrics and the ranges of observed conditions associated with the SSO study will confirm that the proposed copper criteria continues to be appropriately applied and represented of site-specific conditions. If basin-average water quality parameters are measured outside of the ranges associated with the SSO study, this would suggest that the conditions in MdR have sufficiently changed such that a re-evaluation or modification of the SSO may be necessary.

## 8.1. Concentration Triggers

Ranges of values are used to define the water quality conditions associated with the proposed SSO. Table 2 contains basin-average environmental conditions associated with water samples collected as part of the WER analysis (see the SSO Report for further details). The SSO report notes that the critical condition for copper variability was primarily affected by DOC.

*Table 2: Environmental Conditions associated with the WER Analysis.*

| | **Minimum Basin Average** | **Maximum Basin Average** | ***Overall Average*** |
|---|---|---|---|
| DOC (mg/L) | 0.65 | 1.58 | *1.17* |
| DO (mg/L) | 5.65 | 8.68 | *6.85* |
| pH | 7.49 | 8.29 | *7.93* |
| Salinity (ppt) | 28.4 | 35.1 | *33.1* |
| Temperature (°C) | 14.7 | 25.5 | *18.6* |

If monitoring activities find that the future basin-average water quality conditions are outside of ranges provided in Table 2, then the environment within MdR Harbor may have changed to a point that a reevaluation and/or modification of the WER is required[12].

[12] *"The WER should be reevaluated whenever hardness, alkalinity, pH, TOC, and/or TSS decrease below the values that existed when the WERs were determined."* (EPA 1994).

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