CITY OF BELMONT
CITY COUNCIL AND BELMONT FIRE PROTECTION DISTRICT BOARD OF DIRECTORS

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CITY COUNCIL REGULAR MEETING AGENDA
Tuesday, July 26, 2022
7:00 PM
City Council Chambers
City Hall, One Twin Pines Lane, Belmont, California

TELECONFERENCE PARTICIPANTS
Some Members may Participate Virtually
Being held under Gov. Code 54953(e) and

The meeting will be broadcast live to Belmont residents on Comcast Cable Channel 27, streamed live via the City's website at www.Belmont.gov. The public may also attend the meeting in the City Council Chambers and address the council from the chambers. Social distancing must be practiced, and seating will be limited.

PUBLIC COMMENT:

To maximize time for live public comment, we encourage members of the public to provide comments by joining the City Council meeting via Zoom : For web, visit https://belmont-gov.zoom.us/ select "Join" and enter Meeting ID: 95745673035. Use the Raise Hand feature to request to speak. You may rename your profile if you wish to remain anonymous.

For dial- in comments, call *67 1-(669) 900-6833 (your phone number will appear on the live broadcast if *67 is not dialed prior to the phone number), enter Meeting ID: 95745673035, and press *9 to request to speak. All public comments are subject to a 3-minute time limit unless otherwise determined by the Mayor.

If you wish to submit written public comment, you may send an email to cclerk@belmont.gov before the council considers the item. Please indicate the agenda item topic or agenda item number you wish to comment on in your email's subject line. Any public comment regarding agenda items that are received from the publication of the agenda through the meeting date will be made part of the meeting record, but will not be read during the Council meeting.

1. ROLL CALL

2. PLEDGE OF ALLEGIANCE

3. REPORT FROM CLOSED SESSION

4. SPECIAL PRESENTATIONS

A. National Night Out August 2022

5. PUBLIC COMMENTS ON ITEMS NOT ON THE AGENDA

This portion of the meeting is reserved for persons wishing to address the Body on any City matter not on the agenda. The period for public comment at this point in the agenda is limited to 15 minutes, with a maximum of 3 minutes per speaker. Speakers who requested but did not receive an opportunity to speak during this comment period will be given an opportunity to address the Body later in the meeting. State law prohibits the Body from acting on non-agenda items.

6. COUNCILMEMBER ANNOUNCEMENTS

7. CONSENT BUSINESS

Consent business items are considered to be routine in nature and will be enacted by one motion. There will be no separate discussion on these items unless a member or staff request specific items to be removed for separate action. The City Attorney will read the title of ordinances to be adopted.

A. Approval of Meeting Minutes

Recommendation: Approve minutes as presented for Special and Regular Meetings of April 12, 2022 and July 12, 2022

Attachment(s):

Special and Regular Meeting April 12, 2022
Special and Regular Meeting July 12, 2022

B. New Municipal Regional Stormwater Permit Update

Recommendation: This is an informational item only; no action is required.

Attachment(s):

Staff Report
New Municipal Regional Stormwater Permit Upgrade

C. Task Orders For CCN 579 - San Juan Pump Station Slope Repair Project

Recommendation: Adopt a resolution 1) authorizing the City Manager to execute a Task Order with Atlas Technical Consultants LLC (Atlas) to provide geotechnical and structural construction support services for the San Juan Pump Station Slope Repair Project for an amount not to exceed $15,000, and 2) authorizing the City Manager to execute a Task Order with Moore Iacofano Goltsman, Inc. (MIG) to provide environmental construction support services for the San Juan Pump Station Slope Repair Project for an amount not to exceed $38,880.

Attachment(s):

Staff Report
Resolution

D. Labor Relations Consulting Services

Recommendation: Adopt a resolution authorizing the City Manager to execute an amendment to Task Order No. 2 with Renne Public Law Group (RPLG) to provide labor relations consulting services in an amount of $80,000 for a total not-to-exceed amount of $130,000

Attachment(s):

Staff Report
Resolution

E. Recommended Parking Changes at Various Locations
Recommendation:

Adopt a resolution approving the establishment of 1) no parking zones (red zones) along Academy Avenue and Court and 2) passenger pick up and drop off zone (white zone) in front of 1314 Old County Road.

Attachment(s):
Staff Report
Resolution

8. PUBLIC HEARINGS

A. Locally Controlled Hotel Guest Tax Measure
Recommendation: 1. Adopt a resolution calling a municipal election on a measure increasing the hotel room tax by updating the rate to 14% of the rent paid by the guest; and,
2. Designate by motion a subcommittee of two council members to prepare the written argument in favor and rebuttal

Attachment(s):
Staff Report
Resolution
Draft Ordinance
Presentation

9. GENERAL BUSINESS
General Business items are considered separately, typically in the order listed. The chair will call for public comment on each item when the body considers the item.

A. Review of Draft General Plan Housing Element 2023-2030 and Draft Environmental Impact Report
Recommendation: Receive presentation introducing the Draft General Plan Housing Element 2023-2030 and Draft Environmental Impact Report, consider Planning Commission recommendations and public comments, and provide direction for submittal to the State Department of Housing and Community Development (HCD)

Attachment(s):
Staff Report

B. Continuation of July 12, 2022 Agenda Item 9. A ("review and Adoption of the Parks, Recreation and Open Space Master Plan") - CONTINUED TO DATE TDB

This item will be re-agendized for a Council meeting in the near future while clarifications are prepared based on community feedback to date. It is anticipated that additional public comment will be taken at that future meeting before the Council concludes the item after the August recess.

10. BRIEF VERBAL REPORTS FROM MEMBERS AND STAFF
A. Verbal report from Councilmembers on Intergovernmental (IGR) and Subcommittee Assignments
B. Verbal report from City Manager

11. MATTERS OF INTEREST/CLARIFICATION

Items in this category are for discussion and direction to staff only. However, Council/Board may take final action on an item if there is no need for additional staff analysis.

12. ADJOURNMENT

If you need assistance to participate in this meeting, please contact the City Clerk at (650) 595-7413. The speech and hearing-impaired may call (650) 637-2999 for TDD services. Notification in advance of the meeting will enable the City to make reasonable arrangements to ensure accessibility to this meeting.

Meeting information can also be accessed via the internet at: www.belmont.gov. All staff reports will be posted to the web in advance of the meeting, and any writings or documents provided to a majority of the City Council/District Board or Commission regarding any item on this agenda will be made available for public inspection in the City Clerk's Office, One Twin Pines Lane, during normal business hours and at the Council Chambers at City Hall, Second Floor, during the meeting.

Meeting Minutes of Special and Regular Meetings of April 12, 2022 of City Council and Belmont Fire Protection District Board Of Directors
City Council Chambers City Hall, One Twin Pines Lane, Belmont, California

SPECIAL MEETING

CALL TO ORDER: 6:35 PM

ROLL CALL
COUNCILMEMBERS PRESENT: Stone, Hurt, McCune, Mates
COUNCILMEBERS ABSENT: Lieberman

Mayor Mates opened the meeting for public comment on the closed session item. No member of the public came forward.

CLOSED SESSION

1. Conference with Legal Counsel – Existing Litigation (Gov't Code Section 54956.9(d)(1)), One case: Wolfson v. City of Belmont et al., San Mateo Superior Court No. 22-CIV-00921

ADJOURNMENT at this time being 6:55 pm

Jozi Plut
City Clerk

CALL TO ORDER: 7:00 PM

ROLL CALL
COUNCILMEMBERS PRESENT: Stone, Hurt, McCune, Mates
COUNCILMEBERS ABSENT: Lieberman

PLEDGE OF ALLEGIANCE
Led by Mayor Mates

REPORT FROM CLOSED SESSION
City Attorney Rennie state that there are no reportable actions from an earlier held closed session.

SPECIAL PRESENTATIONS

Proclamation Honoring Denny Lawhern
Mayor Mate read the proclamation and presented it to Mr. Lawherns's sister Abby Hull,

Proclamation In Appreciation to Park and Recreation Commissioner Chuck Cotton
Mayor Mates read the proclamation and presented it to Mr. Cotton.

Councilmembers thanked Mr. Cotton for his public service.

Proclamation Honoring Women's History Month
Mayor Mates read the proclamation.

Proclamation Declaring the Month of April National Poetry Month
Mayor Mates read the proclamation and presented it to Belmont Poet Laurette Monika Korde.

Ms. Korde highlighted her work as Belmont Poet Laurette and recited her poem *Awakening the Poet Within.*

Proclamation Declaring the Month of April as Water Conservation Month in the City of Belmont
Mayor Mates read the proclamation and presented it to members of the Mid-Peninsula Water Board and Staff.

Presentation of SchoolForce Celebrate the Music Festival
Event representative Alain Sarver provided information and invited the public to attend the upcoming music festival.

RECESS: 7:44 pm
RECONVENE: 751 PM

PUBLIC COMMENTS ON ITEMS NOT ON THE AGENDA
Belmont Police Chief Stenquist stated that the department is recognizing the department's dispatchers and call takers. He stated the police personnel is wearing patches or pins to recognize autism awareness month.

COUNCILMEMBER ANNOUNCEMENTS
Councilmember Hurt announced a virtual happy hour held by sustainable San Mateo County, titled High Voltage, Low Impact building Electrification in San Mateo County. She also announced an Office of Sustainability event to help reduce impacts of climate change.

Mayor Mates announced City Earth Day events, an upcoming egg hunt and invited the public to look to the City's website for other events.

CONSENT BUSINESS
Approved **February 2022 Monthly Financials**
Resolution 2022-023 authorizing the City Manager to enter into an agreement with Granicus LLC for software solutions to conduct required elements of public meetings and public office campaign requirements. in an amount not to exceed $206,265.06 for continued use and support and maintenance for a three-year period from July 2022 – June 2025.
Resolution 2022-024 (1) acknowledging receipt of, and accepting the allocation of funds in the amount of $28,880 awarded by San Mateo County; and (2) appropriating $28,880 of grant revenue from San Mateo County to the County Grant Account 205-4-820-6362 and increasing the appropriation of $20,080 to expenditure account 205-4-820-8103 to hire additional part time staff to provide support to vulnerable participants, to provide disability awareness and inclusion training, and to purchase sensory and wellness supplies

Resolution 2022-025 authorizing the City Manager to execute Amendment 2 to the Service Agreement with Renne Public Policy Group to provide State Legislative Advocacy and Consulting Services to the City in an amount not to exceed $55,000 annually, including City Manager authority to extend the agreement for two additional, consecutive one-year term
Introduced an Ordinance establishing Cannabis Retail & Distribution (S-3 & S-4) Overlay Zones and Development Standards 2) Direct review of Ordinance and Zoning Basemap Amendments to Planning Commission for review/recommendation
Resolution 2022-026 authorizing the City Manager to Execute State and Federal Agreements for transportation grants between The State of California, Department of Transportation (Caltrans) and the City of Belmont for State-Funded and Federal-Aid Projects

In response to Councilmember Hurt, Parks and Recreation Director Shearer clarified grant funds will not be used to promote the disability awareness and inclusion training, and to purchase sensory and wellness supplies in the parks and recreation department. She noted that the Parks Department has a robust communications network and noted that the school district, and PTA's will be serve as a resource to promote the grant from San Mateo County.

ACTION: on a motion made by Councilmember Stone and seconded by Councilmember Hurt the consent business was approved by a roll call vote. (4-0), Councilmember Lieberman absent.

PUBLIC HEARINGS (None)

GENERAL BUSINESS
District Elections Map Boundaries, Sequence of Elections, and At-Large Elected Mayor
City Attorney Rennie stated the action before is a culmination of a series of meetings and public hearings the Council has had on distinct elections. He explained that the Council will hold a final public hearing for the approval of a final map, adopt boundaries of council districts for by-district elections by resolution and introduce an ordinance codifying district-based elections, establishing the sequence of councilmember elections by-districts, establishing the office of mayor and setting the term of office at two years and initial election, and reorganizing the city code to incorporate the change in method of council elections.

In response to Councilmember Hurt, City Attorney Rennie stated that boundaries are based on specific information in the US Census, he explained that the technical boundary changes allotted to the City Manager are to ensure that the map is following the census lines and lines are closing. He further explained that the technical changes would not include moving residences from one district to another.

In response to Mayor Mates, City Attorney Rennie explained that in earlier irritations the districts were numbered with letters rather than that of the current map with numerical districts, he noted that the numerical method is conventional.

In response to Councilmember Stone, City Attorney Rennie stated that the Council could initiate the process of establishing term limits for the Mayor, he explained that the term limits are established by the vote of the people.

ACTION: on a motion made by Councilmember McCune and seconded by Councilmember Stone **Resolution 2021-027** Adopting District Boundaries Based on the 2020 Census for By-District Elections was approved by a roll call vote. (4-0), Councilmember Lieberman absent.

Comprehensive Sewer Rate Study – Proposition 218 Notice for Sewer Rate Changes Effective Fiscal Years 2022/2023 and 2023/2024

Public Works Director Brown noted that the comprehensive study is a biannual process and the action recommended is to adopt a resolution setting the maximum sewer rates for the next 2 fiscal years 2022 to 2024 with a flow stabilization adjustment and setting a rate study public hearing to occur on the June 14, 2022.

City Consultant Korn, HDR provided a summary of the sewer rate study and stated the study has some key goals to fund annual operational and maintenance (O&M) expenses, including the cost of waste water treatment thru Silicon Valley Clean Water (SVCW) a total pass through cost of 45% pf the O$M budget. He added that the overall capital improvements costs are also calculated into the charges. He explained cost formulas for increases to consumers and provided a comparison to other member agencies. He concluded stating that the proposed rates of 5.5% on July 1 of FY22/23 and FY 23/24 and winter follow adjustment increase from 9% to 10% are cost based and reflect cost of service principles and recommended approval of rates.

ACTION: on a motion made by Councilmember and seconded by Councilmember Stone and seconded by Councilmember Hurt **Resolution 2022-028** Stating Its Intention to Revise the City's Sewer Charges Effective Tax Year 2022-2023 And 2023-2024 approved by a roll call vote. (4-0), Councilmember Lieberman absent.

Measure I Report

Public Works Director Brown provided an update on the projects delivered since the inception of the Measure I Sales Tax Measure between 2018 and present. Mr. Brown explained that the tax measure is a ½ cent local sales tax enacted in 2017 with a 30-year sunset to provided local funding for maintaining City services and facilities. He outlined benefits from Measure I since adoption nothing completed and upcoming projects. He noted that with the Measure I monies the Pavement Index has risen 9 points.

In response to Councilmember Hurt, Mr. Brown stated that $300 thousand Measure I dollars was granted for the Twin Pines and Belmont Creek restoration project and matched with $150 thousand from both San Carlos and County of San Mateo.

BRIEF VERBAL REPORTS FROM MEMBERS AND STAFF

Verbal report from Councilmembers on Intergovernmental (IGR) and Subcommittee Assignments

Councilmembers reported on their intergovernmental assignments.

Verbal report from City Manager

City Manager Oskoui welcomed everyone back to the chamber for n person meetings. He acknowledged the accomplishment of district mapping process and congratulated all involved in the adoption of the final map. He noted that the San Mateo ShopLocal app is live. He stated that

information will be forthcoming regarding City projects that will impact local traffic. He announced the V.O.I.C.E.S. personal hygiene and household products drive in partnership with Samaritan House.

MATTERS OF INTEREST/CLARIFICATION
(none)

ADJOURNMENT at this time being 8:50 PM

Jozi Plut
City Clerk

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Meeting Minutes of Regular Meeting of July 12, 2022, of City Council and Belmont Fire Protection District Board of Directors
City Council Chambers City Hall, One Twin Pines Lane, Belmont, California

CALL TO ORDER 7:00 p.m.

ROLL CALL
COUNCILMEMBERS PRESENT: Lieberman (virtual), Stone, Hurt, McCune, Mates,

PLEDGE OF ALLEGIANCE
Led by Mayor Mates.

REPORT FROM CLOSED SESSION
City Attorney Rennie stated that there is no closed session on the agenda.

SPECIAL PRESENTATIONS
Mayor to Administer Attorney's Oath to Belmont Resident Gabrielle Sue
Mayor Mates administered the oath to Ms. Sue.

Fire Prevention Update
Deputy Fire Chief Marshal provided an update on fire prevention efforts by the San Mateo County Consolidated Fire and outlined new legislation governing fire preparedness. He described resources available to the public to plan for fire prevention.

In response to Councilmember McCune Deputy Fire Chief Marshal stated that a grant application was submitted and would include fuel reduction efforts in city park areas and City owned property including thinning and removal of nonnative fire fuel and creating firebreaks in defensible fire zones.

In response to public comment from Dipendra Sinha, Deputy Fire Chief Marshal stated that the number of alarms corresponds to the number of resources that are deployed to a fire.

Parks Make Life Better
Mayor Mates read the proclamation.
Michael Moran, Parks and Recreation Staff Member, thanked the Council for recognizing Parks and the positive impact they have in the community.

RECESS: 7:35 PM
RECONVENE: 7:40

PUBLIC COMMENTS ON ITEMS NOT ON THE AGENDA
Michael Craig, commented on traffic impacts in the Sterling Downs area as a result to proposed housing plans.

"Call-in-User" commented on off-leash hours at Barrett Community Center and opposition to a proposed structure on Folder Drive.

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Bhushhan Gupta, commented on potential traffic issues on Oxford Way as a result of proposed housing plans.

COUNCILMEMBER ANNOUNCEMENTS

Councilmember Lieberman stated that SVCW Chief Operating Officer Monte Amamoto was appointed to the State Water Resources Control Board Wastewater Certification Advisory Committee as subject matter expert. He announced a seven-partner agency study on reusing purified water thru the treatment plant to portable water.

Councilmember Stone announced the final series of Concerts in the Park sponsored by the Belmont Park Boosters.

Councilmember McCune stated that the Council received a voluminous number of emails in regard to items on the agenda, he clarified that he may have sent inaccurate standardized responses to some recipients.

Mayor Mates announced that the Alameda Corridor Project was included and announced in the CA State Budget. The Project was awarded $3.2 million dollars and will be applied to traffic relief in the four corners of San Carlos and Belmont corridor area. She thanked Senator Kevin Mullin for championing the project. She announced upcoming community events.

CONSENT BUSINESS

Resolution 2022-073 finding that the COVID-19 statewide emergency remains in effect and that state and local officials continue to recommend measures to promote social distancing and directing the Council's Citizen Advisory Bodies to make consistent findings

Resolution 2022-074 accepting work and authorizing the issuance of a Notice of Completion to EPS, Inc., dba Express Plumbing for the Sanitary Sewer Easement Rehabilitation Project, City Contract Number 2019-574, for a final construction cost of $3,137,595.09.

City Clerk Plut that noted email correspondence was received for items not on the agenda.

ACTION: on a motion made by Councilmember Stone and seconded by Councilmember Hurt the consent business was unanimously approved by a roll call vote. (5-0)

PUBLIC HEARINGS

Commercial Cannabis Overlay Zone Amendments

Community Development Director de Melo stated that the Council has before them a first reading of a Belmont Zoning Ordinance (BZO) and Basemap Amendments for Commercial Cannabis Overlay and recommendations from the June 7, 2022 Commission meeting. He explained that in 2016 California passed Proposition 64 to legalize cannabis. He noted that Council in 2017 adopted an ordinance prohibiting commercial cannabis in Belmont, He stated that in 2021 Council considered option for diversifying revenues and began a review of Local Cannabis policy framework. He explained that in April of 2022 Council reviewed zoning overlay district models and Conditional use permit (CUP) performance requirements and development standards. He

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noted that the City is in the initial steps of developing a land use ordinance and identified Council direction from earlier study sessions.

He summarized the proposed Belmont Zoning Ordinance Modifications and explained the overlay zoning map identifying cannabis distribution along El Camino Real, on east and west side fronting properties - with the exception of properties located in the Belmont Village Specific Plan (S-3 Cannabis Retail & Distribution Combining District) a portion of Ralston Avenue east of the Caltrain station to Granada Street, along a portion of west side Old County Road (OCR) from Masonic Way to the 700 Block of OCR, and along a portion of both east and west side Old County Road from Ralston Avenue (going south) to the southern border (of San Carlos).

He stated that the S-4 Cannabis Distribution Combining District is exclusively located along the west side of Old County Road (OCR) from the 700 Block to the northern border (of San Mateo) and includes all properties along Shoreway Road. He explained development regulations noting that the cannabis facility must be at least 600 feet from schools and other cannabis uses and 100 feet from operational childcare centers and parks. He provided an overview of performance standards related to the conditional use permit. He identified the Planning Commission recommendations for Council consideration.

He noted that the Commission provided three areas of preference for Council to reconsider. He explained that all areas on both sides of Ralston Ave (noted as Area 1) from Old County (OCR) Road to Granada Avenue were top priority to be reconsidered. He further explained that the Commission recommended reconsideration of the S-4 distribution and S-3 retail areas (noted as Area 2) along north OCR. Thirdly a recommendation to reconsider the south OCR properties (noted as Area 3). He noted that the Commission did not recommended reconsideration to the areas along the El Camino Real.

City Attorney clarified that the proposed ordinance requires a cannabis retail uses to be at least 600 feet from other cannabis retail use but does not require cannabis retail uses to be at least 600 feet from cannabis distribution uses.

In response to Councilmember Stone, City Attorney clarified that depending on the changes that the Council may propose that the item may again need to come before the Planning Commission.

In response to Councilmember McCune questions, Mr. de Melo clarified that only the west side Old County Road are proposed for retail and distribution.

In response to Councilmember Hurt, Mr. de Melo confirmed that cannabis delivery in Belmont is allowed. He explained that the Planning Commission considered eliminating overlays districts on zones 1, 2, and 3 and changing buffer areas which would zone out certain areas. City Attorney stated that if a city does not alter state land use regulations the state regulations apply. He noted that local jurisdictions can place uses closer to each other than that of state regulations.

In response to Councilmember Hurt, Police Chief Stenquist explained that the Police department began research at the local and out of county areas that provide high end cannabis services and

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determined there is minimal impact on services. He noted that the department is working on security plans and procedures and noted that all applications will be vetted by the department.

In response to Councilmember Lieberman, Mr. de Melo confirmed language in the ordinance related to cannabis retail distance from schools at 600 feet, childcare centers and parks at 100 feet and no regulation in the vicinity of a muti-family living complex.

Mayor Mates opened the item for public comments, forty individuals came forward to speak, additionally numerous email comments were provided to Council since the posting of the agenda.

RECESS: 10:05 PM
RECONVENE: 10:13 PM

Councilmember discussion ensued.

Councilmember Stone clarified that Carlmont shopping center was not considered as a dispensary location due to its 600-foot vicinity to schools. He stated that he could support dispensaries along El Camino Real and distribution on the east side of 101. He noted that the area is currently commercial and in close vicinity to the Belmont police department.

Councilmember Lieberman stated that his approach to cannabis in Belmont is conservative and supports reconsidering the areas proposed for cannabis dispensaries and distribution. He noted that Belmont is not a wealthy City but he does not concur with the necessity of cannabis as a revenue source.

ACTION: On a motion made by Councilmember Stone the meeting was extended for 30 minutes by a roll call vote. (5-0)

Councilmember Liberman stated that he does not support cannabis in the vicinity of where children are present including single and multi-family dwellings. He stated that the most appropriate location for cannabis retail is in commercial areas. He noted that with current development on El Camino Real cannabis retail is also not a good fit. He concluded stating that Belmont does not have a need for Cannabis retail.

Councilmember McCune stated that he has not come to a conclusion on the item and deferred to further Council discussion.

Councilmember Hurt stated that she supports the importance of maintaining public safety and a healthy community. She noted that meeting the needs of the community can be met, she noted that she would entertain more information on controls. She explained that she does not support cannabis in major school thoroughfares and locations near daycare centers. She supports planning commission recommendation of removing location 1,2 and 3. She concurs with one rather than three retails locations. She does not support the Davis Drive or Carlmont Shopping Center.

Councilmember Stone suggested more community engagement and input on the item.

Councilmember Mates stated that she could support tabling cannabis establishments in Belmont.

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ACTION: Councilmember Stone provided a motion to table the item and direct staff to conduct further community outreach for a broader understanding of community needs seconded by Councilmember Hurt.

ACTION: Councilmember Lieberman offered a substitute motion to remove areas 1, 2, and 3 from consideration from cannabis retail, seconded by Mayor Mates and approved by a roll call vote. (5-0)

ACTION: A motion made by Councilmember Stone and seconded by Councilmember Hurt to table the item and direct staff to conduct further community outreach for a broader understanding of community needs was approved by roll call vote. (5-0).

ACTION: On a motion made by Councilmember Stone the meeting was extended for 60 minutes by a roll call vote. (5-0)

GENERAL BUSINESS

Review and Adoption of the Parks, Recreation, and Open Space Master Plan

Parks and Recreation Director Shearer explained that before the Council is a draft Parks and Recreation Open Space Master Plan which frames the plan for the future development and improvement of the City's outdoor recreational spaces. She noted that the plan is the culmination of over 18 months of work by the community and City Consultants Gates and Associates and WRA Environmental. She noted that the Parks and Recreation Commission reviewed the draft master plan and with minor adjustments recommends the plan to Council for consideration and approval.

Linda Gates, City Consultant, Gates and Associates provided an overview of the master plan process, findings and recommendations. She explained that the plan is a high-level master plan outlining the vision and providing guidelines for implementation over the next fifteen years.

John Baas, City Consultant, Project Manager for the Open Space Management Plan (WRA) provided an overview of the open space management plan and process. He noted that the document will serve as a framework for the City to manage it's open space areas. The plan identifies the objectives, policies and implementation actions for a number of categories including sentimental sustainability, balanced recreation use, and natural hazard mitigation. He noted key findings that the conclude that the overall habitat quality in the open space is high. He noted that existing nature-based recreational uses can continue on existing mapped and established, and previously unmapped trails and the City should continue wildfire fuel reduction efforts.

Mayor Mates opened the item for public comments, nineteen individuals came forward to speak, additionally numerous email comments were provided since the posting of the agenda.

ACTION: On a motion made by Councilmember Stone the meeting was extended for 30 minutes by a roll call vote. (5-0)

Public comment continued.

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ACTION: On a motion made by Councilmember Stone and seconded by Councilmember Hurt in consideration of the late hour the item was continued a subsequent meeting by a roll call vote. (5-0)

BRIEF VERBAL REPORTS FROM MEMBERS AND STAFF

Verbal report from Councilmembers on Intergovernmental (IGR) and Subcommittee Assignments
None

Verbal report from City Manager
City Manager Oskoui introduced Interim Assistant City Manager Stacey Stevenson who will be assisting the City with organizational matters.

MATTERS OF INTEREST/CLARIFICATION
None

ADJOURNMENT at this time being 12:25 am

Jozi Plut
City Clerk

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STAFF REPORT

Meeting Date:	July 26, 2022
Agency:	City of Belmont
Staff Contact:	Jared Barrilleaux, Assistant Public Works Director, (650) 595-7469, jbarrilleaux@belmont.gov Elizabeth Wada, Associate Civil Engineer, (650) 595-7468, ewada@belmont.gov
Agenda Title:	New Municipal Regional Stormwater Permit Update
Agenda Action:	For Information Only

Recommendation
This is an informational item only; no action is required.

Strategic Focus Area
Quality of Life

Background
In 1972 Congress passed the Clean Water Act to reduce pollution from factories, municipal sewage treatment plants, and similar facilities that pipe wastes to streams, rivers, lakes, or bays.

The 1987 Amendments to the Clean Water Act expanded the pollution reduction mandate to include discharges from Municipal Separate Storm Sewer Systems (MS4s, or storm drains). Around the same time, California began referencing stormwater runoff as a source of pollutants to be controlled under the state's Porter-Cologne Water Quality Act. The California Water Quality Control Board for the San Francisco Bay Region (RWQCB) issued the first California municipal stormwater National Pollutant Discharge Elimination System (NPDES) permits in 1989.

The stormwater NPDES permits require owners of MS4s--including cities, towns, and counties, state and regional transportation agencies, flood control districts, and others--to control the myriad sources of pollutants that enter and are transported through their systems. These sources include fertilizers from lawns, sediment from construction sites, dust that settles from the atmosphere, trash left in street gutters, and washwater from cleaning vehicles and equipment.

In 2009, the San Francisco Bay RWQCB consolidated permits issued to municipal permittees in Contra Costa, Alameda, Santa Clara, San Mateo, and Solano counties into a single Municipal Regional Stormwater Permit (MRP) with 75+ local government agencies as permittees.

In addition to continuing the previous requirements, the MRP required municipalities to plan and implement strategies to eliminate trash from entering the storm drain systems and to radically reduce the amount of PCBs and mercury entering storm drains in accordance with Total Maximum Daily Loads (TMDLs) adopted by the RWQCB in 2006 (for mercury) and 2008 (for PCBs). A TMDL is a calculation of the maximum amount of pollutants that may be discharged to a water body without causing its uses to

be impaired.

The 2009 MRP also updated the new development requirements to require that new land development projects use solely Low Impact Development (LID) techniques and technologies to treat stormwater runoff. Those requirements went into effect in 2011. Some refinement of the requirements, and some exceptions, were incorporated in a 2011 permit amendment.

The San Francisco Bay RWQCB reissued the MRP (MRP 2.0) in 2015. The second iteration of the permit expanded mandates to implement PCB-reduction activities, including requirements to condition permits to demolish certain types of buildings with requirements to manage PCBs in demolition wastes. Permittees must also identify and remediate, or refer for remediation, industrial sites which may be sources of PCB-laden sediment entering nearby storm drains. MRP 2.0 also requires each Permittee to prepare a Green Infrastructure Plan intended to describe how the Permittee will, over the long term, shift impervious surfaces and storm drain infrastructure from "gray," conventional concrete infrastructure to a more resilient, sustainable green infrastructure system that slows runoff by dispersing it to vegetated areas, harvests and uses runoff, promotes infiltration, and uses bioretention to clean runoff.

Permittees must also prepare an implementation plan and Reasonable Assurance Analysis (RAA) showing how specified pollutant reductions (wasteload allocations) will be met by 2030 (for PCBs) and 2040 (for mercury). The City Council adopted Belmont's Green Infrastructure Plan at its September 24, 2019, Council meeting which was submitted circa September 2019, and the countywide RAA and PCBs and mercury implementation plan were submitted circa September 2020 to the Regional Board.

In 2020 San Mateo County staff and municipal Permittee staff were negotiating requirements to be included in the next iteration of the MRP. MRP 3.0 which was reissued in early 2022, with new requirements phased in beginning July 1, 2022.

As of July 1, 2022, municipalities are now guided by the reissued Order No. R2-2022-0018, NPDES Permit No. CAS612008, and is commonly known as "MRP 3.0". Some changes to the new permit requirement will require enhanced activities from municipalities, increased costs and staff time to ensure compliance.

Provision C.17.a of the Permit requires San Mateo County municipalities to submit an Annual Report (report) each year. The report focuses on stormwater management activities to ensure compliance with the Clean Water Act during a specific fiscal year (i.e. minimize impacts to the water system from new development, construction activities, water quality monitoring, storm drain system maintenance, trash capture, public outreach, etc.). More detailed information about the report can be found on the San Mateo Countywide Water Pollution Prevention Program's FlowsToBay webpage: https://www.flowstobay.org/data-resources/reports/annual-report/.

Analysis

Managing the City's stormwater system includes a wide range of engineering, operations, and regulatory compliance efforts. These efforts include operating and maintaining drainage facilities and creeks, capital improvement master planning, infrastructure and green infrastructure construction, operations and maintenance of stormwater conveyance and pumping systems, trash management activities, and

regulatory compliance with the Municipal Regional Stormwater Permit. Public Works is primarily responsible for completion of these management activities. Additionally, the overall funding needs to effectively manage the City's stormwater system are greater than what is currently available through the General Fund without a separate, dedicated funding source.

The City implements a stormwater program in compliance with MRP. Over the years, the range of actions and necessary level of effort to implement the stormwater program and comply with the MRP have increased in response to the evolving regulatory requirements and community needs. These activities are primarily funded by the General Fund except for street sweeping and certain litter removal activities, which are funded through Solid Waste Program fees. The City offsets some of the costs by participating in a collaborative, countywide effort, the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP), which is a partnership with the City/County Association of Governments. As a result of the partnership, some of the MRP requirements are implemented directly by the municipalities, while others, such as public education and outreach and water quality monitoring, are addressed by SMCWPPP on behalf of the member agencies

The new MRP 3.0 permit, with new requirements and changes are expected to increase the resources necessary for the City to stay in compliance. The new permit includes costly new mandates relating to:

- Constructing rain gardens and other green infrastructure at higher levels, including in roads and transportation projects, potentially crowding out funding for street maintenance
- Reducing trash reduction credits for existing source control policies (e.g., single-use bag ban) and creek cleanups, while maintaining the target to achieve a 100% trash load reduction, thereby making it more expensive and challenging to maintain compliance
- Including some new single-family homes as regulated development projects that require stormwater control plans and ongoing inspections
- Implementing new best management practices, standard operating procedures, and reporting for discharges of water and foam used in emergency firefighting applications
- Tracking encampments and addressing illegal dumping, illicit discharges, and other stormwater concerns stemming from unsheltered populations
- Developing and implementing the use of new expansive asset management programs and software for stormwater assets
- Increased water quality monitoring region-wide with costs estimated to be in millions over the course of the MRP 3.0 permit term
- And, increased reporting requirements in almost all sections of the MRP.

The increased level of effort in the permit will translate to increased implementation costs both at the local and countywide level. Some cities including Belmont will face challenges focused on certain provisions or pollutant categories, like trash reductions or PCBs load reductions, especially in areas that have industrial land uses or new C.3 requirements for single-family homes and road reconstruction and maintenance.

Though Belmont has a robust existing C.3 program for single-family homes and large developments, the concern will be more along the lines of increased costs of many more roadway projects being regulated. This is due to the need for increased inspections for a likely significant increase in regulated projects and

potentially the PCBs load reduction requirements in the Harbor Industrial Area. This, along with the additional coordination and participation in countywide and regional efforts and local implementation, will increase the amount of required staff time to meet provision requirements.

City Staff, in coordination with the San Mateo Countywide Water Pollution Prevention Program and other stormwater agencies, provided feedback to the Water Board on the cost implications of some of the proposed requirements and practical challenges to implementation. However, the final permit that was issued incorporates only some of the feedback received from municipalities.

The City will be coordinating internally and regionally over the coming months and year to make a plan for implementation, to ensure compliance with the new Permit requirements.

Additionally, the San Francisco Bay Keeper organization had filed a petition for stay of action of this order. The petition was reviewed by the RWQCB and denied on July 13, 2022.

Alternatives

1. None

Attachments

A. Final MRP 3.0 – Order No. 2022-0018 and Attachments

Fiscal Impact

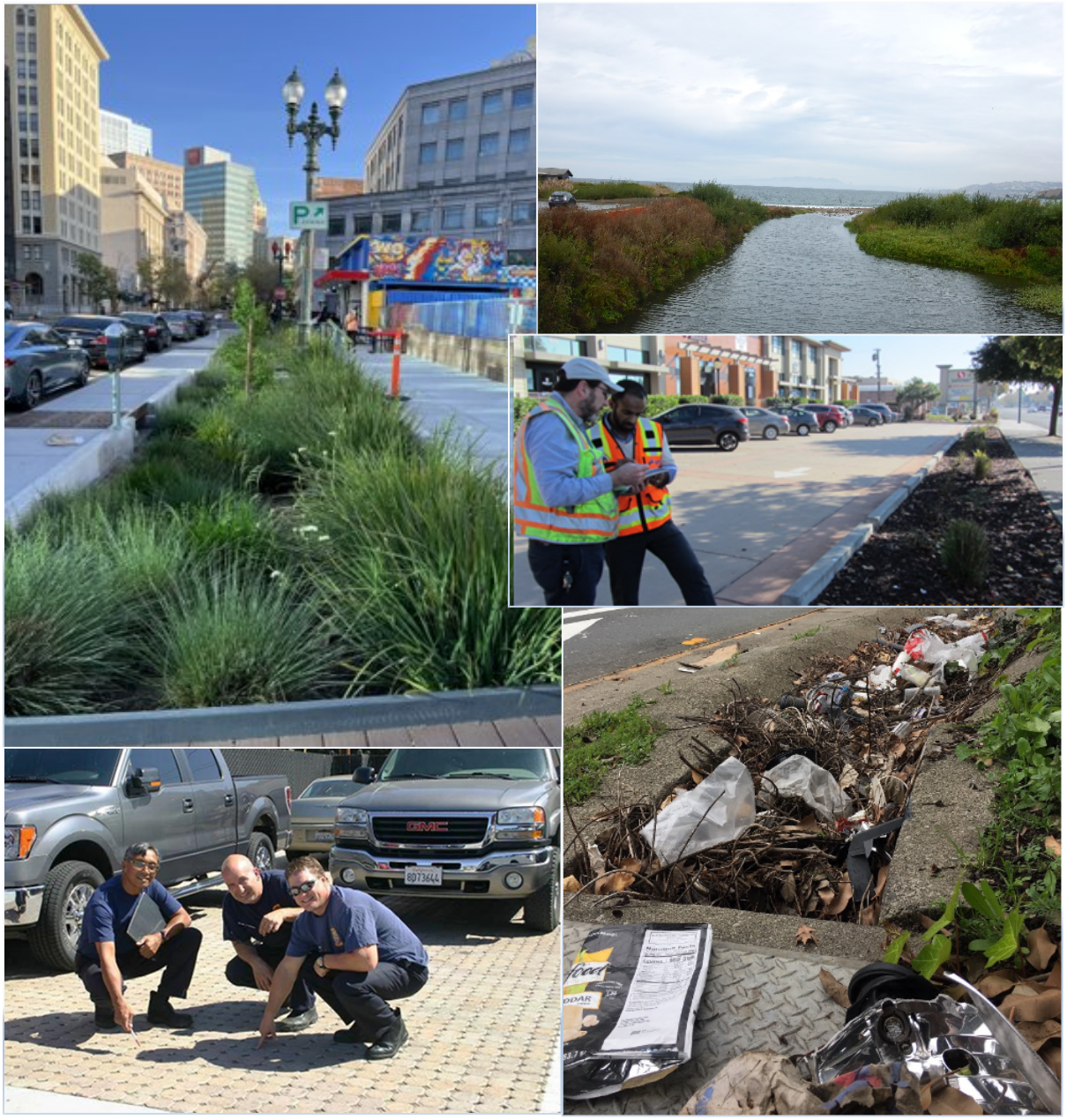
☐ No Fiscal Impact

☒ Funding Source Confirmed: Costs associated with MRP compliance are budgeted in the Storm Drainage Fund. Due to the high level of new requirements, staff is unsure whether the current fiscal year's adopted budget will be sufficient to cover the funds of the new MRP. Staff will continue to monitor the costs and seek a supplemental appropriation during the mid-year budget review if necessary.

Source:	**Purpose:**	**Public Outreach:**
Staff	Council Vision/Priority	Posting of Agenda

California Regional Water Quality Control Board
San Francisco Bay Region
Municipal Regional Stormwater NPDES Permit

Order No. R2-2022-0018
NPDES Permit No. CAS612008
May 11, 2022



California Regional Water Quality Control Board
San Francisco Bay Region
Municipal Regional Stormwater NPDES Permit

ORDER No. R2-2022-0018
NPDES PERMIT No. CAS612008

Issuing Waste Discharge Requirements and National Pollutant Discharge Elimination System (NPDES) Permit for the discharge of stormwater runoff from the municipal separate storm sewer systems (MS4s) of the following jurisdictions and entities, which are permitted under this San Francisco Bay Municipal Regional Stormwater Permit (MRP):

The cities of Alameda, Albany, Berkeley, Dublin, Emeryville, Fremont, Hayward, Livermore, Newark, Oakland, Piedmont, Pleasanton, San Leandro, and Union City, Alameda County, the Alameda County Flood Control and Water Conservation District, and Zone 7 of the Alameda County Flood Control and Water Conservation District, which have joined together to form the Alameda Countywide Clean Water Program (Alameda Permittees)

The cities of Antioch, Brentwood, Clayton, Concord, El Cerrito, Hercules, Lafayette, Martinez, Oakley, Orinda, Pinole, Pittsburg, Pleasant Hill, Richmond, San Pablo, San Ramon, and Walnut Creek, the towns of Danville and Moraga, Contra Costa County, the Contra Costa County Flood Control and Water Conservation District, which have joined together to form the Contra Costa Clean Water Program (Contra Costa Permittees)

The cities of Campbell, Cupertino, Los Altos, Milpitas, Monte Sereno, Mountain View, Palo Alto, San Jose, Santa Clara, Saratoga, and Sunnyvale, the towns of Los Altos Hills and Los Gatos, the Santa Clara Valley Water District, and Santa Clara County, which have joined together to form the Santa Clara Valley Urban Runoff Pollution Prevention Program (Santa Clara Permittees)

The cities of Belmont, Brisbane, Burlingame, Daly City, East Palo Alto, Foster City, Half Moon Bay, Menlo Park, Millbrae, Pacifica, Redwood City, San Bruno, San Carlos, San Mateo, and South San Francisco, the towns of Atherton, Colma, Hillsborough, Portola Valley, and Woodside, the San Mateo County Flood and Sea Level Rise Resiliency District, and San Mateo County, which have joined together to form the San Mateo Countywide Water Pollution Prevention Program (San Mateo Permittees)

The cities of Fairfield, Suisun City, Vallejo, and the Vallejo Flood & Wastewater District, which have joined together to form the Solano Stormwater Alliance (Solano Permittees)

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The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter referred to as the Water Board) finds that:

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Incorporation of Fact Sheet

1. The Fact Sheet for the San Francisco Bay Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit (Attachment A) includes cited regulatory and legal references and additional explanatory information in support of the requirements of this Permit. The Fact Sheet, including any supplements thereto, is hereby incorporated by reference.

Existing Permit

2. **Alameda County—**The cities of Alameda, Albany, Berkeley, Dublin, Emeryville, Fremont, Hayward, Livermore, Newark, Oakland, Piedmont, Pleasanton, San Leandro, and Union City, Alameda County (Unincorporated area), the Alameda County Flood Control and Water Conservation District, and Zone 7 of the Alameda County Flood Control and Water Conservation District have joined together to form the Alameda Countywide Clean Water Program (hereinafter collectively referred to as the Alameda Permittees) and have submitted a permit application (Report of Waste Discharge), dated July 1, 2020, for reissuance of their waste discharge requirements under the NPDES permit to discharge stormwater runoff from storm drains and watercourses within the Alameda Permittees' jurisdictions. The Alameda Permittees are currently subject to NPDES Permit No. CAS612008 issued by Order No. R2-2015-0049 on November 19, 2015, and amended by Order No. R2-2019-0004 on February 13, 2019, to discharge stormwater runoff from storm drains and watercourses within their jurisdictions.
3. **Contra Costa County—**The cities of Antioch, Brentwood, Clayton, Concord, El Cerrito, Hercules, Lafayette, Martinez, Oakley, Orinda, Pinole, Pittsburg, Pleasant Hill, Richmond, San Pablo, San Ramon, and Walnut Creek, the towns of Danville and Moraga, Contra Costa County, and the Contra Costa County Flood Control and Water Conservation District have joined together to form the Contra Costa Clean Water Program (hereinafter collectively referred to as the Contra Costa Permittees) and have submitted a permit application (Report of Waste Discharge), dated July 1, 2020, for reissuance of their waste discharge requirements under the NPDES permit to discharge stormwater runoff from storm drains and watercourses within the Contra Costa Permittees' jurisdictions. The Contra Costa Permittees are currently subject to NPDES Permit No. CAS612008 issued by Order No. R2-2015-0049 on November 19, 2015, and amended by Order No. R2-2019-0004 on February 13, 2019, to discharge stormwater runoff from storm drains and watercourses within their jurisdictions.
4. **San Mateo County—**The cities of Belmont, Brisbane, Burlingame, Daly City, East Palo Alto, Foster City, Half Moon Bay, Menlo Park, Millbrae, Pacifica, Redwood City,

San Bruno, San Carlos, San Mateo, and South San Francisco, the towns of Atherton, Colma, Hillsborough, Portola Valley, and Woodside, the San Mateo County Flood and Sea Level Rise Resiliency District, and San Mateo County have joined together to form the San Mateo Countywide Water Pollution Prevention Program (hereinafter collectively referred to as the San Mateo Permittees) and have submitted a permit application (Report of Waste Discharge), dated July 2, 2020, for reissuance of their waste discharge requirements under the NPDES permit to discharge stormwater runoff from storm drains and watercourses within the San Mateo Permittees' jurisdictions. The San Mateo Permittees are currently subject to NPDES Permit No. CAS612008 issued by Order No. R2-2015-0049 on November 19, 2015, and amended by Order No. R2-2019-0004 on February 13, 2019, to discharge stormwater runoff from storm drains and watercourses within their jurisdictions.

5. **Santa Clara County—**The cities of Campbell, Cupertino, Los Altos, Milpitas, Monte Sereno, Mountain View, Palo Alto, San Jose, Santa Clara, Saratoga, and Sunnyvale, the towns of Los Altos Hills and Los Gatos, the Santa Clara Valley Water District, and the County of Santa Clara have joined together to form the Santa Clara Valley Urban Runoff Pollution Prevention Program (hereinafter collectively referred to as the Santa Clara Permittees) and have submitted a permit application (Report of Waste Discharge), dated July 2, 2020, for reissuance of their waste discharge requirements under the NPDES permit to discharge stormwater runoff from storm drains and watercourses within the Santa Clara Permittees' jurisdictions. The Santa Clara Permittees are currently subject to NPDES Permit No. CAS612008 issued by Order No. R2-2015-0049 on November 19, 2015, and amended by Order No. R2-2019-0004 on February 13, 2019, to discharge stormwater runoff from storm drains and watercourses within their jurisdictions.

6. **Fairfield-Suisun—**The cities of Fairfield and Suisun City have joined together to form the Fairfield-Suisun Urban Runoff Management Program (hereinafter referred to as the Fairfield-Suisun Permittees) and have submitted a permit application (Report of Waste Discharge), dated July 3, 2020, for reissuance of their waste discharge requirements under the NPDES permit to discharge stormwater runoff from storm drains and watercourses within the Fairfield-Suisun Permittees' jurisdictions. The Fairfield-Suisun Permittees are currently subject to NPDES Permit No. CAS0612008 issued by Order No. R2-2015-0049 on November 19, 2015, and amended by Order No. R2-2019-0004 on February 13, 2019, to discharge stormwater runoff from storm drains and watercourses within their jurisdictions.

7. **Vallejo—**The City of Vallejo and Vallejo Flood & Wastewater District (hereinafter referred to as the Vallejo Permittees) have submitted permit applications (Report of Waste Discharge), dated June 25 and June 29, 2020, respectively, for reissuance of their waste discharge requirements under the NPDES permit to discharge stormwater runoff from storm drains and watercourses within the Vallejo Permittees' jurisdictions. The Vallejo Permittees are currently subject to NPDES Permit No. CAS612008 issued by Order No. R2-2015-0049 on November 19, 2015, and amended by Order No. R2-2019-0004 on February 13, 2019, to discharge stormwater runoff from storm drains and watercourses within their jurisdictions.

8. The cities of Fairfield, Suisun City, Vallejo, and the Vallejo Flood & Wastewater

District have joined together to form the Solano Stormwater Alliance (hereinafter referred to as the Solano Permittees). The Alameda, Contra Costa, San Mateo, Santa Clara, and Solano Permittees are hereinafter referred to in this Order as the Permittees.

Applicable Federal, State and Regional Regulations

9. Section 402(p) of the federal Clean Water Act (CWA), as amended by the Water Quality Act of 1987, requires NPDES permits for stormwater discharges from municipal separate storm sewer systems (MS4s), stormwater discharges associated with industrial activity (including construction activities), and designated stormwater discharges, which are considered significant contributors of pollutants to waters of the United States. On November 16, 1990, U.S. EPA published regulations (40 CFR Part 122), which prescribe permit application requirements for MS4s pursuant to CWA 402(p). On May 17, 1996, U.S. EPA published an Interpretive Policy Memorandum on Reapplication Requirements for Municipal Separate Storm Sewer Systems, which provided guidance on permit application requirements for regulated MS4s.

10. The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan was duly adopted by the Water Board and approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law, and U.S. EPA, where required.

11. The Water Board finds stormwater discharges from urban and developing areas in the San Francisco Bay Region to be significant sources of certain pollutants that cause or may be causing or threatening to cause or contribute to water quality impairment in waters of the Region. Furthermore, as delineated in the CWA section 303(d) list, the Water Board has found that there is a reasonable potential that municipal stormwater discharges cause or may cause or contribute to an excursion above water quality standards for the following pollutants: mercury, PCBs, furans, dieldrin, chlordane, DDT, trash, and selenium in San Francisco Bay segments; pesticide associated toxicity, and trash in urban creeks; and trash and low dissolved oxygen in Lake Merritt, in Alameda County. In accordance with CWA section 303(d), the Water Board is required to establish Total Maximum Daily Loads (TMDLs) for these pollutants to these waters to gradually eliminate impairment and attain water quality standards. Therefore, pollutant control actions and further pollutant impact assessments by the Permittees are warranted and required pursuant to this Order.

12. Under section 13389 of the California Water Code, this action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA).

Nature of Discharges and Sources of Pollutants

13. Stormwater runoff is generated from various land uses in all the hydrologic sub-basins in the Basin and discharges into watercourses, which in turn flow into Central,

Lower and South San Francisco Bay, and Suisun and San Pablo Bays.

14. The quality and quantity of runoff discharges vary considerably and are affected by hydrology, geology, land use, season, and sequence and duration of hydrologic events. Pollutants of concern in these discharges are certain heavy metals; excessive sediment production from erosion due to anthropogenic activities; petroleum hydrocarbons from sources such as used motor oil; microbial pathogens of domestic sewage origin from illicit discharges; certain pesticides associated with acute aquatic toxicity; excessive nutrient loads, which can cause or contribute to the depletion of dissolved oxygen and/or toxic concentrations of dissolved ammonia; trash, which impairs beneficial uses including, but not limited to, support for aquatic life; and other pollutants that can cause aquatic toxicity in the receiving waters.
15. Federal, State or regional entities within the Permittees' boundaries, not currently named in this Order, operate storm drain facilities and/or discharge stormwater to the storm drains and watercourses covered by this Order. The Permittees may lack jurisdiction over these entities. Consequently, the Water Board recognizes that the Permittees should not be held responsible for such facilities and/or discharges. The Water Board will consider such facilities for coverage under its NPDES permitting scheme pursuant to U.S. EPA stormwater regulations.
16. Certain pollutants present in stormwater and/or urban runoff can be derived from extraneous sources over which the Permittees have limited or no direct jurisdiction. Examples of such pollutants and their respective sources are polycyclic aromatic hydrocarbons (PAHs), which are products of internal combustion engine operation and other sources; heavy metals, such as copper from vehicle brake pad wear and zinc from vehicle tire wear; dioxins as products of combustion; polybrominated diphenyl ethers that are incorporated in many household products as flame retardants; mercury resulting from atmospheric deposition; and naturally occurring minerals from local geology. All these pollutants, and others, can be deposited on paved surfaces, rooftops, and other impervious surfaces as fine airborne particles—thus yielding stormwater runoff pollution that is unrelated to the activity associated with a given project site.
17. The Water Board will notify interested agencies and interested persons of the availability of reports, plans, and schedules, including Annual Reports, and will provide interested persons with an opportunity for a public hearing and/or an opportunity to submit their written views and recommendations. The Water Board will consider all comments and may modify the reports, plans, or schedules or may modify this Order in accordance with applicable law. All submittals required by this Order conditioned with acceptance by the Water Board will be subject to these notification, comment, and public hearing procedures.
18. The Water Board notified the Permittees and interested agencies and persons of its intent to adopt this Order and provided an opportunity to submit written comments and recommendations.
19. The Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

20. This Order supersedes and rescinds Order Nos. R2-2015-0049 as amended by R2-2019-0004.

21. This Order serves as a NPDES permit, pursuant to CWA section 402, or amendments thereto, and shall become effective July 1, 2022, provided the Regional Administrator, U.S. EPA, Region 9, has no objections.

THEREFORE, IT IS HEREBY ORDERED that Order No. R2-2015-0049, as amended by Order No. R2-2019-0004, is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions of Water Code division 7 (commencing with § 13000) and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, the Permittees shall comply with the following requirements in this Order. This action in no way prevents the Water Board from taking enforcement action for past violations of the previous order.

A. DISCHARGE PROHIBITIONS

A.1. The Permittees shall, within their respective jurisdictions, effectively prohibit the discharge of non-stormwater (materials other than stormwater) into storm drain systems and watercourses. NPDES-permitted discharges are exempt from this prohibition. Provision C.15 describes a tiered categorization of non-stormwater discharges based on potential for pollutant content that may be discharged upon adequate assurance that the discharge contains no pollutants of concern at concentrations that will impact beneficial uses or cause exceedances of water quality standards.

A.2. It shall be prohibited to discharge rubbish, refuse, bark, sawdust, or other solid wastes into surface waters or at any place where they would contact or where they would be eventually transported to surface waters, including flood plain areas. Permittees are also subject to the trash discharge prohibition in the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California and the Water Quality Control Plan for Ocean Waters of California.

B. RECEIVING WATER LIMITATIONS

B.1. The discharge shall not cause the following conditions to create a condition of nuisance or to adversely affect beneficial uses of waters of the State:

B.1.a. Floating, suspended, or deposited macroscopic particulate matter, or foam;

B.1.b. Bottom deposits or aquatic growths;

B.1.c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;

B.1.d. Visible, floating, suspended, or deposited oil or other products of petroleum origin; and

B.1.e. Substances present in concentrations or quantities that would cause deleterious effects on aquatic biota, wildlife, or waterfowl, or that render any of these unfit for human consumption.

B.2. The discharge shall not cause or contribute to a violation of any applicable water quality standard for receiving waters. If applicable water quality objectives are

adopted and approved by the State Water Board after the date of the adoption of this Order, the Water Board may revise and modify this Order as appropriate.

C.1. Compliance with Discharge Prohibitions and Receiving Waters Limitations

The Permittees shall comply with Discharge Prohibitions A.1 and A.2 and Receiving Water Limitations B.1 and B.2 through the timely implementation of control measures and other actions as specified in Provisions C.2 through C.24. Compliance with Provisions C.9 through C.12, C.14, C.18 (pertaining to the Pescadero-Butano Sediment TMDL), and C.19.c-f of this Order, which prescribe requirements and schedules for Permittees identified therein to manage their discharges that may cause or contribute to violations of water quality standards (WQS) for pesticides, trash, mercury, polychlorinated biphenyls (PCBs), bacteria, sediment, diazinon and chlorpyrifos, and methylmercury, shall constitute compliance during the term of this Order with Receiving Water Limitations B.1 and B.2 for the pollutants and the receiving waters identified in the provisions. Compliance with Provision C.10 which prescribes requirements and schedules for Permittees to manage their discharges of trash, shall also constitute compliance with Discharge Prohibitions A.1 and A.2 during the term of this Order for discharges of trash. If exceedance(s) of WQS, except for exceedances of WQS for pesticides, trash, mercury, PCBs, bacteria, sediment, diazinon and chlorpyrifos, and methylmercury that are managed pursuant to Provisions C.9 through C.12, C.14, C.18 (pertaining to the Pescadero-Butano Sediment TMDL), and C.19.c-f, persist in receiving waters notwithstanding the implementation of the required controls and actions, the Permittees shall comply with the following procedure:

C.1.a. Upon a determination by either the Permittee(s) or the Water Board that discharges are causing or contributing to an exceedance of an applicable (WQS), the Permittee(s) shall notify, within no more than 30 days, and thereafter submit a report to the Water Board that describes controls or best management practices (BMPs) that are currently being implemented, and the current level of implementation, and additional controls or BMPs that will be implemented, and/or an increased level of implementation, to prevent or reduce the discharge of pollutants that are causing or contributing to the exceedance of water quality standards. The report may be submitted in conjunction with the Annual Report, unless the Water Board directs an earlier submittal, and shall constitute a request to the Water Board for amendment of this NPDES Permit. The report and application for amendment shall include an implementation schedule. The Water Board may require modifications to the report and application for amendment; and

C.1.b. Submit any modifications to the report required by the Water Board within 30 days of notification.

As long as Permittees have complied with the procedures set forth above, they do not have to repeat the same procedure for continuing or recurring

exceedances of the same receiving water limitations unless directed by the Water Board to develop additional control measures and BMPs and reinitiate the Permit amendment process.

C.2. Municipal Operations

The purpose of this provision is to ensure implementation of appropriate BMPs by all Permittees to control and reduce non-stormwater and polluted stormwater discharges to storm drains and watercourses during operation, inspection, and routine repair and maintenance activities of municipal facilities and infrastructure.

C.2.a. Street and Road Repair and Maintenance

i. Task Description – Asphalt/Concrete Removal, Cutting, Installation, and Repair

The Permittees shall implement appropriate BMPs, such as those described in the California Stormwater Quality Association (CASQA) Municipal Stormwater BMP Handbook and Construction Stormwater BMP Handbook, at street and road repair and/or maintenance sites to control debris and waste materials during road and parking lot installation, repaving, repair, or maintenance activities.

ii. Implementation Levels

(1) The Permittees shall require proper management of concrete slurry and wastewater, asphalt, pavement cutting, and other street and road maintenance materials and wastewater to avoid discharge to storm drains from such work sites. The Permittees shall coordinate with sanitary sewer agencies to determine if wastewater generated from road construction, repair, and maintenance activities may be discharged to the sanitary sewer system, provided appropriate approvals are obtained and pretreatment standards are met.

(2) The Permittees shall require sweeping and/or vacuuming to remove debris, concrete, or sediment residues from work sites upon completion of work. The Permittees shall require cleanup of all construction debris, spills, and leaks using dry methods (e.g., absorbent materials, rags, pads, and vacuuming), as described in the Bay Area Stormwater Management Agencies Association (BASMAA) Blueprint for a Clean Bay or the CASQA Municipal Stormwater BMP Handbook.

iii. Reporting

(1) The Permittees shall report on implementation of and compliance with these BMPs in the Annual Report.

(2) Permittees shall make applicable supporting BMP documents available to Water Board staff or representatives during audits or inspections, and upon request.

C.2.b. Sidewalk/Plaza Maintenance and Pavement Washing

i. Task Description – The Permittees shall implement and require to be implemented BMPs that prevent the discharge of polluted wash water and non- stormwater to storm drains from pavement, sidewalk and plaza cleaning, mobile cleaning, outdoor pressure washing operations, and washing down of trash areas and gas station or mobile fueling service areas. BMPs for washing down outside areas of human habitation shall include sanitizing procedures. The Permittees shall implement BMPs such as those included in the BASMAA Mobile Surface Cleaner Program. The Permittees shall coordinate with sanitary sewer agencies to determine if disposal to the sanitary sewer is available for the wastewater generated from these activities provided that appropriate approvals and pretreatment standards are met.

ii. Reporting

(1) The Permittees shall report on implementation of and compliance with these BMPs in the Annual Report.

(2) Permittees shall make applicable supporting BMP documents available to Water Board staff or representatives during audits or inspections, and upon request.

C.2.c. Bridge and Structure Maintenance and Graffiti Removal

i. Task Description

(1) The Permittees shall implement appropriate BMPs to prevent the discharge of polluted stormwater and non-stormwater from bridges and structural maintenance activities directly into surface waters or storm drains.

(2) The Permittees shall implement BMPs for graffiti removal that prevent non-stormwater and wash water discharges into storm drains.

ii. Implementation Levels

(1) The Permittees shall prevent all debris and pollutants, including structural materials and coating debris, such as paint chips, generated in bridge and structure maintenance or graffiti removal, from entering storm drains or water courses.

(2) The Permittees shall protect nearby storm drain inlets before removing graffiti from walls, signs, sidewalks, or other structures. The Permittees shall prevent any discharge of debris, cleaning compound waste, paint waste, or wash water due to graffiti removal from entering storm drains or watercourses.

(3) The Permittees shall use proper disposal methods for wastes generated from these activities. The Permittees shall train their employees and/or specify in contracts the proper capture and disposal methods for the wastes generated.

iii. Reporting

(1) The Permittees shall report on implementation of and compliance with these BMPs in the Annual Report.

(2) Permittees shall make applicable supporting BMP documents available to Water Board staff or representatives during audits or inspections, and upon request.

C.2.d. Stormwater Pump Stations

i. Task Description –The Permittees shall implement measures to operate, inspect, and maintain stormwater pump stations to eliminate non-stormwater discharges containing pollutants, and to reduce pollutant loads in stormwater discharges to comply with WQS.

ii. Implementation Levels – The Permittees shall comply with the following at Permittee-owned or -operated pump stations:

(1) Upon becoming aware that the discharge from a pump station has a dissolved oxygen (DO) concentration below 3.0 mg/L, implement corrective actions, such as continuous pumping at a low flow rate, aeration, or other appropriate methods to maintain DO concentrations of the discharge above 3 milligrams per liter (mg/L) and verify the effectiveness of the corrective actions with monitoring. Corrective actions are not necessary for discharges from pump stations that remain in the stormwater collection system or infiltrate into a dry creek immediately downstream.

(2) Ensure that pump stations are free of debris and trash, replace any oil-absorbent booms, as needed, and investigate and abate illicit discharges. Pump stations excluded from C.2.d.ii.(1) above are not excluded from this requirement.

(3) The Permittees shall maintain records of inspection, maintenance, implementation of corrective actions, and any monitoring records at Permittee-owned or -operated pump stations. These records shall be made available to Water Board staff or its representatives during inspections and audits, or otherwise upon request.

C.2.e. Rural Public Works Construction and Maintenance

i. Task Description – Rural Road and Public Works Construction and Maintenance

For the purpose of this provision, rural means any watershed or portion thereof that is developed with large lot home-sites, such as one acre or larger, or with primarily agricultural, grazing, or open space uses. Rural roads include paved, unpaved, utility, and access roads in rural areas. The Permittees shall implement and require contractors to implement BMPs for erosion and sediment control during and after construction for maintenance activities on rural roads, such as those in the CASQA Construction Stormwater BMP Handbook, particularly in or adjacent to stream channels or wetlands. The Permittees shall notify the Water Board, the California Department of Fish and Wildlife (CDFW), and the U.S. Army Corps of Engineers, where applicable, and obtain appropriate agency permits for rural public works activities before work in or near creeks and wetlands.

San Mateo County has additional rural road requirements for the Pescadero-Butano Sediment TMDL described in Provision C.18 and shall also implement that provision.

ii. Implementation Level

(1) The Permittees shall continue to implement erosion and sediment control BMPs, in addition to those described in Provision C.2.a, during construction and maintenance activities on rural roads, including developing and implementing appropriate training and technical assistance resources for rural public works activities.

(2) The Permittees shall implement appropriate BMPs to minimize impacts on streams and wetlands in the course of rural road and public works maintenance and construction activities by:

(a) Selecting road design, construction, maintenance, and repairs in rural areas that prevent and control road-related erosion and sediment transport;

(b) Identifying and prioritizing rural road maintenance on the basis of soil erosion potential, slope steepness, and stream habitat resources;

(c) Constructing roads and culverts that do not impact creek functions. New or replaced culverts shall not create a migratory fish passage barrier, where migratory fish are present, or lead to stream instability;

(d) Implementing an inspection program to maintain rural roads' structural integrity and prevent impacts to water quality;

(e) Maintaining rural roads adjacent to streams and riparian habitat to reduce erosion, replace damaging shotgun culverts, and address excessive erosion;

(f) Re-grading unpaved rural roads to slope outward where consistent with road engineering safety standards, and installation of water bars as appropriate; and

(g) Replacing existing culverts or design of new culverts or bridge crossings shall use measures to reduce erosion, provide fish passage, and maintain natural stream geomorphology in a stable manner.

(3) The Permittees shall incorporate information about the importance of planning and construction in avoiding water quality impacts into existing training and guidance on permitting requirements for rural public works activities.

(4) The Permittees shall provide training incorporating these BMPs to rural public works maintenance staff at least twice within this Permit term.

iii. Reporting – The Permittees shall report on the implementation of and compliance with BMPs for rural public works construction and maintenance activities, including reporting on increased maintenance in priority areas, in the Annual Report.

C.2.f. Corporation Yard BMP Implementation

i. Task Description – Corporation Yard Maintenance

(1) The Permittees shall implement and maintain a site-specific Stormwater Pollution Prevention Plan (SWPPP) for corporation yards, including municipal vehicle and heavy equipment maintenance yards and parking areas, and material storage facilities, to comply with water quality standards. Each SWPPP shall incorporate all appropriate BMPs, such as those described in the current versions of the CASQA Municipal Stormwater BMP Handbook or the Caltrans Storm Water Quality Handbook Maintenance Staff Guide, and addenda, as applicable.

(2) The requirements in this provision shall apply only to facilities that are not covered under the State Water Board's Industrial Stormwater NPDES General Permit.

ii. Implementation Level

(1) Implement BMPs to minimize pollutant discharges in stormwater and prohibit non-stormwater discharges, such as wash waters from street sweepers, vactor trucks, or other related equipment. Pollution control actions shall include, but not be limited to, good housekeeping practices, material and waste storage control, and vehicle leak and spill control.

(2) Routinely inspect corporation yards to ensure that non-stormwater discharges are not entering the storm drain system and that pollutant discharges are prevented to the maximum extent practicable. At a minimum, each corporation yard shall be fully inspected each year between August 1 and September 30. Permittees shall cease or cause to be ceased any active non-stormwater discharges immediately after they are discovered. Corrective actions shall be implemented before the next rain event, but no longer than 10 business days after the potential and/or actual discharges are discovered. Corrective actions can be temporary, in which case more time can be allowed for permanent corrective actions. If more than 10 business days are required for compliance, a rationale shall be recorded.

(3) Plumb all vehicle and equipment wash areas to the sanitary sewer after coordination with the local sanitary sewer agency and equip with a pretreatment device (if necessary) in accordance with the requirements of the local sanitary sewer agency. In areas where a sanitary sewer connection is not available, the Permittees shall collect and haul the wash water to an alternative sanitary sewer connection or municipal wastewater treatment plant, or implement appropriate BMPs to collect, properly treat, and reuse wash water onsite without any discharge.

(4) Use dry cleanup methods when cleaning debris and spills from corporation yards. If wet cleaning methods must be used (e.g., pressure washing), the Permittee shall ensure that wash water is collected and disposed in the sanitary sewer after coordination with the local sanitary sewer agency and in accordance with the requirements of the local sanitary sewer agency. Any private companies hired by the Permittee to perform cleaning activities on Permittee-owned property shall follow the same requirements. In areas where a sanitary sewer connection is not available, the Permittees shall collect and haul the wash water to a municipal wastewater treatment plant, or implement appropriate BMPs and dispose of the wastewater to land in a manner that does not adversely impact surface water or groundwater.

(5) Outdoor storage areas containing pollutants shall be covered and/or bermed to prevent discharges of polluted stormwater runoff or run-on to storm drain inlets.

iii. Reporting

(1) In each Annual Report, Permittees shall list activities conducted in the corporation yards that have BMPs in the site-specific SWPPP, the date(s) of inspections, the results of inspections, and any follow-up actions, including the date of any necessary corrective actions implemented. The information may be reported in a narrative or tabular format.

(2) In the 2023 Annual Report, Permittees shall make their corporation yard SWPPPs available to the Water Board by providing links to online documents or submitting the documents as part of the Annual Report.

C.2.g. Storm Drain Inlet Marking

i. Task Description – Permittees shall mark and maintain municipally-maintained storm drain inlets with an appropriate stormwater pollution prevention message, such as “No dumping, drains to Bay” or equivalent. For newly approved, privately maintained streets, Permittees shall require storm drain inlet markings with an appropriate stormwater pollution prevention message by the project developer upon construction and maintenance of markings through the development maintenance entity. Markings on the storm drain inlets shall be verified prior to acceptance of the project.

ii. Implementation Level

(1) Inspect and maintain storm drain inlet markings of at least 80 percent of municipality-maintained inlets to ensure they are legibly labeled with a no dumping message or equivalent once per permit term.

(2) Storm drain inlet markings of newly developed, privately maintained streets shall be verified prior to acceptance of the project. Permittees shall require maintenance of the storm drain inlet markings through the development maintenance entity.

(3) Certify that all privately maintained streets had storm drain inlet markings verified prior to acceptance of the project and were required to maintain the storm drain inlet markings through the development maintenance entity.

iii. Reporting – In the 2026 Annual Report, each Permittee shall (1) state how many municipally-maintained storm drain inlets it has, (2) certify that at least 80 percent of municipality-maintained storm drain inlet markings are legibly labeled with an appropriate stormwater pollution prevention message during the permit term; and (3) include a picture of a labeled municipality-maintained inlet.

C.2.h. Staff Training

i. Task Description – Permittees shall ensure municipal maintenance staff conducting routine repair and maintenance activities of municipal facilities and infrastructure, or activities related to the implementation of corporation yard SWPPPs, are appropriately trained on the requirements of Provision C.2 and methods of implementation. Trainings may be program-wide, region-wide, or Permittee-specific.

ii. Implementation Level – At a minimum, provide training at least once within the 5-year term of this Permit to municipal staff on the following topics as relevant to municipal staff responsible for maintenance activities:

(1) Stormwater pollution prevention;

(2) Appropriate BMPs for maintenance and cleanup activities;

(3) Street and Road Repair and Maintenance BMPs;

(4) Sidewalk/Plaza Maintenance and Pavement Washing;

(5) Bridge and Structure Maintenance and Graffiti Removal;

(6) Corporation Yard SWPPPs and BMPs; and

(7) Spill and discharge response and notification procedures and contacts.

iii. Reporting – The Permittees shall include the following information in each Annual Report:

(1) Dates of training;

(2) Training topics covered;

(3) Total number of Permittee maintenance staff;

(4) Number and percentage of Permittee maintenance staff who attended training;

(5) If there was no training in a given year, so state.

C.3. New Development and Redevelopment

The goal of Provision C.3 is for the Permittees to use their planning authorities to include appropriate source control, site design, and stormwater treatment measures in new development and significant redevelopment projects to address stormwater runoff pollutant discharges and prevent increases in runoff flows from new development and redevelopment projects. This goal is to be accomplished primarily through the implementation of low impact development (LID) techniques.

C.3.a. New Development and Redevelopment Performance Standard Implementation

i. Task Description – At a minimum, each Permittee shall:

(1) Have adequate legal authority to implement all requirements of Provision C.3;

(2) Have adequate development review and permitting procedures to impose conditions of approval or other enforceable mechanisms to implement the requirements of Provision C.3. For projects discharging directly to CWA section 303(d)-listed waterbodies, conditions of approval must require that post-development runoff not exceed pre-development levels for such pollutants that are listed;

(3) Evaluate potential water quality effects and identify appropriate mitigation measures when conducting environmental reviews, such as under CEQA;

(4) Provide training adequate to implement the requirements of Provision C.3 for staff, including interdepartmental training;

(5) Provide outreach adequate to implement the requirements of Provision C.3, including providing education materials to municipal staff, developers, contractors, construction site operators, and owner/builders, early in the planning process and as appropriate;

(6) For all new development and redevelopment projects that are subject to the Permittee's planning, building, development, or other comparable review, but not regulated by Provision C.3, encourage the inclusion of adequate site design measures that may include minimizing land disturbance and impervious surfaces (especially parking lots); clustering of structures and pavement; directing roof runoff to vegetated areas; use of micro-detention, including distributed landscape-based detention; preservation of open space; and protection and/or restoration of riparian areas and wetlands as project amenities;

(7) For all new development and redevelopment projects that are subject to the Permittee's planning, building, development, or other comparable

review, but not regulated by Provision C.3, encourage the inclusion of adequate source control measures to limit pollutant generation, discharge, and runoff. These source control measures should include:

- Storm drain inlet stenciling.
- Landscaping that minimizes irrigation and runoff, promotes surface infiltration where possible, minimizes the use of pesticides and fertilizers, and incorporates appropriate sustainable landscaping practices and programs, such as ReScape California.
- Appropriate covers, drains, and storage precautions for outdoor material storage areas, loading docks, repair/maintenance bays, and fueling areas.
- Covered trash, food waste, and compactor enclosures.
- Plumbing of the following discharges to the sanitary sewer, subject to the local sanitary sewer agency's regulations and standards:
    - Discharges from indoor floor mat/equipment/hood filter wash racks or covered outdoor wash racks for restaurants.
    - Dumpster drips from covered trash and food compactor enclosures.
    - Discharges from outdoor covered wash areas for vehicles, equipment, and accessories.
    - Swimming pool water, if discharge to onsite vegetated areas is not a feasible option.
    - Fire sprinkler test water, if discharge to onsite vegetated areas is not a feasible option.

(8) Revise, as necessary, General Plans to integrate water quality and watershed protection with water supply, flood control, habitat protection, groundwater recharge, and other sustainable development principles and policies (e.g., referencing the ReScape California Guidelines).

ii. Reporting – Provide a brief summary of the method(s) of implementation of Provisions C.3.a.i.(1) - (8) in the 2023 Annual Report.

C.3.b. Regulated Projects

i. Task Description – The Permittees shall require all projects fitting the category descriptions listed in Provision C.3.b.ii. below (hereinafter called Regulated Projects) to implement LID source control, site design, and

stormwater treatment onsite or at a joint stormwater treatment facility[1] in accordance with Provisions C.3.c. and C.3.d., unless the Provision C.3.e. alternate compliance options are invoked. For Regulated Projects that will discharge runoff to a joint stormwater treatment facility, the treatment facility must be completed by the end of construction of the first Regulated Project that will be discharging runoff to the joint stormwater treatment facility.

(1) Any Regulated Project that has been approved with stormwater treatment measures in compliance with Provision C.3.d. under a previous MS4 permit is exempt from the requirements of Provision C.3.c. (low impact development requirements).

(2) Any Regulated Project that was approved with no Provision C.3. stormwater treatment requirements under a previous MS4 permit and that has not begun construction by the effective date of this Permit, shall be required to fully comply with the requirements of Provisions C.3.c. and C.3.d. Permittees may grant exemptions from this requirement as follows:

   (a) An exemption may be granted to:

      (i) Any Regulated Project that was previously approved with a vesting tentative map that confers a vested right to proceed with development in substantial compliance with the ordinances, policies, and standards in effect at the time the vesting tentative map was approved or conditionally approved, as allowed by State law.

      (ii) Any Regulated Project for which the Permittee has no legal authority to require changes to previously granted approvals, such as projects that have been granted building permits.

   (b) An exemption from the LID requirements of Provision C.3.c. may be granted to any such Regulated Project as long as stormwater treatment with media filters is provided that comply with the hydraulic sizing requirements of Provision C.3.d.

(3) Any pending Regulated Project that has not yet been approved as of June 30, 2023, and for which a Permittee has no legal authority to require new requirements under Government Code sections 66474.2 or 65589.5., subd. (o), is subject to the Provision C.3 requirements in effect on the Permit's effective date.

[1] **Joint stormwater treatment facility** – Stormwater treatment facility built to treat the combined runoff from two or more Regulated Projects.

ii. Regulated Projects are defined in the following categories:

(1) **Special Land Use Categories**

(a) **New Development or redevelopment projects** that fall into one of the categories listed below and that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site). This category includes development projects of the following four types on public or private land that fall under the planning and building authority of a Permittee, including sidewalks and any other portions of the public right of way that are developed or redeveloped as part of the project:[2]

(i) Auto service facilities, described by the following Standard Industrial Classification (SIC) Codes: 5013, 5014, 5541, 7532-7534, and 7536-7539;

(ii) Retail gasoline outlets;

(iii) Restaurants (SIC Code 5812); or

(iv) Stand-alone uncovered parking lots and uncovered parking lots that are part of a development project if the parking lot creates and/or replaces 5,000 square feet or more of impervious surface. This category includes the top uncovered portion of parking structures, unless drainage from the uncovered portion is connected to the sanitary sewer along with the covered portions of the parking structure.

(b) For redevelopment projects in the categories specified in Provision C.3.b.ii.(1)(a)(i)-(iv):

(i) The following interior and exterior practices are excluded:

a. Interior remodels; and

b. Routine maintenance or repair such as roof or exterior wall surface replacement.

(ii) The following pavement maintenance practices are excluded;

a. Pothole and square cut patching;

b. Overlaying existing asphalt or concrete pavement with asphalt or concrete without expanding the area of coverage;

[2] This does not include separate additional portions of the public right of way that Permittees require treatment of, which the Regulated Project is not disturbing. This is typically enforced through local ordinance, such as what is described in Provision C.3.j.ii.(2)(j).

c. Shoulder grading;

d. Reshaping/regrading drainage systems;

e. Crack sealing;

f. Pavement preservation activities that do not expand the road prism;

g. Upgrading from a bituminous surface treatment (e.g., chip seal)[3] with an overlay of asphalt or concrete, without expanding the area of coverage;[4]

h. Applying a bituminous surface treatment to existing asphalt or concrete pavement, without expanding the area of coverage; and

i. Vegetation maintenance.

j. Layering gravel over an existing gravel road, without expanding the area of coverage.

(iii) The following pavement maintenance practices are not excluded. For Road Reconstruction Projects, these practices are included only if they trigger all criteria specified in Provision C.3.b.ii.(5), including the criteria regarding contiguousness.

a. Removing and replacing an asphalt or concrete pavement to the top of the base course[5] or lower, or repairing the pavement base (including repair of the pavement base in preparation for bituminous surface treatment, such as chip seal), as these are considered replaced impervious surfaces;

b. Extending the pavement edge without increasing the size of the road prism, or paving graveled shoulders, as these are considered new impervious surfaces; and

c. Resurfacing by upgrading from dirt to gravel, to a bituminous surface treatment (e.g., chip seal),[3] to asphalt, or to concrete; or upgrading from gravel to a bituminous surface treatment, to asphalt, or to concrete, as these are considered new impervious surfaces.

[3] This is defined further in the Glossary

[4] This includes wedge grinding that is implemented as part of the upgrade project, so long as the area of coverage is not expanded. See definition of wedge grinding in Glossary.

[5] See definition in Glossary.

(iv) For a project consisting of a combination of exempted pavement maintenance practices (pursuant to Provision C.3.b.ii.(1)(b)(ii)), non-exempted pavement maintenance practices (pursuant to Provision C.3.b.ii.(1)(b)(iii)), and/or practices that fall under any other Regulated Project category (pursuant to Provision C.3.b.ii.(1)-(6)), the parts of the project that are not exempt shall be evaluated as a Regulated Project.

(c) Where a redevelopment project in the categories specified in Provision C.3.b.ii.(1)(a)(i)-(iv) results in an alteration of **50 percent or more** of the impervious surface of a previously existing development that was not subject to Provision C.3, the entire project, consisting of all existing, new, and/or replaced impervious surfaces, must be included in the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from the entire redevelopment project).

(d) Where a redevelopment project in the categories specified in Provision C.3.b.ii.(1)(a)(i)-(iv) results in an alteration of **less than 50 percent** of the impervious surface of a previously existing development that was not subject to Provision C.3, only the new and/or replaced impervious surface of the project must be included in the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from the new and/or replaced impervious surface of the project).

(e) The calculations in Provision C.3.b.ii.(1)(c)-(d) shall include portions of the public right of way that are developed or redeveloped as part of the Regulated Project.

(2) **Other Development Projects**

New development projects that create 5,000 square feet or more of impervious surface (collectively over the entire project site) including commercial, industrial, residential housing subdivisions (i.e., detached single-family home subdivisions, multi-family attached subdivisions (town homes), condominiums, and apartments), mixed-use, and public projects (other than public road projects), including sidewalks and any other portions of the public right of way that are developed or redeveloped as part of the projects.[2] This category includes development projects on public or private land that fall under the planning and building authority of a Permittee.

(3) **Other Redevelopment Projects**

Redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site) including commercial, industrial, residential housing subdivisions (i.e., detached single-family home subdivisions, multi-family attached subdivisions (town homes), condominiums, and apartments), mixed-use, new and reconstructed private roads and private trails, and public projects (other than public road and trail projects),[6] including sidewalks and any other portions of the public right of way that are developed or redeveloped as part of the projects.[2] Redevelopment is any land-disturbing activity that results in the creation, addition, or replacement of exterior impervious surface area on a site on which some past development has occurred. This category includes redevelopment projects on public or private land that fall under the planning and building authority of a Permittee.

Specific exclusions that apply to this category are listed in Provision C.3.b.ii.(1)(b). Public works projects that are additionally excluded from this category – unless they create and/or replace 5,000 contiguous[8] square feet or more of impervious surface – include the following examples: sidewalk gap closures,[7] sidewalk section replacement, and ADA curb ramps. However, as noted above, portions of the public right of way that are developed or redeveloped as part of Regulated Projects (e.g., curb extensions, pavement replacement, and curb and gutter replacement) shall be included in the total created and/or replaced impervious surface that must be treated by those Regulated Projects.

(a) Where a redevelopment project results in an alteration of **50 percent or more** of the impervious surface of a previously existing development that was not subject to Provision C.3, the entire project, consisting of all existing, new, and/or replaced impervious surfaces, must be included in the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from the entire redevelopment project).

(b) Where a redevelopment results in an alteration **of less than 50 percent** of the impervious surface of a previously existing development that was not subject to Provision C.3, only the new and/or replaced impervious surface of the project must be included in

[6] Examples of such public projects are construction/reconstruction of: streetlights, signals, and signs; curb extensions, sidewalks, and medians; crosswalk enhancements, bulb-outs, curb ramps, and ADA improvements; and sidewalk extensions.

[7] The filling of gaps between sections of sidewalks, with pavement (e.g., where a block has a sidewalk, but it is not continuous because it is missing across a parcel, completing the sidewalk across that parcel).

the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from the new and/or replaced impervious surface of the project).

(c) The calculations in Provision C.3.b.ii.(3)(a)-(b) shall include portions of the public right of way that are developed or redeveloped as part of the Regulated Project.

(4) **New or Widening Road Projects**

Any of the following types of road projects that create 5,000 square feet or more of newly constructed contiguous[8] impervious surface, that are both public and private road projects, and that fall under the building and planning authority of a Permittee:

(a) Construction of new streets or roads, including sidewalks and bicycle lanes built as part of the new streets or roads.

(b) Widening of existing streets or roads with additional traffic lanes.

(i) Where the addition of traffic lanes results in an alteration of more than 50 percent of the impervious surface of an existing street or road within the project that was not subject to Provision C.3, the entire project, consisting of all existing, new, and/or replaced impervious surfaces, shall be included in the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from the entire street or road that had additional traffic lanes added).

(ii) Where the addition of traffic lanes results in an alteration of less than 50 percent of the impervious surface of an existing street or road within the project that was not subject to Provision C.3, only the new and/or replaced impervious surface of the project must be included in the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from only the new traffic lanes). However, if the stormwater runoff from the existing traffic lanes and the added traffic lanes cannot be separated, any onsite treatment system shall be designed and sized to treat stormwater runoff from the entire street or road. If an offsite treatment system is installed or in-lieu fees paid in accordance with Provision C.3.e, the offsite treatment system or in-lieu fees must address only the stormwater runoff from the added traffic lanes.

[8] Project areas interrupted by cross streets or intersections are considered contiguous.

(c) Construction of impervious[9] trails that are greater than or equal to 10 feet wide or are creek-side (within 50 feet of the top of bank).

(d) Specific exclusions to Provisions C.3.b.ii.(4)(a)-(c) include the following:

(i) Sidewalks built as part of new streets or roads and built to direct stormwater runoff to adjacent vegetated areas.

(ii) Bicycle lanes built as part of new streets or roads, but that are not hydraulically connected to the new streets or roads and that direct stormwater runoff to adjacent vegetated areas.

(iii) Impervious trails that direct stormwater runoff to adjacent vegetated areas, or other non-erodible permeable areas, preferably away from creeks or towards the outboard side of levees, where those areas are at least half as large as the contributing impervious surface area.

(iv) Sidewalks, bicycle lanes, or trails constructed as pervious pavement systems.[10]

(v) Caltrans highway projects and associated facilities.

(5) **Road Reconstruction Projects**

Road projects that involve the reconstruction of existing streets or roads,[11] which create and/or replace greater than or equal to one contiguous[8] acre of impervious surface and that are public road projects and/or fall under the building and planning authority of a Permittee, including sidewalks and bicycle lanes that are built or rebuilt as part of the existing streets or roads. This Regulated Project category includes utility trenching projects which are - on average, over the entire length of the project - greater than or equal to 8 feet wide. It also includes public pavement maintenance practices listed in Provision C.3.b.ii.(1)(b)(iii)(b).

Project activities that are included and excluded, which apply to this category, are listed in Provision C.3.b.ii.(1)(b)(ii)-(iv). Pavement maintenance practices that are not excluded (as detailed in Provision C.3.b.ii.(1)(b)(iii)) are considered Road Reconstruction Projects if they meet the other definitions therein.

[9] Gravel layers are considered impervious, excluding gravel layers that are included in pervious pavement systems (as defined in the Glossary).

[10] As defined in the Glossary.

[11] The definition of roads includes roads on levees.

(a) Where the reconstruction project results in an alteration of greater than or equal to 50 percent of the impervious surface of an existing street or road within the project that was not subject to Provision C.3, the entire project, consisting of all existing, new, and/or replaced impervious surfaces, shall be included in the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from the entire street or road that was reconstructed).

(b) Where the reconstruction project results in an alteration of less than 50 percent of the impervious surface of an existing street or road within the project that was not subject to Provision C.3, only the new and/or replaced impervious surface of the project must be included in the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from only the new and/or replaced impervious surface within the project footprint). However, if the stormwater runoff from the existing impervious surface and the added impervious surface cannot be separated, any onsite treatment system shall be designed and sized to treat stormwater runoff from the entire street or road. If an offsite treatment system is installed or in-lieu fees paid in accordance with Provision C.3.e, the offsite treatment system or in-lieu fees must address only the stormwater runoff from the added impervious surface.

(c) Road Reconstruction Projects shall comply with Provision C.3.d. However, with cause (e.g., significantly constrained area for a BMP, substantially increased costs for that sizing relative to the Provision C.3.j.i.(2)(g) approach outlined in the Previous Permit, significant amounts of run-on from adjacent areas, or other substantial constraints identified by Permittees) and with reporting in their Annual Reports, Permittees may use the Guidance for Sizing Green Infrastructure Facilities in Streets Projects with companion analysis Green Infrastructure Facility Sizing for Non-Regulated Street Projects submitted in June 2019, to size Road Reconstruction Projects. If so, Permittees must comply with the Water Board's June 21, 2019, conditional approval of that submittal, which provides qualifiers to, and the conditions under which, the alternative sizing criteria may be used.

(d) Permittees may credit the acreage of impervious surface created or replaced for Road Reconstruction Projects towards the Numeric Implementation retrofit requirements specified in Provision C.3.j.ii.(2).

(6) **Large Detached Single-Family Home Projects**

Detached single-family home projects that create and/or replace 10,000 ft^2 or more of impervious surface (collectively over the entire project site) and are not part of a larger development or redevelopment plan regulated under Provision C.3.b.ii.(2)-(3).

(a) Where a single family home project results in an alteration of **50 percent or more** of the impervious surface of a previously existing project that was not subject to Provision C.3, the entire project, consisting of all existing, new, and/or replaced impervious surfaces, must be included in the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from the entire project).

(b) Where a single family home project results in an alteration **of less than 50 percent** of the impervious surface of a previously existing project that was not subject to Provision C.3, only the new and/or replaced impervious surface of the project must be included in the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from the new and/or replaced impervious surface of the project).

(c) The calculations in Provision C.3.b.ii.(6)(a)-(b) shall include portions of the public right of way that are developed or redeveloped as part of the Regulated Project.

(d) Included in this Regulated Project category is the addition of an accessory dwelling unit (ADU) on an existing parcel with one single-family home, without a subdivision.

iii. Implementation Level

(1) Provision C.3.b.i shall be effective immediately.

(2) Beginning July 1, 2023, the Regulated Project definitions in Provision C.3.b.ii are effective.

(3) Prior to July 1, 2023, the Regulated Project definitions in Provision C.3.b.ii in Attachment I are effective, which are definitions from the Previous Permit.

(4) For Provisions C.3.b.iii.(1)-(3), this shall include a database or equivalent tabular format that contains all the information under Reporting (Provision C.3.b.iv.).

iv. Reporting

(1) C.3.b.i.(2) Reporting

In the 2023 Annual Report, each Permittee shall provide a complete list of the development projects that are subject to the requirements of Provision C.3.b.i.(2). For each such project, the Permittee shall indicate the type of stormwater treatment system required or the specific exemption granted, pursuant to Provision C.3.b.i.(2)(a) and (b). If a Permittee has no projects subject to Provision C.3.b.i.(2), it shall so state in the 2023 Annual Report.

(2) Annual Reporting – C.3.b.ii. Regulated Projects

For each Regulated Project approved during the fiscal year reporting period, the following information shall be reported electronically in the fiscal year Annual Report, in tabular form (as set forth in the Provision C.3.b. Sample Reporting Table included in Attachment B):

(a) Project Name, Number, Location (cross streets), and Street Address;

(b) Name of Developer, Phase No. (if project is being constructed in phases, each phase should have a separate entry), Project Type (e.g., commercial, industrial, multi-unit residential, mixed-use, public), and description;

(c) Project watershed;

(d) Total project site area and total area of land disturbed;

(e) Total new impervious surface area and/or total replaced impervious surface area;

(f) If redevelopment or road widening project, total pre-project impervious surface area and total post-project impervious surface area;

(g) Status of project (e.g., application date, application deemed complete date, project approval date), and whether the project has been completed. If not, the estimated project completion date;

(h) Source control measures;

(i) Site design measures;

(j) All post-construction stormwater treatment systems installed onsite, at a joint stormwater treatment facility, and/or at an offsite location;

(k) Operation and maintenance responsibility mechanism for the life of the project;

(l) Hydraulic Sizing Criteria used;

(m) Alternative compliance measures for Regulated Project (if applicable)

(i) If alternative compliance will be provided at an offsite location in accordance with Provision C.3.e.i.(1), include information required in Provision C.3.b.iv.(2)(a) – (l) for the offsite project; and

(ii) If alternative compliance will be provided by paying in-lieu fees in accordance with Provision C.3.e.i.(2), provide information required in Provision C.3.b.iv.(2)(a) – (l) for the Regional Project. Additionally, provide a summary of the Regional Project's goals, duration, estimated completion date, total estimated cost of the Regional Project, and estimated monetary contribution from the Regulated Project to the Regional Project; and

(n) Hydromodification (HM) Controls (see Provision C.3.g) – If not required, state why not. If required, state control method used.

C.3.c. Low Impact Development (LID)

The goal of LID is to reduce runoff and mimic a site's predevelopment hydrology by minimizing disturbed areas and impervious cover and then infiltrating, storing, detaining, evapotranspiring, and/or biotreating stormwater runoff close to its source. LID employs principles such as preserving and recreating natural landscape features and minimizing imperviousness to create functional and appealing site drainage that treats stormwater as a resource, rather than a waste product. Practices used to adhere to these LID principles include measures such as rain barrels and cisterns, green roofs, permeable pavement, preserving undeveloped open space, and biotreatment through rain gardens, bioretention units, bioswales, and planter/tree boxes.

i. Task Description – The Permittees shall, at a minimum, implement the following LID requirements:

(1) Source Control Requirements

Require all Regulated Projects to implement source control measures onsite that, at a minimum, shall include the following:

(a) Minimization of stormwater pollutants of concern in urban runoff through measures that may include plumbing of the following discharges to the sanitary sewer, subject to the local sanitary sewer agency's regulations and standards:

- Discharges from indoor floor mat/equipment/hood filter wash racks or covered outdoor wash racks for restaurants;
- Dumpster drips from covered trash, food waste, and compactor enclosures;

- Discharges from covered outdoor wash areas for vehicles, equipment, and accessories;
- Swimming pool water, if discharge to onsite vegetated areas is not a feasible option; and
- Fire sprinkler test water, if discharge to onsite vegetated areas is not a feasible option;

(b) Properly designed covers, drains, and storage precautions for outdoor material storage areas, loading docks, repair/maintenance bays, and fueling areas;

(c) Properly designed trash storage areas;

(d) Landscaping that minimizes irrigation and runoff, promotes surface infiltration, minimizes the use of pesticides and fertilizers, and incorporates other appropriate sustainable landscaping practices and programs such as Bay-Friendly Landscaping;

(e) Efficient irrigation systems; and

(f) Storm drain system stenciling or signage.

(2) Site Design and Stormwater Treatment Requirements

(a) Require each Regulated Project to implement at least the following design strategies onsite:

(i) Limit disturbance of natural water bodies and drainage systems; minimize compaction of highly permeable soils; protect slopes and channels; and minimize impacts from stormwater and urban runoff on the biological integrity of natural drainage systems and water bodies;

(ii) Conserve natural areas, including existing trees, other vegetation, and soils;

(iii) Minimize impervious surfaces;

(iv) Minimize disturbances to natural drainages; and

(v) Minimize stormwater runoff by implementing one or more of the following site design measures:

- Direct roof runoff into cisterns or rain barrels for reuse.
- Direct roof runoff onto vegetated areas.
- Direct runoff from sidewalks, walkways, and/or patios onto vegetated areas.

- Direct runoff from driveways and/or uncovered parking lots onto vegetated areas.
- Construct sidewalks, walkways, and/or patios with pervious pavement systems.[12]
- Construct driveways, bike lanes, and/or uncovered parking lots with pervious pavement systems.

(b) Permittees shall implement the design specifications for pervious pavement systems contained within their countywide stormwater handbooks.

(c) Require each Regulated Project and all projects implemented pursuant to Provision C.3.j to treat 100 percent of the amount of runoff identified in Provision C.3.d for the Regulated Project's or Provision C.3.j project's drainage area with LID treatment measures onsite or with LID treatment measures at a joint stormwater treatment facility.

(i) LID treatment measures are harvesting and use, infiltration, evapotranspiration, and biotreatment.

(ii) Biotreatment (or bioretention) systems shall be designed to have a surface area no smaller than what is required to accommodate a 5 inches/hour stormwater runoff surface loading rate, infiltrate runoff through biotreatment soil media at a minimum of 5 inches per hour, and maximize infiltration to the native soil during the life of the Regulated Project. The soil media for biotreatment (or bioretention) systems shall be designed to sustain healthy, vigorous plant growth and maximize stormwater runoff retention and pollutant removal. Permittees shall ensure that Regulated Projects use biotreatment soil media that meet the minimum specifications set forth in the Revised Model Biotreatment Soil Media Specifications submitted by BASMAA on behalf of the Permittees on February 5, 2016, and approved on April 18, 2016, pursuant to the requirements of Provision C.3.c.i.(2)(c)(ii) of MRP 2. Permittees may collectively (on an all-Permittee scale or countywide scale) develop and adopt revisions to the soil media minimum specifications, subject to the Executive Officer's approval.

a. The Permittees may convene a workgroup with Water Board staff to discuss and investigate the pollutant removal

[12] Pervious pavement systems include pervious asphalt, pervious concrete, pervious pavers, and grid pavers, and are defined in the Glossary.

effectiveness and hydrologic equivalency of – and suggested criteria for – high flow-rate media treatment systems in combination with retention/detention measures, such as silva cells and structural soils, as compared to conventional bioretention. The workgroup should consider issues including: the MEP standard in relation to the use of such systems; the pollutant removal benefits and hydrologic criteria associated with the Permit's LID design approach and which are included in other MS4 permits, such as the Western Washington Phase II Municipal Stormwater Permit (NPDES Permit No. WAR045717) and the Los Angeles Regional MS4 Permit (NPDES Permit No. CAS004004); and additional issues, such as the feasibility of obtaining high flow rate media at construction and, as needed, for the life of a project.

(iii) Green roofs may be considered biotreatment systems that treat roof runoff only if they meet certain minimum specifications. Permittees shall ensure that green roofs installed at Regulated Projects meet the following minimum specifications:

a. The green roof system planting media shall be sufficiently deep to provide capacity within the pore space of the media for the required runoff volume specified by Provision C.3.d.i.(1).

b. The green roof system planting media shall be sufficiently deep to support the long-term health of the vegetation selected for the green roof, as specified by a landscape architect or other knowledgeable professional.

(d) Require any Regulated Project that does not comply with Provision C.3.c.i.(2)(c) above to meet the requirements established in Provision C.3.e for alternative compliance.

ii. Reporting

(1) For specific tasks listed above that are reported using the reporting tables required for Provision C.3.b.iv, a reference to those tables will suffice.

C.3.d. Numeric Sizing Criteria for Stormwater Treatment Systems

i. Task Description – The Permittees shall require that stormwater treatment systems constructed for Regulated Projects and for projects implemented pursuant to Provision C.3.j meet at least one of the following hydraulic sizing design criteria:

(1) **Volume Hydraulic Design Basis** – Treatment systems whose primary mode of action depends on volume capacity shall be designed to treat stormwater runoff equal to:

(a) The maximized stormwater capture volume for the area, on the basis of historical rainfall records, determined using the formula and volume capture coefficients set forth in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998), pages 175–178 (e.g., approximately the 85th percentile 24-hour storm runoff event); or

(b) The volume of annual runoff required to achieve 80 percent or more capture, determined in accordance with the methodology set forth in Section 5 of CASQA's Stormwater Best Management Practice Handbook, New Development and Redevelopment (2003), using local rainfall data.

(2) **Flow Hydraulic Design Basis** – Treatment systems whose primary mode of action depends on flow capacity shall be sized to treat:

(a) 10 percent of the 50-year peak flow rate;

(b) The flow of runoff produced by a rain event equal to at least two times the 85th percentile hourly rainfall intensity for the applicable area, based on historical records of hourly rainfall depths; or

(c) The flow of runoff resulting from a rain event equal to at least 0.2 inches per hour intensity.

(3) **Combination Flow and Volume Design Basis** – Treatment systems that use a combination of flow and volume capacity shall be sized to treat at least 80 percent of the total runoff over the life of the project, using local rainfall data.

ii. Reporting – Permittees shall use the reporting tables required in Provision C.3.b.iv.(2).

iii. Limitations on Use of Infiltration Devices in Stormwater Treatment Systems

(1) For Regulated Projects and for all projects implemented pursuant to Provision C.3.j, each Permittee shall review planned land use and proposed treatment design to verify that installed stormwater treatment systems with no under-drain, and that function primarily as infiltration devices, should not cause or contribute to the degradation of groundwater quality at project sites. An infiltration device is any structure that is designed to infiltrate stormwater into the subsurface and, as designed, bypass the natural groundwater protection afforded by surface soil.

Infiltration devices include dry wells, injection wells, and infiltration trenches (includes french drains).

(2) For any Regulated Project and for any project implemented pursuant to Provision C.3.j that includes plans to install stormwater treatment systems which function primarily as infiltration devices, the Permittee shall require that:

(a) Appropriate pollution prevention and source control measures are implemented to protect groundwater at the project site, including the inclusion of a minimum of two feet of suitable soil to achieve a maximum 5 inches/hour infiltration rate for the infiltration system;

(b) Adequate maintenance is provided to maximize pollutant removal capabilities;

(c) The vertical distance from the base of any infiltration device to the seasonal high groundwater mark is at least 10 feet. (Note that some locations within the Permittees' jurisdictions are characterized by highly porous soils and/or high groundwater tables. In these areas, a greater vertical distance from the base of the infiltration device to the seasonal high groundwater mark may be appropriate, and treatment system approvals should be subject to a higher level of analysis that considers the potential for pollutants (such as from onsite chemical use), the level of pretreatment to be achieved, and other similar factors in the overall analysis of groundwater safety);

(d) Unless stormwater is first treated by a method other than infiltration, infiltration devices are not approved as treatment measures for runoff from areas of industrial or light industrial activity; areas subject to high vehicular traffic (i.e., 25,000 or greater average daily traffic on a main roadway or 15,000 or more average daily traffic on any intersecting roadway); automotive repair shops; car washes; fleet storage areas (e.g., bus, truck); nurseries; and other land uses that pose a high threat to water quality;

(e) Infiltration devices are not placed in the vicinity of known contamination sites unless it has been demonstrated that increased infiltration will not increase leaching of contaminants from soil, alter groundwater flow conditions affecting contaminant migration in groundwater, or adversely affect remedial activities; and

(f) Infiltration devices are located a minimum of 100 feet horizontally away from any known water supply wells, septic systems, and underground storage tanks with hazardous materials. (Note that some locations within the Permittees' jurisdictions are characterized by

highly porous soils and/or high groundwater tables. In these areas, a greater horizontal distance from the infiltration device to known water supply wells, septic systems, or underground storage tanks with hazardous materials may be appropriate, and treatment system approvals should be subject to a higher level of analysis that considers the potential for pollutants (such as from onsite chemical use), the level of pretreatment to be achieved, and other similar factors in the overall analysis of groundwater safety).

iv. Tree Runoff Reduction and Tree-Based Stormwater Treatment Systems

(1) The Permittees collectively may submit a proposal, subject to the Executive Officer's approval, which evaluates the benefit and associated criteria of runoff reduction associated with trees with respect to treatment control sizing, which evaluates and includes as appropriate the findings of the Healthy Watersheds, Resilient Baylands project,[13] and which will be considered for incorporation into a subsequent Permit. Such a proposal shall characterize the multiple benefits of green infrastructure beyond standard designs (e.g., urban forestry), develop recommendations for Permittees to achieve the benefits (e.g., beneficial modifications to GI designs, guidelines for coordinating with work such as stream restoration, parks and urban forestry), and suggest opportunities to modify Provision C.3 language in a future Permit to better recognize broader benefits.

The proposal may include treatment control sizing and design criteria for tree-based stormwater treatment systems in combination with systems that provide additional hydrologic benefit (such as structural soils, suspended pavement systems, or other methods to provide tree rooting volume), which provide water quality and hydrologic benefit equivalent to bioretention.

(2) Tree Interceptor Credits, as described in the 2011 BASMAA Feasibility/Infeasibility Criteria Report submitted pursuant to Provision C.3.c.i.(2)(b)(iv) of MRP 1, shall not be used to reduce the stormwater treatment required pursuant to Provision C.3.

v. Reporting

(1) If the Permittees collectively submit a proposal pursuant to Provision C.3.d.iv, the proposal shall be submitted by no later than with the 2025 Annual Report.

[13] The San Francisco Estuary Partnership (SFEP) and Association of Bay Area Governments (ABAG) along with several other partners (including Water Board staff) secured a U.S. EPA Water Quality Improvement Fund (WQIF) grant to pursue the Healthy Watersheds, Resilient Baylands project, which in part investigates the stormwater treatment benefit provided by trees within the urban landscape.

C.3.e. Alternative or In-Lieu Compliance with Provision C.3.b.

i. The Permittees may allow a Regulated Project to provide alternative compliance with Provision C.3.b in accordance with one of the two options listed below:

(1) **Option 1: LID Treatment at an Offsite Location**

Treat a portion (this portion may be zero; Permittees should treat as much onsite as possible) of the amount of runoff identified in Provision C.3.d for the Regulated Project's drainage area with LID treatment measures onsite or with LID treatment measures at a joint stormwater treatment facility **and** treat the remaining portion of the Provision C.3.d runoff with LID treatment measures at an Offsite Project[14] in the same watershed. The offsite LID treatment measures must provide hydraulically-sized treatment (in accordance with Provisions C.3.d and C.3.g, as appropriate) of an equivalent quantity of both stormwater runoff and pollutant loading and achieve a net environmental benefit.

(2) **Option 2: Payment of In-Lieu Fees**

Treat a portion (this portion may be zero; Permittees should treat as much onsite as possible) of the amount of runoff identified in Provision C.3.d for the Regulated Project's drainage area with LID treatment measures onsite or with LID treatment measures at a joint stormwater treatment facility **and** pay equivalent in-lieu fees[15] to treat the remaining portion of the Provision C.3.d runoff (and comply with Provision C.3.g, as appropriate) with LID treatment measures at a Regional Project[16] or Offsite Project. The Regional Project must achieve a net environmental benefit, through a net increase in impervious surface treated, and/or a net reduction in flow and/or pollutant load.

(3) For the alternative compliance options described in Provision C.3.e.i.(1) and (2) above (Options 1 and 2), all Offsite Projects and Regional Projects must be completed within three years after the end of construction of the

[14] **Offsite Project** – A stormwater treatment facility that discharges into the same watershed as the Regulated Project and is located at a different public or private parcel or property (e.g., right-of-way) from the Regulated Project.

[15] **In-lieu fees** – Monetary amount necessary to provide both hydraulically-sized treatment (in accordance with Provision C.3.d) with LID treatment measures of an equivalent quantity of stormwater runoff and pollutant loading, and a proportional share of the operation and maintenance costs of the Offsite Project or Regional Project.

[16] **Regional Project –** A regional or municipal stormwater treatment facility that captures runoff from a drainage area larger than the parcel on which it is located and discharges into the same watershed as the Regulated Project.

Regulated Project. However, the timeline for completion of an Offsite Project or Regional Project may be extended, up to five years after the completion of the Regulated Project, with prior Executive Officer approval. Executive Officer approval will be granted contingent upon a demonstration of good faith efforts to implement the Offsite Project or Regional Project, such as having funds encumbered and applying for the appropriate regulatory permits.

(4) Reporting

(a) Annual reporting on Alternative Compliance projects shall be done in conjunction with reporting requirements under Provision C.3.b.iv.(2).

ii. Special Projects

(1) When considered at the watershed scale, certain land development projects characterized as smart growth or high density can either reduce existing impervious surfaces or create less “accessory” impervious areas and automobile-related pollutant impacts. Incentive LID Treatment Reduction Credits approved by the Water Board may be applied to these Special Projects, which are Regulated Projects that meet the specific criteria listed below in Provision C.3.e.ii.(2). For any Special Project, the allowable incentive LID Treatment Reduction Credit is the maximum percentage of the amount of runoff identified in Provision C.3.d for the Special Project’s drainage area that may be treated with one or a combination of the following two types of non-LID treatment systems:

- Tree-box-type high flowrate biofilters
- Vault-based high flowrate media filters

The allowed LID Treatment Reduction Credit recognizes that density and space limitations for the Special Projects identified herein may make 100% LID treatment infeasible.

(2) Prior to granting any LID Treatment Reduction Credits, Permittees must first establish all the following:

(a) The infeasibility of treating 100% of the amount of runoff identified in Provision C.3.d for the Regulated Project’s drainage area with LID treatment measures onsite;

(b) The infeasibility of treating 100% of the amount of runoff identified in Provision C.3.d for the Regulated Project’s drainage area with LID treatment measures offsite or paying in-lieu fees to treat 100% of the Provision C.3.d runoff with LID treatment measures at an offsite or Regional Project; and

(c) The infeasibility of treating 100% of the amount of runoff identified in Provision C.3.d for the Regulated Project's drainage area with some combination of LID treatment measures onsite, offsite, and/or paying in-lieu fees towards at an offsite or Regional Project.

For each Special Project, a Permittee shall document the basis of infeasibility used to establish technical and/or economic infeasibility.

Under Provision C.3.e.v, each Permittee is required to report on the infeasibility of 100% LID treatment in each scenario described in Provision C.3.e.ii.(2)(a)-(c) above, for each of the Special Projects for which LID Treatment Reduction Credit was applied.

(3) Category A Special Project Criteria

(a) To be considered a Category A Special Project, a Regulated Project must meet all of the following criteria:

(i) Be built as part of a Permittee's stated objective to preserve or enhance a pedestrian-oriented type of urban design.

(ii) Be located in a Permittee's designated central business district, downtown core area or downtown core zoning district, neighborhood business district or comparable pedestrian-oriented commercial district, or historic preservation site and/or district.

(iii) Create and/or replace one half acre or less of impervious surface area.

(iv) Include no surface parking, except for incidental surface parking. Incidental surface parking is allowed only for emergency vehicle access, Americans with Disabilities Act (ADA) accessibility, and passenger and freight loading zones.

(v) Have at least 85 percent coverage for the entire project site by permanent structures. The remaining 15 percent portion of the site is to be used for safety access, parking structure entrances, trash and recycling service, utility access, pedestrian connections, public uses, landscaping, and stormwater treatment.

(b) Any Category A Special Project may qualify for 100 percent LID Treatment Reduction Credit, which would allow the Category A Special Project to treat up to 100 percent of the amount of runoff identified in Provision C.3.d. for the Project's drainage area with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1).

(4) Category B Special Project Criteria

(a) To be considered a Category B Special Project, a Regulated Project must meet all of the following criteria:

(i) Be built as part of a Permittee's stated objective to preserve or enhance a pedestrian-oriented type of urban design.

(ii) Be located in a Permittee's designated central business district, downtown core area or downtown core zoning district, neighborhood business district or comparable pedestrian-oriented commercial district, or historic preservation site and/or district.

(iii) Create and/or replace greater than one-half acre but no more than 2 acres of impervious surface area.

(iv) Include no surface parking, except for incidental surface parking. Incidental surface parking is allowed only for emergency vehicle access, ADA accessibility, and passenger and freight loading zones.

(v) Have at least 85 percent coverage for the entire project site by permanent structures. The remaining 15 percent portion of the site is to be used for safety access, parking structure entrances, trash and recycling service, utility access, pedestrian connections, public uses, landscaping, and stormwater treatment.

(b) For any Category B Special Project, the maximum LID Treatment Reduction Credit allowed is determined based on the density achieved by the Project in accordance with the criteria listed below. Density is expressed in Floor Area Ratios (FARs[17]) for commercial development projects, in Dwelling Units[18] per Acre (DU/Ac) for residential development projects, and in FARs and DU/Ac for mixed-use development projects.

(i) 50 percent Maximum LID Treatment Reduction Credit

a. For any commercial Category B Special Project with an FAR of at least 2:1, up to 50 percent of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the two

[17] **Floor Area Ratio** – The ratio of the total floor area on all floors of all buildings at a project site (except structures, floors, or floor areas dedicated to parking) to the total project site area.

[18] **Dwelling Unit** – A single unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking, and sanitation.

types of non-LID treatment systems listed in Provision C.3.e.ii.(1).

b. For any residential Category B Special Project with a gross density[19] of at least 50 DU/Ac, up to 50 percent of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.

c. For any mixed use Category B Special Project with an FAR of at least 2:1 or a gross density of at least 50 DU/Ac, up to 50 percent of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.

(ii) 75 percent Maximum LID Treatment Reduction Credit

a. For any commercial Category B Special Project with an FAR of at least 3:1, up to 75 percent of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.

b. For any residential Category B Special Project with a gross density of at least 75 DU/Ac, up to 75 percent of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.

c. For any mixed-use Category B Special Project with an FAR of at least 3:1 or a gross density of at least 75 DU/Ac, up to 75 percent of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.

(iii) 100 percent Maximum LID Treatment Reduction Credit

[19] **Gross Density** – The total number of residential units divided by the acreage of the entire site area, including land occupied by public rights-of-way, recreational, civic, commercial, and other non-residential uses.

a. For any commercial Category B Special Project with an FAR of at least 4:1, up to 100 percent of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.

b. For any residential Category B Special Project with a gross density of at least 100 DU/Ac, up to 100 percent of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.

c. For any mixed-use Category B Special Project with an FAR of at least 4:1 or a gross density of at least 100 DU/Ac, up to 100 percent of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.

(5) Category C Special Project Criteria (Affordable Housing)

(a) For the purposes of attributing Affordable Housing Credits, affordable housing is defined as preserved housing with deed restrictions running at least 55 years, at rent/mortgage rates (including utilities) no greater than 30 percent of the total household income, and which meets the following income levels specified in the Federal Department of Housing and Urban Development's (HUD's) definition of affordable housing in metropolitan areas: For metropolitan areas, HUD defines Extremely Low household incomes as 0 - 30 percent of area median household income (AMI), Very Low household incomes as 31 - 50 percent of AMI, Low household incomes as 51-80 percent of AMI, and Moderate household incomes as 81-120 percent of AMI.

To be considered a Category C Special Project, a Regulated Project must additionally meet both of the following criteria:

(i) Be primarily a residential development project.

(ii) Achieve at least a gross density of 40 DU/Ac.

(b) For any Category C Special Project, the total maximum LID Treatment Reduction Credit allowed is the sum of four different types of credits that the Category C Special Project may qualify for, namely: Affordable Housing, Location, Density, and Minimized Surface Parking Credits.

(c) Affordable Housing Credits: A Category C Special Project may qualify for Affordable Housing Credits, according to the following criteria. The income limits that shall be used for these criteria are the most current Official State Income Limits (adjusted for household size), which are defined on the California Department of Housing and Community Development's website.[20,21] All qualifying affordable housing DUs must be preserved housing with deed restrictions running at least 55 years, at rent/mortgage rates (including utilities) no greater than 30 percent of the total household income.

(i) To qualify for 70 percent Affordable Housing Credit:

100 percent of the project's DUs must have monthly rent/mortgage rates[22] no greater than 30 percent of the Moderate household income level (≤ 120 percent of AMI), at least 75 percent of the project's DUs must have monthly rent/mortgage rates[22] no greater than 30 percent of the Low household income level (≤ 80 percent of AMI), at least 50 percent of the project's DUs must have monthly rent/mortgage rates[22] no greater than 30 percent of the Very Low household income level (≤ 50 percent of AMI), and at least 25 percent of the project's DU's must have monthly rent/mortgage rates[22] no greater than 30 percent of the Extremely Low household income level (≤ 30 percent of AMI).

(ii) To qualify for 50 percent Affordable Housing Credit:

At least 75 percent of the project's DUs must have monthly rent/mortgage rates[22] no greater than 30 percent of the Moderate household income level (≤ 120 percent of AMI), at least 50 percent of the project's DUs must have monthly rent/mortgage rates[22] no greater than 30 percent of the Low household income level (≤ 80 percent of AMI), at least 25 percent of the project's DUs must have monthly rent/mortgage rates[22] no greater than 30 percent of the Very Low household income level (≤ 50 percent of AMI), and at least 15 percent of the project's DUs must have monthly rent/mortgage rates[22] no greater than 30 percent of the Extremely Low household income level (≤ 30 percent of AMI).

[20] https://www.hcd.ca.gov/grants-funding/income-limits/state-and-federal-income-limits.shtml

[21] As of December 31, 2021, they are: https://www.hcd.ca.gov/grants-funding/income-limits/state-and-federal-income-limits/docs/income-limits-2021.pdf

[22] Including utilities.

(iii) To qualify for 25 percent Affordable Housing Credit:

At least 50 percent of the project's DUs must have monthly rent/mortgage rates[22] no greater than 30 percent of the Moderate household income level (≤ 120 percent of AMI), at least 25 percent of the project's DUs must have monthly rent/mortgage rates[22] no greater than 30 percent of the Low household income level (≤ 80 percent of AMI), at least 15 percent of the project's DUs must have monthly rent/mortgage rates[22] no greater than 30 percent of the Very Low household income level (≤ 50 percent of AMI), and at least 5 percent of the project's DUs must have monthly rent/mortgage rates[22] no greater than 30 percent of the Extremely Low household income level (≤ 30 percent of AMI).

AMI	Minimum Percentage of DUs		
	70% credit	50% credit	25% credit
Moderate (≤120% of AMI)	100	75	50
Low (≤80% of AMI)	75	50	25
Very Low (≤50% of AMI)	50	25	15
Extremely Low (≤30% of AMI)	25	15	5

(d) Location Credits: To qualify for any Location Credits, a Category C Special Project must first qualify for one of the Affordable Housing Credits in Provision C.3.e.ii.(5)(c).

(i) A Category C Special Project may qualify for the following Location Credits:

a. 5 percent Location Credit: Located within a ¼-mile radius of an existing or planned transit hub.

b. 10 percent Location Credit: Located within a planned Priority Development Area (PDA), which is an infill development area formally designated by the Association of Bay Area Government's/Metropolitan Transportation Commission's FOCUS regional planning program. FOCUS is a regional

incentive-based development and conservation strategy for the San Francisco Bay Area.

(ii) Only one Location Credit may be used by an individual Category C Special Project, even if the project qualifies for multiple Location Credits.

(iii) One hundred percent of a Category C Special Project's site must be located within the ¼-mile radius of an existing or planned transit hub to qualify for the corresponding Location Credit listed above. One hundred percent of a Category C Special Project's site must be located within a PDA to qualify for the corresponding Location Credit listed above.

(iv) Transit hub is defined as a rail, light rail, or commuter rail station, ferry terminal, or bus transfer station served by three or more bus routes (i.e., a bus stop with no supporting services does not qualify). A planned transit hub is a station on the MTC's Regional Transit Expansion Program list, per MTC's Resolution 3434 (revised September 2008), which is a regional priority funding plan for future transit stations in the San Francisco Bay Area.

(e) Density Credits: To qualify for any Density Credits, a Category C Special Project must first qualify for one of the Affordable Housing Credits listed in Provision C.3.e.ii.(5)(c).

(i) A Category C Special Project may qualify for the following Density Credits:

a. 5 percent Density Credit: Achieve a gross density of at least 40 DU/Ac.

b. 10 percent Density Credit: Achieve a gross density of at least 60 DU/Ac.

c. 15 percent Density Credit: Achieve a gross density of at least 100 DU/Ac.

(ii) Only one Density Credit may be used by an individual Category C Special Project, even if the project qualifies for multiple Density Credits.

(f) Minimized Surface Parking Credits: To qualify for any Minimized Surface Parking Credits, a Category C Special Project must first qualify for one of the Affordable Housing Credits listed in Provision C.3.e.ii.(5)(c).

(i) A Category C Special Project may qualify for the following Minimized Surface Parking Credits:

a. 5 percent Minimized Surface Parking Credit: Have no surface parking except for incidental surface parking. Incidental surface parking is allowed only for emergency vehicle access, ADA accessibility, and passenger and freight loading zones.

(g) Category C Special Projects receiving final discretionary approval prior to July 1, 2022, may use the Category C Special Project criteria included in the Previous Permit.

(6) Any Regulated Project that meets the criteria for multiple Special Projects Categories (i.e., a Regulated Project that may be characterized as a Category B or C Special Project) may only use the LID Treatment Reduction Credit allowed under one of the Special Projects Categories (i.e., a Regulated Project that may be characterized as a Category B or C Special Project may use the LID Treatment Reduction Credit allowed under Category B or Category C, but not the sum of both.).

iii. Implementation Level

(1) Provisions C.3.e.i-ii supersede any Alternative Compliance Policies previously approved by the Executive Officer.

(2) For all offsite projects and Regional Projects installed in accordance with Provision C.3.e.i-ii, the Permittees shall meet the Operation & Maintenance (O&M) requirements of Provision C.3.h.

(3) Prior to July 1, 2023, Permittees shall implement Provision C.3.e.ii in Attachment I, which are requirements from the Previous Permit.

(4) Beginning July 1, 2023, Permittees shall implement Provision C.3.e.ii.

iv. Reporting – Annual reporting shall be done in conjunction with reporting requirements under Provision C.3.b.iv.(2).

Any Permittee choosing to require 100 percent LID treatment onsite for all Regulated Projects and not allow alternative compliance under Provision C.3.e, shall include a statement to that effect in each Annual Report.

v. Reporting on Special Projects

(1) Permittees shall track any identified potential Special Projects, including those projects that have submitted planning applications, but that have not received final discretionary approval.

(2) In each Annual Report, Permittees shall report to the Water Board on these tracked potential Special Projects using Table 3.1 found at the end

of Provision C.3. All the required column entry information listed in Table 3.1 shall be reported for each potential Special Project. Any Permittee with no Special Projects shall so state.

For each Special Project listed in Table 3.1, Permittees shall include a narrative discussion of the feasibility or infeasibility of 100 percent LID treatment onsite, offsite, and at a Regional Project. The narrative discussion shall address each of the following:

(a) The infeasibility of treating 100 percent of the amount of runoff identified in Provision C.3.d for the Regulated Project's drainage area with LID treatment measures onsite.

(b) The infeasibility of treating 100 percent of the amount of runoff identified in Provision C.3.d for the Regulated Project's drainage area with LID treatment measures offsite or paying in-lieu fees to treat 100% of the Provision C.3.d runoff with LID treatment measures at a Regional Project.

(c) The infeasibility of treating 100 percent of the amount of runoff identified in Provision C.3.d for the Regulated Project's drainage area with some combination of LID treatment measures onsite, offsite, and/or paying in-lieu fees towards a Regional Project.

Both technical and economic feasibility or infeasibility shall be discussed, as applicable. The discussion shall also contain enough technical and/or economic detail to document the basis of infeasibility used.

(3) Once a Special Project has final discretionary approval, it shall be reported in the Provision C.3.b. Reporting Table in the same reporting year that the project was approved. In addition to the column entries contained in the Provision C.3.b. Reporting Table, the Permittees shall provide the following supplemental information for each approved Special Project:

(a) Submittal Date: Date that a planning application for the Special Project was submitted.

(b) Description: Type of project, number of floors, number of units (commercial, mixed-use, residential), type of parking, and other relevant information.

(c) Site Acreage: Total site area in acres.

(d) Total Impervious Surface Created/Replaced: The total impervious surface in acres created or replaced by the project, which is subject to the treatment requirements listed in Provision C.3.e.ii.(1).

(e) Gross Density in DU/Ac: Number of dwelling units per acre.

(f) Category C Projects: Number of DUs in each AMI Category: For Category C Special Projects only, the number of preserved DUs (DUs with deed restrictions running at least 55 years) that have rent/mortgage rates (including utilities) no less than 30 percent of the Moderate, Low, Very Low, and Extremely Low area median household income levels specified in Provision C.3.e.ii.(5)(c).

(g) Density in FAR: Floor Area Ratio.

(h) Special Project Category: For each applicable Special Project Category, list the specific criteria applied to determine applicability. For each non-applicable Special Project Category, indicate n/a.

(i) LID Treatment Reduction Credit: For each applicable Special Project Category, state the maximum total LID Treatment Reduction Credit applied. For Category C Special Projects also list the individual Affordable Housing, Location, Density, and Minimized Surface Parking Credits applied.

(j) Stormwater Treatment Systems: List all proposed stormwater treatment systems and the corresponding percentage of the total amount of runoff identified in Provision C.3.d. for the Project's drainage area that will be treated by each treatment system.

(k) List of Non-LID Stormwater Treatment Systems: List all non-LID stormwater treatment systems approved. For each type of non-LID treatment system, indicate: (1) the percentage of the total amount of runoff identified in Provision C.3.d. for the Special Project's drainage area, and (2) whether the treatment system either meets minimum design criteria published by a government agency or received certification issued by a government agency, and reference the applicable criteria or certification.

C.3.f. Alternative Certification of Stormwater Treatment Systems

i. Task Description – In lieu of reviewing a Regulated Project's adherence to Provision C.3.d, a Permittee may elect to have a third party conduct detailed review and certify the Regulated Project's adherence to Provision C.3.d. The third-party reviewer must be a Civil Engineer, or a Licensed Architect or Landscape Architect registered in the State of California or staff of another Permittee subject to the requirements of this Permit.

ii. Implementation Level – Any Permittee accepting third-party reviews must make a reasonable effort to ensure that the third party has no conflict of interest with regard to the Regulated Project in question. That is, any

consultant or contractor (or his/her employees) hired to design and/or construct a stormwater treatment system for a Regulated Project shall not also be the certifying third party. The Permittee must verify that the third party certifying any Regulated Project has current training on stormwater treatment system design (within three years of the certification signature date) for water quality and understands the groundwater protection principles applicable to Regulated Project sites.

Training conducted by an organization with stormwater treatment system design expertise (such as a college or university, the American Society of Civil Engineers, American Society of Landscape Architects, American Public Works Association, California Water Environment Association (CWEA), BASMAA, National Association of Flood & Stormwater Management Agencies, CASQA, or the equivalent, may be considered qualifying training.

iii. **Reporting** – Projects reviewed by third parties shall be noted in reporting tables for Provision C.3.b.

C.3.g. Hydromodification Management

i. **Hydromodification Management (HM) Projects** are Regulated Projects that create and/or replace one acre or more of impervious surface except where one of the following applies.

(1) The post-project impervious surface area is less than, or the same as, the pre-project impervious surface area.

(2) The project is located in a catchment that drains to a hardened (e.g., continuously lined with concrete) engineered channel or channels or enclosed pipes, which extend continuously to the Bay, Delta, or flow-controlled reservoir, or, in a catchment that drains to channels that are tidally influenced.

(3) The project is located in a catchment or subwatershed that is highly developed (i.e., that is 70 percent or more impervious).[23]

All HM Projects shall meet the HM Standard of either Provision C.3.g.ii or Provision C.3.g.iii.

The Hydromodification Applicability Maps developed by the Permittees in the Alameda, Santa Clara, San Mateo, and Fairfield-Suisun Programs, and the

[23] The Permittees' maps accepted for Order No. R2-2009-0074 were prepared using this standard, adjusted to 65 percent imperviousness to account for the presence of vegetation on the photographic references used to determine imperviousness. Thus, the maps for Order No. R2-2009-0074 are accepted as meeting the 70 percent requirement.

City of Vallejo, under Order No. R2-2009-0074 remain in effect and are provided in Attachment C to this Permit.

Permittees that do not have the location-based applicability criteria (Provision C.3.g.i.(2) – (3)) shown on existing maps shall develop, or cause to be developed, new maps, overlays to existing maps, or other equivalent information that demonstrates whether a project falls under one of those two criteria (whether or not areas are subject to HM requirements). Such maps, overlays, or other equivalent information shall be acceptable to the Executive Officer and shall not be effective until accepted by the Executive Officer.

ii. HM Standard

Stormwater discharges from HM Projects shall not cause an increase in the erosion potential of the receiving stream over the pre-project (existing) condition. Increases in runoff flow and volume shall be managed so that post-project runoff shall not exceed estimated pre-project rates and durations, where such increased flow and/or volume is likely to cause increased potential for erosion of creek beds and banks, silt pollutant generation, or other adverse impacts on beneficial uses due to increased erosive force. The demonstration that post-project stormwater runoff does not exceed estimated pre-project runoff rates and durations shall include the following:

(1) **Range of Flows to Control:** For Alameda, Contra Costa, San Mateo, and Santa Clara Permittees, and the City of Vallejo, HM controls shall be designed such that post-project stormwater discharge rates and durations match pre-project discharge rates and durations from 10 percent of the pre-project 2-year peak flow[24] up to the pre-project 10-year peak flow. For Fairfield-Suisun Permittees, HM controls shall be designed such that post-project stormwater discharge rates and durations shall match from 20 percent of the 2-year peak flow up to the pre-project 10-year peak flow.

(2) **Goodness of Fit Criteria:** The post-project flow duration curve shall not deviate above the pre-project flow duration curve by more than 10 percent over more than 10 percent of the length of the curve corresponding to the range of flows to control.

[24] Where referred to in this Order, the 2-year peak flow is determined using a flood frequency analysis based on USGS Bulletin 17B to obtain the peak flow statistically expected to occur at a 2-year recurrence interval. In this analysis, the appropriate record of hourly rainfall data (e.g., 35-50 years of data) is run through a continuous simulation hydrologic model, the annual peak flows are identified, rank ordered, and the 2-year peak flow is estimated. Such models include U.S. EPA's Hydrologic Simulation Program—Fortran (HSPF), the U.S. Army Corps of Engineers' Hydrologic Engineering Center-Hydrologic Modeling System (HEC-HMS), and U.S. EPA's Storm Water Management Model (SWMM).

(3) **Standard HM Modeling:** Permittees shall use, or shall cause to be used, a continuous simulation hydrologic computer model to simulate pre-project and post-project runoff, or sizing factors or charts developed using such a model, to design onsite or regional HM controls. The Permittees shall compare, or shall cause to be compared, the pre-project and post-project model output for a long-term rainfall record and shall show that applicable performance criteria in Provision C.3.g.ii.(1)-(3) are met. HM controls designed using the Bay Area Hydrology Model (BAHM) and site-specific input data shall be considered to meet the HM Standard. Such use must be consistent with directions and options set forth in the most current BAHM User Manual. Modifications to the BAHM shall be acceptable to the Executive Officer, shall be consistent with the requirements of this Provision, and shall be reported as required below:

- **Precipitation Data:** Precipitation data used in the modeling of HM controls shall, at a minimum, be 30 years of hourly rainfall data representative of the area being modeled. Where a longer rainfall record is available, the longer record shall be used.
- **Calculating Post-Project Runoff:** Retention and detention basins shall be considered impervious surfaces for purposes of calculating post-project runoff. Pre- and post-project runoff shall be calculated and compared for the entire site, without separating or excluding areas that may be considered self-retaining.

iii. HM Standard – Direct Simulation of Erosion Potential

HM control shall be achieved by maintaining the erosion potential in receiving streams at a value of equal to or less than 1.0. In order to use the Provision C.3.g.iii HM Standard – Direct Simulation of Erosion Potential, for their HM Projects, the CCCWP Permittees shall distinguish the range of situations present within their jurisdictions and incorporate an associated range of sizing factors for HM controls (described below in Provision C.3.g.vi.(2)) to address that range of situations, sufficient to demonstrate that appropriately-sized HM controls in those respective situations would achieve the HM Standard. The CCCWP Permittees shall submit a Technical Report describing and justifying these criteria, subject to the Executive Officer's approval.

iv. Types of HM Controls

Projects shall meet the HM Standard using any of the following HM controls or a combination thereof:

(1) **Onsite HM controls** are flow duration control structures, LID features and facilities, and hydrologic source controls that collectively result in the HM

Standard being met at the point(s) where stormwater runoff discharges from the project site.

(2) **Regional HM controls** are flow duration control structures that collect stormwater runoff discharge from multiple projects (each of which shall incorporate hydrologic source control measures as well) and are designed such that the HM Standard is met for all the projects at the point where the regional HM control discharges.

(3) **In-stream measures** shall be an option only where the stream, which receives runoff from the project, is already impacted by erosive flows and shows evidence of excessive sediment, erosion, deposition, or is a hardened channel.

In-stream measures involve modifying the receiving stream channel slope and geometry so that the stream can convey the new flow regime without increasing the potential for erosion and aggradation. In-stream measures are intended to improve long-term channel stability and prevent erosion by reducing the erosive forces imposed on the channel boundary.

In-stream measures, or a combination of in-stream and onsite controls, shall be designed to achieve the HM Standard from the point where the project(s) discharge(s) to the stream to the mouth of the stream or to achieve an equivalent degree of flow control mitigation (based on amount of impervious surface mitigated) as part of an in-stream project located in the same watershed. Designing in-stream controls requires a hydrologic and geomorphic evaluation (including a longitudinal profile) of the stream system downstream and upstream of the project. As with all in-stream activities, other regulatory permits must be obtained by the project proponent.[25]

v. Implementation Level

(1) For Alameda, Santa Clara, San Mateo, and Solano Permittees, HM Projects shall meet the HM Standard in Provision C.3.g.ii immediately.

(2) For CCCWP Permittees, HM Projects receiving final planning entitlements prior to Executive Officer approval of CCCWP's submittal pursuant to Provisions C.3.g.iii and C.3.g.vi.(2) shall use the methods and criteria specified in CCCWP's Stormwater C.3 Guidebook, 7th Edition (2017), or most current version. Subsequent to Executive Officer approval of CCCWP's submittal pursuant to Provisions C.3.g.iii and C.3.g.vi.(2), HM

[25] In-stream control projects require a Stream Alteration Agreement from CDFW, a CWA section 404 permit from the U.S. Army Corps of Engineers, and a section 401 certification from the Water Board. Early discussions with these agencies on the acceptability of an in-stream modification are necessary to avoid project delays or redesign.

Projects shall use the methods and criteria specified (and/or acknowledged and approved) in the Executive Officer's approval or conditional approval of that submittal; CCCWP Permittees may alternatively implement the HM Standard in Provision C.3.g.ii.

vi. Reporting

(1) New HM Applicability Maps or equivalent information prepared pursuant to Provision C.3.g.i, for those Permittees who do not have an approved Map, shall be submitted, acceptable to the Executive Officer, not later than with the 2023 Annual Report.

(2) With the 2023 Annual Report, the CCCWP Permittees shall submit a Technical Report subject to the Executive Officer's approval, consisting of a HM Management Plan describing how the CCCW Permittees will implement the HM Standard specified in Provision C.3.g.iii. The Technical Report shall include:

(a) A complete suite of sizing factors – for each type of HM control that may be used in the County – that is protective of all likely site and watershed characteristics, for sites with soils in Hydrologic Soil Groups (HSG) A, B, C, and D, with equations for adjustments to the sizing factors based on geographic differences (including, but not limited to, annual rainfall intensity and frequency, land use, and other hydrologic characteristics), based on the methods and criteria in the CCCWP Hydromodification Technical Report (September 29, 2017), and pursuant to the recommendations provided in the Water Board's Response to CCCWP's Hydromodification Management Memo of November 4, 2020 (March 19, 2021). The complete suite of sizing factors shall ensure each type of HM control achieves the Provision C.3.g.iii HM Standard.

For the complete suite of sizing factors, the base case sizing factor for HM controls at sites with HSG D soils shall be 6.5 percent.[26]

(b) The Technical Report may optionally identify geographic areas or criteria for site-by-site determination, where the use of the prescribed methods, criteria, and suite of sizing factors may result in HM Projects failing to comply with the Provision C.3.g.iii HM Standard. For those areas, the Technical Report shall propose additional onsite mitigation measures, which when implemented in addition to the complete suite

[26] This is a conservative value, based on sites with project-scale built-out imperviousness in the upper watershed for the Lower Control Threshold of 0.1Q2, for soil percolation rates of 0.024 inches per hour, as presented in Table 5-7 on page 58 of the CCCWP Hydromodification Technical Report (September 29, 2017).

of sizing factors specified in Provision C.3.g.vi.(2)(a), ensure that HM controls achieve the Provision C.3.g.iii HM Standard.

The additional onsite mitigation measures include, but are not limited to: site grading to produce self-retaining areas, specific guidance on augmentation of HM control design (e.g., increasing the size of the storage layer), and increases to the HM control sizing factors.

The additional mitigation measures shall not include: reliance on land development restrictions, or on open space preservation, or on the presence of existing or future HM and LID controls located elsewhere within the catchment.

The Technical Report may additionally propose alternative or supplemental methods of compliance with the Provision C.3.g.iii HM Standard, including any combination of: undersized onsite HM controls, additional new HM controls located offsite within the same catchment as the receiving stream, and in-stream controls (e.g., as described in SCVURPPP's 2005 Hydromodification Management Plan Final Report), which when implemented together achieve the Provision C.3.g.iii HM Standard.

(3) Reporting of HM projects shall be as described in Provision C.3.b.

(4) Permittees allowing the use of BAHM shall report collectively, with each Annual Report, a listing, summary, and date of modifications made to the BAHM, including the technical rationale. This shall be prepared at the countywide program level and submitted on behalf of participating Permittees.

(5) In addition, for each HM Project approved during the reporting period, Permittees shall collect and make available the following information. Information shall be reported electronically, and, where appropriate, in tabular form.

- Device(s) or method(s) used to meet the HM Standard, such as detention basin(s), biodetention unit(s), regional detention basin, or in-stream control(s);
- Method used by the project proponent to design and size the device or method used to meet the HM Standard;
- Site plans identifying impervious areas, surface flow directions for the entire site, and location(s) of HM measures;
- For projects using standard sizing charts, a summary of sizing calculations used;

- For projects using the BAHM, a listing of model inputs; and
- For projects using custom modeling, a summary of the modeling calculations with a corresponding graph showing curve matching (existing, post-project, and post-project-with HM controls curves).

C.3.h. Operation and Maintenance of Stormwater Treatment Systems

i. Task Description – Each Permittee shall implement an Operation and Maintenance (O&M) Verification Program.

ii. Implementation Level – At a minimum, the O&M Verification Program shall include the following elements:

(1) Conditions of approval or other legally enforceable agreements or mechanisms for all Regulated Projects and for all projects implemented pursuant to Provision C.3.j that, at a minimum, require at least one of the following from all project proponents and their successors in control of the Project or successors in fee title:

(a) The project proponent's signed statement accepting responsibility for the operation and maintenance of the installed pervious pavement system(s) (if any), onsite, joint, and/or offsite stormwater treatment system(s), and HM control(s) (if any) until such responsibility is legally transferred to another entity;

(b) Written conditions in the sales or lease agreements or deed for the project that requires the buyer or lessee to assume responsibility for the operation and maintenance of the pervious pavement system(s) (if any), onsite, joint, and/or offsite installed stormwater treatment system(s), and HM control(s) (if any) until such responsibility is legally transferred to another entity;

(c) Written text in project deeds, or conditions, covenants and restrictions (CCRs) for multi-unit residential projects that require the homeowners association or, if there is no association, each individual owner to assume responsibility for the O&M of the installed pervious pavement system(s) (if any), onsite, joint, and/or offsite stormwater treatment system(s), and HM control(s) (if any) until such responsibility is legally transferred to another entity; or

(d) Any other legally enforceable agreement or mechanism, such as recordation in the property deed, that assigns the operation and maintenance responsibility for the installed pervious pavement system(s) (if any), onsite, joint, and/or offsite treatment system(s) and HM control(s) (if any) to the project owner(s) or the Permittee.

(2) Coordination with the appropriate mosquito and vector control agency with jurisdiction to establish a protocol for notification of installed stormwater treatment systems and HM controls.

(3) Conditions of approval or other legally enforceable agreements or mechanisms for all Regulated Projects that require the granting of site access to all representatives of the Permittee, local mosquito and vector control agency staff, and Water Board staff, for the sole purpose of performing operation and maintenance inspections of the installed pervious pavement system(s) (if any), stormwater treatment system(s) and HM control(s) (if any).

(4) A database or equivalent tabular format of the following:

(a) All pervious pavement system(s) that total 3,000 square feet or more installed at Regulated Projects, offsite, or at a Regional Project. The total square footage should not include pervious pavement systems installed as private-use patios for single family homes, townhomes, or condominiums.

(b) All stormwater treatment systems installed onsite at Regulated Projects, offsite, or at a joint or Regional Project.

(c) All HM controls installed onsite at Regulated Projects, offsite, or at a joint or Regional Project.

(5) The database or equivalent tabular format required in Provision C.3.h.ii.(4) shall include the following information for each Regulated Project, offsite project, and Regional Project, and shall be made available to Water Board staff upon request:

(a) Name and address of the project;

(b) Names of the owner(s) and responsible operator(s) of the installed pervious pavement system(s) (if any), stormwater treatment system(s), and/or HM control(s);

(c) Specific description of the location (or a map showing the location) of the installed pervious pavement system(s) (if any), stormwater treatment system(s), and HM control(s) (if any);

(d) Date(s) that the pervious pavement system(s) (if any), stormwater treatment system(s), and HM controls (if any) was/were installed;

(e) Description of the type and size of the pervious pavement systems (if any), stormwater treatment system(s), and HM control(s) (if any) installed;

(f) Detailed information on operation and maintenance inspections. For each inspection, include the following:

(i) Date of inspection.

(ii) Type of inspection (e.g., installation, annual, followup, spot).

(iii) Type(s) of pervious pavement systems inspected (e.g., pervious concrete, pervious asphalt, pervious pavers).

(iv) Type(s) of stormwater treatment systems inspected (e.g., swale, bioretention unit, tree well) and an indication of whether the treatment system is an onsite, joint, or offsite system.

(v) Type of HM controls inspected.

(vi) Inspection findings or results (e.g., proper installation, proper operation and maintenance, system not operating properly because of plugging, bypass of stormwater because of improper installation or maintenance, maintenance required immediately).

(vii) Enforcement action(s) taken, if any (e.g., verbal warning, notice of violation, compliance schedule, administrative citation, administrative order).

(6) A prioritized O&M Inspection Plan for inspecting all pervious pavement systems that total 3,000 square feet or more (excluding private-use patios for single family homes, townhomes, or condominiums), stormwater treatment systems and HM controls installed at Regulated Projects, offsite locations, and/or at joint or Regional Projects. For residential subdivisions with pervious pavement systems that include individual driveways, inspection of a representative number of driveways is sufficient.

At a minimum, the O&M Inspection Plan must specify the following for each fiscal year:

(a) Inspection by the Permittee of all newly installed pervious pavement systems that total 3,000 square feet or more (excluding private-use patios for single family homes, townhomes, or condominiums), stormwater treatment systems, and HM controls (at Regulated Projects, offsite locations, and/or at joint or Regional Projects) at the completion of installation to ensure approved plans have been followed. For residential subdivisions with pervious pavement systems that include individual driveways, inspection of a representative number of driveways is sufficient;

(b) Inspection by the Permittee of an average of 20 percent, but no less than 15 percent, of the total number (at the end of the preceding fiscal

year) of Regulated Projects, offsite projects, or Regional Projects. Each inspection shall include inspection of all pervious pavement systems that total 3,000 square feet or more (excluding private-use patios for single family homes, townhomes, or condominiums), stormwater treatment systems, and HM controls installed at the Regulated Project, offsite project, or Regional Project. For residential subdivisions with pervious pavement systems that include individual driveways, inspection of a representative number of driveways is sufficient;

(c) Inspection by the Permittee of all Regulated Projects, offsite projects, or Regional Projects at least once every five years. Each inspection shall include inspection of all pervious pavement systems that total 3,000 square feet or more (excluding private-use patios for single family homes, townhomes, or condominiums), stormwater treatment systems, and HM controls installed at the Regulated Project, offsite project, or Regional Project. For residential subdivisions with pervious pavement systems that include individual driveways, inspection of a representative number of driveways is sufficient; and

(d) For vault-based stormwater treatment systems, Permittees may accept 3rd party inspection reports in lieu of conducting Permittee operation and maintenance inspections only if the 3rd party inspections are conducted at least annually. Information from each 3rd party inspection shall be included in the database or tabular format required in Provision C.3.h.ii.(5) and each inspection shall be clearly identified as a 3rd party inspection.

Each 3rd party inspection report must clearly document the following:

(i) Name of 3rd party inspection company.

(ii) Date of inspection.

(iii) Condition of the treatment unit(s) at the time of inspection.

(iv) Description of maintenance activities performed during the inspection.

(v) Date- and time-stamped photographs of the inside of the vault unit(s) before and after maintenance activities.

(7) An Enforcement Response Plan (ERP) for all operation and maintenance inspections that serves as a reference document for inspection staff so that consistent enforcement actions can be taken to bring development projects into compliance. At a minimum, the ERP must contain the following:

(a) Enforcement Procedures – A description of the Permittee's procedures from the discovery of problems through the confirmation of implementation of corrective actions. This shall include guidance for recognizing common problems with the different types of pervious pavement systems, stormwater treatment systems, and/or HM controls, remedies for the problems, and appropriate enforcement actions, follow-up inspections, and appropriate time periods for implementation of corrective actions, and the roles and responsibilities of staff responsible for implementing the ERP.

(b) Enforcement Tools and Field Scenarios – A discussion of the various, escalating enforcement tools appropriate for different field scenarios of problems identified with the pervious pavement systems, stormwater treatment systems, and/or HM controls as well as for different types of inadequate response to enforcement actions taken.

(c) Timely Correction of Identified Problems – A description of the Permittee's procedures for assigning due dates for corrective actions. Permittees shall require timely correction of all identified problems with the pervious pavement systems, stormwater treatment systems, and/or HM controls.

Corrective actions shall be implemented no longer than 30 days after a problem is identified by an inspector. Corrective actions can be temporary, in which case more time may be allowed for permanent corrective actions. If more than 30 days are required for compliance, a rationale shall be recorded in the electronic database or equivalent tabular system.

iii. Due Date for Implementation: Immediate.

iv. Maintenance Approvals: The Permittees shall ensure that all pervious pavement systems that total 3,000 square feet or more (excluding private-use patios for single family homes, townhomes, or condominiums), stormwater treatment systems, and HM controls installed onsite, offsite, or at a joint or Regional Project by development proponents are properly operated and maintained for the life of the projects. In cases where the responsible party for a pervious pavement system, stormwater treatment system, or HM control has worked diligently and in good faith with the appropriate State and federal agencies to obtain approvals necessary to complete maintenance activities, but these approvals are not granted, the Permittees shall be deemed to be in compliance with Provision C.3.h. Permittees shall ensure that constructed wetlands installed by Regulated Projects and used for urban runoff treatment shall abide by the Water Board's Resolution No. 94-102: Policy on the Use of

Constructed Wetlands for Urban Runoff Pollution Control and the operation and maintenance requirements contained therein.

v. Reporting

(1) The database or equivalent tabular format required in Provisions C.3.b.ii.(4) and (5) shall be maintained by the Permittees. Upon request from the Executive Officer, information from this database or equivalent tabular format shall be submitted to Water Board staff for review. The requested information may include specific details on each inspection conducted within particular timeframes, such as several fiscal years.

(2) On an annual basis, before the wet season, provide a list of newly installed (installed within the reporting period) stormwater treatment systems and HM controls to the local mosquito and vector control agency, and include a copy of that communication with the Annual Report. This list shall include the facility locations and a description of the stormwater treatment measures and HM controls installed.

(3) Each Permittee shall report the following information in the Annual Report each year:

(a) Total number of Regulated Projects in the Permittee's database or tabular format as of the end of the reporting period (fiscal year).

(b) Total number of Regulated Projects, offsite projects, and Regional Projects inspected during the reporting period (fiscal year).

(c) Percentage of the total number of Regulated Projects that were inspected during the reporting period (fiscal year).

(d) A discussion of the inspection findings for the year and any common problems encountered with various types of pervious pavement systems, treatment systems and/or HM controls. This discussion should include a general comparison to the inspection findings from the previous year.

(e) A discussion of the effectiveness of the Permittee's O&M Program and any proposed changes to improve the O&M Program (e.g., changes in prioritization plan or frequency of O&M inspections, other changes to improve effectiveness of program).

C.3.i. Required Site Design Measures for Small Development and Redevelopment Projects and Smaller Detached Single-Family Home Projects

i. Task Description – The Permittees shall require all development and redevelopment projects, which create and/or replace $\geq$ 2,500 ft^2 to < 5,000 ft^2

of impervious surface, and detached single-family home projects,[27] which create and/or replace ≥ 2,500 ft^2 to < 10,000 ft^2 of impervious surface, to install one or more of the following site design measures:

- Direct roof runoff into cisterns or rain barrels for reuse.
- Direct roof runoff onto vegetated areas.
- Direct runoff from sidewalks, walkways, and/or patios onto vegetated areas.
- Direct runoff from driveways and/or uncovered parking lots onto vegetated areas.
- Construct sidewalks, walkways, and/or patios with permeable surfaces.[10]
- Construct bike lanes, driveways, and/or uncovered parking lots with permeable surfaces.[10]

This provision applies to all development projects that require approvals and/or permits issued under the Permittees' planning, building, or other comparable authority.

ii. Implementation Level

(1) Beginning July 1, 2023, Permittees shall implement Provision C.3.i.

(2) Prior to July 1, 2023, Permittees shall implement Provision C.3.i in Attachment I, which are requirements from the Previous Permit.

iii. Reporting – On an annual basis, discuss the implementation of the requirements of Provision C.3.i, including ordinance revisions, permit conditions, development of standard specifications and/or guidance materials, and staff training.

C.3.j. Green Infrastructure Planning and Implementation

i. Task Description – The Permittees shall continue to implement their Green Infrastructure Plans (completed during the term of the Previous Permit), as may be updated and/or supplemented to comply with this Order, for the inclusion of low impact development drainage design into storm drain infrastructure on public and private lands, including streets, roads, storm

[27] **Detached single-family home project** – The building of one single new house or the addition and/or replacement of impervious surface to one single existing house, which is not part of a larger plan of development.

drains, parking lots, building roofs, and other storm drain infrastructure elements.

(1) The Plans are intended to serve as an implementation guide and reporting tool during this and subsequent Permit terms to provide reasonable assurance that urban runoff TMDL wasteload allocations (e.g., for the San Francisco Bay mercury and PCBs TMDLs and the Urban Creeks Pesticides TMDL) will be met, and to set goals for reducing, over the long term, the adverse water quality impacts of urbanization and urban runoff on receiving waters.

(2) Over the long term, the Plans are intended to describe how the Permittees will shift their impervious surfaces and storm drain infrastructure from gray, or traditional storm drain infrastructure where runoff flows directly into the storm drain and then the receiving water, to green—that is, to a more-resilient, sustainable system that slows runoff by dispersing it to vegetated areas, harvests and uses runoff, promotes infiltration and evapotranspiration, and uses bioretention and other green infrastructure practices to clean stormwater runoff.

(3) Green infrastructure project prioritization is described in the Green Infrastructure Plans based on local characteristics and priorities, and therefore green infrastructure projects will typically be designed to achieve multiple benefits in addition to mercury and PCBs load reduction. Furthermore, this Provision establishes a separate impervious surface retrofit requirement for other-than Regulated Projects.

ii. Implementation Level

(1) **Programmatic Implementation**

The Permittees shall, individually or in a coordinated manner, update and/or supplement their Green Infrastructure Plans as needed to ensure that municipal processes and ordinances allow and appropriately encourage implementation of green infrastructure, and incorporate lessons learned, by:

(a) Revising implementation mechanisms to include consideration, or reconsideration, of cooperation with non-municipal entities such as schools on green infrastructure implementation, and otherwise updating implementation mechanisms as appropriate.

(b) Following through with the development or updates of general plans, specific plans, urban forestry plans, climate change adaptation plans, complete streets plans and other planning documents with a green infrastructure nexus to include language which is more supportive of green infrastructure implementation, as identified by Permittees in

their Green Infrastructure Plans. Upon request by Water Board staff, Permittees shall provide justifications for planning documents that they assert do not need to be updated to further support green infrastructure implementation.

(c) Developing funding and funding mechanisms identified in the Green Infrastructure Plans, such as by working with the relevant agencies to expand the scope of transportation grants to include allocation for green infrastructure; establishing green infrastructure-based or green infrastructure-incorporating stormwater fees, including work that sets the foundation for additional future stormwater fees; establishing or increasing application review fees, and evaluating other opportunities to leverage municipal approval of private development to fund green infrastructure implementation.

(d) Reviewing countywide green infrastructure implementation guidance documents and adapting them as necessary to account for local considerations if this has not already been completed during the Previous Permit term, and otherwise reviewing and updating general guidelines and standard specifications as appropriate.

(e) Continuing to implement the tools developed during the Previous Permit term to track and map completed public and private green infrastructure projects, and making the information publicly available.

(f) Continuing to adopt or amend policies, ordinances, and/or other appropriate legal mechanisms to ensure implementation of the Green Infrastructure Plan in accordance with the requirements of this Provision, as necessary.

(g) Continuing to conduct outreach and education as follows:

(i) Conduct public outreach on the requirements of this Provision, including outreach coordinated with adoption or revision of standard specifications and planning documents, and with the initiation and planning of infrastructure projects. Such outreach shall include general outreach and targeted outreach to and training for professionals involved in infrastructure planning and design.

(ii) Train appropriate staff, including planning, engineering, public works maintenance, finance, fire/life safety, and management staff on the requirements of this Provision and methods of implementation.

(iii) Educate appropriate Permittee elected officials (e.g., mayors, city council members, county supervisors, district board members) on

the requirements of this Provision and methods of implementation.

(2) **Numeric Implementation**

(a) By June 30, 2027, the Permittees shall implement, or cause to be implemented, green infrastructure projects within their jurisdictions which are not already defined as Regulated Projects pursuant to Provision C.3.b, such that the impervious surface retrofits listed in Table H-1 of Attachment H are achieved.

(b) The Permittees may meet the numeric retrofit requirements listed in Table H-1 of Attachment H on a countywide basis. If Permittees within a given county do not collectively achieve their numeric retrofit requirements, each Permittee within that county shall be separately responsible for achieving its individual retrofit requirement.

(c) Though Permittees may meet their total individual numeric retrofit requirements on a countywide basis, each Permittee shall implement, or cause to be implemented, a green infrastructure project or projects treating no less than 0.2 acres of impervious surface within its jurisdiction, where that project is not already defined as a Regulated Project pursuant to Provision C.3.b. Alternatively, a Permittee may contribute substantially to such a green infrastructure project(s) outside of its jurisdiction and within its County.

(d) Impervious surfaces treated by non-Regulated Projects may be counted towards the numeric requirements in Table H-1 of Attachment H.

Impervious surfaces treated by Regulated Projects, beyond the minimum required by Provisions C.3.c-d for such Regulated Projects, may be counted towards the numeric requirements in Table H-1 of Attachment H.

If a portion of the impervious surface treated by such a Non-Regulated Project or by Regulated Projects (beyond the minimum required by Provisions C.3.c-d for such Regulated Projects) is later used as part of an Alternative Compliance exchange to offset the treatment required by a Regulated Project pursuant to Provision C.3.e.i, then that portion may no longer be counted towards the Provision C.3.j.ii.(2) retrofit requirements listed in Table H-1 of Attachment H.

(e) Projects completed after January 1, 2021, shall be counted towards the Provision C.3.j.ii.(2) Numeric Implementation retrofit requirements.

(f) Projects completed by June 30, 2027, shall be counted towards the Provision C.3.j.ii.(2) Numeric Implementation retrofit requirements.

If a project is not completed by June 30, 2027, it may still count towards the Provision C.3.j.ii.(2) Numeric Implementation retrofit requirements, if it is approved and fully funded. Permittees that count such projects towards the Provision C.3.j.ii.(2) Numeric Implementation retrofit requirements shall certify in their Annual Reports that the projects are approved and funded by June 30, 2027.

(g) Controls implemented to satisfy Provision C.3 requirements, including the numeric retrofit requirements specified in Provision C.3.j.ii.(2), may also be used to satisfy Provision C.11 Mercury Controls requirements, and Provision C.12 PCBs Controls requirements, as long as they satisfy the other aspects of those requirements, such as location (i.e., for PCBs, controls that are implemented in areas of old industrial land use or otherwise in areas with identified relatively high concentrations of PCBs).

(h) Permittees may credit the acreage of impervious surface created or replaced for Regulated Road Reconstruction Projects, specified in Provision C.3.b.ii.(5), towards the Numeric Implementation retrofit requirements specified in Provision C.3.j.ii.(2).

(i) Permittees with small rural jurisdictions (e.g., whose stormwater conveyance systems are dominated by roadside ditches) may collectively submit a proposal, subject to the Executive Officer's approval, for pilot projects investigating the use of alternative green infrastructure techniques to comply with the Provision C.3.j.ii.(2) Numeric Implementation retrofit requirements, with construction completed by June 30, 2027. If a project is not completed by June 30, 2027, it may still count towards the Provision C.3.j.ii.(2) Numeric Implementation retrofit requirements, if it is approved and fully funded. Permittees that count such projects towards the Provision C.3.j.ii.(2) Numeric Implementation retrofit requirements shall certify in their Annual Reports that the projects are approved and funded by June 30, 2027.

The proposal shall include a discussion describing the small rural jurisdiction, including density, developed versus undeveloped areas, and piped stormwater conveyances versus roadside ditches.

(j) Permittees with existing ordinances (or that adopt new ordinances by June 30, 2023) that require Regulated Projects to treat significantly more impervious surface than the minimum required by Provision C.3.c-d, may offset their Numeric Implementation retrofit requirements

specified in Provision C.3.j.ii.(2) by a one-time credit of up to 25 percent, and by no greater than one acre. The claimed offset shall not reduce Permittees' Numeric Implementation retrofit requirements below 0.2 acres as specified in Provision C.3.j.ii.(2)(c).

In order to claim this offset, Permittees shall submit a report subject to Executive Officer approval estimating the benefit that will be realized by the adopted ordinance(s) in the current Permit term and the subsequent Permit terms (i.e., until June 30, 2032), as specified in Provision C.3.j.v.(5). The offset claimed shall be no greater than the benefit of the offset estimated in the report. Permittees shall not use the offset prior to Executive Officer approval of the report.

(3) **Design and Other Criteria** - Green infrastructure projects built pursuant to Provision C.3.j shall:

(a) Comply with Provision C.3.c and Provisions C.3.e-h.

(b) Comply with Provision C.3.d. With cause (e.g., significantly constrained area for a BMP, substantially increased costs for that sizing relative to the C.3.j.i.(2)(g) approach outlined in the Previous Permit, significant amounts of run-on from adjacent areas, or other substantial constraints identified by Permittees) and with reporting in their Annual Reports, Permittees may use the Guidance for Sizing Green Infrastructure Facilities in Streets Projects with companion analysis Green Infrastructure Facility Sizing for Non-Regulated Street Projects submitted in June 2019, to size Non-Regulated green streets projects. If so, Permittees must comply with the Water Board's June 21, 2019, conditional approval of that submittal, which provides qualifiers to, and the conditions under which, the alternative sizing criteria may be used for Non-Regulated green streets projects.

(4) **Long-Term Green Infrastructure Implementation**

(a) The Permittees and their representatives may, together with Water Board staff and impartial science experts (e.g., SFEI, SFEP, U.S. EPA Region 9), collectively form a Technical Working Group (TWG) to discuss long-term green infrastructure goals and recommend long-term percentage reductions in Permittees' impervious surfaces, at individual, countywide and regional scales. The TWG should prioritize discussion of long-term green infrastructure goals for development and redevelopment projects not already captured by Provision C.3.b, and in particular, public road and right of way reconstruction projects that are not already defined as Regulated Projects by Provision C.3.b.ii.(5). The TWG should additionally review BMPs and

performance metrics, and should consider linkages to climate change impacts and resiliency.

(b) Prior to the submittal of a report containing the TWG's recommendations for long-term percentage reductions in Permittees' impervious surfaces – as prescribed by Provision C.3.j.v.(6) – the TWG should meet at a minimum biannually, and subsequent to that submittal should meet at a minimum annually.

iii. No Missed Opportunities

Each Permittee shall:

(1) Continue to maintain a list of green infrastructure projects, public and private, that are planned for implementation during the permit term and infrastructure projects planned for implementation during the permit term that have potential for green infrastructure measures.

(2) Submit the list with each Annual Report and a summary of planning or implementation status for each public green infrastructure project and each private green infrastructure project that is not also a Regulated Project as defined in Provision C.3.b.ii. Include a summary of how each public infrastructure project with green infrastructure potential will include green infrastructure measures to the maximum extent practicable during the permit term. For any public infrastructure project where implementation of green infrastructure measures is not practicable, submit a brief description of the project and the reasons green infrastructure measures were impracticable to implement.

iv. Participate in Processes to Promote Green Infrastructure

(1) The Permittees shall, individually or collectively, track processes, assemble and submit information, and provide informational materials and presentations as needed to assist relevant regional, State, and federal agencies to plan, design, and fund incorporation of green infrastructure measures into local infrastructure projects, including transportation projects. Issues to be addressed include coordinating the timing of funding from different sources, changes to standard designs and design criteria, ranking and prioritizing projects for funding, and implementation of cooperative in-lieu programs.

(2) In each Annual Report, Permittees shall report on the goals and outcomes during the reporting year of work undertaken to participate in processes to promote green infrastructure.

v. Tracking and Reporting Progress

(1) The Permittees shall continue to implement the existing regionally-consistent tracking and mapping tools developed pursuant to Provision C.3.j.i.(2).(d) of the Previous Permit to track and report implementation of green infrastructure measures including treated area and connected and disconnected impervious area on both public and private parcels within their jurisdictions. The methods shall also address tracking needed to provide reasonable assurance that wasteload allocations for TMDLs, including the San Francisco Bay PCBs and mercury TMDLs, and reductions for trash, are being met. The tracking and mapping tools shall be used by Permittees to inform issues relevant to program management, such as life cycle costs, asset management, operation and maintenance frequency, and beneficial design changes.

(a) Non-regulated green infrastructure projects built pursuant to Provision C.3.j shall be tracked and mapped in the same manner as Regulated Projects. These projects shall be reported in a separate table from Regulated Projects.

(b) The tracking and mapping tools shall include a component that is available to the public, which is advertised on individual Permittee websites and on County stormwater program websites, and as appropriate is advertised in other locations. This component must include the following basic information: a brief description of design (e.g., whether bioretention or bioswale), location, land use type, and area treated. If the tools contain additional information which has not been made available to the public such as detailed design information, incurred or planned O&M costs and O&M frequency, condition assessments, and pollutant loads treated, that information shall be made available to Water Board staff upon request.

(c) The Permittees shall certify in the 2023 Annual Reports that the tracking and mapping tools have been completed and are being implemented.

(d) In each Annual Report, Permittees shall provide summary reports on the implementation of the tracking and mapping tools and shall provide a link to the component which is available to the public.

(2) In the 2024 and 2026 Annual Reports, report on updates, addenda, and changes to their programmatic implementation, including, but not limited to, the items listed in Provision C.3.j.ii.(1).

(3) In each Annual Report, Permittees shall report on progress made towards the retrofit requirements described in Provision C.3.j.ii.(2).

(4) With the 2026 Annual Reports, Permittees shall provide a summary of lessons learned to-date with regard to Provision C.3.j.ii.(1), including topics such as operation and maintenance, sizing, infiltration and other design criteria for stormwater treatment controls, implementation of tracking and mapping tools, cooperation with non-municipal entities, regional project efforts, funding initiatives and opportunities to leverage municipal approval of private development, education and outreach, and development or updates of plan documents with a green infrastructure nexus. In the summary, Permittees shall also discuss attainment of the numeric retrofit requirements prescribed in Provision C.3.j.ii.(2).

In that summary, as applicable, Permittees shall report on how they have addressed deficiencies identified in Provision C.3.j.ii.(1).

(5) Pursuant to Provision C.3.j.ii.(2)(i), Permittees whose jurisdictions are dominated by rural areas may collectively submit a proposal, subject to the Executive Officer's approval, for the use of alternative green infrastructure techniques. This proposal shall be submitted by no later than with the 2023 Annual Reports.

(6) Each Permittee that wishes to use the one-time offset specified in Provision C.3.j.ii.(2)(j) shall submit a report estimating the benefit realized by the adopted ordinance(s) in the current Permit term, and until June 30, 2032, by no later than with the 2023 Annual Report, subject to Executive Officer approval. Permittees shall not use the offset prior to Executive Officer approval of the Report. The benefit of the estimated offset shall be no less than the offset claimed during the current Permit term.

In each Annual Report, each Permittee claiming the offset shall report on the acreage of retrofit produced by the implementation of the offset in that Fiscal Year, as well as the cumulative acreage of retrofit produced by the implementation of the offset up to that point in time during the current Permit term.

(7) By no later than with the 2025 Annual Reports, the Permittees shall collectively submit a report summarizing any TWG efforts and recommendations, as specified in Provision C.3.j.ii.(4).

(8) Pursuant to Provision C.3.j.ii.(2)(f) and Provision C.3.j.ii.(2)(i), Permittees shall certify in the 2027 Annual Report that any projects counting towards the Provision C.3.j.ii.(2) Numeric Implementation retrofit requirements, which have not been completed by June 30, 2027, have been approved and fully funded by June 30, 2027.

Table 3.1 Standard Tracking and Reporting Form for Potential Special Projects

Project No.	Permittee	Address	Application Submittal Date	Description	Site Total Acreage	Total Impervious Surface Created/ Replaced	Gross Density DU/Ac	Category C Projects: Number of DUs in each AMI Category	FAR	Special Project Category	LID Treatment Reduction Credit	Stormwater Treatment Systems

Project No.: Number of the Special Project as it appears in Table 3.1.

Permittee: Name of the Permittee in whose jurisdiction the Special Project will be built.

Address: Address of the Special Project; if no street address, state the cross streets.

Submittal Date: Date that a planning application for the Special Project was submitted; if a planning application has not been submitted, include a projected application submittal date.

Description: Type of project (commercial, mixed-use, residential), number of floors, number of units, type of parking, and other relevant information.

Site Total Acreage: Total site area in acres.

Total Impervious Surface Created/Replaced: The total impervious surfaced in acres created or replaced by the project, which is subject to the treatment requirements listed in Provision C.3.e.ii.(1).

Gross Density in DU/Ac: Number of dwelling units per acre.

Category C Projects: Number of DUs in each AMI Category: For Category C Special Projects only, the number of preserved DUs (DUs with deed restrictions running at least 55 years) that have rent/mortgage rates (including utilities)

no less than 30 percent of the Moderate, Low, Very Low, and Extremely Low area median household income levels specified in Provision C.3.e.ii.(5)(c).

FAR: Floor Area Ratio.

Special Project Category: For each Special Project Category, indicate applicability. If a Category is applicable, list the specific criteria applied to determine applicability.

LID Treatment Reduction Credit: For each applicable Special Project Category, state the maximum total LID Treatment Reduction Credit available. For Category C Special Projects also list the individual Affordable Housing, Location, Density, and Minimized Surface Parking Credits available.

Stormwater Treatment Systems: List all proposed stormwater treatment systems and the corresponding percentage of the total amount of runoff identified in Provision C.3.d. for the Project's drainage area that will be treated by each treatment system.

C.4. Industrial and Commercial Site Controls

Each Permittee shall implement an industrial and commercial site control program at all sites that could reasonably be considered to cause or contribute to pollution of stormwater runoff. Permittees shall conduct inspections, effective follow-up, and enforcement to abate potential and actual non-stormwater discharges, consistent with each respective Enforcement Response Plan. These combined efforts will prevent the discharge of pollutants and impacts to beneficial uses of receiving waters. Inspections shall confirm implementation of appropriate and effective BMPs and other pollutant controls by industrial and commercial site operators.

C.4.a. Legal Authority for Effective Site Management

i. **Task Description** – Permittees shall have sufficient legal authority to inspect, require effective stormwater pollutant control, and implement progressively stricter enforcement to achieve expedient compliance and pollutant abatement at commercial and industrial sites within their jurisdiction.

ii. **Implementation Level** – Permittees shall have the legal authority to oversee, inspect, and require expedient compliance and pollution abatement at all industrial and commercial sites that may be reasonably considered to cause or contribute to pollution of stormwater runoff. Permittees shall have the legal authority to require implementation of appropriate BMPs at industrial and commercial facilities to address pollutant sources associated with outdoor process and manufacturing areas; outdoor material storage areas; outdoor waste storage and disposal areas; outdoor vehicle and equipment storage and maintenance areas; outdoor parking areas and access roads; outdoor wash areas, for example, areas used to wash restaurant equipment and mats,; outdoor drainage from indoor areas; rooftop equipment; vehicle fueling activities; contaminated and erodible surface areas; and other sources determined by the Permittees or the Water Board Executive Officer to have a reasonable potential to contribute to pollution of stormwater runoff.

C.4.b. Industrial and Commercial Business Inspection Plan (Inspection Plan)

i. **Task Description** – Permittees shall continue to update and implement an Inspection Plan that will serve as a prioritized inspection workplan. This Inspection Plan will allow inspection staff to categorize the commercial and industrial sites within the Permittee's jurisdiction by pollutant threat and inspection frequency, change inspection frequency based on site performance, and add and remove sites as businesses open and close.

ii. Implementation Level

(1) Facilities to Prioritize for Inspection

Commercial and industrial facilities with the functional aspects and types described below, and other facilities identified by the Permittees as reasonably likely to contribute to pollution of stormwater runoff, shall be prioritized for inspection on the basis of the potential for water quality impact using criteria such as pollutant sources on site, use of pollutants of concern, proximity to a waterbody, and the enforcement history of potential discharges and actual discharges at the facility. Permittees may use a variety of sources to develop and update the business inspection prioritization, including, but not limited to, business license applications, tax records, and inspectors' observations. The following are some of the functional aspects of businesses and types of businesses that shall be included in the Inspection Plan:

(a) Sites with the following functions or facilities that may be sources of pollutants when exposed to stormwater:

(i) Outdoor process and manufacturing areas

(ii) Outdoor material storage areas

(iii) Outdoor waste storage, handling, and disposal areas

(iv) Outdoor vehicle and equipment storage and maintenance areas

(v) Outdoor wash areas

(vi) Outdoor drainage from indoor areas

(vii) Fueling Areas

(viii) Rooftop equipment

(ix) Other sources determined by the Permittee or Water Board as reasonably likely to contribute to pollution of stormwater runoff.

(b) Sites that support industrial and commercial activities that have a reasonable likelihood to be sources of pollutants to stormwater and non-stormwater discharges, including:

(i) Industrial facilities, as defined at 40 CFR 122.26(b)(14), including facilities subject to the Statewide NPDES General Permit for Stormwater Discharges Associated with Industrial Activity (hereinafter the Industrial General Permit);

(ii) Vehicle Salvage yards;

(iii) Metal and other recycled materials collection facilities, and waste transfer facilities;

(iv) Vehicle mechanical repair, maintenance, fueling, or cleaning facilities;

(v) Nurseries and greenhouses;

(vi) Restaurants and other food service businesses at which food is prepared or that have onsite eating and drinking areas for customers;

(vii) Supermarkets or large grocery stores with outdoor waste storage or cardboard compacting areas;

(viii) Building trades facilities or yards, corporation yards;

(ix) Building material retailers and storage;

(x) Plastics manufacturers; and

(xi) Other facilities designated by the Permittee or Water Board to be reasonably likely to contribute to pollution of stormwater runoff.

(2) Inspection Plan – The Inspection Plan shall be updated annually and shall contain the following information:

(a) A description of the process for prioritizing inspections and frequency of inspections. The prioritization criteria shall assign a more frequent inspection schedule to the highest priority facilities per Provision C.4.b.ii.(1). If any geographical areas are to be targeted for inspections due to high potential for stormwater pollution, these areas should be indicated in the Inspection Plan.

(b) Assign appropriate inspection frequency for each industrial and commercial facility based on the priority established in Provision C.4.b.ii.(2)(a), potential for contributing pollution to stormwater runoff, and commensurate with the threat to water quality.

(c) A mechanism to include new businesses that warrant inspections.

(d) Total number and a list of all industrial and commercial facilities requiring inspections, within each Permittee's jurisdiction, based on the prioritization criteria established in Provision C.4.(b)ii.(2)(a). This list shall be updated annually.

(e) List of facilities scheduled for inspection each fiscal year of the MRP permit term. Each fiscal year's inspection list shall be added to the Inspection Plan at the beginning of the fiscal year as part of the annual

update. Previous fiscal years' inspection lists shall remain in the Inspection Plan.

(f) If a Permittee relies on multiple entities to perform business and commercial inspections, a list of the entities and their responsibilities with regard to this Permit. Describe how the Permittee oversees and coordinates the entities performing inspections and assures that all sites with the potential to pollute stormwater are inspected.

(3) Record Keeping – For each facility identified in Provision C.4.b.ii.(2)(d), the Permittee shall maintain a database or equivalent tabular system of at least the following information:

(a) Name and address of the business and local business operator;

(b) A brief description of business activity or pollutant source, including SIC or NAICS code. Examples: outdoor process/manufacturing areas, outdoor material storage areas, outdoor waste storage and disposal areas, outdoor vehicle and equipment storage and maintenance areas, outdoor parking areas and access roads, outdoor wash areas, rooftop equipment, outdoor drainage from indoor areas, and use of mobile businesses for outdoor fueling, washing, etc.;

(c) Inspection priority and inspection frequency; and

(d) Whether facility requires coverage under the Industrial General Permit.

iii. Reporting

(1) Permittees shall include the following information in the 2023 Annual Report:

(a) A brief description of which Permittee entity or entities are responsible for reviewing and approving business license applications or a link to the Permittee's website for business license applications.

(2) Permittees shall make the list required by Provision C.4.b.ii.(2)(d) available upon Water Board request.

C.4.c. Enforcement Response Plan

i. Task Description – Each Permittee shall implement and update, as needed, its Enforcement Response Plan (ERP), a reference document to guide inspection staff in achieving timely and effective compliance from all commercial and industrial site operators.

ii. Implementation Level – The ERP shall contain the following:

(1) Enforcement Procedures – A description of the Permittee's enforcement and compliance procedures, from the discovery of problems through the confirmation of implementation of corrective actions. This shall include guidance for appropriate enforcement actions, follow-up inspections, referrals to another agency, appropriate time periods for implementation of corrective actions, and the roles and responsibilities of all persons responsible for implementing the ERP.

(2) Enforcement Tools and Field Scenarios – A discussion of the various, escalating enforcement tools for different field scenarios, including, but not limited to, potential discharges (e.g., housekeeping issues, inadequate waste or materials management, evidence of actual discharges, lack of emergency response plans, lack of BMPs, inadequate BMPs, and inappropriate BMPs); actual discharges (observed or documented flow of unauthorized, illicit, or pollutant-containing stormwater discharges to the MS4); non-compliance with previous enforcement actions; and sites with a history of potential and/or actual discharges.

(3) Timely Correction of Potential and Actual Discharges – A description of the Permittee's procedures for assigning due dates for corrective actions. Each Permittee shall require timely correction of all potential and actual discharges. Permittees shall require actual discharges to cease immediately. Corrective actions shall be implemented before the next rain event, and no longer than 10 business days after the potential or actual non-stormwater discharges are discovered. Corrective actions can be temporary, in which case more time can be allowed for permanent corrective actions. If more than 10 business days are required for compliance, the rationale, including the expected time frame for compliance, shall be recorded in the electronic database or equivalent tabular system.

(4) Referral and Coordination with Other Agencies – Each Permittee shall enforce its stormwater ordinances to achieve compliance at sites with observed potential and actual discharges, including compliance required by Discharge Prohibition A.1. For cases in which the Permittee's enforcement tools are inadequate to remedy the noncompliance, the Permittee shall refer the case to the Water Board, district attorney, or other relevant agencies for additional enforcement. Permittees may also contact and coordinate with Water Board staff for joint inspections and parallel enforcement of large, complex, or noncompliant sites.

C.4.d. Inspections

i. Task Description – Each Permittee shall conduct inspections according to the Inspection Plan in Provision C.4.b.ii.(2) and the ERP in Provision C.4.c.ii. to enforce its ordinance to prevent stormwater pollution.

ii. Implementation Level

(1) Inspections – Inspections shall be conducted to include at least the following activities:

(a) Observations for appropriate BMPs to prevent stormwater runoff pollution, or unauthorized or illicit discharge;

(b) Observations for evidence of unauthorized or illicit discharges, illicit connections, and potential discharge of pollutants to stormwater by the Discharger or contractors, such as and including mobile businesses, that operate on the facility;

(c) Observations for noncompliance with Permittee ordinances and other local requirements; and

(d) Verification of coverage under the Industrial General Permit, if applicable.

(2) Record Keeping – Permittees shall maintain adequate records to demonstrate compliance and appropriate follow-up enforcement responses for facilities inspected. Permittees shall maintain an electronic database or equivalent tabular system that contains the following information regarding industrial and commercial site inspections:

(a) Name of facility/site inspected

(b) Inspection date

(c) Industrial General Permit coverage required (Yes or No)

(d) Compliance status

(e) Specific problems, including inadequate and ineffective BMPs

(f) Type of enforcement (if applicable)

(g) Problem resolution date

(h) Additional comments

The electronic database or equivalent tabular system and any supporting documentation shall be made readily available to Water Board staff or its representative during inspections, audits, or upon request.

(3) Data Evaluation – Permittees shall evaluate the frequency of potential and actual non-stormwater discharges by business category. Note trends and, as needed, implement focused inspections or education in subsequent years to address trends.

iii. Reporting

(1) Permittees shall include the following information in each Annual Report:

(a) Number of inspections conducted;

(b) Number of each type of enforcement action, as listed in each Permittee's ERP, issued;

(c) Number of enforcement actions or discrete number of potential and actual discharges fully resolved within 10 working days or otherwise deemed resolved in a longer, but still timely manner; and

(d) Frequency of potential and actual non-stormwater discharges by business category.

(2) Permittees shall make the list of facilities required to have coverage under the Industrial General Permit, but that have not filed for coverage, available upon Water Board request. For facilities added to the list or re-inspected during this Permit term, the list shall include the date when the facility was first identified and the date when it was most recently inspected or evaluated.

C.4.e. Staff Training

i. Task Description – Permittees shall provide focused training for industrial and commercial site inspectors and illicit discharge detection and elimination inspectors annually. Trainings may be program-wide, region-wide, or Permittee- specific.

ii. Implementation Level – At a minimum, provide inspection training, within the 5-year term of this Permit, in the following topics:

(1) Urban runoff pollution prevention;

(2) Inspection procedures;

(3) Business Inspection Plan;

(4) Enforcement Response Plan;

(5) Illicit Discharge Detection and Elimination; and

(6) Appropriate BMPs to be used at different industrial and commercial facilities.

iii. Reporting – The Permittees shall include the following information in each Annual Report:

(1) Dates of training;

(2) Training topics covered;

(3) Total number and percentage of industrial and commercial site inspectors attending training; and

(4) Total number and percentage of illicit discharge detection and elimination inspectors attending training.

C.5. Illicit Discharge Detection and Elimination

The purpose of this provision is to implement the illicit discharge prohibition and to detect and control illicit discharges not otherwise controlled under Provisions C.4. – Industrial and Commercial Site Controls, C.6. – Construction Site Controls, and C.17 – Discharges Associated with Unsheltered Homeless Populations. Permittees shall implement an illicit discharge program that includes active surveillance and centralized complaint collection and follow-up to detect and eliminate illicit discharges into the MS4. Permittees shall maintain a complaint tracking and follow-up data system as their primary accountability reporting for this provision.

C.5.a. Legal Authority

i. Task Description – Permittees shall have the legal authority to prohibit and control illicit discharges and implement progressively stricter enforcement to achieve expedient compliance.

ii. Implementation Level

(1) Permittees shall have adequate legal authority to address illicit discharges to the MS4, including, but not limited to, the following:

(a) Discharges of sewage, trash, or other potentially polluting or hazardous materials;

(b) Discharges of wash water resulting from the cleaning of exterior surfaces, pavement, equipment, and other facilities of any commercial business, or any other public or private facility, including discharges from mobile businesses;

(c) Discharges of runoff from material storage areas, including those containing chemicals, fuels, or other potentially polluting or hazardous materials;

(d) Discharges of pool or fountain water containing chlorine, biocides, or other chemicals; discharges of pool or fountain filter backwash water;

(e) Discharges of sediment, pet waste, vegetation clippings, or other landscape or construction-related wastes;

(f) Discharges of food-related wastes (e.g., grease, fish processing wastes, restaurant kitchen mat and trash bin wash water); and

(2) Permittees shall have adequate legal authority to prohibit, discover through inspection and surveillance, and eliminate illicit connections and discharges to the MS4.

(3) Permittees shall have adequate legal authority to control the discharge of spills, dumping, or disposal of materials other than stormwater to the MS4.

(4) Permittees shall have adequate legal authority to hold mobile businesses, and the businesses, property managers, property owners, and other associated entities that hire a mobile business, responsible for stormwater pollution discharged by the mobile business operating at their location.

C.5.b. Enforcement Response Plan (ERP)

i. Task Description – Each Permittee shall implement and update, as needed, its ERP – a reference document for inspection staff to take consistent actions to achieve timely and effective abatement of illicit discharges and compliance from responsible parties.

ii. Implementation Level – The ERP shall contain the following:

(1) Enforcement Procedures – A description of the Permittee's procedures from the discovery of problems through the confirmation of implementation of corrective actions. This shall include guidance for appropriate enforcement actions, follow-up inspections, referrals to another agency, appropriate time periods for implementation of corrective actions, and the roles and responsibilities of all persons responsible for implementing the ERP.

(2) Enforcement Tools and Field Scenarios – A discussion of the various, escalating enforcement tools for different field scenarios, including, but not limited to, potential discharges (e.g., housekeeping issues, inadequate waste or materials management, evidence of actual discharges, lack of emergency response plans, lack of BMPs, inadequate BMPs, and inappropriate BMPs); actual discharges (observed or documented flow of unauthorized, illicit, or pollutant-containing stormwater discharges to the MS4); non-compliance with previous enforcement actions; and sites with a history of potential and/or actual discharges.

(3) Timely Correction of Potential and Actual Discharges – A description of the Permittee's procedures for assigning due dates for corrective actions. Each Permittee shall require timely correction of all potential and/or actual discharges. Permittees shall require actual discharges to cease immediately. Corrective actions shall be implemented before the next rain event, and no longer than 10 business days after the potential or actual discharges are discovered. Corrective actions can be temporary, in which case more time can be allowed for permanent corrective actions. If more than 10 business days are required for compliance, the rationale, including the expected time frame for compliance, shall be recorded in the electronic database or equivalent tabular system.

(4) Referral and Coordination with Other Agencies – Each Permittee shall enforce its stormwater ordinances to achieve compliance at sites with observed potential and actual discharges, including compliance required by Discharge Prohibition A.1. For cases in which the Permittee's enforcement tools are inadequate to remedy the noncompliance, the Permittee shall refer the case to the Water Board, district attorney, or other relevant agencies for additional enforcement. Permittees may also contact and coordinate with Water Board staff for joint inspections and parallel enforcement of large, complex, or noncompliant sites.

C.5.c. Spill, Dumping, and Complaint Response Program

i. Task Description – Each Permittee shall implement a program to respond to spills, dumping, and complaints.

ii. Implementation Level

(1) Each Permittee shall have a central contact point for the public and Permittee's staff to report spills, dumping, and complaints. At a minimum, this central contact point shall include a phone number. Permittees shall also include, as feasible, a user-friendly web address for reporting for spills and dumping or a link to a web-based reporting application.

(2) Each Permittee shall publicize the phone number on its website, and, if used, a web reporting address or link to a web-based reporting application, to the Permittee's staff and the public. The contact information on the Permittee's website shall be kept up-to-date, and updated at least annually when changed. This central contact point shall be readily searchable and accessible on the Permittee's website.

(3) Each Permittee shall require the municipal staff conducting routine maintenance and inspection activities to report illicit discharges found during their activities to the central contact point so that illicit discharge staff can investigate and track.

(4) Each Permittee shall maintain and update, as needed, a spill, dumping, and complaint response flow chart and/or phone tree for the staff responsible for the spill and dumping response program. At a minimum, this flow chart and/or phone tree shall identify staff or positions responsible for receiving the complaints and investigating and abating the complaints.

(5) Each Permittee shall also maintain and update, as needed, a spill, dumping, and complaint response flow chart and phone tree or contact list for internal use that shows the various responsible agencies and their contacts, who would be involved in illicit discharge incident response that goes beyond the Permittee's immediate capabilities.

(6) Each Permittee shall conduct reactive inspections in response to spill, dumping, and complaint reports and shall also conduct follow-up inspections, as needed, to ensure that corrective measures have been effectively implemented to achieve and maintain compliance. The start of the investigation of a spill or discharge shall not exceed 3 business days from the date the complaint was received by the Permittee. If additional time is required, the Permittee shall document the rationale for the delay.

iii. Reporting

(1) Permittees shall provide the following information in the 2024 and 2026 Annual Reports:

(a) The spill, dumping, and complaint reporting phone number and, if used, a web reporting address or a link to a web-based reporting application;

(b) A screen shot of the Permittee's website showing the central contact point; and

(c) A discussion of how the central contact point – spill and dumping reporting phone number and, if used, the web address or web-based reporting application – is being publicized to Permittees' staff and the public.

(2) Copies of the phone trees and contact lists required in Provision C.5.c.ii (4) and (5) shall be provided as attachments to, or links in, the 2026 Annual Report. The lists may be redacted to remove references to private cell phone numbers. The unredacted phone trees and contact lists shall be made available to Water Board staff or representatives during audits or inspections, and upon request

C.5.d. Tracking and Case Follow-up

i. Task Description – All incidents or discharges reported to the spill, dumping, and complaints central contact point, that might discharge into the MS4, shall be logged to track follow-up and response through problem resolution. The data collected shall be sufficient to demonstrate escalating responses for repeated problems and inter/intra-agency coordination, where appropriate. It is not necessary to track and report data according to this provision if they are tracked and reported according to State Water Resources Control Board Order No. 2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems.

ii. Implementation Level – Maintain records for tracking and follow-up to water quality spills, dumping, and complaints that might discharge into the MS4 in an electronic database or equivalent tabular system.

The water quality spills, dumping, and complaint tracking system shall contain the following information:

(1) Complaint information:

(a) Date that complaint is received by the Permittee;

(b) Type of pollutant; and

(c) Problem Status (potential or actual discharge).

(2) Investigation information:

(a) Date and time investigation of spill or discharge started;

(b) Date and time response to illegal dumping report or complaint started;

(c) Agency, department, or other entities responding to the complaint or discharge;

(d) Type of pollutant;

(e) Identify the entered storm drain or approximate location, and/or receiving water;

(f) Date and time abated; and

(g) Type of enforcement based on the Permittee's ERP.

(3) Responses to discharges or dumping associated with unsheltered populations, including those living in homeless encampments or vehicles, shall be coordinated with the Permittee's Provision C.10 Trash Control efforts, Provision C.17 Homeless Encampment Discharge Control efforts, and other agencies and entities addressing homelessness issues, as appropriate.

iii. Reporting

(1) Permittees shall provide the following information in the Annual Report:

(a) Number of discharges reported;

(b) Number of discharges reaching storm drains and/or receiving waters;

(c) Number of discharges resolved in a timely manner; and

(2) The electronic database or equivalent tabular system and supporting documentation shall be made available to Water Board staff or representatives during audits or inspections, and upon request.

C.5.e. Control of Mobile Sources

i. Task Description – Permittees shall have oversight and control of pollutants associated with mobile businesses.

ii. Implementation Level – Each Permittee shall implement a program to reduce the discharge of pollutants from mobile businesses.

(1) The program shall include the following:

(a) Implementation of minimum standards and BMPs for each of the various types of mobile businesses, including, but not limited to, automobile washing, vehicle fueling, power washing, steam cleaning, graffiti removal, and carpet cleaning;

(b) Implementation of an enforcement strategy that specifically addresses mobile businesses;

(c) Updating and maintaining a mobile business inventory at least annually;

(d) Implementation of an outreach and education strategy to mobile businesses operating within the Permittee's jurisdiction; and

(e) Inspection of mobile businesses.

(2) Permittees may cooperate countywide and/or region-wide with the implementation of their programs for mobile businesses, including sharing of mobile business information, BMP requirements, enforcement action information, and educational materials.

iii. Reporting

(1) In the 2026 Annual Report, each Permittee shall provide the following:

(a) Minimum standards and BMPs for each of the various types of mobile businesses;

(b) Enforcement strategy;

(c) A list and summary of the countywide or regional activities conducted, including BMP requirements, enforcement action information, and educational materials (Permittees' annual reports may refer to the countywide or regional reports for this information);

(d) A list and summary of specific outreach events and education conducted for each type of mobile business operating within the Permittee's jurisdiction; and

(e) A copy of the most recent version of the mobile business inventory.

(2) In each Annual Report, each Permittee shall include at least the following:

(a) The total number of inspections conducted of mobile businesses;

(b) The number of each type of mobile business inspected; and

(c) A summary of the enforcement actions taken against mobile businesses during the reporting year.

C.5.f. Municipal Separate Storm Sewer System (MS4) Map

i. Task Description – Each Permittee shall make the current map(s) of its MS4 available to the public.

Permittees shall identify information missing from the current MS4 maps and develop a plan and schedule to compile additional storm sewer system information, considering the potential to identify component locations, size or specifications, materials of construction, and condition. This information will be used to update Permittee maps and databases.

ii. Implementation Level

(1) Current MS4 Maps – Permittees shall make current maps of the MS4 publicly available, either electronically or in hard copy. Public availability shall be made through a single point of contact that is convenient for the public, such as a staffed counter or web-accessible maps. The MS4 map availability shall be publicized through Permittee directories and web pages.

(2) Updates to MS4 Maps – During the current Permit term, each Permittee shall complete the following:

(a) Determine information missing from the Permittee's current MS4 map(s), which may include Oakland Museum watershed maps, existing MS4 maps or drawings in the Permittee files, or other storm sewer system information databases.

(b) Identify and make available upon Water Board request maps of the storm sewer system and other stormwater controls installed after publication of the Oakland Museum watershed maps within the Permittee's jurisdictional area.

(c) Develop a plan and schedule for updating the Permittee's storm sewer system information. Permittees or countywide stormwater programs may work together or with the Oakland Museum of California to develop a plan and schedule for updating existing information, maps, drawings, and databases. The plan will consider the potential to identify storm sewer system component locations, size or specifications, materials of construction, and condition.

iii. Reporting

(1) In the 2024 Annual Report, Permittees shall discuss how they make MS4 maps available to the public and how they publicize the availability of the MS4 maps.

(2) Submit a plan and schedule with the 2026 Annual Report to update existing storm sewer system information as described above.

C.6. Construction Site Control

Each Permittee shall implement a construction site inspection and control program at all construction sites, with follow-up and enforcement consistent with each Permittee's respective Enforcement Response Plan, to prevent construction site discharges of pollutants into the storm drains. Inspections shall confirm implementation of appropriate and effective erosion and other construction pollutant controls by construction site operators/developers. Each Permittee shall in its reporting demonstrate the effectiveness of its inspections and enforcement activities to prevent polluted construction site discharges into storm drains.

C.6.a. Legal Authority for Effective Site Management

i. Task Description – Permittees shall have the authority to require effective stormwater pollutant controls to prevent discharge of pollutants into the storm drains, and to implement progressive enforcement to achieve expedient compliance and cleanup at all public and private construction sites.

ii. Implementation Level

(1) Permittees shall have the legal authority to require, at all construction sites year-round, effective erosion control, run-on and runoff control, sediment control, active treatment systems (as appropriate), good site management, and non-stormwater management through all phases of construction (including, but not limited to, grubbing, clearing, site grading, filling, excavation, leveling, building, landscaping, and finishing of lots) until the site is fully stabilized by landscaping or the installation of permanent erosion control measures.

(2) Permittees shall have the legal authority to oversee, inspect, and require expedient compliance and cleanup at all construction sites year-round.

C.6.b. Enforcement Response Plan (ERP)

i. Task Description – Each Permittee shall implement and update, as needed, its ERP – a reference document for inspection staff to take consistent actions to achieve timely and effective compliance at all public and private construction sites.

ii. Implementation Level – The ERP shall contain the following:

(1) Enforcement Procedures – A description of the Permittee's procedures from discovery of problems through confirmation of implementation of corrective actions. This shall include guidance for appropriate enforcement actions, follow-up inspections, referrals to another agency, appropriate time periods for implementation of corrective actions, and the roles and responsibilities of all persons responsible for implementing the ERP.

(2) Enforcement Tools and Field Scenarios – A discussion of the various, escalating enforcement tools for different field scenarios, including, but not limited to, potential discharges (e.g., housekeeping issues, inadequate waste or materials management, evidence of actual discharges, lack of emergency response plans, lack of BMPs, inadequate BMPs, and inappropriate BMPs); actual discharges (observed or documented flow of unauthorized, illicit, or pollutant-containing stormwater discharges to the MS4); non-compliance with previous enforcement actions; and sites with a history of potential and/or actual discharges.

(3) Timely Correction of Potential and Actual Discharges – A description of the Permittee's procedures for assigning due dates for corrective actions. Each Permittee shall require timely correction of all potential and actual discharges. Permittees shall require actual discharges to cease immediately. Corrective actions shall be implemented before the next rain event, and no longer than 10 business days after the potential or actual discharges are discovered. Corrective actions can be temporary, in which case more time can be allowed for permanent corrective actions. If more than 10 business days are required for compliance, the rationale, including the expected time frame for compliance, shall be recorded in the electronic database or equivalent tabular system.

(4) Referral and Coordination with Other Agencies – Each Permittee shall enforce its stormwater ordinances to achieve compliance at sites with observed potential and actual discharges, including compliance required by Discharge Prohibition A.1. For cases in which the Permittee's enforcement tools are inadequate to remedy the noncompliance, the Permittee shall refer the case to the Water Board, district attorney, or other relevant agencies for additional enforcement. Permittees may also contact and coordinate with Water Board staff for joint inspections and parallel enforcement of large, complex, or noncompliant sites.

C.6.c. Best Management Practices Categories

i. Task Description – Permittees shall require all construction sites to have site-specific, and seasonally- and phase-appropriate, effective BMPS in the following six categories:

(1) Erosion Control

(2) Run-on and Runoff Control

(3) Sediment Control, including entrance/exit and perimeter controls

(4) Active Treatment Systems, as necessary

(5) Good Site Management, including materials and waste management

(6) Non-Stormwater Management

ii. Implementation Level

The BMPs targeting specific construction site pollutants within the six categories listed in Provision C.6.c.i. shall be site-specific. Permittees may select site-specific BMPs, or BMP combinations, from resources such as:

(1) CASQA BMP Handbook, Construction, December 2019

(2) Caltrans Stormwater Quality Handbooks, Construction Site Best Management Practices Manual, May 2017, and addenda

(3) Other BMPs shown to provide equivalent or better protection

C.6.d. Plan Approval Process

i. Task Description – Permittees shall review erosion control plans for consistency with local requirements and the appropriateness and adequacy of proposed BMPs for each site before issuing grading permits for projects. Permittees shall also verify that sites disturbing one acre or more of land have filed a Notice of Intent for permit coverage under the Construction Stormwater General Permit.

ii. Implementation Level – Before approval and issuance of local grading permits, each Permittee shall perform the following:

(1) Review the site operator's/developer's erosion/pollution control plan or Stormwater Pollution Prevention Plan (SWPPP) to verify compliance with the Permittee's grading ordinance and other local requirements. Also review the site operator's/developer's erosion/pollution control plan or SWPPP to verify that seasonally appropriate and effective BMPs for the six categories listed in Provision C.6.c.i. are planned.[28]

(2) For sites disturbing one acre or more of soil, verify that the site operators/developers have filed a Notice of Intent for permit coverage under the Construction Stormwater General Permit.

(3) Provide construction stormwater management educational materials to site operators/developers, as appropriate.

C.6.e. Inspections

i. Task Description – Permittees shall conduct inspections to determine compliance with local ordinances (grading and stormwater) and determine the effectiveness of the BMPs in the six categories listed in Provision C.6.c.i. in

[28] If SWPPPs do not include erosion control plan drawings for use by construction workers and managers at the site, erosion, sediment, and site control plans and drawings must also be submitted and reviewed.

preventing the discharge of construction pollutants into the storm drain. Permittees shall require timely corrections of all actual and potential discharges observed.

ii. Implementation Level

(1) Wet Season Notification

By September 1 of each year, each Permittee shall remind all site developers and/or owners disturbing one acre or more of soil, hillside projects, and high priority sites to prepare for the upcoming wet season.

(2) Frequency of Inspections

Inspections shall be conducted monthly during the wet season[29] at the following sites:

(a) All construction sites disturbing one or more acre of land;

(b) All hillside projects (based on the Permittee's map of hillside development areas or criteria, or if the Permittee does not have a map of hillside development areas or criteria, those projects on sites with ≥15 percent slope) disturbing greater than or equal to 5,000 square feet; and

(c) High Priority Sites – Other sites determined by the Permittee or the Water Board as significant threats to water quality. In evaluating threat to water quality, the following factors shall be considered:

(i) Soil erosion potential or soil type;

(ii) Site slope;

(iii) Project size and type;

(iv) Sensitivity of receiving waterbodies;

(v) Proximity to receiving waterbodies;

(vi) Non-stormwater discharges; and

(vii) Any other relevant factors as determined by the local agency or the Water Board.

[29] For the purpose of inspections, the wet season is defined as October through April, but sites need to implement seasonally appropriate BMPs in the six categories listed in C.6.c.i throughout the year.

(3) Contents of Inspections

Inspections shall focus on the adequacy and effectiveness of the site-specific BMPs implemented for the six categories listed in Provision C.6.c.i.

Permittees shall require timely corrections of all actual and potential problems observed. Inspections of construction sites shall include, but are not limited to, the following:

(a) Assessment of compliance with Permittee's ordinances and permits related to urban runoff, including the implementation and maintenance of the verified erosion/pollution control plan or SWPPP (from Provision C.6.d.ii.(1));

(b) Assessment of the adequacy and effectiveness of the site-specific BMPs implemented for the six categories listed in Provision C.6.c.i;

(c) Visual observations for:

(i) Actual discharges of sediment and/or construction-related materials into storm drains and/or waterbodies.

(ii) Evidence of sediment and/or construction-related materials discharges into storm drains and/or waterbodies.

(iii) Illicit connections, and

(iv) Potential illicit connections.

(d) Education on stormwater pollution prevention, as needed.

(4) Tracking

All inspections shall be recorded on a written or electronic inspection form. Inspectors shall follow the ERP for all actual and potential discharges discovered during the inspection.

Permittees shall track in an electronic database or tabular format all inspections. This electronic database or tabular format shall be made readily available during inspections and audits by the Water Board staff or its representatives. This electronic database or tabular format shall record the following information for each site inspection:

(a) Site name;

(b) Inspection date;

(c) Weather during inspection;

(d) The department, agency, or other entity performing the inspection.

(e) Enforcement Response Level (Use ERP);

(f) Problem(s) observed using Illicit Discharge and the six BMP categories listed in Provision C.6.c.i;

(g) Resolution of Problems noted using the following three standardized categories: Problems Fixed, Need More Time, and Escalate Enforcement; and

(h) Comments, which shall include all rationale for longer compliance times, all escalation in enforcement discussions, and any other information that may be relevant to that site inspection.

iii. Reporting

(1) Each Permittee shall summarize the following information in the Annual Report:

(a) Total number of construction sites requiring inspections during at least part of the Permit year;

(b) Total number of active hillside sites disturbing less than one acre of soil requiring inspection;

(c) Total number of active sites disturbing one acre or more of soil;

(d) Total number of active sites disturbing less than one acre of soil identified as High Priority sites in Provision C.6.e.ii.(2)(c) requiring inspections;

(e) Total number of inspections conducted;

(f) Number of enforcement actions taken by type, organized by the categories in each Permittee's ERP;

(g) Number of illicit discharges, actual and potential, of sediment or other construction-related materials; and

(h) Number of enforcement actions or discrete number of potential and actual discharges fully corrected prior to the next rain event, but no longer than 10 business days after the potential and actual discharges[30] are discovered or otherwise considered corrected in a timely, though longer period.

(2) In the 2027 Annual Report, each Permittee shall evaluate its respective electronic database or tabular format and the summaries produced in Provision C.6.e.ii.(4). This evaluation shall include findings on the

[30] Permittees who track by discrete potential and actual discharges shall report by discrete discharges. Permittees who track by enforcement actions shall report by enforcement actions

program's strength, comparison to previous years' results, as well as areas that need more focused education for site owners, operators, and developers the following year.

(3) An electronic copy of the construction site and inspection database(s) shall be made available to the Water Board during inspections, audits, or upon request.

C.6.f. Staff Training

i. Task Description – Permittees shall provide training or access to training for all staff conducting construction stormwater inspections.

ii. Implementation Level – Permittees shall provide training at least every other year to staff responsible for conducting construction site stormwater inspections. Training topics shall include information on correct uses of specific BMPs, proper installation and maintenance of BMPs, Permit requirements, local requirements, and the ERP.

iii. Reporting – Permittees shall include in each Annual Report the following information:

(1) Dates of training;

(2) Training topics covered;

(3) Total number of inspectors, including both municipal and non-municipal staff; and

(4) The number of inspectors attending each training, including both municipal and non-municipal staff.

If there was no training in that year, so state.

C.7. Public Information and Outreach

Each Permittee shall increase the awareness of the community, including diverse socioeconomic groups, government elected officials and staff, and ethnic communities, regarding the impacts of stormwater pollution on receiving waters and potential solutions to mitigate these impacts; positively influence the public's waste disposal and runoff pollution generation behavior; and involve various citizens in mitigating the impacts of stormwater pollution. Outreach required in other provisions may be conducted under Provision C.7.

C.7.a. Outreach Campaigns

i. Task Description – Permittees shall continue to participate in or contribute to outreach campaigns, with the goal of significantly increasing overall awareness of stormwater runoff pollution prevention messages and behavior changes in target audiences.

ii. Implementation Level

(1) Target a broad audience with a minimum of one outreach campaign with specific stormwater runoff pollution prevention messages. The outreach campaign(s) should utilize various electronic and print media, and paid and free media, including social media, as practicable, to best reach different demographics. The outreach campaign(s) may be coordinated regionally or countywide.

(2) Permittees shall conduct timely evaluations to measure the effectiveness of the outreach campaigns. Effectiveness assessment/evaluation may be done regionally or countywide.

C.7.b. Stormwater Pollution Prevention Education

i. Task Description – Permittees shall continue to maintain a point of contact to provide the public with stormwater pollution prevention information.

ii. Implementation Level

(1) Each Permittee shall maintain and publicize one point of contact for information on stormwater issues, watershed characteristics, and stormwater pollution prevention alternatives. This point of contact can be maintained individually or collectively, and Permittees may combine this function with the spill and dumping complaint central contact point required in Provision C.5 – Illicit Discharge Detection and Elimination.

(2) Each Permittee shall place and maintain information on stormwater issues, watershed characteristics, and stormwater pollution prevention alternatives on its website. In lieu of posting the detailed informational pages directly on their individual websites, Permittees may choose to

provide links from their websites to the countywide program's websites and/or websites for other collaborative efforts between Permittees. Each Permittee shall publicize its website.

C.7.c. Public Outreach and Citizen Involvement Events

i. **Task Description** – Public outreach shall include a variety of pollution prevention messages such as for car washing; proper use, storage, and disposal of vehicle waste fluids; household waste materials disposal; pesticide use; and trash. Public outreach events may include venues such as fairs, shows, workshops, and household waste collection events. Citizen involvement events may include venues such as creek/shore clean-ups, adopt-an-inlet/creek/beach programs, volunteer monitoring, storm drain inlet marking, riparian restoration activities, and community grants.

ii. **Implementation Level** – Each Permittee shall annually participate and/or host a mix of public outreach and citizen involvement events according to its population, as shown in the table below:

Table 7.1 Public Outreach and Citizen Involvement Events[31]

Permittee Population	Number of Events
< 10,000	2
10,001– 40,000	4
40,001 – 100,000	5
100,001 – 175,000	7
175,001 – 250,000	8
> 250,000	10
Non-population-based Permittees	6

C.7.d. Watershed Stewardship Collaboration

i. **Task Description** – Permittees shall individually or collectively collaborate with other organizations to encourage and support community watershed stewardship activities. This may include collaborating with community groups such as local watershed forums and "friends of creek" groups; encouraging and supporting the development of grassroots watershed groups; or engaging

[31] Permittees may claim individual credits for events in which their Countywide Program participates, that the County Program supports or hosts, or other collaborative efforts, provided such events are publicized in the Permittee's jurisdiction.

existing groups, such as neighborhood associations, in watershed stewardship activities. This may also include collaboration with other organizations that benefit the health of the watershed, such as ReScape California, or collaboration to introduce community watershed stewardship activities into organizations focused on other environmental or sustainability efforts.

ii. Implementation Level – Annually demonstrate effort.

C.7.e. School-Age Children Outreach

i. Task Description – Permittees shall individually or collectively implement outreach activities designed to increase awareness of stormwater and/or watershed message(s) in school-aged children (K through 12).

ii. Implementation Level – Implement annually and demonstrate effectiveness of efforts through assessment.

C.7.f. Outreach to Municipal Officials

i. Task Description – Permittees shall conduct outreach to municipal officials. One alternative means of accomplishing this is through the use of the Nonpoint Education for Municipal Officials program (NEMO) to significantly increase overall awareness of stormwater and/or watershed message(s) among regional municipal officials.

ii. Implementation Level – At least once per permit cycle, or more often.

C.7.g. Tracking and Reporting

i. Task Description – Permittees shall electronically track outreach efforts in a table or spreadsheet. The tracking document should include, at a minimum:

(1) Outreach event or campaign type;

(2) Dates;

(3) Target Audience;

(4) Number of participants and number of participants compared to previous events, if applicable;

(5) Location(s) or website address, as applicable;

(6) Contact information for venues and coordinators, if applicable;

(7) Materials and activities, as applicable;

(8) Level of effort;

(9) Evaluation of effectiveness;

(10) Lessons learned; and

(11)Planned changes in approach or implementation, if any.

ii. Implementation Level – The tracking document shall be made available to the Water Board staff during inspections, audits, or upon request.

iii. Reporting

(1) In each Annual Report, each Permittee (or the Countywide Program, if the tracking was done countywide or regionally) shall submit a table listing the types of outreach programs implemented during that Permit year along with a brief description. The table should be a cumulative table showing the number, if applicable, of each type of outreach campaigns or events occurring during each Permit year.

(2) In the 2023 Annual Report, each Permittee shall list the Permittee's point of contact and the URL for its stormwater pollution website. The Permittee shall discuss how the point of contact and website are publicized and maintained and certify that it has a website dedicated to providing and maintaining information on stormwater issues, watershed characteristics, and stormwater pollution prevention approaches. Changes in this information shall be reported in the Annual Report for the year in which the change occurs.

(3) In the 2027 Annual Report, each Permittee (or the Countywide Program, if the effectiveness assessment/evaluation was done countywide or regionally) shall submit a summary of the effectiveness assessments/evaluations by type of outreach described in Provisions C.7.a through C.7.f. The summary shall include plans for continuing or modifying each outreach type during the next permit term.

C.8. Water Quality Monitoring

C.8.a. Compliance Options

All Permittees shall comply with all the monitoring requirements in this Provision. Permittees may choose any of the following mechanisms, or a combination of these mechanisms, to meet the monitoring requirements:

i. **Regional Collaboration.** Permittees are encouraged to continue contributing to the Regional Monitoring Collaborative (RMC), which coordinates water quality monitoring conducted by all the Permittees. Permittees are encouraged to consider and assign additional duties to the RMC for purposes of increased efficiencies, particularly, but not limited to, reporting duties.

ii. **Area-wide Stormwater Program.** Permittees may contribute to their countywide or area-wide Stormwater Program, so that the Stormwater Program conducts monitoring on behalf of its members.

iii. **Third-party Monitoring.** Permittees may use data collected by a third-party organization, such as the Water Board or Department of Pesticide Regulation, to fulfill a monitoring requirement, provided the data are demonstrated to meet the data quality objectives described in Provision C.8.b.

C.8.b. Monitoring Protocols and Data Quality

Where applicable, monitoring data must be Surface Water Ambient Monitoring Program (SWAMP) comparable. Minimum data quality shall be consistent with the latest version of the SWAMP Quality Assurance Program Plan (QAPrP) for applicable parameters, including data quality objectives, field and laboratory blanks, field duplicates, laboratory spikes, and clean techniques, using the most recent SWAMP Standard Operating Procedures.

C.8.c. San Francisco Estuary Receiving Water Monitoring

With limited exceptions, urban runoff from the Permittees' jurisdictions ultimately discharges to the San Francisco Estuary. Monitoring of the Estuary is intended to answer questions[32] such as:

- Are chemical concentrations in the Estuary potentially at levels of potential concern and are associated impacts likely?
- What are the concentrations and masses of contaminants in the Estuary and its segments?

[32] https://www.sfei.org/sites/default/files/biblio_files/MYP%202021%20FINAL.pdf (SF Bay Regional Monitoring Program (RMP) Multi-Year Plan, January 2021). While the stated objectives may change over time, the intent of this provision is for Permittees to continue contributing financially and as stakeholders in such a program as the RMP, which monitors the quality of San Francisco Bay.

- What are the sources, pathways, loadings, and processes leading to contaminant related impacts in the Estuary?
- Have the concentrations, masses, and associated impacts of contaminants in the Estuary increased or decreased?
- What are the projected concentrations, masses, and associated impacts of contaminants in the Estuary?

The Permittees shall participate in implementing an Estuary receiving water monitoring program, at a minimum equivalent to the San Francisco Estuary Regional Monitoring Program by contributing their fair share financially on an annual basis.

C.8.d. Low Impact Development (LID) Monitoring

LID Monitoring is intended to measure compliance and effectiveness of LID controls. It will improve the understanding of the benefit of LID implementation, in particular, green stormwater infrastructure, on pollutant loading and hydrology of receiving waters within Permittees' jurisdictions, at different space and time scales, and inform the design, construction, operation and maintenance (O&M) and future implementation of LID. LID Monitoring may also be used to calibrate and validate models that estimate pollutant removal effectiveness and inform sizing of LID facilities (e.g., countywide C.3 technical guidance documents, reasonable assurance analysis models, and other sizing and assessment models).

LID Monitoring is intended to answer both of the following two management questions:

- What are the pollutant removal and hydrologic benefits, such as addressing impacts associated with hydromodification, of different types of LID facilities, systems, components, and design variations, at different spatial scales (e.g., single control vs watershed or catchment scale), and how do they change over time?
- What are the minimum levels of O&M necessary to avoid deteriorated LID facilities, systems, and components that reduce pollutant removal and hydrologic performance?

i. LID Monitoring Plans

(1) The Permittees shall, at the regional or countywide level, develop LID Monitoring Plans to implement the requirements in Provision C.8.d.iii-iv. The LID Monitoring Plans shall, at a minimum:

(a) Explain how the study(s) will address both management questions and propose monitoring questions necessary that will address both management questions.

(b) Describe the LID facility(s) or system(s) and study area(s), including the characteristics, land use and management actions within the tributary drainage area to the LID facility(s) or system(s) that will be monitored.

(c) List the monitoring stations, monitoring parameters, and associated measurement, sample and analytical methods that will be utilized.

(d) Establish a monitoring schedule, including number and type (wet weather and dry weather) of monitoring events for each site, that may result in a greater number of total and/or annual monitoring events than the minimum required in Table 8.d.2, and including a discussion of the allocation of samples between and within sites.

(e) Describe the data evaluation methods, such as statistical analyses to test whether differences in concentrations are statistically significant.

(f) Include study-specific Quality Assurance Project Plans (QAPPs), which, at a minimum, are comparable to the SWAMP QAPrP.

(g) Provide annual cost estimates for the implementation of the LID Monitoring Plan.

(h) Explain how sampling and analytical methodologies will be regionally consistent.

(2) Permittees shall implement no later than the deadline set forth in Provision C.8.d.v, the approved or conditionally approved LID Monitoring Plans as meeting the requirements herein (including consideration of countywide and regional representativeness and whether the information generated will reliably address the LID Monitoring management questions).

ii. Regional Collaboration

To assist with the development and implementation of scientifically-sound LID Monitoring Plans, to facilitate regional consistency with respect to sampling and analytical methodology, and to make recommendations about allocation of samples between and within different sites, the Permittees shall form and convene a Technical Advisory Group (TAG) which includes impartial science advisors (e.g., SFEI, SCCWRP) and Water Board staff, to review and make recommendations regarding the LID Monitoring Plans (including their study design, analysis methods, results, and conclusions) prior to submission of the LID Monitoring Plans to the Executive Officer. In order to effectuate this review, the Permittees shall submit their draft LID Monitoring Plans to the TAG by March 1, 2023. Prior to the Executive Officer's approval or conditional approval of the LID Monitoring Plans, the TAG shall be convened at least biannually. Thereafter, it shall be convened at least annually to provide continued feedback regarding the implementation of Provision C.8.d, including but not limited to study design, sample locations, and analysis methods.

iii. Methods

The Permittees shall implement or cause to be implemented the LID effectiveness monitoring methods listed in Table 8.d.1.

iv. Parameters and Intensities

(1) Permittees shall conduct LID Monitoring consistent with the parameters and intensities specified in Table 8.d.2.

(2) Monitoring must be conducted according to test procedures in 40 CFR part 136 for analyses of pollutants unless another method is required under 40 CFR chapter 1, subchapter N. For PFAS, if there are no standard methods in 40 CFR part 136, Permittees may use other methods, such as those recommended by U.S. EPA for non-potable water and other environmental media.

(3) In a given water year, if there are not enough storm events for Permittees to sample (i.e., due to weather/climate), Permittees may certify that in their subsequent LID Monitoring Status Report and perform the missed sample events in the subsequent water year.

v. Implementation Level – Permittees shall begin implementation of the approved or conditionally approved LID Monitoring Plans by no later than the start of the 2024 Water Year, which is October 1, 2023.

vi. Reporting – The Permittees shall submit their LID Monitoring Plans for Executive Officer approval by May 1, 2023.

Table 8.d.1 LID Monitoring Methods

Management Question		Monitoring Methods
1	What are the pollutant removal and hydrologic benefits of LID components, facilities and/or systems (and of different combinations of components, facilities and/or systems), including variations in design and how do they change over time?	Monitoring methods to investigate pollutant removal benefits shall consist of: • Required: Collection and analysis of the parameters listed in Table 8.d.2, in stormwater influent and effluent (simultaneously) – using automated samplers to collect flow-weighted composite EMCs (time-weighted composites are allowed if they have many subsamples and can be closely approximated as flow-weighted composites) – at the component, facility, site, and/or watershed scale; and • Optional: sampling of sediment and other technically sound and accepted monitoring methods designed to investigate pollutant removal benefits. Monitoring methods to investigate hydrologic performance (flow) shall consist of: • Required: Measurement of stormwater runoff quantity and/or flow at the component, facility, site and/or watershed scale, in both the influent and effluent of the LID BMP(s). • Optional: Measurement of stream flow to evaluate watershed scale benefits; development of runoff hydrographs; water balance monitoring; collection and analysis of infiltration rates or water depth at the facility and/or site scale; or other technically sound and accepted monitoring methods designed to investigate hydrologic performance. Monitoring methods to investigate changes over time include: • Longitudinal study(s), using the above monitoring methods applied at the component, facility, and/or system scales, over different time scales.
2	What are the minimum levels of O&M necessary to avoid deteriorated LID facilities, systems, and components that reduce pollutant removal and hydrologic performance?	• Monitoring methods assigned to Management Question 1 above, applied at the component, facility, system, and/or site scale; and • Condition assessments at the component, facility, system, and/or site scale.

Table 8.d.2 LID Monitoring Intensities and Parameters

Countywide Stormwater Program	Anticipated Type(s) of LID Facilities Monitored	Total Minimum Number of Water Quality Sample Events During Permit Term (Annual Minimum)[33]	Parameters[34,35]
Alameda	High flow rate tree well filters and/or a combination of several LID measures.	25 (3)	**Required:** • Total Hg; • Total PCBs; • TSS • PFAS; • TPH; • Total and Dissolved Copper; • Flow; • Total Hardness; and • pH. **Optional:** • Other emerging contaminants;[36] and • Other ancillary parameters.[37]
Contra Costa	Bioretention and/or other infiltration-based LID measures.	25 (3)	
San Mateo	Regional multi-benefit stormwater capture facility(s).	25 (3)	
Santa Clara	Bioretention and/or other LID measures.	25 (3)	
Solano	Bioretention and/or other LID measures.	12 (1)	

[33] This column indicates the total minimum number of sample events that must take place during the Permit term, and the minimum number of sample events that must take place during each year of the Permit term. Samples shall be collected via automated sampler as flow-weighted composite event mean concentrations (EMCs); time-weighted composites are allowed if they have many subsamples and can be closely approximated as flow-weighted composites. In order to assess performance, each sample event must include simultaneous sampling of the influent and effluent. The Permittees are encouraged to additionally collect sediment samples (e.g., to analyze for total PCBs and total mercury), however such sediment sample collection shall not count towards the required water quality samples specified in this column. The LID Monitoring Plans shall propose how to address both of the Management Questions, by specifying the locations of sampling stations, the matrix (surface water, bedded sediment, etc.), the number of samples to be collected at each site each year in the dry season versus in the wet season, and analytical methods.

[34] Each flow-weighted (or time-weighted) composite EMC sample shall be analyzed for all of the required parameters listed in this column. LID Monitoring Plans may include additional parameters not listed in this column.

[35] Data must be SWAMP comparable.

[36] Other emerging contaminants may include but are not limited to: microplastics and tire compounds such as 6PPD-quinone.

[37] Other ancillary parameters may include, but are not limited to: zinc (and other metals), temperature, conductivity, polycyclic aromatic hydrocarbons (PAHs), turbidity, pathogens (FIB), total methylmercury, total organic carbon (TOC), dissolved organic carbon (DOC), pesticides of concern to water quality (e.g., pyrethroids, fipronil and its degradants, and neonicotinoids such as imidacloprid), major cations (Ca, Mg, Na, K), and major anions (SO_4, Cl).

C.8.e. Trash Monitoring

Trash Monitoring is intended to: 1) verify whether Permittees' trash control actions to-date have effectively prevented trash from their jurisdictions from discharging to receiving waters, and 2) evaluate whether discharges of trash from areas of Permittees' jurisdictions where full trash capture equivalency (full trash capture devices or other actions verified with on-land visual trash assessments, as referenced in Provision C.10.b.iii) has been achieved are causing and/or contributing to adverse trash impacts in receiving waters.

Trash monitoring shall address the following management and monitoring questions:

Management Questions

- Have Permittees' trash management actions effectively prevented trash from their jurisdictions from discharging to receiving waters?
- Are discharges of trash from areas within Trash Management Areas controlled to a low trash generation level causing and/or contributing to adverse trash impacts in receiving waters?

Monitoring Questions

- What is the trash condition and approximate level of trash (volume, type, and size) within and discharging into receiving waters in areas that receive MS4 runoff controlled to a low trash generation via the installation of full trash capture devices, or the implementation of other trash management actions equivalent to full trash capture systems?
- Does the level of trash in the receiving water correlate strongly with the conditions of the tributary drainage area of the MS4?

i. Monitoring Components

The Permittees shall implement or cause to be implemented the monitoring components as described below, to address each management and monitoring question. Permittees should use comparable assessment methods to facilitate regional consistency.

To ensure comparable data, for each monitoring site, Permittees and the TAG shall consider incorporating the implementation of steps 1-6 as specified in the Statewide Trash Monitoring Methods Project Trash Monitoring Playbook[38] into the Trash Monitoring Plan. Permittees and the TAG shall consider adapting and repeating these six steps for all methods specified in Provision C.8.e.ii, to

[38] https://sites.google.com/sfei.org/trash

reflect site information that can be collected regardless of method and can increase comparability between methods. The six steps are as follows:

(1) Event Preparation

(2) Gather Standard Equipment

(3) Set up the Assessment Area

(4) Record the Site Information and Assessment Area Dimensions

(5) Record Assessment Area Photographs

(6) Determine, Document, and Map the Locations of Storm Drain Outfalls, Homeless Encampments, and Illegal Dumping Hotspots Which May Impact the Assessment Area.

ii. Monitoring Methods

(1) Permittees shall collect and analyze the amount of trash discharged from MS4 outfalls that drain tributary drainage areas controlled to the Low trash generation level, during storm events that will (or that Permittees estimate are likely to) result in discharges of trash through the MS4 system.

Sampling of MS4 outfalls includes the use of netting devices attached to the end of the outfall pipe (that capture trash discharging through the MS4), or other equivalent end-of-pipe (or in-line) devices and structures, whether existing, modified, or new. The device used to monitor the trash at the end of the MS4 outfall (or in-line, within the MS4) shall not be used itself as the trash control that grants the Low trash generation status to the tributary drainage area; the monitored tributary drainage area may only be controlled to the Low trash generation level by controls upstream of the monitoring device.

(2) Permittees shall implement a pilot program to directly (in-stream) sample sections of receiving waters that receive runoff primarily from MS4 outfalls that drain tributary drainage areas controlled to the Low trash generation level, during storm events that will (or that Permittees estimate are likely to) result in discharges of trash through the MS4 system. Permittees should not select in-stream sites that are downstream of direct discharge sites (e.g., homeless encampments and illegal dumping sites).

To the extent feasible, in-stream monitoring sites should be co-located with MS4 outfall monitoring sites, as follows: They should be no further than 300 feet downstream or upstream of them; failing that, they should be no further than 300 feet downstream of them, or, any distance upstream of them; failing that, they should be anywhere within the same receiving

water; failing that, in-stream monitoring sites do not have to be co-located with MS4 outfall monitoring sites.

Sampling a receiving water directly (in-stream) involves the use of trawls, nets, or other equivalent devices, that are designed to capture as much of the width and depth of the receiving water's cross section (especially the thalweg) as is feasible and safe, during storm events that will (or that Permittees estimate are likely to) result in discharges of trash through the MS4 system.

Indirect methods (on-land), such as shoreline and/or streambank assessments, are not a satisfactory surrogate or replacement for these direct measurements of trash within receiving waters.

(3) Permittees may additionally implement shoreline and/or streambank assessment methods (with an appropriate frequency, timing, and assessment length), not to indirectly measure trash loading in MS4 outfalls and receiving waters, but instead to gain a synoptic view of on-land trash conditions adjacent to MS4 outfall and in-stream monitoring sites. Such methods include: the riverine volumetric method, the riverine quantitative tally method, the unoccupied aerial system (UAS) method,[39] or other equivalent methods. The riverine qualitative visual assessment method may be merited but requires additional study, refinement, and calibration, and its use is subject to the Executive Officer's approval.

(4) In order to be able to characterize loading rather than only concentration, Permittees shall directly measure flow at both MS4 outfall sites (flow through the MS4 pipe) and at in-stream receiving water sites (flow through the receiving water). Examples of methods to collect flow data include stream gages, manning's equation, and other methods recommended in Chapter 3.2 of the International Stormwater BMP Database's October 2009 Urban Stormwater BMP Performance Monitoring document.[40]

(5) All methods shall include collection of data on material type. For example, the volume or tally of cigarette butts collected.

[39] https://sites.google.com/sfei.org/trash

[40] https://bmpdatabase.org/monitoring

iii. Monitoring Sites, Events, Frequency, and Intervals

(1) Permittees shall conduct MS4 outfall monitoring annually, starting October 1, 2023, at no less than the number of sites and events specified in the table below, according to the approved or conditionally approved Trash Monitoring Plan.

County	MS4 Outfall Monitoring	
	Minimum Number of Sites	Minimum Number of Wet Weather Monitoring Events
Alameda	3	3
Contra Costa	2	3
Solano	1	3
San Mateo	2	3
Santa Clara	3	3

(2) Permittees shall implement a pilot program for direct in-stream monitoring. Permittees shall conduct this monitoring annually, starting October 1, 2024, at no less than the number of sites and events specified in the table below, according to the approved or conditionally approved Trash Monitoring Plan.

County	Direct In-Stream Monitoring	
	Minimum Number of Sites	Minimum Number of Wet Weather Monitoring Events
Alameda	2	3
Contra Costa	1	3
Solano	0	0
San Mateo	1	3
Santa Clara	2	3

(3) Permittees should monitor storm events that trigger trash discharge and transport trash through the MS4 (e.g., 0.25 inches of rain over 24 hours), and that are preceded by at least 48 hours of limited or no trash discharge from the tributary drainage area. Each wet season, Permittees should sample the first forecasted significant storm event, and at least one storm event that is forecast to be greater than the one-year, one-hour storm event (i.e., full capture design standard).

(4) To the extent possible, Permittees should monitor the same monitoring sites during each year of the Permit term. With cause, justification, and reporting in the Annual Trash Monitoring Progress Report, they can change monitoring sites.

(5) Tributary drainage areas to monitoring sites should be representative with respect to the types of trash controls present across the region.

For example, some monitoring sites receive runoff from areas controlled primarily by one type of full trash capture device (e.g., an inlet-based device) while other monitoring sites receive runoff from areas controlled primarily by another type of full trash capture device (e.g., a HDS unit). And/or, some monitoring sites receive runoff from areas controlled primarily by full trash capture devices while other monitoring sites receive runoff from areas controlled primarily by Other Actions.

(6) Permittees are exempt from outfall and receiving water sampling during dangerous and unsafe weather conditions.

(7) In a given water year, if there are not enough qualifying storm events for Permittees to sample (i.e., due to weather/climate) – or if safety concerns preclude sampling during a qualifying storm event such that Permittees would not achieve the mandatory minimums set forth in Provisions C.8.e.iii.(1)-(2) – the Permittees may certify that in their subsequent Annual Trash Monitoring Progress Report, and perform the missed sample events in the subsequent water year.

(8) Permittees shall use the results of Trash Monitoring to inform and investigate their trash management actions. If Trash Monitoring results indicate that discharges are causing or contributing to adverse impacts in receiving waters, Permittees shall implement new or enhanced actions to comply with the trash discharge prohibition and receiving water limitations. Examples of results that could trigger follow up actions are provided in the Fact Sheet.

iv. Regional Trash Monitoring Technical Advisory Group

(1) To assist with the development and implementation of scientifically-sound trash monitoring, the Permittees shall form and convene a Technical Advisory Group (TAG), which includes impartial science advisors (e.g., SFEI) and Water Board staff, to review and provide input on ongoing trash monitoring, site selection, analysis methods, results, and conclusions.

Prior to the submission of the Trash Monitoring Plan, the TAG shall meet at least biannually. Subsequent to the submission of the Trash Monitoring Plan, the TAG shall meet at least annually.

(2) The Permittees shall solicit input and feedback from the TAG on:

(a) The spatial representativeness of each site;

(b) The adequacy of the methods employed at each site;

(c) The recommended minimum intensity, size, and/or recurrence interval for storms that are sampled;

(d) The number of sites and monitoring events, as described in the monitoring schedule in the Trash Monitoring Plan;

(e) The timing of sampling during storm events. For example, it is likely that Permittees should prioritize sampling during the rising limb of the hydrograph (and towards the beginning of the rising limb, at that), because that is when most of the trash load is mobilized and discharged to MS4 outfalls and receiving waters;

(f) Implementation of Provision C.8.e.iii.(8);

(g) Permitting; and

(h) Recommendations for alternative approaches to answering the management and monitoring questions.

v. Trash Monitoring Plan - Permittees shall collectively submit a Trash Monitoring Plan by July 31, 2023, subject to Executive Officer approval, that, at a minimum, includes the following information:

(1) Selected site locations (latitudinal and longitudinal coordinates), including maps and characteristics (e.g., type of outfall, receiving water);

(2) For each site, describe the land use, trash conditions/levels, trash controls present, and other relevant characteristics (trash generation rates, types of controls present, etc.) of the tributary drainage areas of the MS4, and also delineate the tributary drainage areas of the MS4;

(3) A description of factors that were considered when selecting monitoring sites and events, including spatial and temporal representativeness;

(4) For each site, a description of the monitoring methods and protocols that will be used;

(5) A monitoring schedule, which shall include the timing (of sampling during and between storm events), number and type of monitoring events at each site;

(6) Plans for implementation of Provision C.8.e.iii.(8);

(7) A summary of permitting efforts;

(8) Opportunities provided for input and participation by interested parties and scientific experts other than those participating in the TAG; and

(9) Input, feedback, and recommendations from the TAG on the capacity of the Trash Monitoring Plan to answer the management and monitoring questions.

C.8.f. Pollutants of Concern Monitoring

Pollutants of Concern (POC) monitoring is intended to assess inputs of select POCs to the Bay from local tributaries and urban runoff, provide information to assess compliance with receiving water limitations, support implementation of TMDLs and other pollutant control strategies, assess progress toward achieving wasteload allocations for TMDLs and help resolve uncertainties associated with loading estimates and impairments associated with these pollutants.

In particular, monitoring required by this provision must be directed toward addressing the following six priority POC management information needs:

(1) **Source Identification** - identifying or confirming which sources or watershed source areas provide the greatest opportunities for reductions of POCs in urban stormwater runoff;

(2) **Contributions to Bay Impairment** - identifying which watershed source areas contribute most to the impairment of San Francisco Bay beneficial uses (due to source intensity and sensitivity of discharge location);

(3) **Management Action Effectiveness** - evaluating the effectiveness or impacts of existing management actions, including compliance with TMDLs and other POC requirements and providing support for planning future management actions;

(4) **Loads and Status -** providing information on POC loads, concentrations, and presence in local tributaries or urban stormwater discharges;

(5) **Trends** - evaluating trends in POC loading to the Bay and POC concentrations in urban stormwater discharges or local tributaries over time; and

(6) **Compliance with Receiving Water Limitations –** providing information to assess whether receiving water limitations (RWLs) are achieved.

Not all information needs apply to all POCs (see Table 8.2 below for details).

i. Sampling Methods – The Permittees shall implement or cause to be implemented the monitoring components shown in Table 8.1 to address each of the six POC management information needs.

Table 8.1 POC Monitoring Methods

Monitoring Type	Information Need	Monitoring Methods
1	Identify Source Areas	Monitoring methods to identify watershed sources of POCs shall include: • Collection and analysis of POCs (in dissolved phase or on suspended sediment particles as appropriate for pollutant) in urban stormwater runoff transported through MS4s or receiving waters during stormwater runoff events; or • Collection and analysis of POCs (in dissolved phase or on suspended sediment particles as appropriate for pollutant) in urban stormwater runoff at outfall locations (i.e., as runoff from MS4 enters receiving waters) during stormwater runoff events; or • Collection and analysis of POCs on bedded sediments deposited in MS4s, treatment facilities, or receiving waters; or • Collection and analysis of POCs in stormwater runoff or bedded sediments on source area properties (e.g. private property) or public rights of way; or • Other monitoring methods designed to identify specific sources or uses of POCs (e.g., caulk in roadways or building materials) or watershed source areas.
2	Identify watershed areas contributing most to Bay impairment	Monitoring methods to identify watershed areas contributing most to Bay impairment shall include: • Methods described for Monitoring Type #1; or • Collection and chemical analysis of small fish tissue (or other relevant indicator) near tributary confluences with the Bay; or • Collection of bedded sediments near tributary confluences with the Bay and analysis for POCs.
3	Effective-ness of, and provide support for future, management actions	Monitoring methods to evaluate effectiveness of, and provide support for future, management actions shall include: • Methods described for Monitoring Type #1, but focused on characterizing the effectiveness of specific management actions in reducing or avoiding POCs in MS4 discharges; or • Collection of information to characterize or develop models of control measure performance

Monitoring Type	Information Need	Monitoring Methods
		(e.g., treatment controls, demolition debris program, green infrastructure, etc.). This information could include data for model calibration and validation, or other information needed to estimate or compute model parameters.
4	Provide information on POC loads, concentra-tions, or presence/ absence	Monitoring methods to provide information on POC loads, concentrations, or presence/absence shall include: • Methods described for Monitoring Type #1, in combination with quantitative modeling associated with quantifying POC loads from MS4s or small tributaries to the Bay; or • Collection of information to support development of conceptual models of watershed fate and transport; or • Collection of information to support watershed loading models such as data for model calibration and validation or other information needed to estimate or compute model parameters.
5	Evaluate POC trends	Monitoring methods to provide information on trends in POC loads and concentrations over time shall include methods described for Monitoring Type #1 or #2
6	RWLs Assessment	Monitoring in receiving waters to assess compliance with RWLs. Monitoring methods shall include: • Collection and analysis of analytes during the wet season in receiving waters (i.e., creeks and rivers that flow to San Francisco Bay) influenced by urban stormwater runoff. • Collection and analysis of analytes during the dry season in receiving waters (i.e., creeks and rivers that flow to San Francisco Bay) influenced by dry season urban runoff. • Sampling locations for RWLs assessment monitoring shall be spatially and temporally representative of the sampled waterbody. Sampled waterbodies shall be representative of the range of receiving waterbody types.

ii. **Parameters and Monitoring Frequency –** The Permittees shall conduct POC monitoring consistent with the monitoring intensity and frequency specified in Table 8.2. Monitoring frequencies are described as the total and minimum number of samples that Permittees within a countywide Stormwater Program shall collectively collect and analyze in a Water Year (October 1- September 30). Minimum number of samples that Permittees within a countywide Stormwater Program shall collect by the end of the Permit term to address each monitoring type are also specified.

Table 8.2 POC Monitoring Parameters, Effort and Type

Pollutant of Concern	Total Samples[a] Collected /Analyzed (yearly minimum) for each Countywide Program: Alameda, Contra Costa, Santa Clara, and San Mateo	Minimum Number of Samples for each Monitoring Type[b]
Polychlorinated Biphenyls (PCBs)	75 (8) Alameda, Santa Clara 65 (8) Contra Costa, San Mateo	8 samples minimum for monitoring types 1-3 and 16 samples minimum for monitoring types 4-5
Total Mercury	60 (8) Alameda, Santa Clara 50 (8) Contra Costa, San Mateo	8 samples minimum for monitoring types 1-5
Copper	5	all samples for monitoring type 4
Emerging Contaminants [c] Must include but not limited to: • contaminants likely in stormwater and associated with vehicles; • per- and polyfluoroalkyl substances (PFAS); • organophosphate ester plastic additives/flame retardants; • bisphenol plastic additives; and • ethoxylated surfactants	25 See footnote c	all samples for monitoring type 4 See footnote c
Ancillary Parameters[d]: • Total organic carbon • Suspended sediments (SSC) • Hardness	as necessary to address management questions for other POCs – see footnote d	
RWLs Assessment: copper, zinc, fecal indicator bacteria, and additional analytes determined under Provision C.8.h.iv	4 wet season samples 1 dry season sample	5 samples for monitoring type 6

[a] This column indicates the total number of samples, across all applicable monitoring types (i.e., monitoring types 1-5 from Table 8.1), that must be collected during the Permit term. The number in parentheses indicates the minimum number of samples that must be collected, across all applicable monitoring types, during each of the five years of the permit. For example, 75 total samples must be collected for total PCBs and 60 total samples for mercury by each set of Santa Clara County and Alameda County during the term of the permit. San Mateo and Contra Costa Counties, because of smaller program size, must collect 65 PCBs and 50 total samples for mercury. Permittees must collect a minimum of 8 PCBs and 8 mercury samples every year of the Permit term, including the final year. It is possible that data can satisfy multiple monitoring types. However, the intent of the Permit is to achieve a distribution of monitoring effort across all applicable monitoring information needs. Therefore, no more than 25 percent of samples for any pollutant may be used to satisfy requirements for multiple monitoring categories for that pollutant. This requirement is intended to ensure that monitoring is focused to provide the best information to answer specific management questions.

[b] This column indicates the monitoring types from Table 8.1 that are applicable to this POC along with the minimum number of samples that shall be collected by each set of Permittees (i.e., Santa Clara County, San Mateo County, Alameda County, and Contra Costa County) by the end of the Permit term. The applicable monitoring type(s) is also stated to illustrate the management information need(s) motivating the collected data. For example, each set of Permittees (i.e., the Countywide Programs for Santa Clara, San Mateo, Alameda, and Contra Costa counties) must collect and analyze at least 8 samples to address monitoring types 1-5 in Table 8.1 for both total PCBs and total mercury. Some collected samples may address multiple management questions.

[c] Permittees, collectively, shall produce or cause to be produced a stormwater monitoring strategy for emerging contaminants (ECs) April 1, 2023 that prioritizes ECs for stormwater monitoring listed in this table and possibly others and establishes an approach for sampling stormwater ECs based on specific or likely physico-chemical properties, sources, transport pathways, and fate of prioritized ECs. Permittees must conduct or cause to be conducted ECs stormwater monitoring to execute the ECs stormwater monitoring strategy at a level of effort indicated in the table. This level of effort can be satisfied either through sampling and analysis of the number of samples indicated in this table or through augmentation of the San Francisco Bay Regional Monitoring Program Emerging Contaminants Monitoring Strategy in the amount of $100,000 per year for all Permittees combined.

[d] Total Organic Carbon (TOC) data are not used independently. Rather, TOC can be useful for normalizing PCBs data collected in water and sediment. TOC shall be collected concurrently with PCBs data that should be normalized to TOC. Similarly, suspended sediment concentrations (SSC) samples should be collected and analyzed when water samples are collected that will be used to assess loads, loading trends, or BMP effectiveness for PCBs and Mercury. Hardness data are used in conjunction with copper concentrations collected in fresh water.

iii. **POC Parameters and Analytical Methods –** Samples collected consistent with Table 8.2 shall be analyzed for parameters listed in Table 8.3. Where no laboratory method is listed in Table 8.3, Permittees shall use U.S. EPA or SWAMP-approved methods. There are no analytical methods listed in Table 8.3 for ECs as there are not U.S. EPA-approved methods for most of these contaminants. Monitoring for ECs is investigatory monitoring to provide information on EC loads, concentrations, and presence/absence rather than compliance determination. Accordingly, specification of analytical method is not mandatory. Moreover, the sampling and analysis is likely to be conducted through the San Francisco Bay Regional Monitoring Program, which has a robust and well-established quality assurance process, and the laboratories chosen for the EC analyses will be applying state-of-the-science analytical methods for the detection and quantification of ECs in stormwater samples.

Table 8.3 POC Analytes and Analytical Methods

Pollutant of Concern	Matrix	Analyte(s) or Test Species	Laboratory Analytical Methods
Polychlorinated Biphenyls (PCBs)	Water	Total PCBs	U.S. EPA 1668 (RMP 40)
		Total Organic Carbon	SM5310B
		Suspended sediments (SSC)	ASTM D3977-97
	Bedded Sediment	Total PCBs	As appropriate to address the management information need: U.S. EPA 1668 (RMP 40), 8082A, or 8270D modified by Method 1625
		Total organic carbon	U.S. EPA 9060
Mercury	Water	Total Mercury	U.S. EPA 1631 Rev E
	Bedded Sediment	Total Mercury	U.S. EPA 7473
Copper	Water	Total Copper	U.S. EPA 200.7
		Dissolved Copper	U.S. EPA 200.8
		Hardness	U.S. EPA 130.1 or 130.2

C.8.g. Pesticides and Toxicity Monitoring

Permittees shall conduct wet and dry weather monitoring of pesticides and toxicity in urban creeks. If a statewide coordinated pesticides and pesticides-related toxicity monitoring program begins collecting data on an ongoing basis during the Permit term, Permittees may request the Water Board modify, reduce or eliminate this monitoring requirement, provided the resultant change would result in overall improvement of pesticide monitoring data collection.

In fulfilling the requirements of Provision C.8.g, Permittees may collaborate with the California Department of Pesticide Regulation (CDPR) for data collection and analysis. For data collected through such collaboration, CDPR's standard operating procedures and quality assurance/quality control methods

may be used in place of the SWAMP comparability requirements in subprovisions C.8.b and in C.8.g.

i. Toxicity in Water Column - Dry Weather

(1) Field and Laboratory Method – Permittees shall collect grab samples of receiving water using applicable SWAMP comparable methodology. These samples shall be analyzed for the test organisms listed, and by the methods described, in Table 8.4.

Toxicity shall be evaluated using the Test of Significant Toxicity (TST) statistical approach.[41] Each sample shall be subject to determination of "Pass" or "Fail" and shall indicate "Percent Effect" from toxicity using nondiluted samples. The TST null hypothesis shall be "mean sample response ≤ 0.75 × mean control response." A test result that rejects this null hypothesis shall be reported as "Pass." A test result that does not reject this null hypothesis shall be reported as "Fail." The relative "Percent Effect" of the sample is defined and reported as: ((Mean control response – Mean sample response) ÷ Mean control response)) × 100.

(2) Sample Design/Locations – Sample locations may be selected by Permittees to monitor locations where toxicity could be likely; to coincide with creek restoration sites; or to resample a location where toxicity has been found in the past.

(3) Frequency, Timeframe and Number of Sites – Permittees shall annually collect in the dry season at least the minimum number of samples as shown below.

Permittees	Minimum Number of Sample Sites
Alameda County Permittees	2 per year
Santa Clara County Permittees	2 per year
Contra Costa County Permittees	1 per year
San Mateo County Permittees	1 per year
Solano County Permittees	1 by the end of water year 2023-24

[41] *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document* (EPA 833-R-10-003, 2010), Appendix A, Figure A-1, and Table A-1.

Table 8.4 Water Column Aquatic Toxicity Analytical Procedures

Test Species	Test Endpoint(s)	Units	U.S. EPA Method
Pimephales promelas (Fathead Minnow)	Larval Survival and Growth	Pass or Fail using TST, % Effect	EPA-821-R-02-013[42] EPA 833-R-10-003[43]
Ceriodaphnia dubia (Freshwater Crustacean)	Survival[a]	Pass or Fail, % Effect <25% Passes, >25% Fails	EPA-821-R-02-013 EPA 833-R-10-003
Ceriodaphnia dubia (Freshwater Crustacean)	Reproduction	Pass or Fail using TST, % Effect	EPA-821-R-02-013 EPA 833-R-10-003
Selenastrum capricornutum (Green Algae)	Growth	Pass or Fail using TST, % Effect	EPA-821-R-02-013 EPA 833-R-10-003
Hyalella azteca (Freshwater Amphipod)	Survival	Pass or Fail using TST, % Effect[b]	EPA-821-R-02-012[44] EPA 833-R-10-003
Chironomus dilutus (midge)	Survival	Pass or Fail using TST, % Effect[b]	EPA-821-R-02-012 EPA 833-R-10-003

[a] The *Ceriodaphnia dubia* chronic toxicity test design for the survival endpoint is not amenable to the TST, Welch's t-test so the survival endpoint will be determined as a percent effect using the TST approach. A percent effect less than 25 percent will be considered a "pass," and a percent effect equal to or greater than 25 percent will be considered a "fail."

[b] For *Hyalella* and *Chironomus* acute toxicity test methods, the test result will be considered a "pass," regardless of a TST determination of "fail" if the percent survival in the receiving water is equal to or greater than 90 percent.

[42] Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. EPA/821/R-02/013, 2002; Table IA, 40 CFR Part 136.

[43] National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document (EPA 833-R-10-003) 2010.

[44] *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA/821/R-02/012, 2002; Table IA, 40 CFR Part 136). See Appendix B, page 238, for *H.azteca* and *C.dilutus* methods.

ii. Toxicity, Pesticides and Other Pollutants in Sediment - Dry Weather

(1) Field and Laboratory Method – The Permittees shall collect grab samples of creek sediment using applicable SWAMP-comparable methodology. These samples shall be analyzed for the pollutants and organisms listed and by the methods described on Table 8.5. Where no laboratory method is listed in Table 8.5, Permittees shall use U.S. EPA- or SWAMP-approved methods.

(2) Sample Design/Locations – Samples shall be collected at fine-grained depositional locations. Such sample locations may be selected by the Permittees to monitor locations where toxicity could be likely, or to resample a location where toxicity has been found in the past, for example.

Table 8.5 Sediment Toxicity & Pollutants Analytical Procedures

Test Species or Pollutant	Units	Laboratory Method
Hyalella azteca and Chironomus dilutus survival[a]	Pass/Fail using TST, % Effect[a]	EPA-600/R-99-064[45]
Pyrethroids: bifenthrin, cyfluthrin, cypermethrin, deltamethrin, esfenvalerate, lambda-cyhalothrin, permethrin		EPA 3540C followed by EPA 8270D by NCI-GCMS
Fipronil and its degradates (fipronil-sulfone, fipronil-desulfinyl, fipronil sulfide)		
Total PAHs		
Arsenic, Cadmium, Chromium, Copper, Lead, Nickel, Zinc		
Total organic carbon		
Grain size		

[a] For *Hyalella* and *Chironomus* acute toxicity test methods, the test result will be considered a "pass," regardless of a TST determination of "fail" if the percent survival in the receiving water is equal to or greater than 90 percent. The false positive rate (beta error) is 0.05 and the negative rate (alpha error) is 0.25 for these test methods.

[45] *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates* (EPA 600/R-99-064) Second Edition. March 2000.

(3) Sample Design/Locations – Samples shall be collected at fine-grained depositional locations. Such sample locations may be selected by the Permittees to monitor locations where toxicity could be likely, to coincide with bioassessment sites, or to resample a location where toxicity has been found in the past, for example.

(4) Frequency, Timeframe, and Number of Sites – Permittees shall collect at least the minimum number of samples annually as shown:

Permittees	Minimum Number of Sample Sites
Alameda County Permittees	2 per year
Santa Clara County Permittees	2 per year
Contra Costa County Permittees	1 per year
San Mateo County Permittees	1 per year
Solano County Permittees	1 by the end of water year 2023-24

iii. Wet Weather Pesticides and Toxicity Monitoring

(1) Field and Laboratory Method – Permittees shall collect water column samples and analyze them for the following parameters using the methods specified in Tables 8.4 and 8.5. For imidacloprid, Permittees shall specify an analytical method that achieves a reporting level of 0.01 ppb.

- Pyrethroids: bifenthrin, cyfluthrin, cypermethrin, deltamethrin, esfenvalerate, lambda-cyhalothrin, permethrin
- Imidacloprid
- Fipronil and its degradates fipronil-sulfone, fipronil-desulfinyl, fipronil sulfide and fipronil amide (amide is optional – do it if lab offers the suite)
- Toxicity

(2) Sample Design/Locations – Permittees shall collect samples annually during storm events. Sample locations shall be representative of urban watersheds (i.e., bottom of watershed locations).

(3) Frequency, Timeframe, and Number of Sites – If this (Provision C.8.g.iii) sampling is conducted by the RMC on behalf of all Permittees, a total of ten (10) samples shall be collected over the Permit term, with a minimum

of six (6) samples collected by the end of the third water year of the permit term. If this (Provision C.8.g.iii) sampling is conducted by Countywide Stormwater Programs, Permittees shall collect at least the minimum number of samples as shown below:

Permittees	Minimum Number of Sample Sites
Alameda County Permittees	2 per year
Santa Clara County Permittees	2 per year
Contra Costa County Permittees	1 per year
San Mateo County Permittees	1 per year
Solano County Permittees	1 by the end of water year 2023-24

iv. Follow-up – Permittees shall provide notification in the next Urban Creeks Monitoring Report when analytical results indicate any of the following:

(1) A toxicity test of growth, reproduction, or survival of any test organism is reported as "fail" in both the initial sampling and a second, follow-up sampling, and both have ≥ 50% Percent Effect;

(2) A pollutant is present at a concentration exceeding its water quality objective in the Basin Plan; or

(3) For pollutants without water quality objectives, results exceed Probable Effects Concentrations or Threshold Effects Concentrations.[46]

C.8.h. Reporting

i. Water Quality Standard Exceedance – When data collected pursuant to Provisions C.8.a.-C.8.g. indicate that discharges are causing or contributing to an exceedance of an applicable water quality standard, the Permittees shall notify the Water Board within no more than 30 days of such a determination and submit a follow-up report in accordance with Provision C.1 requirements. This reporting requirement shall not apply to continuing or recurring exceedances of water quality standards previously reported to the Water Board or to exceedances of pollutants that are addressed pursuant to

[46] TEC and PEC are found in MacDonald, D.D., G.G. Ingersoll, and T.A. Berger. 2000. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Ecosystems. *Archives of Environ. Contamination and Toxicology* 39(1):20–31. More recent TECs and PECs may be used if lower than stated in MacDonald 2000.

Provisions C.9 through C.12, C.14, C.18, and C.19, consistent with Provision C.1.

ii. Electronic Reporting – The Permittees shall submit to the California Environmental Data Exchange Network (CEDEN) all results from monitoring conducted pursuant to Provisions C.8.d LID Monitoring, C.8.e Trash Monitoring, C.8.f Pollutants of Concern Monitoring, and C.8.g Pesticides and Toxicity Monitoring. Data that CEDEN cannot accept are exempt from this requirement.

(1) Data shall be submitted in SWAMP formats and with the quality controls required by CEDEN.

(2) Data collected during the previous October 1–September 30 period shall be submitted by March 31 of each year.

iii. Urban Creeks Monitoring Report – The Permittees shall submit a comprehensive Urban Creeks Monitoring Report at the countywide level no later than March 31 of each year, reporting on all data collected during the foregoing October 1–September 30 period. Each Urban Creeks Monitoring Report shall contain summaries of C.8.d LID Monitoring, C.8.e Trash Monitoring, C.8.f Pollutants of Concern Monitoring, and C.8.g Pesticides and Toxicity Monitoring, including the following:

(1) **A LID Monitoring Status Report**, which, at a minimum, includes the following information:

(a) A summary of the LID Monitoring Methods and study designs used in the preceding water year, at each sampled LID component, facility or system.

(b) A summary table that lists monitoring samples collected during the preceding water year during the Permit term, including at a minimum, the following information for each sample location: Site ID; the name or ID of the LID component, facility or system name; latitude and longitude of the LID component, facility or system; type of LID component, facility or system (e.g., bioretention); characteristics and land use of the tributary drainage area of the LID component, facility or system; other management actions and controls present in the tributary drainage area of the LID component, facility or system; sample dates; and concentrations of parameters measured.

(c) A summary of lessons learned, progress made, and interim conclusions, for all samples collected during the previous water year.

(d) For all data generated during the preceding water year, a statement of data quality.

(e) The raw data generated by the preceding water year, made available to the Water Board and third parties.

(f) An outline of steps (including but not limited to study designs, methods and sites) for the upcoming water year.

(g) An analysis of the data, including the following:

(i) Identification and analysis of any trends in stormwater or receiving water quality.

(ii) A discussion of the data for each monitoring program component, which includes:

a. Monitoring data relative to prior conditions, beneficial uses and applicable water quality standards as described in the Basin Plan, the Ocean Plan, the California Toxics Rule, and other applicable water quality control plans;

b. Where appropriate, hypotheses to investigate regarding pollutant sources, trends, and BMP effectiveness;

c. Identification and prioritization of water quality problems;

d. Identification of potential sources of water quality problems;

e. Description of follow-up actions;

f. Evaluation of the effectiveness of existing control measures; and

g. Identification of management actions needed to address water quality problems.

(2) **An Annual Trash Monitoring Progress Report,**[47] which, at a minimum, includes the following information:

(a) Narrative description of monitoring conducted, including the number of sites monitored and the number of monitoring events completed;

(b) Description of storms events that were sampled, including the date(s) and times when samples were collected, intensity and duration of the storm event, a description of where along the hydrograph the storm event was sampled, and justification used to determine the storm event was of appropriate size to displace and/or mobilize the transport of trash though the MS4 system;

[47] The Annual Trash Monitoring Progress Report shall be a single collective regionwide report. With their UCMRs, all Permittees shall include a copy of the Annual Trash Monitoring Progress Report.

(c) Narrative description, including maps, of any MS4 outfalls, homeless encampments and illegal dumping sites, located upstream of each Outfall Monitoring sample site;

(d) Description and the results of data analysis methods, including statistical analyses;

(e) Results and lessons learned;

(f) Data quality assurance procedures that were implemented for samples collected;

(g) Monitoring events (including locations and methods) planned for the subsequent fiscal year(s);

(h) A comprehensive detailed discussion of implementation of Provision C.8.e.iii.(8); and

(i) Updates of required Trash Monitoring Plan elements.

(3) **A Pesticides and Toxicity Monitoring Status Report**, which includes the following information:

(a) A complete Water Year Summary Table that lists the monitoring sites, with a row for each site. The table columns contain: Site ID; creek name; latitude; longitude; permittee jurisdiction(s); water column toxicity (acute); water column toxicity (chronic); sediment toxicity (acute); sediment toxicity (chronic); and sediment chemistry. For each site, list the site information and check the parameters sampled at that site. Provide a statement of the data quality and an analysis of the data, including:

(i) Discuss monitoring data relative to prior conditions, beneficial uses and applicable water quality standards as described in the Basin Plan, Ocean Plan, and California Toxics Rule and other applicable water quality control plans;

(ii) Where appropriate, develop hypotheses to investigate regarding pollutant sources, trends, and BMP effectiveness;

(iii) Identify and prioritize water quality impairments;

(iv) Identify and potential sources (and actual, if known) of water quality impairments, and provide sufficient justification for those potential sources;

(v) Describe follow-up actions;

(vi) evaluate the effectiveness of existing management actions; and

(vii) identify additional management actions needed to address water quality impairments.

iv. Pollutants of Concern Monitoring Reports

(1) In each Urban Creeks Monitoring Report, the Permittees shall submit a report describing the allocation of sampling effort for POC monitoring for the forthcoming year (i.e., the water year that began October 1 of that year) and what was accomplished for POC monitoring during the preceding water year. The report shall include (for preceding year and projected for forthcoming year): monitoring locations, number and types of samples collected, purpose of sampling (management question addressed), and analytes measured. Any data not reportable to CEDEN should also be included in the Urban Creeks Monitoring Report due annually on March 31.

(2) Receiving Water Limitations Assessment Report

(a) By no later than March 31, 2023, Permittees shall submit a report with the following information:

(i) Relevant water quality objectives against which to compare monitoring data;

(ii) Analytes in addition to those listed in Table 8.2 to monitor based on assessment of the potential that discharges of these analytes may result in levels in receiving waters approaching or exceeding water quality objectives and the basis of the determination; and

(iii) Identification of waterbodies to be sampled, sampling locations within those waterbodies, and sampling schedule consistent with the requirements in Tables 8.1 and 8.2.

(b) The report shall be subject to approval by the Executive Officer for compliance and technical adequacy. Upon approval by the Executive Officer, Permittees shall augment the RWLs assessment monitoring required in Tables 8.1 with the analytes identified in the report.

(c) By no later than March 31, 2026, or as part of the Integrated Monitoring Report, Permittees shall submit an updated Receiving Water Limitations Assessment Report with proposed monitoring to be conducted during the next permit term.

v. Integrated Monitoring Report – By no later than March 31, 2026, Permittees shall submit an Integrated Monitoring Report in lieu of the annual Urban Creeks Monitoring Report. This report will be part of the next Report of Waste Discharge for the reissuance of this Permit. The Integrated Monitoring Report

shall report on all the data collected since the previous Integrated Monitoring Report[48] and shall contain the following:

(1) The information described in Provisions C.8.h.iii.(1)-(3), pertaining to the monitoring data collected during the preceding (third) water year of the Permit term;

(2) A comprehensive analysis of all data collected pursuant to Provision C.8. since the previous Integrated Monitoring Report,[48] and may include other pertinent studies.

For LID Monitoring and Trash Monitoring, this shall additionally include a summary of the methods and study designs used in all preceding water years, at each sample location. And, a summary of lessons learned, progress made, data, results, analyses, and conclusions, for all samples collected during all prior water years during the Permit term;

(3) For POCs, methods, data, calculations, load estimates, and source estimates for each POC parameter, as applicable;

(4) A budget summary for each monitoring requirement (for each year of the Permit term); and

(5) With cause and justification, recommendations for changes to any of the elements of Provision C.8 in future Permit terms.

vi. Comprehensive Bioassessment Final Report – By no later than March 31, 2024, the Permittees shall collectively submit a comprehensive analysis of all bioassessment monitoring conducted by the RMC during MRP 1 and MRP 2, for Water Years 2012-2021.

vii. Standard Report Content – All monitoring reports shall be clear, concise, and well-organized, and shall include the following information:

(1) An Executive Summary;

(2) The purpose of the monitoring and brief description of the study design rationale;

(3) Quality Assurance/Quality Control summaries for sample collection and analytical methods, including a discussion of any limitations of the data;

(4) Brief descriptions of sampling protocols and analytical methods;

(5) Sample location description, including water body name and segment and latitude and longitude coordinates;

[48] Excluding Creek Status Monitoring conducted subsequent to the submittal of the Integrated Monitoring Report during the Previous Permit.

(6) Sample ID, collection date (and time if relevant), media (e.g., water, filtered water, bed sediment, tissue);

(7) Concentrations detected, measurement units, and detection limits;

(8) Assessment, analysis, and interpretation of the data for each monitoring program component;

(9) A listing of volunteer and other non-Permittee entities whose data are included in the report; and

(10) Assessment of compliance with applicable water quality standards.

C.9. Pesticides Toxicity Control

To prevent the impairment of urban streams by pesticide-related toxicity, the Permittees shall implement a pesticide toxicity control program that addresses, within their jurisdictions, their own and others' use of pesticides that pose a threat to water quality and that have the potential to enter the municipal conveyance system.

This provision implements requirements of the TMDL for Diazinon and Pesticide-Related Toxicity for Urban Creeks in the region. The TMDL includes urban runoff allocations for Diazinon of 100 ng/l and for pesticide-related toxicity of 1.0 Acute Toxicity Units (TUa) and 1.0 Chronic Toxicity Units (TUc) to be met in urban creek waters. U.S. EPA phased out urban uses of diazinon in the mid-2000s, and diazinon is no longer detected in urban creeks in the region. Pesticide-related toxicity continues to occur because State and federal pesticide regulatory programs, as currently implemented, allow pesticides to be used in ways that cause or contribute to aquatic toxicity. In adopting the TMDL implementation plan, the Water Board recognized that (1) Permittees must control their own use of pesticides, but Permittees are not solely responsible for attaining the allocations, because their authority to regulate others' pesticide use is constrained by federal and State law; and (2) because a realistic date for achieving allocations cannot be discerned given the current framework for pesticide regulation, reviewing the implementation strategy every five years, at permit reissuance, is the appropriate timeline. Accordingly, the Permittees' requirements for addressing the allocations are set forth in the TMDL implementation plan and are included in this provision.

Urban-use pesticides of concern (Pesticides of Concern) to water quality include: diamides (chlorantraniliprole and cyantraniliprole); diuron, fipronil and its degradates; indoxacarb; organophosphorous insecticides (chlorpyrifos, diazinon, and malathion); pyrethroids (metofluthrin, bifenthrin, cyfluthrin, beta-cyfluthrin, cypermethrin, deltamethrin, esfenvalerate, lambda-cyhalothrin, and permethrin); carbamates (e.g., carbaryl and aldicarb); and neonicotinoids (e.g., imidacloprid, acetamiprid, and dinotefuran).

C.9.a. Maintain and Implement an Integrated Pest Management Policy or Ordinance and Standard Operating Procedures

All Permittees have developed a pesticide toxicity control program for use of pesticides in municipal operations and on municipal property based on the concepts of Integrated Pest Management (IPM)[49] and have adopted an IPM policy or ordinance and standard operating procedures to implement the policy or ordinance.

[49] The Glossary attached to this Permit includes IPM definitions adapted from the draft UP Provisions.

i. Task Description – The Permittees shall implement their IPM policies or ordinances and standard operating procedures and update their IPM policies or ordinances and standard operating procedures as needed to ensure their use of pesticides does not cause or contribute to pesticide-related toxicity in receiving waters.

ii. Implementation – Each Permittee shall require municipal employees and contractors to adhere to its IPM policy or ordinance and standard operating procedures in all the Permittee's municipal operations and on all municipal property.

iii. Reporting

(1) In each Annual Report, Permittees shall certify they are implementing their IPM policy or ordinance and standard operating procedures, report trends in quantities and types of pesticide active ingredients used, and explain any increases in use of Pesticides of Concern to water quality.

(2) In each Annual Report, Permittees shall provide a brief description (e.g., one or two sentences) of two IPM tactics or strategies implemented in the reporting year. Examples could include non-chemical strategies such as monitoring, mowing weeds, mulching, and redesign of problematic landscapes; preventive actions such as sealing holes and gaps in structures, improving sanitation, and outreach to employees about how their actions contribute to pest presence; and integration of several strategies, such as tackling a rat problem by educating building occupants, improving sanitation, trimming trees away from buildings, sealing holes in the structure, and trapping rodents. To the extent possible, different IPM actions should be described each year, so that a range of IPM actions is described over the permit term.

(3) In their 2023 Annual Reports, the Permittees shall provide links to their IPM policies or ordinances and IPM standard operating procedures. Permittees shall submit updated links in subsequent Annual Reports, if those links change.

C.9.b. Train Municipal Employees

i. Task Description – The Permittees shall ensure that all municipal employees who, within the scope of their duties, apply or use pesticides are trained in IPM practices and the Permittee's IPM policy and/or ordinance and standard operating procedures. This training may also include other training opportunities, such as the ReScape California Landscape Maintenance Training & Qualification Program, provided both structural and landscape pest control training are provided.

ii. Reporting

(1) In each Annual Report, Permittees shall report the percentage of municipal employees who apply pesticides who have received training in the Permittees' IPM policy and/or ordinance and IPM standard operating procedures within the last year. This report shall briefly describe the nature of the training, such as tailgate training provided by a Permittee's IPM coordinator, IPM training through the Pesticide Applicators Professional Association, etc.

(2) The Permittees shall submit training materials (e.g., course outline, date, and list of attendees) upon request.

C.9.c. Require Contractors to Implement IPM

i. Task Description – The Permittees shall include contract specifications requiring contractors to implement IPM, so that all contractors practice IPM on municipal properties. The Permittees shall monitor contractor pesticide applications to ensure that contractors implement their contract specifications in accordance with the Permittee's IPM policies and/or ordinances and standard operating procedures. Contractor certification as a pest control advisor (PCA) alone is not evidence of IPM implementation. Similarly, IPM certifications awarded to a pest control company may not guarantee that an individual employee will always use IPM strategies. Thus, periodic Permittee observation and verification of contractor performance is necessary.

ii. Implementation – Permittees shall periodically monitor their contractors' activities to verify full implementation of IPM techniques. This shall include, at a minimum, evaluation of lists of pesticides and amounts of active ingredient used.

iii. Reporting – In each Annual Report, Permittees shall describe how they verified contractor compliance with IPM policies and any actions taken or needed to correct contractor performance.

C.9.d. Interface with County Agricultural Commissioners

i. Task Description – The Permittees shall maintain communications with county agricultural commissioners to (a) get input and assistance on urban pest management practices and use of pesticides, (b) inform them of water quality issues related to pesticides, and (c) report any observed or citizen-reported violations of pesticide regulations (e.g., illegal handling and applications of pesticides) associated with stormwater management, particularly the California Department of Pesticide Regulation (DPR) surface water protection regulations for outdoor, nonagricultural use of pyrethroid pesticides by any person performing pest control for hire (https://www.cdpr.ca.gov/docs/legbills/calcode/040501.htm#a6970).

ii. Reporting – In each Annual Report, Permittees shall briefly describe the communications they have had with county agricultural commissioners and report follow-up actions to correct violations of pesticide regulations.

C.9.e. Public Outreach

i. Task Description – Permittees shall undertake outreach programs to (a) encourage communities within the Permittee's jurisdiction to reduce reliance on pesticides that threaten water quality; (b) encourage public and private landscape irrigation management that minimizes pesticide runoff; and (c) promote appropriate disposal of unused pesticides.

ii. Implementation – The Permittees shall conduct each of the following:

(1) **Point of Purchase Outreach**: The Permittees shall:

- Conduct outreach to consumers at the point of purchase;
- Provide targeted information on proper pesticide use and disposal, potential adverse impacts on water quality, and less toxic methods of pest prevention and control; and
- Participate in and provide resources for the "Our Water, Our World" program or a functionally equivalent pesticide use reduction outreach program.

(2) **Pest Control Contracting Outreach:** The Permittees shall conduct outreach to residents who use or contract for structural pest control and landscape professionals by (a) explaining the links between pesticide usage and water quality; and (b) providing information about IPM in structural pest management certification programs and landscape professional trainings; and (c) disseminating tips for hiring structural pest control operators and landscape professionals, such as the tips prepared by the University of California Extension IPM Program (UC-IPM).

(3) **Outreach to Pest Control Professionals:** The Permittees shall conduct outreach to pest control operators, urging them to promote IPM services to customers and to become IPM-certified by EcoWise Certified or a functionally equivalent certification program. Permittees are encouraged to work with the Pesticide Applicators Professional Association; the California Association of Pest Control Advisors; DPR; county agricultural commissioners; UC-IPM; BAMSC; CASQA; EcoWise Certified Program (or functionally equivalent certification program); Bio-integral Resource Center and others to promote IPM to pest control operators.

iii. Reporting – In each Annual Report, Permittees shall describe their actions taken in the three outreach categories above. Outreach conducted at the county or regional level shall be described in Annual Reports prepared at that

respective level; reiteration in individual Permittee reports is discouraged. Reports shall include a brief description of outreach conducted in each of the three categories, including level of effort, messages and target audience.

C.9.f. Track and Participate in Relevant Regulatory Processes

i. Task Description – The Permittees shall conduct the following activities, which may be done at a county, regional, or statewide level:

(1) The Permittees shall track U.S. EPA pesticide evaluation and registration activities as they relate to surface water quality and, when necessary, encourage U.S. EPA to coordinate implementation of the Federal Insecticide, Fungicide, and Rodenticide Act and the CWA and to accommodate water quality concerns within its pesticide registration process;

(2) The Permittees shall track DPR pesticide evaluation activities as they relate to surface water quality and, when necessary, encourage DPR to coordinate implementation of the California Food and Agriculture Code with the California Water Code and to accommodate water quality concerns within its pesticide evaluation process;

(3) The Permittees shall assemble and submit information (such as monitoring data) as needed to assist DPR and county agricultural commissioners in ensuring that pesticide applications comply with WQS; and

(4) As appropriate, the Permittees shall submit comment letters on U.S. EPA and DPR re-registration, re-evaluation, and other actions relating to pesticides of concern for water quality.

ii. Reporting – In each Annual Report, Permittees shall summarize participation efforts, information submitted, and how regulatory actions were affected. Permittees who contribute to a county, regional, or statewide effort shall submit one report at the county or regional level. Duplicate reporting is discouraged.

C.9.g. Evaluate Implementation of Pesticide Source Control Actions

i. Task Description – This task is necessary to gauge how effective the implementation actions taken by Permittees are in (a) achieving TMDL targets and (b) avoiding future pesticide-related toxicity in urban creeks. Once during the permit term, Permittees shall conduct a thoughtful evaluation of their IPM efforts, how effective these efforts appear to be, and how they could be improved.

ii. Implementation – The Permittees shall evaluate the effectiveness of the pesticide control measures implemented by their staff and contractors,

evaluate attainment of pesticide concentration and toxicity targets for water and sediment from monitoring data (collected by Permittees, research agencies, and/or State agencies), and identify additions and/or improvements to existing control measures needed to attain targets, with an implementation time schedule.

iii. **Reporting** – In their 2025 Annual Reports, the Permittees shall submit this evaluation, which shall include an assessment of the effectiveness of their IPM efforts required in Provisions C.9.a-f (including the effectiveness of outreach efforts required by Provision C.9.e); a discussion of any improvements made in these efforts in the preceding five years; and any changes in water quality regarding pesticide toxicity in urban creeks. This evaluation shall also include a brief description of one or more pesticide-related area(s) the Permittee will focus on enhancing during the subsequent permit term. Work conducted at the county or regional level shall be evaluated at that respective level; reiteration in individual Permittee evaluation reports is discouraged.

C.10. Trash Load Reduction

The Permittees shall demonstrate compliance with Discharge Prohibition A.1, for trash discharges, Discharge Prohibition A.2, and trash-related Receiving Water Limitations through the timely implementation of control measures and other actions to reduce trash loads from municipal separate storm sewer systems in accordance with the requirements of this provision. Flood management agencies are not subject to these trash reduction requirements except for those included in Provision C.10.c.

C.10.a. Trash Reduction Requirements

Permittees shall implement trash load reduction control actions in accordance with the following schedule and trash generation area management requirements, including mandatory minimum full trash capture systems, to meet the goal of 100 percent trash load reduction or no adverse impact to receiving waters from trash by June 30, 2025.

i. **Schedule** - Permittees shall reduce trash discharges from 2009 levels, described below, to receiving waters in accordance with the following schedule:

(1) 90 percent by June 30, 2023; and

(2) 100 percent by June 30, 2025.

Permittees that do not attain the 90 percent compliance benchmark by June 30, 2023, shall submit a revised trash load reduction plan as described in Provision C.10.d and a schedule of implementation of additional trash load reduction control actions sufficient to achieve compliance with the 90 percent compliance benchmark within a reasonable timeframe, and the 100 percent compliance benchmark by June 30, 2025.

ii. **Trash Generation Area Management** - Permittees shall demonstrate attainment of the Provision C.10.a.i trash discharges percentage-reduction requirements by management of mapped trash generation areas within their jurisdictions delineated on Trash Generation Area Maps included with their Long-Term Trash Reduction Plans, submitted in February 2014, in accordance with the requirements and accounting set forth in this provision. The February 2014 maps provide the 2009 trash levels and delineate trash generation areas within Permittees' jurisdictions into the following trash generation rate categories:

Low = less than 5 gal/acre/yr;

Moderate = 5-10 gal/acre/yr;

High = 10-50 gal/acre/yr; and

Very High = greater than 50 gal/acre/yr.

Permittees also designated trash management areas on their February 2014 maps encompassing one or more trash generation areas, within which they will implement trash control actions. With the 2024 Annual Report, Permittees shall submit a revised Trash Generation Area Map that includes trash management areas, as well as private land drainage areas (See Provision C.10.a.ii.b) that will be retrofitted with full trash capture devices, or equivalent, by June 30, 2025. The updated trash generation map(s) shall include GIS layers and appropriate metadata (including tables etc.) that identify locations and associated drainage areas of full trash capture systems, and other trash control actions, and shall highlight any revisions or changes from the previous map(s). Permittees may provide access to multilayered GIS maps that account for other trash control action details and locations rather than submitting that information in a document. Maps and data generated through this effort may be used to illustrate progress toward achieving the trash reduction requirements in Provision C.10.a.i.

(a) Permittees shall implement trash prevention and control actions, including full trash capture systems or other trash management actions, or combinations of actions, with trash discharge control equivalent to or better than full trash capture systems, to reduce trash generation to a Low trash generation rate or better.

A full capture device or system is a treatment control, or series of treatment controls, including, but not limited to, a multi-benefit project (as defined in the Trash Amendments) or a low-impact development control that traps all particles that are 5 mm or greater, and has a design treatment capacity that is either: a) of not less than the peak flow rate, Q, resulting from a one-year, one-hour storm in the subdrainage area, or b) appropriately sized to, and designed to carry at least the same flows as, the corresponding storm drain. The device(s) must also have a trash reservoir large enough to contain a reasonable amount of trash safely without overflowing trash into the overflow outlet between maintenance events. Types of systems certified by the State Water Resources Control Board are deemed full capture systems. A stormwater treatment facility implemented in accordance with Provision C.3 is also deemed a full capture system if the facility, including its maintenance, prevents the discharge of trash to the downstream MS4 and receiving waters and discharge points from the facility, including overflows, are appropriately screened or otherwise configured to meet the full trash capture screening specification for storm flows up to the full trash capture one-year, one-hour storm hydraulic specification.

Actions equivalent to full trash capture are actions that send no more trash down the storm drain system than a full trash capture device would allow, which is essentially no trash discharge except in very large storm flows. The Provision C.10.a.i percent reductions shall be demonstrated by percent of 2009 Very High, High, and Moderate trash generation areas reduced to lower trash generation categories or Low trash generation by the Provision C.10.a.i mandatory deadlines.

(b) By July 1, 2025, Permittees shall ensure that private lands that are moderate, high, or very high trash generating, and that drain to storm drain inlets that Permittees do not own or operate (private), but that are plumbed to Permittees' storm drain systems are equipped with full trash capture systems or are managed with trash discharge control actions equivalent to or better than full trash capture systems. The efficacy of actions equivalent to or better than full trash capture systems shall be assessed with visual assessments in accordance with Provision C.10.b.iii. If there is a full trash capture device downstream of these private lands that is designed, operated, and maintained to control trash discharges from that land area, no other trash control is required.

C.10.b. Demonstration of Trash Reduction Outcomes

i. Full Trash Capture Systems – Permittees shall maintain, and provide for inspection and review upon request, documentation of the design, operation, and maintenance of each full trash capture system, including the mapped location and drainage area served by each system. Permittees shall provide their respective vector control agencies with the names and locations of new and existing full trash capture devices.

(a) **Inspection and Maintenance** – Permittees shall inspect and maintain full trash capture devices to ensure that they are operating appropriately and have sufficient operating capacity to capture trash consistent with the requirements of this Provision. The inspection and maintenance of each full capture device shall be at a frequency sufficient to prevent plugging, including plugging of the 5 mm screen leading to trash overflow and bypass, flooding, or a full condition of the device's trash reservoir causing bypassing of trash. At a minimum, all full trash capture devices shall be inspected and maintained once per year. In High and Very High trash generation areas, all full trash capture devices shall be inspected at least twice per year (and maintained as necessary), with the inspections spaced at least three months or more apart.

(b) For catch basin insert type full capture systems, if any such device is found to have a plugged or blinded screen, or is 50 percent full or greater, during an inspection or a maintenance event, the inspection and maintenance frequency shall be increased so that the device is neither plugged nor 50 percent or more full of trash at the next inspection or maintenance event. For high-flow capacity devices, if any such device is found to have a plugged or blinded screen, or exhibits a condition that exceeds the manufacturer's guidelines for requiring maintenance, the inspection and maintenance frequency shall be increased so that the device is neither plugged nor exceeds the manufacturer's guidelines during the next inspection or maintenance event.

ii. Maintenance Records – Permittees shall retain device-specific maintenance records, including, at a minimum: device type, date of installation, location, drainage area, date(s) of inspection and maintenance, the capacity condition of the device at the time of inspection and maintenance (full and overflowing or with storage capacity remaining), any special problems such as flooding, screen blinding or plugging from leaves, plastic bags, or other debris causing overflow, any damage reducing function, or other negative conditions. A summary of this information shall be reported in each Annual Report and may be limited to the number of full capture devices maintained that exhibited a plugged, 50 percent or more full, or overflowing condition upon inspection or maintenance.

(a) **Certification** – Permittees shall certify annually that each full trash capture system is operated and maintained to meet full trash capture system requirements. Drainage areas served by an adequately maintained full trash capture system will be considered equivalent to or better than a Low trash generation rate area.

iii. Other Trash Management Actions – Permittees shall maintain, and provide for inspection and review upon request, documentation of non-full trash capture system trash control actions that verifies implementation of each action. Permittees shall also conduct assessment of the action that verifies effectiveness of the action or combination of actions and maintain, and provide for inspection and review upon request, documentation of assessments.

(a) **Implementation Documentation** – Permittees shall maintain documentation of trash control actions that describes each action or combination of actions, the level of implementation, the timing and frequency of implementation, standard operating procedures if applicable, location(s) of implementation actions including mapped location(s) and drainage area(s) affected or description of areal extent, tracking and enforcement procedures if applicable, and other

information relevant to effective implementation of the action or combination of actions.

(b) **Visual Assessment of Outcomes of Other Trash Management Actions** – Permittees shall conduct visual on-land assessment, including photo documentation, or other acceptable assessment method (see ProvisionC.10.b.iii.(b)(iv)), of each trash generation area within which it is implementing other trash management actions or combination of actions other than full trash capture, to determine or verify the effectiveness of the action or combination of actions. Permittees may assess and account for one or more trash generation areas in a single trash management area within which a control action or combination of control actions is implemented. The visual on-land assessment method used shall meet or exceed the following criteria:

(i) Conduct observations of the sidewalk, curb and gutter within each trash management area, or locations associated with sources of trash.

(ii) Conduct observations at randomly selected locations covering at least ten percent of a trash management area's street miles or at strategic locations, provided they are representative of trash generation in the management area and they will represent the effectiveness of the control action(s) implemented or planned in the management area.

(iii) Conduct observations at a frequency consistent with known or estimated trash generation rate(s) within a trash management area and the time frequency of the control action(s) implemented or planned in the management area. Conduct observations for effectiveness approximately at the halfway point of the interval between instances of recurring trash control actions such as street sweeping and on-land cleanup.

(iv) Permittees may put forth substantive and credible evidence that certain management actions or sets of management actions when performed to a specified performance standard yield a certain trash reduction outcome reliably. Permittees shall submit such evidence to the Executive Officer as a submittal separate from any other submittals or reports. If this evidence is accepted by the Executive Officer, the Permittees may claim a similar trash reduction outcome by demonstrating that they have performed these management actions at the specified performance standard.

iv. Percentage Discharge Reduction – Percentage discharge reduction from 2009 from Very High generation areas reduced to High, Moderate, and Low, High generation areas reduced to Moderate and Low, and Moderate trash generation areas reduced to Low trash generation category to meet the required total percent reduction (% Reduction) shall be calculated based on the following formula:

$$\% \text{ Reduction} = 100\ [(12A_{VH(2009)} + 4A_{H(2009)} + A_{M(2009)}) - (12A_{vh} + 4A_{h} + A_{M})]\ /(12A_{VH2009} + 4A_{H2009} + A_{M2009})$$

where:

$A_{VH(2009)}$ = total amount of the 2009 very high trash generation category jurisdictional area

$A_{H(2009)}$ = total amount of the 2009 high trash generation category jurisdictional area

$A_{M(2009)}$ = total amount of the 2009 moderate trash generation category jurisdictional area

A_{VH} = total amount of very high trash generation category jurisdictional area in the reporting year

A_{H} = total amount of high trash generation category v jurisdictional area in the reporting year

A_{M} = total amount of moderate trash generation category jurisdictional area in the reporting year

12 = Very High to Moderate weighing ratio

4 = High to Moderate weighing ratio

100 = fraction to percentage conversion factor

v. Source Control – Permittee jurisdiction-wide actions to reduce trash at the source, particularly persistent trash items other than those addressed under previous Permits (foam foodware and single-use plastic bags) may be valued toward trash load reduction compliance by up to ten percent load reduction total for all such actions. To claim a load percentage reduction value, Permittees must provide substantive and credible evidence that new source control actions are being implemented jurisdiction-wide and reduce trash by the claimed value. A Permittee may support its claimed source reduction value with reference studies from other jurisdictions provided that it also provide credible evidence that the chosen source control action would achieve comparable trash reduction if implemented in the Permittee's jurisdiction.

A jurisdiction-wide source control load reduction value cannot be claimed after June 30, 2025. However, Permittees may demonstrate and claim full trash capture equivalence of a source control in specific trash generation areas or in combination with other controls in an area if the control or combination of controls are documented, assessed, and verified in accordance with Provision C.10.b.iii.

vi. **Partial Trash Reduction – Curb Inlet Screens** – Studies conducted by the Permittees during MRP 2 assessed the benefit of other control measures, such as curb inlet screens in combination with street sweeping, in reducing the amount of trash discharged through MS4s. However, additional information is needed to determine the effectiveness of curb inlet screens in reducing trash within a given trash management area. Permittees may demonstrate through further assessment and study, as described below, that the installation and appropriate maintenance of curb inlet screens, accompanied by street sweeping at an appropriate frequency, within Moderate trash generation areas can effectively reduce the trash generation rate to Low under the following conditions:

(a) Permittees shall propose an acceptable method to verify that the area where curb inlet screens have been or will be installed are Moderate trash generating. Permittees shall also propose an appropriate method and frequency of verification, post installation, on the change (if any) in the trash generation rate following the installation of curb inlet screens.

(b) Permittees shall propose an appropriate street sweeping frequency where curb inlet screens are installed that, when implemented, effectively reduces the area's trash generation rate to Low.

(c) At a minimum, Permittees shall evaluate street sweeping effectiveness based on multiple factors other than frequency, and sufficient to allow a determination of proper and effective street sweeper access. Examples of additional evaluations that could be completed include effectiveness associated with enhanced street/curb accessibility via proper signage, ticketing, and towing vehicles when appropriate.

(d) The inspection and maintenance of each curb inlet screen shall be conducted at a frequency sufficient to ensure the screen is functioning appropriately, e.g., a screen is not stuck in an open position or plugged, including plugging of the screen leading to opening of the screen under flows less than those described in Provision C.10.a.ii.(a).

(e) Permittees shall propose an appropriate method of covering/blocking horizontal surface grates during street sweeping events (to prevent

trash from being swept into the grates), and an appropriate method for capturing smaller pieces of trash/debris from entering the MS4 via the horizontal surface grates.

(f) Permittees shall submit the results of the additional study, as described above, for Executive Officer approval. The report must appropriately describe and demonstrate the conditions under which the combined use of curb inlet screens and street sweeping effectively reduce the trash generation rate of an area from Moderate to Low.

C.10.c. Requirements for Flood Management Agencies

Flood management agencies must continue to implement requirements for trash capture systems, as specified in Table 10-1, below. Flood management agencies must also implement trash control measures such as trash pickups and installation of trash receptacles, to control Moderate, High, and Very High trash generation areas within their jurisdiction including, but not limited to, parking lots, trailhead areas, and along recreational paths and trails, and demonstrate effectiveness of these trash control measures as specified in Provision C.10.b.iii.

Table 10-1. Requirements for Flood Management Agencies

Flood Management Agency	Trash Capture Requirement
Santa Clara Valley Water District	4 trash booms or 8 outfall capture devices (minimum 2 ft. diameter outfall) or equivalent measures
Alameda County Flood Control Agency	3 trash booms or 6 outfall capture devices (minimum 2 ft. diameter outfall) or equivalent measures
Alameda Co. Zone 7 Flood Control Agency	1 trash boom or 2 outfall capture devices (minimum 2 ft. diameter outfall) or equivalent measures
Contra Costa County Flood Control Agency	2 trash booms or 4 outfall capture devices (minimum 2 ft. diameter outfall) or equivalent measures
San Mateo County Flood and Sea Level Rise Resiliency District	1 trash boom or 2 outfall capture devices (minimum 2 ft. diameter outfall) or equivalent measures
Vallejo Flood & Wastewater District	1 trash boom or 2 outfall capture devices or equivalent measures (minimum 2 ft. diameter outfall)

C.10.d. Trash Load Reduction Plans

i. Permittees shall maintain, and provide for inspection and review upon request, a Trash Load Reduction Plan, including an implementation schedule to meet the Provision C.10.a Trash Load Reduction requirements. A summary of any new revisions to the Plan shall be included in the Annual Report. The Plan shall describe trash load reduction control actions being implemented or planned and the trash generation areas or trash management areas where the actions are or will be implemented, including jurisdiction-wide actions such as source control ordinances. The Plans may include actions to control sources outside of the Permittees' jurisdictions that are causing or contributing to adverse trash impacts in the receiving water(s). Permittees that choose to implement such control actions may account for them towards meeting the Provision C.10.a Trash Load Reduction requirements as long as they can demonstrate the controls will be sustained, and they quantify the sustained load reduction benefit (relative to control actions in the trash generation areas or trash management areas in their jurisdiction that drained to the affected receiving water).

ii. Permittees shall calculate their trash load reduction, relative to 2009 baseline conditions, without the trash load reduction offsets described in Provision C.10.f, as of June 30, 2023. If that reduction is less than 90 percent, then Permittees shall develop and implement an updated Trash Load Reduction Plan. Pursuant to Provision C.22.c, the updated Trash Load Reduction Plan shall include a schedule of additional trash load reduction implementation actions sufficient to achieve compliance with the 90 percent compliance benchmark within a reasonable timeframe, and the 100 percent reduction from 2009 levels, achieved through implementation of full trash capture, or other equivalent actions, consistent with the requirements of this Provision, by June 30, 2025. Permittees shall submit their updated Trash Load Reduction Plans with their 2023 Annual Report.

iii. Permittees unable to attain 100 percent trash load reduction, relative to 2009 baseline conditions, by June 30, 2025, while accounting for credits from new source controls (as described in Provision C.10.b.v) may be granted additional time until December 31, 2025, and East Contra Costa County Permittees until June 30, 2026, to achieve 100 percent reduction via full trash capture, or equivalent, contingent on developing and implementing an approved Direct Discharge Control Plan as described in Provision C.10.f.ii.

C.10.e. Impracticability Report

Permittees may collectively submit a programmatic report by March 31, 2023, for the approval of the Executive Officer, that describes conditions under which

it is impracticable to control trash via full trash capture devices. The impracticability report shall include, but not be limited to, the following:

i. A description of the engineering constraints that prevent the installation of full trash capture devices.

ii. A process for evaluating and determining impracticability of full trash capture devices.

iii. Alternative Controls: The report shall include alternative controls or a combination of controls that may be implemented to reduce trash loads to meet the requirements and deadlines in Provision C.10.a. Examples of alternative controls include, but are not limited to, requiring businesses or property owners to pick up litter, successful implementation of excess trash receptacles and collection services, increased code enforcement or parking enforcement/ticketing/towing, additional trash pick-ups, street sweeping, assessment and execution of cooperative implementation opportunities with Caltrans or neighboring Permittees, curb inlet screens, and long term measures such as pump station or storm drain retrofits, implementation of green stormwater infrastructure that controls trash, or changes to the catchment to allow effective implementation of full trash capture measures.

iv. Permittees shall use an approved trash impracticability report in developing the updated Trash Load Reduction Workplans required by Provision C.10.d.

C.10.f. Optional Trash Load Reduction Offset Opportunities

i. Creek and Shoreline Cleanup – A Permittee may offset part of its Provision C.10.a trash load percent reduction requirement by conducting cleanup of creek and shoreline areas. The creek and shoreline cleanup efforts should be conducted at a minimum frequency of twice per year, and sufficient to demonstrate sustained improvement of the creek or shoreline area. The maximum offset that may be claimed is ten percent. Offsets for creek and shoreline cleanups will no longer be applicable after June 30, 2025.

A Permittee may claim a load reduction offset of one percent for the June 30, 2023 mandatory trash reduction compliance benchmark for each total of trash volume removed from cleanups that is ten percent of the Permittees' 2009 trash load volume estimates, based on its trash generation maps and average categorical trash generation rates (see Provision C.10.a.ii), in accordance with the following formula:

1% Reduction Offset (Volume) = $(12 + 4\ A_{H(2009)} + A_{M(2009)})\ OF$

where:

$A_{VH(2009)}$ = total amount of 2009 very high trash generation category jurisdictional area

$A_{H(2009)}$ = total amount of 2009 high trash generation category jurisdictional area

$A_{M(2009)}$ = total amount of 2009 moderate trash generation category jurisdictional area

12 = Very High to Moderate weighing ratio

4 = High to Moderate weighing ratio

OF = offset factor equal to (7.5 x 0.1) for the 2023 mandatory trash load reduction deadline, where 7.5 is the conversion from acres to gallons based on trash generation rates and 0.1 is the ten to one offset ratio.

ii. Direct Trash Discharge Controls – Permittees with an approved Direct Discharge Control Plan (DDCP) may claim up to fifteen percent using the Provision C.10.f.i formula towards offsetting their Provision C.10.a trash load percent reduction requirement. The DDCP shall include a detailed description of control measures the Permittee will implement to control the direct discharge of trash to receiving waters from non-storm drain system sources. Offsets for direct discharge controls will no longer be applicable after June 30, 2025.

Permittees wishing to submit a new DDCP pursuant to Provision C.10.d.iii shall submit the DDCP for approval no later than April 1, 2024. Permittees with an existing DDCP approved during the Previous Permit shall submit an updated DDCP for approval no later than January 3, 2023, in order to continue claiming trash load percent reduction offsets. DDCPs shall be sufficient to provide trash reduction benefits equivalent to or greater than the areas not yet in compliance, as calculated using the formula in Provision C.10.b.iv, and shall include:

(a) A description of sources of the directly discharged trash;

(b) A description of control actions that will be implemented during the permit term to prevent or reduce direct discharge trash loads, including those associated with unsheltered homeless populations and illegal dumping, in a systematic and comprehensive manner;

(i) For Permittees whose DDCPs address significant discharges from populations experiencing unsheltered homelessness,

systematic and comprehensive implementation of control actions shall include a commitment to, and a plan for, increasing the provision of emergency, transitional, and/or permanent housing, and the following services: trash and sanitary services, and other services which are necessary to reduce discharges associated with unsheltered homelessness, such as RV safe parking areas and pump out services, and social services that can help the unsheltered homeless transition to housing.

The DDCP shall prioritize providing housing and services to people experiencing unsheltered homelessness who are living near receiving waters.

The DDCP shall document the existing capacities for housing and services as of the time of the DDCP's submittal, and include projections of changes to those capacities for each subsequent year during the Permit term.

(ii) For Permittees whose DDCPs address significant discharges from illegal dumping, systematic and comprehensive implementation of control actions shall include a commitment to, and a plan for, actions that will prevent direct discharges of trash to receiving waters from illegal dumping. Such actions include, but are not limited to, abating illegal dumping sites, providing dumping vouchers (particularly to socioeconomically disadvantaged communities), holding free waste drop-off events, and implementing onsite structural BMPs to prevent direct discharges from illegal dumping sites to receiving waters.

The DDCP shall prioritize addressing illegal dumping that occurs near receiving waters.

The DDCP shall document existing sites where illegal dumping occurs, controls at illegal dumping sites, voucher and free waste drop-off programs, and include projections for reductions in illegal dumping, increases of controls at illegal dumping sites, and expansions of (or the creation of) programs to control illegal dumping, such as dumping voucher programs and waste drop-off events, for each subsequent year during the Permit term.

(iii) For Permittees whose DDCPs address significant discharges from both unsheltered homeless populations and illegal dumping sites, Permittees shall submit DDCPs in compliance with both Provisions C.10.f.ii.b.(i) and C.10.f.ii.b.(ii).

(c) A map of the affected receiving water area and associated watershed; and

(d) A description of how effectiveness of controls will be assessed, including documentation of controls, quantification of trash volume controlled, and assessment of resulting improvements to receiving water conditions.

C.10.g. Reporting

Each Permittee shall provide the following in each Annual Report or otherwise by the date specified:

i. With each Annual Report, a summary of trash control actions within each trash management area, including the types of actions, levels of implementation, areal extent of implementation, and whether the actions are ongoing or new, including initiation date.

ii. With their 2024 Annual Report, Permittees shall submit a revised trash generation area map or maps, as described in Provision C.10.a.ii.

iii. With each Annual Report, a summary of implementation actions and progress toward meeting the July 1, 2025, requirement for all private lands to implement full trash capture systems, or be managed with trash discharge control actions equivalent to or better than full trash capture systems, as required in Provision C.10.a.ii.(b).

iv. With each Annual Report, certification that each of its full trash capture systems is operated and maintained to meet full trash capture system requirements; a description of any system(s) that did not meet full trash capture system requirements (e.g., due to plugging or overflowing); and any corrective actions taken.

v. With each Annual Report, an accounting of its non-full trash capture system trash control actions assessments by providing a summary description of assessments in each of its trash management areas, including the number and dates of observations.

vi. Permittees unable to attain the 90 percent mandatory trash reduction compliance benchmark by June 30, 2023, via full trash capture, or equivalent, shall, by June 30, 2023, submit a notice of noncompliance, pursuant to Provision C.22.c and an updated Trash Load Reduction Plan as described in Provision C.10.d.ii.

vii. With their 2023 Annual Report, Permittees shall submit a report evaluating their trash reduction, relative to 2009 baseline conditions, as of June 30, 2023, without including offsets. Permittees unable to meet the 90 percent mandatory trash reduction compliance benchmark without the trash load reduction offsets

described in Provision C.10.f shall submit, with their 2023 Annual Report, an updated Trash Load Reduction Plan as described in Provision C.10.d.ii.

viii. Permittees unable to attain 100 percent trash load reduction, relative to 2009 baseline conditions, by June 30, 2025, while accounting for credits from new source control (as described in Provision C.10.b.v) shall, by June 30, 2025, submit a notice of noncompliance pursuant to Provision C.22.c, including a plan to come into compliance with the 100 percent trash load reduction requirement. Permittees may be granted additional time until December 31, 2025, and East Contra Costa County Permittees until June 30, 2026, to achieve 100 reduction via full trash capture, or equivalent, contingent on developing and implementing a direct discharge control plan (DDCP) as described in Provision C.10.f.ii.

Permittees, except East Contra Costa County Permittees, that are granted additional time until December 31, 2025, to attain 100 percent reduction via full trash capture, or equivalent, shall submit by December 31, 2025, either a report that confirms that they reached 100 percent trash load reduction by December 31, 2025, or a notice of noncompliance pursuant to Provision C.22.c.

ix. By March 31, 2023, Permittees may collectively submit a programmatic report for the approval of the Executive Officer, that describes typical conditions where it may be impracticable to control trash via full trash capture devices, as described in Provision C.10.e.

x. With the 2024 Annual Report, Permittees that offset part of their Provision C.10.a trash load percent reduction requirement through additional cleanup of creek and shoreline areas, as described in Provision C.10.f.i, shall submit a summary of the additional cleanup actions implemented, and the benefit to water quality achieved through those actions.

xi. Starting with the 2023 Annual Report, Permittees with approved DDCPs shall provide the following information in each Annual Report for which they use an offset from the implementation of Provision C.10.f.ii towards their trash load percent reduction:

(1) For Permittees whose DDCPs address significant discharges from unsheltered homeless populations, the following information for the current year, and for each prior year of the Permit term:

The estimated number of people experiencing unsheltered homelessness in their jurisdiction; the estimated number of people experiencing unsheltered homelessness living within approximately 500 feet of receiving waters; the estimated portion of those populations provided housing as described in Provision C.10.f.ii.b.(i); the estimated portion of

those populations served with the services described in Provision C.10.f.ii.b.(i); the number and scope of sanitation controls and services provided to homeless encampments; the number and scope of trash controls and services provided to homeless encampments; and the number and scope of sanitary cleanouts and other services provided to RVs. Each of these reporting elements shall be accompanied by a narrative description.

(2) For Permittees whose DDCPs address significant discharges from illegal dumping sites, the following information for the current year, and for each prior year of the Permit term:

The total number of active illegal dumping sites; the number of active illegal dumping sites within approximately 500 feet of receiving waters; the number of illegal dumping sites where trash was collected and the amount of material collected; dumping vouchers provided (and who they are provided to); dumping vouchers used; and outreach and education provided to the public regarding illegal dumping and the availability of dumping vouchers. Each of these reporting elements shall be accompanied by a narrative description.

(3) For Permittees whose DDCPs address significant discharges from both unsheltered homeless populations and illegal dumping sites, the Permittees shall report on both Provision C.10.g.xi.(1) and C.10.g.xi.(2) in each Annual Report.

C.11. Mercury Controls

The Permittees shall implement the following control program for mercury. This control program consists of load reduction assessment, source control measures, treatment control measures, measures to reduce risk to consumers of Bay fish, and reporting on all these measures according to the provisions below. The provisions implement the urban runoff requirements of the San Francisco Bay and Guadalupe River Watershed mercury TMDLs for those waters identified therein and reduce mercury loads by approximately 10 kg/yr, making substantial progress toward achieving the urban runoff mercury load allocations established for the TMDLs. The San Francisco Bay mercury TMDL implementation plan calls for attainment of the regionwide, urban runoff wasteload allocation of 82 kg/yr by February 2028. This mercury wasteload allocation represents a load reduction from all urban runoff sources to the Bay of approximately 78 kg/yr compared to loads estimated using data collected prior to development of the TMDL. To measure progress, the TMDL implementation plan calls for attainment of an interim loading milestone by February 2018 of 120 kg/yr, halfway between the 2003 estimated load, 160 kg/yr, and the aggregate allocation. This interim loading milestone has been achieved. The Permittees may comply with any requirement of this Provision through a collaborative effort and are encouraged to do so.

C.11.a. Assess Mercury Load Reductions from Stormwater

i. **Task Description** – The Permittees shall implement an assessment methodology and data collection program to quantify, in a technically sound manner, mercury loads reduced through implementation of pollution prevention, source control, and treatment control, green stormwater infrastructure and other measures taken as part of the mercury control program defined by this provision. A technically sound load reduction accounting system is described in the Fact Sheet and is based on information submitted by Permittees in the January 2014 Integrated Monitoring Report and updated through reporting during the last Permit term as part of Reasonable Assurance Analysis reporting submitted by all Programs in September 2020. This accounting system describes calculation methodologies, data requirements, and model parameters used to quantify the load reduction for each type of control measure. The Permittees shall use the assessment methodology to demonstrate the load reductions achieved during this Permit term as well as progress toward achieving the MRP program area mercury TMDL wasteload allocations. The Permittees shall update this assessment methodology as necessary for use in the subsequent permit term.

ii. **Implementation Level** – The Permittees shall quantify the mercury load reductions achieved through all the pollution prevention, source control, green stormwater infrastructure, and other treatment control measures implemented

during this Permit term as described in Provisions C.11.b through C.11.e. For this Permit term, the Permittees will achieve a regionwide total load reduction of approximately 10 kg mercury/yr if they implement effective mercury control measures consistent with all requirements of Provisions C.11.b through C.11.g. The Permittee-specific portion of the regionwide mercury load reduction estimate shall be based on the proportion of county population in each municipality.

iii. Reporting

(1) In each Annual Report, Permittees shall submit documentation confirming that all control measures effectuated during the previous Permit term for which load reduction credit was recognized continue to be implemented at an intensity sufficient to maintain the credited load reduction.

(2) In the 2026 Annual Report, Permittees shall report the total loads reduced using the assessment methodologies described and cited in the Fact Sheet to demonstrate cumulative mercury load reduced from each control measure implemented since the beginning of the Permit term. This report shall also include an estimate of load reductions from control measures taking place after the 2026 Annual Report submittal but before the end of the permit term. Permittees shall submit all supporting data and information necessary to substantiate the load reduction estimates.

(3) In their 2026 Annual Report, the Permittees shall submit, for Executive Officer approval, any refinements, if necessary, to the measurement and estimation methodologies to assess mercury load reductions from control measures in the subsequent Permit. Any refinements to the methodologies shall be subject to public review.

C.11.b. Program for Source Property Identification and Abatement

i. Task Description – Permittees shall investigate, using both conventional sampling and laboratory analysis techniques, land areas that likely contribute mercury to municipal separate storm sewer system (MS4s). These investigations will likely focus on land areas where industrial activities occurred prior to 1980 and continue today (i.e., old industrial land use areas). For those properties or land areas found to be contributing substantial amounts of mercury or where high mercury concentrations are found (generally areas with sediment concentrations greater than 0.5 mg Hg/kg), Permittees shall take action to abate the mercury sources into their MS4s or refer the properties to the Water Board for follow-up measures. Historical monitoring data suggest that mercury concentrations on or near source properties are similar to those found in urban areas in general so identification of source properties for referral may be based on presence of high PCBs concentrations (generally 0.5 mg PCBs/kg) alone. For each source property referred to the Water Board,

Permittees shall implement interim enhanced operation and maintenance (enhanced O&M) measures in the street or storm drain infrastructure adjacent to the referred source property or implement a stormwater treatment system downstream of the property. These enhanced O&M measures shall be sufficient to intercept historically deposited contaminated sediment in the vicinity of the source area and prevent further contaminated sediment from being discharged from the source area to the storm drain system.

ii. Implementation Level – Permittees shall investigate the following acreage of likely mercury source properties (accomplished through C.12.b investigations) during the permit term.

- Alameda County: 2,620 acres
- Contra Costa County: 1,700 acres
- San Mateo County: 1,411 acres
- Santa Clara County: 913 acres
- Solano County: 21 acres

If high mercury concentrations associated with a likely source property are detected, Permittees may submit monitoring information to support estimation of the aerial yield to receive mercury load reduction credit, contingent upon implementation of interim enhanced O&M measures in the street or storm drain infrastructure adjacent to the source property or implementation of a stormwater treatment system downstream of the property.

iii. Reporting

(1) In each of the 2022 through 2026 Annual Reports, Permittees shall report progress on the acreage of land areas investigated, including progress toward investigation of 100 percent of the old industrial land use indicated above. The reporting shall indicate what action was taken for the parcels investigated (e.g., abatement, referral, enforcement, etc.). Permittees shall submit all supporting data and information including referral reports.

(2) Permittees shall report annually on ongoing enhanced O&M activities associated with all past contaminated property referrals. Prior to all new referrals, Permittees shall submit, for staff review and comment, a detailed description of the enhanced O&M plan for the referred properties.

(3) In their 2026 Annual Report, Permittees shall report as part of reporting under Provision C.11.a.iii(2) on total acreage of land area investigated, area and description of properties referred, description of enhanced O&M measures, and the estimated total mercury mass load reduced (consistent with the approved accounting procedures) resulting from implementing this control measure.

C.11.c. Program for Control Measure Implementation in Old Industrial Areas

i. Task Description – Permittees shall implement or cause to be implemented treatment control measures, stormwater diversion to wastewater treatment facilities, redevelopment (provided GSI is implemented in compliance with C.3.b), or other control measures to achieve mercury load reductions. Permittees have substantial (totaling over 33,100 acres) areas of old industrial land use draining to an MS4 that have not been redeveloped or treated with green stormwater infrastructure or other treatment controls.

- Alameda County: 9,374 acres
- Contra Costa County: 11,199 acres
- San Mateo County: 4,450 acres
- Santa Clara County: 6,647 acres
- Solano County: 1,426 acres

Implementation of treatment control measures on 2,580 acres (which is nearly 8 percent of the land area shown above) will result in a total estimated load reduction of about 108 g mercury/yr (2,580 acres x 70% efficiency x 60 mg mercury/acre/yr estimated yield from old industrial areas, see Fact Sheet) in the area covered by the Permit. Implementation of control measures with efficiency lower than 70% will result in reduced acreage credit (for those lower efficiency control measures) toward fulfillment of the total acreage requirement shown below. The acres credited will be proportional to the ratio of implemented control measure efficiency relative to the efficiency of treatment controls (see Fact Sheet for more explanation and examples). The old industrial land use acreages to be addressed by control measure implementation by the end of the permit term and the estimated mercury load reductions (for 70% control measure efficiency) are shown below. Permittees may comply with this provision element either through implementation of control measures on the following amounts of old industrial land use, based on implementation of 70% efficient control measures, or through accounting for the mass reduction of mercury shown in parentheses. If control measures are less than 70% efficient, the required acreage shall be calculated as set forth above.

- Alameda County: 664 acres (28 grams/yr)
- Contra Costa County: 664 acres (28 grams/yr)
- San Mateo County: 445 acres (19 grams/yr)
- Santa Clara County: 664 acres (28 grams/yr)
- Solano County: 142 acres (6 grams/yr)

ii. Implementation Level – Permittees shall, within the permit term, implement or cause to be implemented control measures (treatment controls, diversion to wastewater treatment plants, redevelopment (provided GSI implemented in compliance with Provision C.3.b), enhanced operation and maintenance controls, or other controls) to comply with the performance metrics in Provision C.11.c.i. Use of conditionally-approved sizing criteria cited in section C.3.j(3)(b) for treatment control systems will be considered provided an analysis is performed, acceptable to the Executive Officer, to determine the reduced effectiveness of the facility sized according to these alternative criteria. If a Permittee chooses to comply by demonstrating mercury load reductions, it shall use accounting methods consistent with Provision C.11.a. Implementation of treatment controls and stormwater diversion in mercury-contaminated catchments not designated as old industrial may count toward fulfillment of the required acreage. In choosing locations for treatment controls and diversions, Permittees should focus on public rights-of-way and storm drain infrastructure in catchments containing known or suspected source areas or evidence of moderate to high mercury or PCBs soil concentrations (generally soil/sediment concentrations greater than 0.3 mg mercury/kg or 0.2 mg PCBs/kg). Treatment control systems must be designed and sized consistent with Provision C.3.d – (Numeric Sizing Criteria for Stormwater Treatment Systems). Permittees may choose to implement diversions to wastewater treatment systems to address this requirement. Because of the higher removal efficiency of wastewater treatment facilities, each acre addressed by routing stormwater to wastewater treatment facilities will be credited as 1.3 acres toward satisfying the treatment requirements provided that the diversion facilities are sized and operated consistent with the sizing requirements used for non-diversion treatment facilities.

iii. Reporting

(1) By March 31, 2023, Permittees shall submit plans and schedules for implementing control measures and stormwater diversion to wastewater treatment facilities in old industrial areas to address mercury load reduction requirements included in this provision. This reporting shall include maps of the areas where control measures are to be implemented, the acreage of these catchments, and a description of design and sizing features all control measures, treatment devices and stormwater diversion facilities implemented for each treated catchment.

(2) Beginning in 2023, in each Annual Report Permittees shall submit an account of control measure and stormwater diversion implementation consistent with the plan submitted in March 2023 and any modifications thereto. Reporting shall include maps of the areas treated, the acreage of

catchments addressed, and a description of all control measures, installed treatment devices and routing facilities for each treated catchment.

(3) In their 2026 Annual Report, Permittees shall report as part of reporting under Provision C.11.a.iii(2) on all control measures and stormwater diversion measures implemented during the permit term and provide the total acreage treated and an estimate of the total mercury mass load reduced resulting from this implementation.

C.11.d. Mercury Collection and Recycling Implemented throughout the Region

i. Task Description – Permittees shall promote, facilitate, and/or participate in collection and recycling of mercury containing consumer products, devices, and equipment (e.g., thermometers, thermostats, switches, bulbs). Mercury is found in a wide variety of consumer products (e.g., fluorescent bulbs, thermostats, thermometers) that are subject to recycling requirements. These recycling efforts are already happening throughout the Region, and Provision C.11.d requires promotion, facilitation and/or participation in these region-wide recycling efforts to increase effectiveness and public participation.

ii. Implementation Level – Permittees shall promote recycling of mercury-containing products and make efforts to increase effectiveness of these recycling efforts throughout the region. Recycling of mercury-containing bulbs and thermostats alone results in a regionwide load reduction of approximately 10 kg mercury per year.[50]

iii. Reporting

(1) In each of the 2023 through 2026 Annual Reports, Permittees shall report on efforts to promote recycling of mercury-containing products and efforts to increase effectiveness of these recycling efforts. Permittees shall also report on the mass of mercury-containing material collected throughout the region along with an estimate of the mass of mercury contained in recycled material using the methodology contained in load reduction accounting system described and cited in the Fact Sheet.

C.11.e. Plan and Implement Green Stormwater Infrastructure to Reduce Mercury Loads

i. Task Description – Permittees shall implement green stormwater infrastructure (GSI) projects during the term of the Permit consistent with implementing requirements in Provision C.3.j. Implementation of green

[50] Geosyntec Consultants and San Francisco Estuary Institute. 2010. “Desktop Evaluation of Controls for Polychlorinated Biphenyls and Mercury Load Reduction.”

stormwater infrastructure will result in a total estimated load reductions of 108 g mercury/yr (see Fact Sheet for basis of estimate).

ii. Implementation Level – The level of implementation is determined by the requirements of Provision C.3.j.

iii. Reporting

(1) In their 2026 Annual Report, Permittees shall report as part of Provision C.11.a.iii(2)) on all green stormwater projects (e.g., parcel-based, street ROW, and regional projects) implemented during the permit term and provide the total acreage treated and an estimate of the total mercury mass load reduced resulting from this implementation. This reporting shall include summary descriptions of the implemented projects including GSI type, location, and area.

C.11.f. Prepare Implementation Plan and Schedule to Achieve TMDL Wasteload Allocations

i. Task Description – In 2020, Permittees submitted a Reasonable Assurance Analysis and plan (RAA) demonstrating that sufficient control measures will be implemented to attain the mercury TMDL wasteload allocations by 2028. Permittees shall evaluate the effectiveness of all mercury control measures and update the RAA as necessary. Updates can be focused on those control measures for which new information is available and for control measures not evaluated in previous efforts. Permittees shall also prepare detailed implementation plans for all control measures to be implemented in and inform permit requirements for the subsequent permit term.

ii. Implementation level – Permittees shall update, as necessary, their mercury control measures implementation plan and corresponding reasonable assurance analysis from the previous permit term (2015-2020, MRP 2). The update may be focused on control measures for which new information is available or for those control measures not previously evaluated. The long-term plan must:

(1) Identify all technically and economically feasible mercury control measures to be implemented (including GSI projects); and

(2) Include a schedule according to which these technically and economically feasible control measures will be fully implemented; and

(3) Provide an evaluation and quantification of the mercury load reduction of such measures as well as an evaluation of costs, control measure efficiency and significant environmental impacts resulting from their implementation.

Additionally, Permittees shall identify all specific control measures to be implemented, the intensity of control measure implementation, and the estimated load reduction benefit from control measures implemented during the subsequent permit term. This implementation plan must include:

(4) Identification of all control measures implemented during the current permit term and any additional control measures to be implemented in the subsequent permit term;

(5) A description of the intensity or extent of control measure implementation (e.g., acres treated, acres investigated for source areas, types of roadway projects for which protocols applied, etc.);

(6) Identification of accountability metrics to track during the subsequent permit corresponding to the proposed implementation intensity; and

(7) Estimates for load reductions to be achieved through implementation of control measures during subsequent permit term at the proposed intensity.

iii. Reporting – Permittees shall submit the updated plan and schedule no later than March 31, 2026.

C.11.g. Fate and Transport Study of Mercury: Urban Runoff Impact on San Francisco Bay Margins

i. Task Description – The Permittees shall conduct or cause to be conducted studies concerning the fate, transport, and biological uptake of mercury discharged from urban runoff to San Francisco Bay margin areas. The studies should focus on near-shore areas contaminated with mercury from historical activity and the expected trajectory of recovery as sources from local watersheds are reduced.

ii. Implementation Level – The specific information needs include understanding the in-Bay transport of mercury discharged in urban runoff, the sediment and food web mercury concentrations in margin areas receiving urban runoff, the influence of urban runoff on the patterns of food web mercury accumulation, especially in Bay margins, and the identification of drainages where urban runoff mercury are particularly important in food web accumulation.

iii. Reporting – The Permittees shall submit in their 2023 Annual Report a workplan describing the specific manner in which these information needs will be accomplished and describing the studies to be performed with a preliminary schedule. The Permittees shall report on status of the studies in their 2023 Annual Report. The Permittees shall report in the March 15, 2026, Integrated Monitoring Report the findings and results of the studies completed, planned,

or in progress as well as implications of studies on potential control measures to be investigated, piloted, or implemented in future permit cycles.

C.11.h. Implement a Risk Reduction Program

i. **Task Description** – The Permittees shall conduct an ongoing risk reduction program to address public health impacts of mercury in San Francisco Bay/Delta fish. The fish risk reduction program shall take actions to reduce actual and potential health risks in those people and communities most likely to consume San Francisco Bay-caught fish, such as subsistence anglers and their families. The risk reduction framework developed in the previous permit term, which funded community-based organizations to develop and deliver appropriate communications to appropriately targeted individuals and communities, is an appropriate approach. Permittees should work with local health departments, the Bay Area Clean Water Agencies, and the Western States Petroleum Association to leverage resources for this program and to appropriately target at-risk populations.

ii. **Implementation Level** – At a minimum, Permittees shall conduct or cause to be conducted an ongoing risk reduction program with the potential to reach 3,000 individuals annually who are likely consumers of San Francisco Bay-caught fish. Permittees are encouraged to collaborate with San Francisco Bay industrial and wastewater discharger agencies in meeting this requirement. In year four of the Permit term, Permittees shall evaluate the effectiveness of their risk reduction program.

iii. **Reporting** – The Permittees shall report on the status of the risk reduction program in each of their Annual Reports, including a brief description of actions taken, an estimate of the number of people reached, and why these people are deemed likely to consume Bay fish. The Permittees shall report the findings of the effectiveness evaluation of their risk reduction program in their 2026 Annual Report.

C.12. Polychlorinated Biphenyls (PCBs) Controls

The Permittees shall implement the following control program for PCBs. This control program consists of load reduction assessment, source control measures, treatment control measures, measures to reduce risk to consumers of Bay fish, and reporting on all these measures according to the provisions below. The provisions implement the urban runoff requirements of the PCBs TMDL for those waters identified therein. By implementing the PCBs control measure program requirements, Permittees will make substantial progress (an estimated 1.47 kg/yr of additional load reduction) toward achieving the urban runoff PCBs wasteload allocation from the TMDL. Of the 2 kg/yr overall load allocation for urban runoff sources for the entire region, 1.47 kg/yr has been allocated to Permittees, and loads must be reduced to this level by March 2030. This PCBs wasteload allocation represents a load reduction from all urban runoff sources to the Bay of approximately 18 kg/yr (14.4 kg/yr from Permittees) compared to loads estimated using data collected in 2003. The Permittees may comply with any requirement of this Provision through a collaborative effort and are encouraged to do so.

C.12.a. Assess PCBs Load Reductions from Stormwater

i. **Task Description** – The Permittees shall implement an assessment methodology and data collection program to quantify, in a technically sound manner, PCBs loads reduced through implementation of pollution prevention, source control, and treatment control, green stormwater infrastructure and other measures taken as part of the PCBs control program defined by this provision. A technically sound load reduction accounting system is described in the Fact Sheet and is based on information submitted by Permittees in the January 2014 Integrated Monitoring Report and updated through reporting during the last Permit term as part of Reasonable Assurance Analysis reporting submitted by all Programs in September 2020. This accounting system describes calculation methodologies, data requirements, and model parameters used to quantify the load reduction for each type of control measure. The Permittees shall use the assessment methodology to demonstrate the load reductions achieved during this Permit term as well as progress toward achieving the MRP program area PCBs TMDL wasteload allocations. The Permittees shall update this assessment methodology as necessary for use in the subsequent permit term.

ii. **Implementation Level** – The Permittees shall quantify the PCBs load reductions achieved through all the pollution prevention, source control, green stormwater infrastructure, and other treatment control measures implemented during this Permit term as described in Provisions C.12.b through C.12.g. For this Permit term, the Permittees will achieve an estimated regionwide total load reduction of 1.47 kg/yr PCBs if they implement effective PCBs control measures consistent with all requirements of Provisions C.12.b through

C.12.g. The Permittee-specific portion of the regionwide PCBs load reduction estimate shall be based on the proportion of county population in each municipality.

iii. Reporting

(1) In each Annual Report, Permittees shall submit documentation confirming that all control measures effectuated during the previous Permit term for which load reduction credit was recognized continue to be implemented at an intensity sufficient to maintain the credited load reduction.

(2) In the 2026 Annual Report, Permittees shall report the total loads reduced using the assessment methodologies described and cited in the Fact Sheet to demonstrate cumulative PCBs load reduced from each control measure implemented since the beginning of the Permit term. This report shall also include an estimate of load reductions from control measures taking place after the 2026 Annual Report submittal but before the end of the permit term. Permittees shall submit all supporting data and information necessary to substantiate the load reduction estimates.

(3) In their 2026 Annual Report, the Permittees shall submit, for Executive Officer approval, any refinements, if necessary, to the measurement and estimation methodologies to assess PCBs load reductions from control measures in the subsequent Permit. Any refinements to the methodologies shall be subject to public review.

C.12.b. Program for Source Property Identification and Abatement

i. Task Description – Permittees shall investigate, using both conventional sampling and laboratory analysis techniques, land areas that likely contribute PCBs to MS4s. These investigations will likely focus on land areas where industrial activities occurred prior to 1980 and continue today (i.e., old industrial land use areas). For those properties or land areas found to be contributing substantial amounts of PCBs or where high PCBs concentrations are found (generally areas with sediment concentrations greater than 0.5 mg PCBs/kg), Permittees shall take actions to abate the PCB sources into their MS4s or refer the properties to the Water Board for follow-up measures. For each source property referred to the Water Board, Permittees should implement interim enhanced operation and maintenance (enhanced O&M) measures in the street or storm drain infrastructure adjacent to the referred source property or implement a stormwater treatment system downstream of the property. These enhanced O&M measures shall be sufficient to intercept historically deposited contaminated sediment in the vicinity of the source area and prevent further contaminated sediment from being discharged from the source area to the storm drain system.

ii. Implementation Level – Permittees shall investigate the following acreage of likely PCBs source properties during the permit term.

- Alameda County: 2,620 acres
- Contra Costa County: 1,700 acres
- San Mateo County: 1,411 acres
- Santa Clara County: 913 acres
- Solano County: 21 acres

Based on data collected through investigating land areas for the presence of source properties during the previous permit terms, this level of implementation will result in PCBs load reductions of approximately 740 g PCBs/yr, 50 percent of which would be credited during this permit term contingent upon implementation of interim enhanced operation and maintenance (enhanced O&M) measures in the street or storm drain infrastructure adjacent to the referred source property or implementation of a stormwater treatment system downstream of the property.

iii. Reporting

(1) In each of the 2022 through 2026 Annual Reports, Permittees shall report progress on the acreage of land areas investigated, including progress toward investigation of 100 percent of the old industrial land use indicated above. The reporting shall indicate what action was taken for the parcels investigated (e.g., abatement, referral, enforcement, etc.). Permittees shall submit all supporting data and information including referral reports.

(2) Permittees shall report annually on ongoing enhanced O&M activities associated with all past contaminated property referrals. Prior to all new referrals, Permittees shall submit, for staff review and comment, a detailed description of the enhanced O&M plan for the referred properties.

(3) In their 2026 Annual Report, Permittees shall report as part of reporting under Provision C.12.a.iii(2) on total acreage of land area investigated, area and description of properties referred, description of enhanced O&M measures, and the estimated total PCBs mass load reduced (consistent with the approved accounting procedures) resulting from implementing this control measure.

C.12.c. Program for Control Measure Implementation in Old Industrial Areas

i. Task Description – Permittees shall implement or cause to be implemented treatment control measures, stormwater diversion to wastewater treatment facilities, redevelopment (provided GSI is implemented in compliance with

Provision C.3.b), or other control measures to achieve PCBs load reductions. Permittees have substantial (totaling over 33,100 acres) areas of old industrial land use draining to an MS4 that have not been redeveloped or treated with green stormwater infrastructure or other treatment controls.

- Alameda County: 9,374 acres
- Contra Costa County: 11,199 acres
- San Mateo County: 4,450 acres
- Santa Clara County: 6,647 acres
- Solano County: 1,426 acres

Implementation of treatment control measures on 2,580 acres (which is about 8 percent of the land area shown above) will result in a total estimated load reduction of about 467 g PCBs/yr (2,580 acres x 10% of area x 70% efficiency x 259 mg PCBs/acre/yr estimated yield from old industrial areas, see Fact Sheet) in the area covered by the Permit. Implementation of control measures with efficiency lower than 70 percent will result in reduced acreage credited (for those lower efficiency control measures) toward fulfillment of the total acreage requirement shown below. The acres credited will be proportional to the ratio of implemented control measure efficiency relative to the efficiency of treatment controls (see Fact Sheet for more explanation and examples). The old industrial land use acreages to be addressed by control measure implementation by the end of the permit term and the estimated PCBs load reductions (for 70 percent control measure efficiency) are shown below. Permittees may comply with this provision element either through implementation of control measures on the following amounts of old industrial land use, based on implementation of 70 percent efficient control measures, or through accounting for the mass reduction of PCBs shown in parentheses. If control measures are less than 70 percent efficient, the required acreage shall be calculated as set forth above.

- Alameda County: 664 acres (121 grams/yr)
- Contra Costa County: 664 acres (121 grams/yr)
- San Mateo County: 445 acres (81 grams/yr)
- Santa Clara County: 664 acres (121 grams/yr)
- Solano County: 142 acres (26 grams/yr)

ii. Implementation Level – Permittees shall, within the permit term, implement or cause to be implemented control measures (treatment controls, diversion to wastewater treatment plants, redevelopment (provided GSI implemented in compliance with Provision C.3.b), enhanced operation and maintenance controls, or other controls) to comply with the performance metrics in Provision C.12.c.i. If a Permittee chooses to comply by demonstrating PCBs load

reductions, it shall use accounting methods consistent with Provision C.12.a. Implementation of treatment controls and stormwater diversion in PCBs-contaminated catchments not designated as old industrial may count toward fulfillment of the required acreage. In choosing locations for treatment controls and diversions, Permittees should focus on public rights-of-way and storm drain infrastructure in catchments containing known or suspected source areas or evidence of moderate to high PCBs soil concentrations (generally soil/sediment concentrations greater than 0.3 mg mercury/kg or 0.2 mg PCBs/kg). Treatment control systems must be designed and sized consistent with Provision C.3.d (Numeric Sizing Criteria for Stormwater Treatment Systems). Use of conditionally-approved sizing criteria cited in section C.3.j(3)(b) for treatment control systems will be considered provided an analysis is performed, acceptable to the Executive Officer, to determine the reduced effectiveness of the facility sized according to these alternative criteria. Permittees may choose to implement diversions to wastewater treatment systems to address this requirement. Because of the higher removal efficiency of wastewater treatment facilities, each acre addressed by routing stormwater to wastewater treatment facilities will be credited as 1.3 acres toward satisfying the treatment requirements provided that the diversion facilities are sized and operated consistent with the sizing requirements used for non-diversion treatment facilities.

iii. Reporting

(1) By March 31, 2023, Permittees shall submit plans and schedules for implementing control measures and stormwater diversion to wastewater treatment facilities in old industrial areas to address PCBs load reduction requirements included in this provision. This reporting shall include maps of the areas where control measures are to be implemented, the acreage of these catchments, and a description of design and sizing features all control measures, treatment devices and stormwater diversion facilities implemented for each treated catchment.

(2) Beginning in 2023, in each Annual Report Permittees shall submit an account of control measure and stormwater diversion implementation consistent with the plan submitted in March 2023 and any modifications thereto. Reporting shall include maps of the areas treated, the acreage of catchments addressed, and a description of all control measures, installed treatment devices and routing facilities for each treated catchment.

(3) In their 2026 Annual Report, Permittees shall report as part of reporting under Provision C.12.a.iii(2) on all control measures and stormwater diversion measures implemented during the permit term and provide the total acreage treated and an estimate of the total PCBs mass load reduced resulting from this implementation.

C.12.d. Program for Controlling PCBs from Bridges and Overpasses

i. Task Description – Permittees shall implement a Caltrans specification (to be developed through proposed requirement in Caltrans stormwater permit, see Fact Sheet for details) to manage, as part of bridge and overpass roadway replacement or major repair, potential PCBs-containing material in bridge roadway expansion joints. Implementation of this specification will result in a total estimated load reductions of 300 g PCBs/yr (see Fact Sheet for calculation details in the program area). Countywide programs and their member municipalities will be credited with a portion of this total load reduction in proportion to their share of population. Load reduction credit for this program will begin upon submittal of documentation demonstrating full implementation of the Caltrans specification for applicable roadway structures.

ii. Implementation Level – Permittees shall track the development of the Caltrans specification and develop an inventory of bridges in their jurisdictions that includes bridge ownership and a replacement/repair schedule. Finally, Permittees shall, by December 31, 2022, or six months after availability of the specification, implement or cause to be implemented the Caltrans specification during applicable replacement activities that are under the direction of the Permittee.

iii. Reporting

(1) In their 2022 Annual Report or the Annual Report immediately following availability of the specification, Permittees shall include a description of the Caltrans specification for managing PCBs-containing materials in bridge or roadway expansion joints during roadway replacement or repair.

(2) In their 2023 Annual Report, Permittees shall submit an inventory of bridges in the program area that includes bridge ownership and the bridge roadway replacement schedule.

(3) In their 2022 through 2026 Annual Reports, Permittees shall submit documentation confirming the use of the Caltrans specification (once it is available) during all instances of bridge roadway replacement or repair in their jurisdiction during that reporting year and provide an estimate of the volume of material managed and total PCBs mass load reduced resulting from implementation of the specification.

(4) In their 2026 Annual Report, Permittees shall report as part of reporting under Provision C.12.a.iii.(2) an estimate of the total PCBs mass load reduced, consistent with approved accounting procedures, resulting from implementing this control measure.

C.12.e. Program for Controlling PCBs from Electrical Utilities

i. Task Description – Permittees shall (1) develop and implement a program to manage PCBs in oil-filled electrical equipment (OFEE) for municipally-owned electrical utilities in the MRP program area and (2) collaborate with the Water Board to determine PCBs loadings in OFEE from non-municipally owned electrical utilities.

ii. Implementation Level – Permittees shall do the following:

(1) Develop or improve standard operating procedures to respond to, clean up, and report spills and releases from municipally owned OFEE and fully implement these procedures.

(2) Develop and implement a plan to maintain and upgrade municipally owned OFEE.

(3) Document the PCBs loads avoided through existing and ongoing OFEE removal and replacement programs.

(4) Collaborate with the Water Board to request information from non-municipally owned electrical utilities. Permittees shall utilize the information to (a) determine the locations of PCBs-containing OFEE, (b) improve estimates of the total baseline mass of PCBs in OFEE in the MRP permit area, (c) evaluate the actions the non-municipally owned electrical utilities are taking to reduce or prevent the release of PCBs from their equipment and to respond to potential releases of PCBs from their equipment; and (d) identify opportunities to improve the response and cleanup protocols.

iii. Reporting

(1) Permittees shall submit in their 2023 Annual Report the estimated PCBs loads avoided (along with supporting documentation) resulting from the removal of municipally-owned PCBs-containing OFEE through maintenance programs and system upgrades for the period 2002 to the beginning of this permit term (2023).

(2) Permittees shall submit in their 2023 Annual Report a description of the improved spill response and reporting practices implemented by municipally owned electrical utilities.

(3) Permittees shall submit in their 2024 Annual Report a summary of their plans to maintain and upgrade OFEE for municipally owned electrical utilities.

(4) Permittees shall submit in every Annual Report, beginning with the 2023 report, a summary of the actions undertaken during that reporting year

that remove municipally owned PCBs-containing OFEE along with the loads avoided and the details of the calculations and assumptions used to estimate the load reduced.

(5) Permittees shall submit in their 2026 Annual Report, as part of reporting under Provision C.12.a.iii(2), the estimated PCBs loads reduced during the permit term associated with municipally owned OFEE removal resulting from maintenance programs and system upgrades.

(6) Within 12-months of the Water Board transmitting to the Permittees information from the non-municipally owned electrical utilities, Permittees shall submit a report discussing the following, to the extent possible given any data limitations: (a) locations of the PCBs-containing OFEE still in service, (b) previous locations of PCBs-containing OFEE, and (c) opportunities to improve non-municipally owned electrical utilities' standard operating procedures for spill response, reporting, cleanup, and sampling and analysis.

C.12.f. Plan and Implement Green Stormwater Infrastructure to reduce PCBs loads

i. Task Description – Permittees shall implement green stormwater infrastructure (GSI) projects during the term of the Permit consistent with implementing requirements in Provision C.3.j. Implementation of green stormwater infrastructure will result in a total estimated load reductions of 200 g PCBs/yr (see Fact Sheet for basis of estimate).

ii. Implementation Level – The level of implementation is determined by the requirements of Provision C.3.j.

iii. Reporting

(1) In their 2026 Annual Report, Permittees shall report as part of Provision C.12.a.iii(2)) on all green stormwater projects (e.g., parcel-based, street right-of-way, and regional projects) implemented during the permit term and provide the total acreage treated and an estimate of the total PCBs mass load reduced resulting from this implementation. This reporting shall include summary descriptions of the implemented projects including GSI type, location, and area.

C.12.g. Manage PCB-Containing Materials and Wastes During Building Demolition Activities

i. Task Description – Prior to issuing a demolition permit, Permittees shall implement the protocol developed during the previous permit term (see Fact Sheet for protocol description) for managing PCB-containing materials and wastes during building demolition so that PCBs do not enter MS4s. Permittees

shall also ensure construction sites are inspected during demolition and obtain verification that materials from demolished buildings are appropriately disposed.

Provision C.12.g. applies to applicable structures containing building materials with PCBs concentrations of 50 ppm or greater at the time such structures undergo demolition. PCBs from these structures can enter storm drains during and/or after demolition through vehicle track-out, airborne releases, soil erosion, or stormwater runoff. Applicable structures include, at a minimum, commercial, public, institutional, and industrial structures constructed or remodeled between the years 1950 and 1980. Single-family residential and wood frame structures are exempt.

Structures that are constructed or remodeled between the years 1950 and 1980 and require emergency demolition to protect public health and/or safety are exempt from implementing the protocol, but they must be reported in accordance to Provision C.12.g.iii.(3)(d)

The Town of Clayton is exempt from the requirements of Provision C.12.g. because it has demonstrated it has no applicable structures. Other Permittees may be exempted from the requirements in Provision C.12.g. if they provide evidence acceptable to the Executive Officer in their 2023 Annual Report that the only structures that existed pre-1980 within its jurisdiction were single-family residential and/or wood-frame structures.

Implementation of this protocol will result in a total estimated load reduction of 2 kg PCBs/yr (see Fact Sheet for calculation details) in the program area. This constitutes an ongoing rather than a new load reduction.

ii. Implementation Level

(1) Permittees shall implement their established protocol prior to issuing a demolition permit.

(2) For demolition of applicable structures containing building materials with PCBs concentrations of 50 ppm or greater approved beginning July 1, 2023, Permittees shall require demolition contractors to provide notification to the Permittees, the Water Board, and U.S. EPA at least one week before any demolition is to occur.

(3) Beginning the 2023 rainy season, Permittees shall inspect demolition sites with applicable structures containing building materials with PCBs concentrations of 50 ppm or greater pursuant to Provision C.6 to ensure that effective construction pollutant controls are used to prevent discharge into the MS4.

(4) Permittees shall enhance their construction site control program to minimize migration of PCBs into the MS4 from applicable structures containing building materials with PCBs concentrations of 50 ppm or greater during demolition activities. Enhancements may include inspecting demolition sites monthly during demolition activities in the dry season (May – September) and requiring the demolition contractors to sweep the project sites and the streets around the property with street sweepers that will effectively remove sediment and dust. Implementation of enhancements shall begin no later than July 1, 2023.

(5) For demolition of applicable structures containing building materials with PCBs concentrations of 50 ppm or greater approved after July 1, 2023, Permittees shall verify that PCBs in demolished buildings are properly managed to minimize transport to the MS4 by obtaining official documentation that the building materials with PCBs concentrations of 50 ppm or greater in these demolished applicable structures were disposed appropriately according to state and federal regulations.

(6) Permittees may elect to update for use in the subsequent permit term the assessment methodology and data collection program to quantify PCBs loads reduced through implementation of the protocol for controlling PCBs during demolition of applicable structures.

iii. Reporting

(1) Each Permittee seeking exemption from Provision C.12.g requirements based on lack of applicable structures must submit in its 2023 Annual Report documentation, such as historic maps or other historic records, that clearly demonstrates that the only structures that existed pre-1980 were single-family residential and/or wood-frame structures.

(2) In their 2023 Annual Report, Permittees shall discuss enhancements to their construction site control program to minimize migration of PCBs from demolition activities into the MS4.

(3) Beginning with their 2023 Annual Report, the Permittees shall provide each of the following items:

(a) The number of applicable structures that applied for a demolition permit during the reporting year;

(b) A running list of the applicable structures that applied for a demolition permit since July 1, 2019, the number of samples each structure collected, and the concentration of PCBs in each sample.

(c) For each applicable structure, with PCBs concentrations of 50 mg/kg or greater, include the following: the project address, the demolition date, and a brief description of the PCBs-containing materials.

(d) For each structure that was constructed or remodeled between the years 1950 and 1980 and requires emergency demolition to protect public health and/or safety, provide the following: address, date building was constructed, and date of demolition.

(4) Beginning with their 2024 Annual Report, Permittees shall provide the following: whether the site was inspected during demolition, and for those cases where notification and advance approval from the U.S. EPA is not required and were approved for demolition after June 30, 2023, the hazardous waste manifest prepared for transportation of the material to a disposal facility.

(5) In their 2026 Annual Report, Permittees shall submit an evaluation of the effectiveness of the protocol for controlling PCBs during building demolition as well as supporting data. This should be conducted and reported at the regional level on behalf of all Permittees and shall be considered the Report of Waste Discharge for Provision C.12.g for the next permit reissuance.

(6) In their 2026 Annual Report, Permittees may submit for use in the subsequent permit term an updated assessment methodology and data collection program to quantify PCBs loads reduced through implementation of the protocol for controlling PCBs-containing materials and wastes during demolition of applicable structures.

C.12.h. Prepare Implementation Plan and Schedule to Achieve TMDL Wasteload Allocations

i. Task Description – In 2020, Permittees submitted a Reasonable Assurance Analysis and plan (RAA) demonstrating that sufficient control measures will be implemented to attain the PCBs TMDL wasteload allocations by 2030. Permittees shall evaluate the effectiveness of all PCBs control measures and update the RAA as necessary. Updates can be focused on those control measures for which new information is available and for control measures not evaluated in previous efforts. Permittees shall also prepare detailed implementation plans for all control measures to be implemented in and inform permit requirements for the subsequent permit term.

ii. Implementation level – Permittees shall update, as necessary, their PCBs control measures implementation plan and RAA. The update may be focused on control measures for which new information is available or for those control measures not previously evaluated. The long-term plan must:

(1) Identify all technically and economically feasible PCBs control measures to be implemented (including GSI projects); and

(2) Include a schedule according to which these technically and economically feasible control measures will be fully implemented; and

(3) Provide an evaluation and quantification of the PCBs load reduction of such measures as well as an evaluation of costs, control measure efficiency and significant environmental impacts resulting from their implementation.

Additionally, Permittees shall identify all specific control measures to be implemented, the intensity of control measure implementation, and the estimated load reduction benefit from control measures implemented during the subsequent permit term. This implementation plan must include:

(a) Identification of all control measures implemented during the current permit term and any additional control measures to be implemented in the subsequent permit term;

(b) A description of the intensity or extent of control measure implementation (e.g., acres treated, acres investigated for source areas, types of roadway projects for which protocols applied);

(c) Identification of accountability metrics to track during the subsequent permit corresponding to the proposed implementation intensity; and

(d) Estimates for load reductions to be achieved through implementation of control measures during subsequent permit term at the proposed intensity.

iii. Reporting – Permittees shall submit the updated plan and schedule no later than March 31, 2026.

C.12.i. Fate and Transport Study of PCBs: Urban Runoff Impact on San Francisco Bay Margins

i. Task Description – The Permittees shall conduct or cause to be conducted studies concerning the fate, transport, and biological uptake of PCBs discharged from urban runoff to San Francisco Bay margin areas. The studies should focus on near-shore areas contaminated with PCBs from historical activity and the expected trajectory of recovery as sources from local watersheds are reduced.

ii. Implementation Level – The specific information needs include understanding the in-Bay transport of PCBs discharged in urban runoff, the sediment and food web PCBs concentrations in margin areas receiving urban

runoff, the influence of urban runoff on the patterns of food web PCBs accumulation, especially in Bay margins, and the identification of drainages where urban runoff PCBs are particularly important in food web accumulation.

iii. **Reporting** – The Permittees shall submit in their 2023 Annual Report a workplan describing the specific manner in which these information needs will be accomplished and describing the studies to be performed with a preliminary schedule. The Permittees shall report on status of the studies in their 2023 Annual Report. The Permittees shall report in the March 15, 2026, Integrated Monitoring Report the findings and results of the studies completed, planned, or in progress as well as implications of studies on potential control measures to be investigated, piloted, or implemented in future permit cycles.

C.12.j. Implement a Risk Reduction Program

i. **Task Description** – The Permittees shall conduct an ongoing risk reduction program to address public health impacts of PCBs in San Francisco Bay/Delta fish. The fish risk reduction program shall take actions to reduce actual and potential health risks in those people and communities most likely to consume San Francisco Bay-caught fish, such as subsistence anglers and their families. The risk reduction framework developed in the Previous Permit term, which funded community-based organizations to develop and deliver appropriate communications to appropriately targeted individuals and communities, is an appropriate approach. Permittees should work with local health departments, the Bay Area Clean Water Agencies, and the Western States Petroleum Association to leverage resources for this program and to appropriately target at-risk populations.

ii. **Implementation Level** – At a minimum, Permittees shall conduct or cause to be conducted an ongoing risk reduction program with the potential to reach 3,000 individuals annually who are likely consumers of San Francisco Bay-caught fish. Permittees are encouraged to collaborate with San Francisco Bay industrial and wastewater discharger agencies in meeting this requirement. In year four of the Permit term, Permittees shall evaluate the effectiveness of their risk reduction program.

iii. **Reporting** – The Permittees shall report on the status of the risk reduction program in each of their Annual Reports, including a brief description of actions taken, an estimate of the number of people reached, and why these people are deemed likely to consume Bay fish. The Permittees shall report the findings of the effectiveness evaluation of their risk reduction program in their 2026 Annual Report.

C.13. Copper Controls

The Permittees shall implement the following control program for copper. The Permittees shall implement the control measures and accomplish the reporting on those control measures according to the provisions below. The purpose of these provisions is to implement the control measures identified in the Basin Plan amendment necessary to support the copper site-specific objectives in San Francisco Bay. The Permittees may comply with any requirement of Provision C.13 through a collaborative effort.

C.13.a. Manage Waste Generated from Cleaning and Treating of Copper Architectural Features, Including Copper Roofs, during Construction and Post-Construction.

i. Task Description – The Permittees shall prohibit the discharge of wastewater to storm drains generated from installing, cleaning, treating, or washing copper architectural features, including copper roofs.

ii. Implementation Level

(1) The Permittees shall require, when issuing building permits, use of appropriate BMPs for managing copper-containing waste during and post-construction.

(2) The Permittees shall educate installers and operators on appropriate BMPs for managing copper-containing wastes.

(3) The Permittees shall enforce against noncompliance.

iii. Reporting

(1) In the 2022 Annual Report, those Permittees that have not previously done so shall certify that legal authority currently exists to prohibit the discharge of wastewater to storm drains generated from the installation, cleaning, treating, and washing of copper architectural features, including copper roofs.

(2) In the 2022 Annual Report, the Permittees shall report how copper architectural features are addressed through the issuance of building permits.

(3) The Permittees shall report annually permitting and enforcement activities.

C.13.b. Manage Discharges from Pools, Spas, and Fountains that Contain Copper-Based Chemicals

i. Task Description – Permittees shall prohibit discharges to storm drains from pools, spas, and fountains that contain copper-based chemicals.

ii. Implementation Level – The Permittees shall either: 1) require installation of a sanitary sewer discharge connection for pools, spas, and fountains, including connection for filter backwash, with a proper permit from the POTWs; or 2) require diversion of discharge for use in landscaping or irrigation.

iii. Reporting

(1) In the 2022 Annual Report, the Permittees that have not previously done so shall certify that legal authority currently exists to prohibit the discharges to storm drains of water containing copper-based chemicals from pools, spas, and fountains.

(2) In the 2022 Annual Report, the Permittees shall report how copper-containing discharges from pools, spas, and fountains are addressed to accomplish the prohibition of the discharge.

(3) The Permittees shall report annually on any enforcement activities.

C.13.c. Industrial Sources

i. Task Description – The Permittees shall ensure industrial facilities do not discharge elevated levels of copper to storm drains by ensuring, through industrial facility inspections, that proper BMPs are in place.

ii. Implementation Level

(1) As part of industrial site controls required by Provision C.4, the Permittees shall identify facilities likely to use copper or have sources of copper (e.g., plating facilities, metal finishers, auto dismantlers) and include them in their inspection program plans.

(2) The Permittees shall educate industrial inspectors on industrial facilities likely to use copper or have sources of copper and proper BMPs for them.

(3) As part of the industrial inspection, inspectors shall ensure that proper BMPs are in place at such facilities to minimize discharge of copper to storm drains, including consideration of roof runoff that might accumulate copper deposits from ventilation systems on site.

iii. Reporting

The Permittees shall highlight copper reduction results in the industrial inspection component in the Provision C.13 portion of each Annual Report.

C.14. Bacteria Control for Impaired Water Bodies

Provisions C.2 through C.7 contain requirements to control sources of pollutants to the Permittees' MS4s. Implementation of these requirements should control sources of bacteria[51]; still, exceedances of bacteria water quality objectives occur in some water bodies that receive urban runoff. Permittees identified in this Provision shall demonstrate compliance with bacteria related Receiving Water Limitations during this Permit term through the timely implementation of control measures and other actions to reduce bacteria discharges from their municipal separate storm sewer systems in accordance with the requirements of this Provision. Provision C.14.a applies to the cities of Mountain View and Sunnyvale for their discharges that are causing or contributing to exceedances of bacteria water quality objectives in Stevens Creek, Calabazas Creek, and Sunnyvale East Channel/Guadalupe Slough, water bodies without bacteria TMDLs. Provision C.14.b applies to Permittees with San Pedro Creek and Pacifica State Beach Indicator Bacteria TMDL wasteload allocations, Provision C.14.c applies to Permittees with San Francisco Bay Beaches Bacteria TMDL wasteload allocations, and Provision C.14.d applies to Permittees with Pillar Point Harbor Beaches and Venice Beach Bacteria TMDL wasteload allocations.

C.14.a. Enhanced Bacteria Control

Enhanced bacteria control requirements are applicable to the cities of Mountain View and Sunnyvale for discharges that are causing or contributing to exceedances of applicable bacteria water quality objectives in Stevens Creek (both cities), Calabazas Creek (Sunnyvale), and Sunnyvale East Channel/Guadalupe Slough (Sunnyvale).[52] "Cities" as used in this Provision C.14.a refers to these cities.

The actions described in this Provision shall be implemented where controllable bacteria sources are located within the Cities' jurisdiction, in order to reduce bacteria inputs to the water body with bacteria exceedances.

i. Municipal Operations Bacteria Control

(1) **Task Description** – Evaluate the potential for municipal operations to generate and cause bacteria to be transported to surface waters. Where such potential is determined to exist, develop and implement BMPs to minimize the transport of bacteria.

[51] Bacteria as used herein refers to fecal indicator bacteria.

[52] The geometric mean of indicator bacteria levels in a waterbody shall not be greater than the applicable geometric mean water quality objective in any six-week interval, calculated weekly. The indicator bacteria levels shall not be greater than the applicable statistical threshold value water quality objective in more than 10 percent of the samples collected in a calendar month, calculated in a static manner.

(2) **Implementation Level** – The Cities shall develop and implement BMPs to minimize potential bacteria sources, including, but not limited to, trash, human and animal fecal sources, and excessive biofilm, for the following municipal operations:

(a) Street and road cleaning

(b) Parks and municipal open space maintenance

(c) Sidewalk, plaza, and pavement cleaning

(d) MS4 component maintenance, such as cleaning biofilm from catch basins, piping, and pump stations.

(3) **Reporting** – In each Annual Report, the Cities shall describe the BMPs, frequency and location for actions taken to reduce bacteria sources related to municipal operations.

ii. Industrial/Commercial Site Bacteria Control and Illicit Discharge Detection and Elimination

(1) **Task Description** – Train municipal staff responsible for inspecting and enforcing industrial and commercial site controls and for detecting and eliminating illicit discharges to enhance their focus on potential bacteria sources. The Cities shall use enforcement authorities to ensure bacteria sources are controlled.

(2) **Implementation Level** – The Cities shall enhance their efforts to ensure transport to surface waters from the following potential bacteria sources is minimized:

(a) Roof and exterior washoff of commercial and industrial structures and surfaces, where these sources are likely to contain bacteria, such as from rodent and bird wastes, and are likely to be discharged to receiving water

(b) Outdoor garbage and recycle bins

(c) Outdoor floor-mat washoff

(d) Portable toilets

(e) Illicit discharges to the MS4

(3) **Reporting** –In each Annual Report, the Cities shall describe BMP, frequency, and location for actions taken to reduce bacteria sources related to Industrial and Commercial Site Bacteria Control and Illicit Discharge Detection and Elimination.

iii. Control of Bacteria Sources Related to Unsheltered Homeless Populations

(1) **Task Description** – Evaluate the potential for bacteria transport to surface waters from areas inhabited by unsheltered homeless persons. Where such potential is determined to exist develop and implement BMPs to minimize such bacteria sources and transport.

(2) **Implementation Level** – The Cities shall minimize the transport of bacteria from areas inhabited by unsheltered homeless persons by taking actions that may include, but are not limited to, the following:

(a) Provide pump-out stations, mobile pumping services, or voucher programs for proper disposal of sanitary sewage where unsheltered homeless persons reside in recreational vehicles

(b) Provide sanitation services, including access to running water, where feasible, at locations where homeless people live or congregate

(c) Establish and update sidewalk, street, and/or plaza cleaning standards for the cleanup and appropriate disposal of human waste

(3) **Reporting** – In each Annual Report, the Cities shall describe the BMPs, numbers or frequency (as applicable), and locations of actions taken to reduce bacteria discharges from areas inhabited by unsheltered persons.

iv. Pet and Livestock Bacteria Source Control

(1) **Task Description** – Evaluate the potential for domestic animal sources, such as pet waste, kennels, horse boarding facilities and trails, to generate and cause to be transported to surface waters. Where such potential is determined to exist, develop and implement BMPs to minimize such bacteria sources and prevent transport.

(2) **Implementation Level** – The Cities shall ensure transport of bacteria from domestic animal sources to surface waters is minimized by taking the following actions:

(a) Enhance numbers of, and maintenance of, pet waste stations

(b) Inspect pet boarding facilities to ensure pet waste is managed to prevent offsite discharges

(c) Inspect horse boarding facilities, if any, to ensure manure is managed to prevent offsite discharges. Notify Water Board staff of facilities that should enroll in the Confined Animal Facility program.

(3) **Reporting** – In each Annual Report, the Cities shall describe the BMPs, numbers or frequency (as applicable), and locations of actions taken to reduce bacteria from domestic animal sources.

v. Public Outreach on Bacteria Source Control

(1) **Task Description** – Evaluate public outreach currently conducted to encourage bacteria pollution prevention and determine how to improve such outreach, such as, for example, by focusing outreach on certain populations or at certain locations.

(2) **Implementation Level** – The Cities shall enhance public outreach where it is likely to improve human behavior regarding bacteria pollution prevention practices, such as, but not limited to, the following:

(a) Cleaning up pet waste

(b) Eliminating litter

(c) Eliminating outdoor restaurant floor mat washdown

(d) Using proper BMPs for sidewalk cleaning

(e) Covering trash storage areas

(f) Maintaining porta-potties properly.

(3) **Reporting** – In each Annual Report, the Cities shall describe the outreach messages, methods of delivery, audiences, and number of repetitions.

vi. Coordination with Sanitary Sewerage System Entities

(1) **Task Description** – Overflows and leaks from sanitary sewage conveyance systems can cause bacteria to be transported to MS4s, and commonly the Cities are not responsible for maintenance and repair of the sanitary sewerage system. This task encourages the Cities to collaborate with the entities responsible for the sanitary sewerage system to minimize overflows and leaks.

(2) **Implementation Level** – The Cities shall, to the extent necessary and within the limits of their authorities, collaborate with their counterparts who are responsible for maintenance of the sanitary sewerage system to assist with the following:

(a) Prioritize maintenance and repair in areas contributing to bacteria loads to surface waters with elevated bacteria

(b) Ensure rapid and thorough response to cleanup sanitary sewer system overflows

(c) Develop lateral maintenance and replacement programs for consideration by the appropriate legal authority.

(3) **Reporting** – In each Annual Report, the Cities shall describe the status of any actions taken to coordinate with sanitary sewer entities.

vii. Prioritize Trash Removal to Control Bacteria Sources

(1) **Task Description** – Evaluate the potential bacteria-reduction benefit of prioritizing trash control efforts required in Provision C.10 in areas where trash generation may be contributing to bacteria exceedances in local surface waters. Where such benefit appears significant, reprioritize trash control actions accordingly.

(2) **Implementation Level** – The Cities shall focus some of their trash reduction efforts to areas where trash generation likely contributes to bacteria exceedances in local surface waters.

(3) **Reporting** – In each Annual Report, the Cities shall describe how the bacteria-reduction benefit of focused trash-control efforts was evaluated, the conclusions reached, and any actions taken during the reporting period to reprioritize trash control areas.

viii. Water Quality Monitoring

(1) **Task Description** – The Cities shall develop and implement a monitoring program to identify and characterize potential bacteria sources to receiving waters that have been found to exceed bacteria water quality objective(s), to help focus source control efforts and evaluate effectiveness of controls, and to ultimately demonstrate attainment of bacteria receiving water limitations. The monitoring program shall be designed and adapted to answer the following questions:

(a) What is the spatial and temporal extent of dry weather flows in the MS4?

(b) Are indicators of human fecal material present in both dry and wet weather flows observed in the MS4?

(i) If so, in which stormwater catchments are sources most prominent?

(ii) Where are the likely locations of these sources in the catchments?

(iii) What measures can be implemented to control these sources?

(c) Are water quality objectives being achieved during dry weather?

(d) Are water quality objectives being achieved during wet weather?

(2) **Implementation Level** – At a minimum, the monitoring program shall include the following:

(a) Sampling of all MS4 outfalls with flow during three dry weather creek walks. One to be scheduled during July / August 2022, one to be scheduled January / February 2023, and one in April / May 2023;

(b) Desktop and field methods based on elements described in the California Microbial Source Identification Manual: A Tiered Approach to Identifying Fecal Pollution Sources to Beaches (Griffith et al. 2013);

(c) Geographic information system analysis of potential sources and existing bacteria control action locations to evaluate existing and identify and optimize additional bacteria controls;

(d) MS4 bacteria characterization monitoring at least monthly through September 2023, including two events that coincide with wet weather discharges, at a minimum of 14 sites each year to identify sources of bacteria discharges to and from the MS4 using microbial source tracking techniques to detect human genetic markers (i.e., HF183) and to evaluate effectiveness of bacteria controls, including the following:

(i) Identification of stormwater catchments where monitoring will be conducted;

(ii) Characterization of indicator bacteria, i.e., E coli, densities in subwatersheds, storm drains, outfalls, and pump stations that drain to receiving waters with excessive levels of indicator bacteria; and

(iii) Determination of baseline (or current) conditions against which future monitoring results can be compared following new, enhanced, or ongoing control measure implementation.

(e) Receiving water monitoring at least monthly, from October 2023 through September 2024, including two events that coincide with, or within 48 hours, of a storm event forecasted to be at least 0.5 inch in 24 hours, to determine E. coli densities, where salinity is less than 1 ppt, and Enterococci densities, where salinity is greater than 1 ppt, at a minimum total of 5 sites in Stevens Creek, 3 sites in Calabazas Creek, and 1 site in Sunnyvale East Channel, including the following:

(i) Stevens Creek immediately downstream of Homestead;

(ii) Stevens Creek La Avenida;

(iii) Sunnyvale East Channel upstream of Tasman (above tidal influence);

(iv) Calabazas Creek downstream of Homestead; and

(v) Calabazas Creek upstream of Tasman.

(3) **Reporting** – In each Annual Report, the Cities submit the results of all monitoring conducted the previous year, including parameters analyzed, frequencies, and locations, and planned monitoring for the current year, including parameters, frequencies, and locations.

ix. Compliance with Receiving Water Limitations

(1) **Task Description** – The Cities shall determine whether discharges from their MS4s are causing or contributing to exceedances of bacteria water quality objectives in receiving waters after implementation of control measures required by C.14.a.i-vii. The Cities are expected to meet Receiving Water Limitations B.2 for applicable bacteria water quality objectives by June 30, 2027. If receiving water limitations are not met, despite a diligent effort to quantify levels and the sources of bacteria in MS4 discharges and documentation of completion of controls required by C.14.a.i-vii, then the Cities shall submit a plan for additional actions to attain the receiving water limitations.

(2) **Implementation Level** – The Cities shall provide a comprehensive assessment of bacteria sources and bacteria controls to demonstrate compliance with receiving water limitations for applicable bacteria water quality objectives. If compliance cannot be achieved by June 30, 2027, the assessment shall describe additional control measures or increased levels of implementation for existing control measures, with an implementation schedule, and proposed milestones, that will be implemented to attain bacteria receiving water limitations as soon as possible.

(3) **Reporting** – The Cities shall submit a Mid-Permit Interpretive Report and a Final Interpretive Report.

(a) The Mid-Permit Interpretive Report shall be submitted by March 31, 2025, which includes the following:

(i) All data collected through September 2024 and description of data validation and quality;

(ii) Description of progress towards answering questions in C.14.a.viii.(1);

(iii) Description of specific bacteria sources and/or specific geographic areas that receive implementation of existing control

measures, as well as. recommended new, modified, or enhanced control that will be evaluated or implemented;

(iv) Description of monitoring, subject to approval by the Water Board through a Permit amendment, to be conducted through the remainder of the Permit term to answer the questions in C.14.a.viii.(1). The monitoring shall be as comprehensive, systematic, and robust as what is required in Provision C.14.a.viii while being commensurate with the need to address and resolve bacteria exceedances in the receiving waters.

(b) The Final Interpretive Report shall be submitted by December 31, 2026, which includes the following:

(i) All data collected through September 2026 and description of data validation and quality;

(ii) Description of progress towards answering questions in C.14.a.viii.(1);

(iii) Description of specific bacteria sources and/or specific geographic areas that received implementation of existing control measures, as well as. new, modified, or enhanced control that were evaluated or implemented;

(iv) Determination if bacteria receiving water limitations have or will be met, by June 30, 2027; and

(v) If bacteria receiving water limitations will not be met by June 30, 2027, description of additional control measures or increased levels of implementation for existing control measures, with an implementation schedule, and proposed milestones, that will be implemented to attain bacteria receiving water limitations as soon as possible, and a proposed monitoring program designed to answer the questions in C.14.a.viii.(1) that will be implemented in the next permit term.

C.14.b. City of Pacifica and San Mateo County Bacteria Controls

The City of Pacifica (City) and San Mateo County (County) Permittees shall implement the actions in this subprovision to control fecal indicator bacteria. The City and County shall focus implementation of bacteria control measures in areas where benefits are most likely to accrue. The goal of this subprovision is to implement the urban runoff (stormwater runoff and dry weather flows) requirements of the San Pedro Creek and Pacifica State Beach Indicator Bacteria TMDL. In accordance with the TMDL, the City and County are required to meet the wasteload allocations for Pacifica State Beach by August

1, 2021, and for San Pedro Creek by August 1, 2028. The City and County may comply with any requirement of this provision through a collaborative effort.

i. Control Measures to Achieve Indicator Bacteria Wasteload Allocations

(1) **Task Description** – The City and County shall implement bacteria control measures and pollution prevention strategies to prevent or reduce discharges of bacteria from their storm drain systems to meet the stormwater TMDL wasteload allocations in the San Pedro Creek (Creek) watershed and Pacifica State Beach (Beach) Indicator Bacteria TMDL (TMDL Project Area).

(2) **Implementation Level** – To comply with this element:

(a) The City and County, as appropriate, shall prohibit potential illicit discharges into their storm sewer system from sanitary sewer overflows or the sanitary sewer lines within their jurisdictions as follows:

(i) Ensure all sanitary sewer lines within a 2,000-foot radius of the Creek and Beach are inspected, assessed, and repaired, as needed, within 60 months of the Permit effective date;

(ii) Ensure at least 20 percent of the storm sewer system discharging to San Pedro Creek or Pacifica State Beach is evaluated and addressed for illicit sanitary sewer connections each year to prevent discharges from the sanitary sewer lines; and

(iii) Coordinate with the responsible sanitary sewer collection agency to identify and implement BMPs to prevent sanitary sewer overflows, such as developing or enhancing a spill response plan for significant sanitary sewer overflow incident areas to decrease potential sewage discharges into the storm sewer system.

(b) The County shall continue to address bacteria discharges from commercial horse and dog kennel facilities (facilities) into its storm sewer system as follows:

(i) Inspect each facility annually for code compliance by June 30 of each year.

(ii) Review each facility's current manure, stormwater, and drainage management plans for code compliance by June 30 of each year.

(iii) Provide a copy of the facilities inspection and review reports to the Water Board in each annual report.

(iv) Take progressive enforcement, as needed, for facilities found to be noncompliant with the County's Confined Animal Ordinance.

(c) The City shall continue to address bacteria discharges from commercial horse facilities (facilities) into its storm sewer system as follows:

(i) Review each facility's compliance with the City's Administrative Policy on "Standards for Keeping Animals."

(ii) Review each facility's compliance with the City's Municipal Code on "Animal Excreta."

(iii) Conduct annual compliance review and inspection of each facility by June 30 of each year.

(iv) Provide a copy of the facilities inspection and review reports to the Water Board in each annual report.

(v) Take progressive enforcement action(s), as needed, to bring noncompliant facilities into compliance with the City's Administrative Policy on "Standards for Keeping Animals" and Municipal Code on "Animal Excreta."

(d) The City shall continue to maintain existing and any new dog waste clean-up signs, waste bag dispensers, and trash cans within the TMDL Project Area.

(e) The City shall continue to implement a visual inspection and cleanup plan for high dog waste accumulation areas along the Creek and its tributaries. From April 1 through October 31, inspections and cleanups shall, at a minimum, be conducted on a quarterly basis (e.g., once each in April, July, and October). From November 1 through March 31, inspections and cleanups shall be conducted prior to forecast rain events with a forecast rainfall depth of 0.2 inches or more (as measured at Half Moon Bay Airport (KHAF) Meteorological Station, or comparable site), and at a frequency of no less than once a month.

(f) The City shall continue to implement a pet waste public outreach and education campaign that, at a minimum, includes all the following:

(i) Establish a public pet waste management stakeholder group (e.g., formal or informal dog owners club).

(ii) Prepare and implement public service announcements regarding pet waste management and associated impacts to the Creek and Beach to play on the local television station and to include in print ads in the Pacifica Tribune.

(iii) Distribute a mailer with an informational brochure to residents and businesses describing proper pet waste management, the linkage of the watershed to the Creek and Beach, and the adverse impact on those water bodies and those recreating in them from improper pet waste management.

(iv) Maintain a web page to the City website with information on the TMDL and the water quality monitoring and BMP implementation activities, as well as information about proper pet waste management and the impact of improperly deposited waste on water quality of the Creek and Beach and public health.

(v) Create and implement a pre-rain pet waste cleanup email alert to residents, reminding them to cleanup accumulated pet waste in their yards that could otherwise get washed into the Creek and Beach.

(vi) Participate in local events and festivals to distribute pet waste management materials (educational fliers, dog waste bags, etc.).

(g) The City and County, based on the results of the source characterization and BMP effectiveness, and wasteload allocation attainment analyses described in Provision C.14.b-iii, shall modify or refocus control measure implementation efforts as appropriate, at a frequency of no less than every two years.

(3) **Reporting –** No later than March 15 of each year, the City and County shall submit a comprehensive TMDL Status and Monitoring Report, reporting on the specific control measures (as listed in Provision C.14.b.1.ii) that have been implemented in the TMDL Project Area during the foregoing October 1 through September 30 period. This report shall include:

(a) The number, type, and locations and/or frequency (if applicable) of control measures;

(b) The description, scope, and start date of pollution prevention measures; and

(c) Clear statements of the responsibilities of each participating Permittee for implementation of pollution prevention or control measures.

ii. Water Quality Monitoring to Assess Attainment of Wasteload Allocations

(1) **Task Description** – Permittees shall determine whether the TMDL wasteload allocations are attained.

(2) **Implementation Level** – The City and County shall conduct attainment water quality monitoring activities as follows:

(a) Sample Locations – Two stations shall be monitored: the mouth of San Pedro Creek (Creek Mouth) and Pacifica State Beach (the original station, as of the TMDL's adoption date of November 2012, which was located approximately 300 feet north of the Creek mouth, and at shin depth, originally referred to as Linda Mar #5 in the TMDL Staff Report, but currently referred to as Linda Mar #7). The locations of these stations are shown in the TMDL Staff Report.

(b) Sampling Frequency – The two attainment stations shall be monitored weekly on an ongoing basis for fecal indicator bacteria. The weekly sampling shall occur year-round regardless of weather conditions, provided the conditions are safe for field staff to collect the samples.

(c) Sampling Constituents – Samples collected from the Creek Mouth shall be analyzed for *E. coli* and total coliform. Samples collected from Linda Mar #5 station shall be analyzed for *Enterococcus*, fecal coliform, and total coliform.

(d) The City and County shall analyze the results of the attainment monitoring and compare the results to applicable bacterial water quality objectives and the allowable exceedances of those objectives as specified in the TMDL.

(3) **Reporting** – In Annual TMDL Status and Monitoring Reports submitted on March 15 each year, the City and County shall analyze, summarize, and report the results of the ongoing attainment monitoring, as follows:

(a) The City and County shall complete a data evaluation, which shall focus on determining whether the TMDL wasteload allocations are being attained in the Creek and at the Beach.

(b) The indicator bacteria results from the attainment monitoring stations (Creek Mouth and original Linda Mar #5 station (currently called Linda Mar #7), located 300 feet north of the Creek mouth at shin depth) shall be compared to applicable bacterial water quality objectives and the allowable exceedances of those objectives as specified in the TMDL (Total Maximum Daily Load for Bacteria in San Pedro Creek and at Pacifica State Beach: Final Staff Report for Proposed Basin Plan Amendment. Water Board, 2012. Accessible at:

https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/pacificabacteria/Final%20Staff%20Report.pdf).

(c) The data evaluation shall include tabulation and review of local rainfall data to determine whether the weekly attainment monitoring sampling events occurred during dry weather or wet weather.

(d) An ongoing quantitative analysis of trends (from initial year) in bacteria densities and exceedances of applicable water quality objectives at the two attainment stations shall be conducted and reported annually.

(e) A detailed and comprehensive assessment of wasteload allocation attainment by the end of year 4 of the Permit term shall be completed. If wasteload allocations are not achieved by the end of the Permit term, no later than 180 days prior to Permit expiration, the City and County shall submit a plan in their Report Of Waste Discharge, acceptable to the Executive Officer, that describes additional control measures or increased levels of existing control measures that will be implemented to prevent or reduce discharges of bacteria to storm sewer systems to attain wasteload allocations. The plan shall include implementation methods, an implementation schedule, and proposed milestones.

iii. Water Quality Monitoring – Characterize Bacteria Sources, Assess BMP Effectiveness

(1) **Task Description** – The purpose of characterization monitoring is to better characterize indicator bacteria contributions from specific sources and to evaluate control measure effectiveness. The characterization monitoring shall provide data to:

(a) Characterize indicator bacteria densities in subwatersheds, storm drain outfalls, and pump stations that have not been sampled in the past. Results of the investigation may be used to drive future control measure actions.

(b) Establish baseline (or current) conditions against which future monitoring results can be compared following new or ongoing control measure implementation.

(c) Characterization monitoring shall be conducted every other year on a water year basis (i.e., October 1 through September 30), continuing on the existing ongoing monitoring schedule. Characterization monitoring shall assess E. coli densities throughout the San Pedro Creek watershed. Human-, horse-, and dog-specific genetic markers shall be analyzed for a subset of the samples to investigate whether these species contribute fecal contamination to the Creek. The

characterization monitoring shall be iterative in nature and allow for flexibility of design and details in future years. Subsequent years of characterization monitoring, at a minimum, shall have the same level of effort as previous years; however, in future years, based on the results of the previous monitoring, alternative sampling stations may be targeted, sampling intensities may be modified, sampling frequencies may be adjusted, and/or the species-specific genetic marker sampling may be revised.

(2) **Implementation Level** – The City and County shall conduct characterization monitoring activities as follows:

(a) Sampling Locations – while based on the previous year's results appropriate sampling locations can be selected for each monitoring year, the "Creek Mouth" site shall always be sampled during events when species-specific genetic marker samples are collected.

(b) Number of Samples – in each monitoring year, a minimum of one hundred ten (110) fecal indicator bacteria samples shall be collected.

(c) Sampling Frequency – the characterization stations shall be sampled a minimum of eight times over the course of the water year, as follows:

(i) Wet season – four sampling events shall be conducted during the wet season months (November through March). To the extent possible, wet season sampling events shall occur during wet weather, which as defined in the TMDL is any day (e.g. 24-hour period) with 0.1 inch of rain or more and the following three days;

(ii) Dry season – four sampling events shall be conducted during the dry season months (May through September).

(iii) In subsequent monitoring years, based on the results of the previous year's monitoring, the sampling frequency may be modified, as appropriate, to provide the most useful results.

(d) Constituents – All samples shall be analyzed for *E. coli*. In addition, during each monitoring year, at a minimum, samples collected at four stations during four sampling events (two wet season, two dry season) shall be analyzed for human-, horse-, and dog-specific genetic markers to assess temporal and spatial fecal waste contributions from the targeted host species to the Creek and Beach.

(e) Monitoring Protocols and Data Quality – Where applicable, monitoring data must be SWAMP comparable. Minimum data quality shall be consistent with the latest version of the SWAMP Quality Assurance

Project Plan (QAPP) for applicable parameters, including data quality objectives, field, equipment, and laboratory blanks, field duplicates, laboratory spikes, and clean techniques, using the most recent SWAMP Standard Operating Procedures.

(f) Future Revisions – Any and all changes to the characterization monitoring plan in future years shall be submitted to the Executive Officer for review and acceptance no later than 90 days prior to implementation.

(3) **Reporting**

(a) In their Annual TMDL Status and Monitoring Reports the City and County shall submit a comprehensive Characterization Monitoring Report reporting on any data collected during the preceding October 1 through September 30 monitoring period.

(b) Data evaluation shall focus on addressing the following questions:

(i) Which land uses and/or sources contribute most to bacteria impairments in San Pedro Creek watershed?

(ii) Are controllable sources of fecal contamination (e.g., human, horses, and dogs) present in the San Pedro Creek watershed?

(iii) What are the multi-year indicator bacteria density trends in the Creek and at the Beach (i.e., do control measures appear to be reducing bacteria)?

(c) As appropriate, the Report shall include the following:

(i) Immediately following the Table of Contents, a Data Tables section that includes all the data collected pursuant to Provision C.14.b.iii. and contains the following information pertaining to the foregoing monitoring period:

a. A map showing all monitoring locations;

b. Immediately following the map, a single completed Locations and Parameters Table containing the following columns or rows for each location sampled: numeric site identifier, a short-hand site name such as “Creek Mouth,” latitude, longitude, and parameters assessed;

c. Immediately following the Locations and Parameters Table, a single completed Results Table containing the following columns or rows for each location sampled: the short-hand site name and datum/result for each constituent analyzed. Constituents that exceed applicable water quality objectives shall be highlighted.

(ii) For all data, a statement of the data quality.

(iii) An analysis of the data, which includes the following:

a. Basic descriptive statistics using indicator bacteria data;

b. Identification and evaluation of any controllable sources of fecal contamination (e.g., human, horses, and dogs) present in the San Pedro Creek watershed;

c. Identification and analysis of any trends in stormwater or receiving water quality; and

d. Consideration of variability in the data sets.

(iv) A discussion of the data, which shall:

a. Discuss monitoring data relative to prior conditions, beneficial uses and applicable water quality standards as described in the Basin or the Ocean plans;

b. Where appropriate, develop hypotheses to investigate regarding pollutant sources, trends, and BMP effectiveness;

c. Identify and prioritize water quality problems;

d. Identify potential sources of water quality problems;

e. Describe follow-up actions;

f. Evaluate the effectiveness of existing control measures; and

g. Identify management actions needed to address water quality problems.

C.14.c. City of San Mateo Marina Lagoon Beaches Bacteria Controls

The City of San Mateo (City) shall implement the actions in this subprovision to control fecal indicator bacteria. For each requirement, the City shall focus implementation in areas where benefits are most likely to accrue, i.e., where bacteria reduction is likely to reduce bacteria densities in San Mateo Lagoon and particularly at Parkside Aquatic Park Beach and Lakeshore Park Beach. Many of the required implementation actions are described in the City's TMDL Basin Plan Amendment Implementation Plan, 2018 (TMDL Implementation Plan). This subprovision implements the urban runoff requirements of the San Francisco Bay Beaches Bacteria TMDL (TMDL) applicable to the City.

i. Control Measures to Achieve Indicator Bacteria Wasteload Allocations

(1) **Task Description** – The City shall implement bacteria control measures and pollution prevention strategies to prevent or reduce discharges of bacteria from their storm drain systems to San Mateo Lagoon to the maximum extent practicable.

(2) **Implementation Level** – In order to comply with this element:

(a) The City shall enhance its efforts to prohibit potential illicit discharges into its storm sewer system.

(b) The City shall expand or enhance dog waste management strategy, including installing and/or maintaining dog waste clean-up signs, waste bag dispensers, and trash cans at a minimum of two parks/open spaces near San Mateo Lagoon beaches.

(c) The City shall enhance its public outreach and education regarding proper management of pet waste management, dumpsters and garbage bins; proper outdoor washdown procedures (restaurant mats, dining areas, commercial areas, mobile cleaner operations) by taking a minimum of three of the following actions:

(i) Prepare and implement public service announcements regarding pet waste management and associated impacts to the Lagoon.

(ii) Distribute a mailer to residents and businesses describing the adverse impact on water quality and recreation of improper pet waste management.

(iii) Add information to the City website about the TMDL and the water quality monitoring and BMP implementation activities, as well as information about proper pet waste management and the impact of improperly deposited waste on water quality of the Lagoon and public health.

(iv) Create and broadcast a pre-rain pet waste cleanup public service announcement to residents, reminding them to cleanup accumulated pet waste in their yards that could otherwise get washed into the Lagoon.

(v) Participate in local events and festivals to distribute pet waste management materials (educational fliers, dog waste bags, etc.).

(d) The City shall continue its goose control program, as described in its TMDL Implementation Plan.

(e) The City shall continue implementing its "Illegal Dumping Screening Program," its "Spill, Dumping, and Complaint Response Program," and its "Commercial/Industrial Business Inspection Plans," including implementing associated enforcement, with a focus near the beaches as appropriate.

(f) Once during the Permit term, determine if boaters in San Mateo Lagoon could be a source of bacteria; if yes, conduct or enhance outreach to improved boaters' behaviors regarding bacteria sources (e.g., litter and human waste).

(3) **Reporting**

(a) In each Annual Report, the City shall summarize the actions it took to satisfy the requirements in Provision C.14.c.i.(2). during the foregoing October 1 through September 30 period. This report shall include:

(i) The number, type, and locations and/or frequency (if applicable) of control measures; and

(ii) The description and scope of pollution prevention measures; and

(iii) A data table and graphs showing Enterococcus data collected during the reporting year for the two San Mateo Lagoon beaches, Parkside Aquatic Park Beach and Lakeshore Park Beach.

(b) For the Annual Report due in 2023, quantitatively and qualitatively evaluate the effectiveness of the City's actions toward wasteload allocation attainment and modify or refocus control measure implementation efforts as appropriate.

ii. Phase Two Measures

(1) **Task Description** – If wasteload allocations are not met by December 13, 2021, the City shall implement additional bacteria control measures and pollution prevention strategies to prevent or reduce discharges of bacteria from their storm drain systems to San Mateo Lagoon.

(2) **Implementation Level** – In order to comply with this element:

(a) By July 1, 2022, the City shall submit a plan describing BMPs being implemented and additional BMPs that will be implemented to reduce discharges of bacteria to the beach. The plan shall include all actions described in Provision C.14.a that are likely to reduce bacteria loads to San Mateo Lagoon and particularly at Parkside Aquatic Park Beach and Lakeshore Park Beach. The plan also shall include an implementation schedule and milestones.

(b) By July 1, 2022, the City shall implement this plan.

(c) By September 30, 2022, the City shall submit a supplemental monitoring plan (supplemental to ongoing beach monitoring) to investigate remaining bacteria sources to the beach. This plan may develop data and a quantitative rational to support (i) locations and types of enhanced bacteria BMPs, and/or (ii) revision of the numeric targets to reflect bacteria contributions from non-controllable sources. Include an implementation schedule.

(3) **Reporting** – Starting with the 2023 Annual Report and for Annual Reports submitted in following years, the City shall summarize the actions it took to satisfy the requirements in Provision C.14.c.ii.(2) during the foregoing October 1 through September 30 period. This report shall include:

(a) The number, type, and locations and/or frequency (if applicable) of control measures;

(b) The description and scope of pollution prevention measures; and

(c) A data table and graphs showing enterococcus data collected during the reporting year for the two San Mateo Lagoon beaches, Parkside Aquatic Park Beach and Lakeshore Park Beach.

iii. Planning for Future Actions

(1) **Task Description** – If wasteload allocations are not met by December 13, 2026, Permittees shall prepare a plan for additional actions to attain the water quality objective in the next permit term.

(2) **Implementation Level** – Permittees shall prepare a plan that includes an assessment of bacteria sources and describes additional control

measures or increased levels of existing control measures that will be implemented to attain bacteria water quality objectives. The plan shall include an implementation schedule and proposed milestones. Additional monitoring studies to identify sources, track, and/or quantify the risk of bacteria in the receiving water may be included in this effort.

(3) **Reporting** – Submit the plan no later than 180 days prior to Permit expiration.

C.14.d. City of Half Moon Bay and San Mateo County Bacteria Controls

The City of Half Moon Bay (City) and San Mateo County (County) shall implement the actions in this subprovision to control bacteria. The City and County shall focus implementation of bacteria control measures in areas where benefits are most likely to accrue, i.e., where controls are likely to reduce bacteria mass in Pillar Point Harbor and Venice Beach. The goal of this subprovision is to implement the municipal stormwater runoff requirements of the Pillar Point Harbor and Venice Beach Bacteria TMDL and achieve the TMDL wasteload allocations. The City and County may comply with any requirement of this subprovision through a collaborative effort.

i. Control Measures to Achieve Bacteria Wasteload Allocations

(1) **Task Description** – The City and County shall implement bacteria control measures and pollution prevention strategies within their respective jurisdictions to prevent or reduce discharges of bacteria from storm drain systems to meet the municipal stormwater runoff TMDL wasteload allocations listed in the Pillar Point Harbor and Venice Beach Bacteria TMDL.

(2) **Implementation Level** – To comply with this element:

(a) The City and County each shall prepare an Initial Report acceptable to the Water Board Executive Officer that describes actions they are taking and will take to prevent or reduce discharges of bacteria to and from storm sewer systems. This report shall be submitted to the Water Board **by July 1, 2022**. The report shall include a schedule, timeline, or frequency of implementation activities for all actions, including, but not limited to, the actions described in Provision C.14.d.i.(2).(b), below.

(b) The City and County shall prohibit and prevent, to the maximum extent possible, discharges of bacteria into the storm sewer system within five years of the effective date of the TMDL as follows:

(i) Illicit sanitary sewer connections: The City and County shall train the staff responsible for enforcing industrial and commercial site

control and for detecting and eliminating illicit discharges to investigate potential connections of sanitary sewer lines to stormwater lines. The City and County shall ensure that staff conduct illicit sanitary sewer connection investigations and include such investigations in their routine inspections as well. The City and County shall use enforcement authorities to ensure transport to surface waters of the following potential bacteria sources is minimized:

(ii) Illicit discharges to the MS4, by increasing illicit discharge investigations in the vicinity of Pillar Point Harbor and Venice Beach

a. Roof and exterior washoff of commercial and industrial structures and surfaces, where these sources are likely to contain bacteria, such as from rodent and bird wastes, that are likely to be discharged to receiving water

b. Outdoor garbage and recycle bins

c. Outdoor floor mat washoff

d. Portable toilet spills and leakage

(iii) Human waste from homeless encampments, by implementing Provision C.14.a.iii in areas likely to discharge to the beaches;

(iv) Pet waste

a. Develop and implement a visual inspection program to identify high pet waste accumulation areas and develop a cleanup plan for these areas, including specific actions before winter rains;

b. Install new or additional dog waste cleanup signs, waste bag dispensers, and trash bins in high dog waste accumulation areas;

c. Evaluate and improve the service frequency of dog waste bins, as needed; and

d. Enhance pet waste public outreach and education campaign that includes at least three of the following:

- Prepare and broadcast public service announcements regarding pet waste management and associated impacts to the beaches and their catchments on social media, local television, and/or local newspapers;

- Distribute a mailer to residents and businesses describing proper pet waste management, and the adverse impact to the beaches and those recreating on them from improper pet waste management;
- Add to or maintain web pages on the City and County websites with information on the TMDL and the water quality monitoring and BMP implementation activities, as well as information about proper pet waste management and the impact of improperly deposited waste on water quality and public health;
- Broadcast a pre-rain pet waste cleanup email alert to residents, reminding them to cleanup accumulated pet waste in their yards that could otherwise get washed into the beaches; and
- Participate in local events and festivals to distribute pet waste management materials (educational fliers, dog waste bags, etc.).

e. The City and County shall include additional actions described in Provision C.14.a. in their Initial Reports and in their actions to prohibit and prevent discharges of bacteria into the storm sewer system to the extent and in the locations they deem helpful for achieving the TMDL wasteload allocation.

(3) **Reporting** – No later than March 30 of each year, the City and County shall submit a comprehensive TMDL Implementation Status and Monitoring Report, reporting on the specific control measures (as listed in Provision C.14.d.i.(2)) that have been implemented in the TMDL Project Area during the foregoing July 1 through June 30 period. This report shall include:

(a) The number, type, and locations and/or frequency of control measures;

(b) The description, scope, and start date of pollution prevention measures;

(c) Listing, timeline, and discussion of the actions scheduled for implementation during the upcoming year; and

(d) Clear statements of the responsibilities of each participating Permittee for implementation of pollution prevention or control measures.

ii. Water Quality Monitoring

(1) **Task Description** – The City and County shall ensure the beaches are sampled weekly (i.e., that current bacteria sampling continues) and shall evaluate beach monitoring data. The purposes of the water quality monitoring are to determine whether the TMDL wasteload allocations are attained; further identify and characterize the source areas or land uses with the greatest bacteria contributions; and direct adaptive implementation of controls to reduce or eliminate bacteria discharges from different sources over time.

(2) **Implementation Level** – At a minimum, the City and County shall continue monitoring the beaches as required under California Health and Safety Code section 115880 and evaluate the resulting data. The City and County may collaboratively or individually develop and conduct a source assessment study to better characterize sources and spatial and temporal extent of bacteria impairment at the beaches and to evaluate the contribution of bacteria from natural sources.

(3) **Reporting** -- No later than March 30 of each year, the City and County shall submit a comprehensive TMDL Implementation Status and Monitoring Report describing the monitoring that has been conducted in the TMDL Project Area during the foregoing October 1 through September 30 period. The City and County are encouraged to collaborate so as to prepare a single report on all the data. This report shall include:

(a) Data evaluation that addresses the following questions:

(i) Are the TMDL targets and allocations met at the beaches?

(ii) Are controllable sources of fecal contamination (e.g., human, horses, and dogs) being contained and do control measures appear to be effective in reducing bacteria loads?

(iii) Which land uses and/or sources contribute most to bacteria impairments?

(b) The Report shall include the following:

(i) Information about the sampling locations, timing and frequency of sampling, analytical method(s), and a map of monitoring sites

(ii) An analysis of the data, which includes the following:

a. Basic descriptive statistics using indicator bacteria data

b. Identification and evaluation of available data that indicate the presence of controllable sources of fecal contamination (e.g., human, horses, and dogs)

c. Identification and analysis of any trends in stormwater or receiving water quality

d. Consideration of variability in the data sets.

(iii) A discussion of the data, which shall:

a. Discuss monitoring data relative to prior conditions, beneficial uses and applicable water quality standards as described in the Pillar Point Harbor and Venice Beach Bacteria TMDL;

b. Identify potential sources of water quality problems;

c. Where appropriate, develop hypotheses to investigate regarding pollutant sources, trends, and BMP effectiveness;

d. Evaluate the effectiveness of existing control measures; and

e. Identify and describe the follow-up management actions needed to address water quality problems.

iii. Planning for Phase Two Actions

(1) **Task Description** – If wasteload allocations are not met within five years of the TMDL effective date, Permittees shall develop a Phase Two Report that describes the actions being implemented and additional actions that will be taken to reduce the discharge of bacteria to the beaches.

(2) **Implementation Level** – In preparing the Phase Two Report, Permittees shall assess bacteria sources; describe control actions taken; and describe additional control measures or increased levels of existing control measures that will be implemented to attain bacteria water quality objectives. The report shall contain an implementation schedule and proposed milestones. Additional monitoring studies to identify sources, track, and/or quantify the risk of bacteria in the receiving water may be included in this effort.

(3) **Reporting** – Submit the Phase Two Report within five years of the TMDL effective date.

C.15. Exempted and Conditionally Exempted Discharges

The objective of this provision is to exempt unpolluted non-stormwater discharges from Discharge Prohibition A.1 and to conditionally exempt non-stormwater discharges that are potential sources of pollutants. In order for non-stormwater discharges to be conditionally exempted from Discharge Prohibition A.1, the Permittees must identify appropriate BMPs, monitor the non-stormwater discharges where necessary, and ensure implementation of effective control measures – as listed below – to eliminate adverse impacts to waters of the State consistent with the discharge prohibitions of the Order.

C.15.a. Exempted Non-Stormwater Discharges (Exempted Discharges):

i. **Discharge Type** – In carrying out Discharge Prohibition A.1, the following unpolluted discharges are exempted from prohibition of non-stormwater discharges:

(1) Flows from riparian habitats or wetlands;

(2) Diverted stream flows;

(3) Flows from natural springs;

(4) Rising ground waters;

(5) Uncontaminated and unpolluted groundwater infiltration;

(6) Single family homes' pumped groundwater, foundation drains, and water from crawl space pumps and footing drains;

(7) Pumped groundwater from drinking water aquifers (excludes well development); and

(8) NPDES permitted discharges (individual or general permits).

ii. **Implementation Level** – The non-stormwater discharges listed in Provision C.15.a.i, above, are exempted unless they are identified by the Permittees or the Executive Officer as sources of pollutants to receiving waters. If any of the above categories of discharges, or sources of such discharges, are identified as sources of pollutants to receiving waters, such categories or sources shall be addressed as conditionally exempted discharges in accordance with Provision C.15.b, below.

C.15.b. Conditionally Exempted Non-Stormwater Discharges:

The following non-stormwater discharges are also exempt from Discharge Prohibition A.1 if they are either identified by the Permittees or the Executive Officer as not being sources of pollutants to receiving waters, or if appropriate control measures to eliminate adverse impacts of such sources are developed

and implemented in accordance with the tasks and implementation levels of each category of Provision C.15.b.i-vi, below.

i. Discharge Type – Pumped Groundwater, Foundation Drains, and Water from Crawl Space Pumps and Footing Drains

(1) **Pumped Groundwater from Non-Drinking Water Aquifers**

Groundwater pumped from a monitoring well, used for groundwater basin management, which is owned and/or operated by a Permittee is allowed if the following requirements are met:

(a) **Implementation Level** – Twice a year (once during the wet season and once during the dry season), representative samples shall be taken from each aquifer that potentially will discharge or has discharged into a storm drain. Samples collected and analyzed for compliance in accordance with self-monitoring requirements of other NPDES permits or sample data collected for drinking water regulatory compliance may be submitted to comply with this requirement as long as they meet the following criteria:

(i) The water samples shall meet water quality standards, including effluent limitations in the VOC and Fuel General Permit, NPDES Permit No. CAG912002.

(ii) The water samples shall be analyzed using approved U.S. EPA methods: (a) U.S. EPA Method 8015 Modified for total petroleum hydrocarbons; (b) U.S. EPA Method 624.1 and 625.1 or equivalent for volatile and semi-volatile organic compounds, respectively; and (c) approved U.S. EPA methods to meet the triggers for the metals listed in the General Permit discussed in Provision C.15.b.i.(1)(a)(i), above.

(iii) The water samples shall be analyzed for pH and turbidity.

If a Permittee is unable to comply with the above criteria, the Permittee shall notify the Water Board upon becoming aware of the compliance issue.

(b) **Required BMPs and Monitoring** – When greater than 2,500 gallons per day of uncontaminated (meeting the criteria in Provision C.15.b.i.(1)(a)(i)) groundwater is discharged from these monitoring wells, the following shall be implemented:

(i) Test the receiving water, upstream and downstream of the discharge point, to determine ambient turbidity and pH prior to discharging. Receiving water monitoring is not required if the discharge infiltrates into a dry creek immediately downstream.

(ii) Test water samples for turbidity and pH on the first two consecutive days of dewatering.

(iii) Maintain proper control of the discharge at the discharge point to prevent erosion, scouring of banks, nuisance, contamination, and excess sedimentation in the receiving waters.

(iv) Maintain proper control of the flow rate and total flow during discharge so that it will not have a negative impact on the receiving waters.

(v) Appropriate BMPs shall be implemented to remove total suspended solids and silt to allowable discharge levels. Appropriate BMPs may include filtration, settling, coagulant application with no residual coagulant discharge, minor odor or color removal with activated carbon, small scale peroxide addition, or other minor treatment.

(vi) Turbidity of the discharged groundwater shall be maintained below 50 NTU for discharges to dry creeks, 110 percent of the ambient stream turbidity for a flowing stream with turbidities greater than 50 NTU, or 5 NTU above ambient turbidity for flowing streams with turbidities less than or equal to 50 NTU.

(vii) The pH of the discharged groundwater shall be maintained within the range of 6.5 to 8.5 and shall not vary from normal ambient pH by more than 0.5 pH units.

(c) If the Permittee is unable to comply with the criteria in Provision C.15.b.i.(1)(b)(i)-(vii), discharge shall cease immediately and the Permittee shall employ treatment to meet the above criteria, use other means of disposal, or apply for coverage under the Water Board's NPDES VOC and Fuel General Permit, or Groundwater General Permit, as appropriate.

(d) **Reporting** – The Permittees shall maintain records of these discharges, BMPs implemented, and any monitoring data collected.

(2) **Pumped[53] Groundwater, Foundation Drains, and Water from Crawl Space Pumps and Footing Drains**

(a) Proposed new discharges of uncontaminated groundwater at flows of 10,000 gallons/day or more and all new discharges of potentially contaminated groundwater shall be reported to the Water Board so that they can be subject to NPDES permitting requirements. Proposed new discharges of uncontaminated groundwater at flows of less than 10,000 gallons/day shall be encouraged to discharge to a landscaped area or bioretention unit that is large enough to accommodate the volume.

(b) If the groundwater cannot be discharged to a landscaped area or bioretention unit and the discharge is greater than 2,500 gallons per day, it can only be considered for discharge once the following sampling is done to verify that the discharge is uncontaminated:

(i) The discharge shall meet water quality standards, including effluent limitations in the VOC and Fuel General Permit, NPDES Permit No. CAG912002.

(ii) The Permittees shall require that water samples from these discharge types be analyzed using the following approved U.S. EPA methods:

- U.S. EPA Method 8015 Modified for total petroleum hydrocarbons, and U.S. EPA Method 624.1 and 625.1 for volatile and semi-volatile organic compounds, respectively.
- The sufficiently sensitive (as identified in Attachment G of NPDES Permit No. CAG912002) approved U.S. EPA Methods (40 C.F.R Part 136) for the constituents listed below that meet the corresponding Reporting Limits:

[53] Pumped groundwater not exempted in Provision C.15.a, or conditionally exempted in Provision C.15.b.i.(1).

Constituent	Reporting Limit
Antimony	6 µg/l
Arsenic	10 µg/l
Beryllium	4 µg/l
Cadmium	0.90 µg/l
Chromium III	50 µg/l
Chromium VI	8.1 µg/l
Copper	3.4 µg/l
Lead	2.6 µg/l
Manganese	50 µg/l
Mercury	4 ng/l
Nickel	10 µg/l
Selenium	4.1 µg/l
Silver	1.1 µg/l
Thallium	1.7 µg/l
Zinc	47 µg/l
Cyanide	2.9 µg/l
Chlorine, total residual	0.05 µg/l
Total Petroleum Hydrocarbons	50 µg/l

(c) **Monitoring and Required BMPs** – When the discharge has been verified as uncontaminated per sampling completed in Provision C.15.b.i.(2)(b), above, the Permittees shall require the following:

(i) Test the receiving water, upstream and downstream of the discharge point, to determine ambient turbidity and pH prior to discharging. Receiving water monitoring is not required if the discharge infiltrates into a dry creek immediately downstream or if accessing the sampling points poses safety to personnel.

(ii) Test water samples for turbidity and pH on the first two consecutive days of dewatering.

(iii) Maintain proper control of the discharge at the discharge point to prevent erosion, scouring of bank, nuisance, contamination, and excess sedimentation in the receiving waters.

(iv) Maintain proper control of the flow rate and total flow during discharge so that it will not have a negative impact on the receiving waters.

(v) Appropriate BMPs to render pumped groundwater free of pollutants and therefore exempted from prohibition may include the following: filtration, settling, coagulant application with no residual coagulant discharge, minor odor or color removal with activated carbon, small scale peroxide addition, or other minor treatment.

(vi) Turbidity of discharged groundwater shall be maintained below 50 NTU for discharges to dry creeks, 110 percent of the ambient stream turbidity for a flowing stream with turbidities greater than 50 NTU, or 5 NTU above ambient turbidity for a flowing stream with turbidities less than or equal to 50 NTU.

(vii) The pH of discharged water shall be maintained within the range of 6.5 to 8.5 and shall not vary from normal ambient pH by more than 0.5 pH units.

(d) If a Permittee determines that a discharger or a project proponent is unable to comply with the criteria in Provision C.15.b.i.(2)(c)(i)-(vii), the Permittee shall require the discharge to cease immediately and require that the discharger employ treatment to meet the above criteria, use other means of disposal, or apply for coverage under the Water Board's NPDES VOC and Fuel General Permit (NPDES Permit No. CAG912002), or Groundwater General Permit (NPDES Permit No. CAG912004), as appropriate.

(e) **Reporting** – The Permittees shall maintain records of these discharges, BMPs implemented, and any monitoring data collected.

ii. Discharge Type – Air Conditioning Condensate

Required BMPs – Condensate from air conditioning units shall be reused or directed to landscaped areas or the ground. Discharge to a storm drain system may be allowed if discharge to landscaped areas or the ground is not feasible.

iii. Discharge Type – Emergency Discharges of Firefighting Water and Foam

(1) Emergency Discharges – Discharges resulting from emergency firefighting activities.

(2) Regional Coordination

(a) Permittees shall collectively convene a regionwide Firefighting Discharges Working Group (Working Group) together with Water Board staff – and other stakeholders identified in Provision C.15.b.iii.(2)(vi), below – to identify and evaluate opportunities to reduce the impacts of emergency discharges to the MS4 associated

with firefighting activity. The Permittees shall collectively (e.g., through the Working Group):

(i) Prior to the submittal of the Firefighting Discharges Report, convene the Working Group at least twice per year. Thereafter, convene the Working Group at least annually.

(ii) Assess the adequacy of existing BMPs and standard operating procedures (SOPs) to address the potential adverse water quality impacts of firefighting water and foam discharged during emergencies (e.g., containment and cleanup),[54] including coordination within and between municipal departments, districts and jurisdictions, coordination between firefighting personnel and containment and cleanup crews, coordination with contracted staff, and coordination with relevant agencies (e.g., CalFire), as appropriate.

If the existing BMPs and SOPs need updates or are otherwise inadequate, suggest changes to those BMPs and SOPs so that they are updated and adequate. If new BMPs and SOPs are needed, recommend model BMPs and SOPs.

(iii) Assess the adequacy of existing resources (e.g., MS4 maps and maps that identify environmentally sensitive areas) used to determine if and how firefighting water and foam discharged during emergencies will impact receiving waters,[55] in order to address pollutant discharges (e.g., by facilitating containment and cleanup).

(iv) Investigate which firefighting foams are the least environmentally harmful (i.e., have the least adverse water quality and beneficial use effects, including those related to biodegradation, biomagnification, bioaccumulation, and acute and chronic toxicity), both for Class A foams and Class B foams. Then, develop SOPs to use the least environmentally harmful firefighting foams (and dispose of the more environmentally harmful foams) and to reduce the use of firefighting foams, without jeopardizing the protection of life or property, during emergencies.

[54] The Working Group does not necessarily have to review every single Permittee's BMPs and SOPs. It may review a representative subset.

[55] The Working Group does not necessarily have to review every single Permittee's resources. It may review a representative subset.

(v) Prepare outreach materials on containment and cleanup BMPs and SOPs for contractors that are hired by private parties to participate in the containment and cleanup of discharges of firefighting water and foam associated with firefighting activities within their jurisdictions. Additionally, prepare outreach materials – regarding good housekeeping practices and preventive measures – for sites that are prone to firefighting emergencies. Distribute those outreach materials to all such contractors and sites by September 30, 2025.

Subsequently, if it is identified that the outreach materials need to be revised or updated, they shall be revised or updated, and then redistributed.

(vi) Pursue coordination, information sharing, feedback and Working Group participation, from relevant agencies and organizations such as the California Department of Forestry and Fire Protection (Cal Fire), the California Department of Toxic Substances Control (DTSC), the U.S. Forest Service (USFS), the State and Regional Water Boards, permittees of other NPDES municipal stormwater permits, other state and federal agencies, and external workgroups (such as Petro-Chemical Mutual Aid), regarding interagency coordination and communication, BMPs, SOPs, and the least environmentally harmful firefighting foams.

(vii) Discuss reporting on emergency discharges of firefighting water and foam. The purpose of this reporting is first to provide transparency about the usage and water quality impacts of firefighting water and foam, and second to track reductions in those impacts over time, which is an anticipated outcome of the implementation of Provision C.15.b.iii.

This shall include discussion of the timing of such reporting, and how that reporting will be submitted to the Water Board. This shall additionally include discussion of how reporting is triggered (e.g., if a certain level of discharge enters the MS4 system, if any level of discharge enters a receiving water, and if any level of PFAS foam is used pursuant the exemptions in SB 1044), as well as the content of the reporting (e.g., the date and time of the discharge, Material Safety Data Sheet (MSDS) and any supplemental information for that foam, the quantity of water and foam concentrate used, the quantity and rate of water and foam concentrate discharged to the MS4 and/or receiving water, the point of discharge to the MS4 and/or receiving water, and

controls implemented to contain and/or mitigate discharges and impacts).

(b) Reporting – The Permittees shall collectively submit a Firefighting Discharges Report by September 30, 2025, that describes progress on, and recommendations regarding, the implementation of the items listed in Provision C.15.b.iii.(2)(a)(i)-(vii). The Firefighting Discharges Report shall be updated as needed on an ongoing basis, to incorporate recommendations by the Working Group.

(3) Ongoing Implementation Practices

(a) When the Firefighting Discharges Report is submitted, the Permittees shall begin implementation of the recommendations included therein.

(b) Permittees shall ensure proper BMPs and SOPs are included in contracts for non-municipal (contracted) staff hired by Permittees to assist with containment and cleanup, and to assist with prevention and mitigation of adverse impacts, of discharges associated with firefighting emergencies.

(c) For large industrial sites within Permittees' jurisdictions – such as IGP sites, gas plants, gas concentration facilities, and chemical plants – Permittees shall evaluate the adequacy of those sites' BMPs and SOPs for the prevention, containment and cleanup of emergency firefighting discharges into storm drains and receiving waters within Permittees' jurisdictions, and cause those BMPs and SOPs to be improved as appropriate.

(d) By June 30, 2027, Permittees shall require all municipal staff and contracted staff hired by Permittees that participate in the containment and cleanup of (and as appropriate, that assist with any other activities associated with mitigating the adverse environmental impacts of) discharges of firefighting water and foam from firefighting emergencies within their jurisdictions to attend at least one training on containment and cleanup BMPs and SOPs (and other BMPs and SOPs, as appropriate). Trainings may be region-wide, program wide, or Permittee-specific. Permittees are encouraged to make these trainings available to contractors hired by private parties.

(e) Reporting

(i) In their Annual Reports, Permittees shall report on the implementation of Provisions C.15.b.iii.(3).(a)-(c).

(ii) In the 2027 Annual Reports, Permittees shall report on trainings conducted pursuant to Provision C.15.b.iii.(3)(d), including the

date(s) of training(s), topics covered, and the percentage of applicable municipal and contracted staff involved in containment and cleanup activities in attendance.

(4) Required BMPs

(a) The Permittees shall implement and/or require firefighting personnel acting within their jurisdictions to implement BMPs and SOPs for emergency discharges – in order to reduce potential and actual water quality impacts – to the extent that the implementation of such BMPs does not interfere with immediate emergency response operations or impact public health and safety.[56]

(b) During emergency firefighting situations, priority of efforts shall be directed toward life, property, and the environment (in descending order). Permittee staff, contractors, or firefighting personnel shall control the pollution threat from their activities during emergency firefighting situations to the extent that time and resources allow.

(5) Reporting

(a) Upon submittal of the Firefighting Discharges Report, Permittees shall implement the reporting recommendations and guidance therein.

(b) Otherwise, reporting requirements will be determined by Water Board staff on a case-by-case basis, such as for fire incidents at chemical plants.

iv. Discharge Type – Individual Residential Car Washing

(1) Required BMPs

(a) The Permittees shall discourage through outreach efforts individual residential car washing within their jurisdictional areas that discharge directly into their storm drain systems.

(b) The Permittees shall encourage individuals to direct car wash waters to landscaped areas, use as little detergent as necessary, or wash cars at commercial car wash facilities.

[56] Examples of BMPs to be considered are listed in the Fact Sheet. Where firefighting personnel may not be under the direct control of a Permittee, implement BMPs and SOPs, such as coordination and communication, identified in the Firefighting Discharges Report.

v. Discharge Type – Swimming Pool, Hot Tub, Spa, and Fountain Water Discharges

(1) Required BMPs

(a) The Permittees shall prohibit discharge of water that contains chlorine residual, copper algaecide, filter backwash or other pollutants to storm drains or to waterbodies. Such polluted discharges from pools, hot tubs, spas, and fountains shall be directed to the sanitary sewer (with the local sanitary sewer agency's approval) or to landscaped areas that can accommodate the volume.

(b) Discharges from swimming pools, hot tubs, spas and fountains shall be allowed into storm drain collection systems only if there are no other feasible disposal alternatives (e.g., disposal to sanitary sewer or landscaped areas) and if the discharge is properly dechlorinated to non-detectable levels of chlorine consistent with water quality standards.

(c) The Permittees shall require that new or rebuilt swimming pools, hot tubs, spas and fountains within their jurisdictions have a connection[57] to the sanitary sewer to facilitate draining events. The Permittees shall coordinate with local sanitary sewer agencies to determine the standards and requirements necessary for the installation of a sanitary sewer discharge location to allow draining events for pools, hot tubs, spas, and fountains to occur with the proper permits from the local sanitary sewer agency.

(d) The Permittees shall improve their public outreach and educational efforts and ensure implementation of the required BMPs and compliance in commercial, municipal, and residential facilities.

(e) The Permittees shall implement the Illicit Discharge Enforcement Response Plan from Provision C.5.b for polluted (contains chlorine, copper algaecide, filter backwash, or other pollutants) swimming pool, hot tub, spa, or fountain waters that get discharged into the storm drain.

(2) **Reporting** – The Permittees shall keep records of the authorized major discharges of dechlorinated pool, hot tubs, spa, and fountain water to the storm drain, including BMPs employed; such records shall be available for inspection by the Water Board.

[57] This connection could be a drain in the pool to the sanitary sewer or a sanitary sewer clean out located close enough to the pool so that a hose can readily direct the pool discharge into the sanitary sewer clean out.

vi. Discharge Type – Irrigation Water, Landscape Irrigation, and Lawn or Garden Watering

(1) **Required BMPs** – The Permittees shall promote measures that minimize runoff and pollutant loading from excess irrigation via the following:

(a) Promoting and/or working with potable water purveyors to promote conservation programs that minimize discharges from lawn watering and landscape irrigation practices;

(b) Promoting outreach messages regarding the use of less toxic options for pest control and landscape management;

(c) Promoting and/or working with potable water purveyors to promote the use of drought tolerant, native vegetation to minimize landscape irrigation demands;

(d) Promoting and/or working with potable water purveyors to promote outreach messages that encourage appropriate applications of water needed for irrigation and other watering practices; and

(e) Implementing the Illicit Discharge Enforcement Response Plan from Provision C.5.b, as necessary, for ongoing, large-volume landscape irrigation runoff to their storm drain systems.

(2) **Reporting** – The Permittees shall provide implementation summaries in each Annual Report.

C.16. Discharges to Areas of Special Biological Significance

This Provision applies to stormwater discharges from the County of San Mateo into the James V. Fitzgerald Marine Reserve Area of Special Biological Significance (ASBS). As set forth in the Fact Sheet, the State Water Board granted an exception to the ASBS discharge prohibition (ASBS Exception) in the Ocean Plan to applicants, including the County of San Mateo, for their existing stormwater discharges into ASBSs, provided they receive authorization to discharge by an NPDES permit; the discharges comply with all applicable terms, prohibitions, and special conditions of Attachment B - Special Protections (Special Protections) attached to and part of the ASBS Exception; and the discharges are essential for flood control or slope stability, designed to prevent soil erosion, occur only during wet weather, and are composed of only stormwater runoff. (See State Water Board Resolution No. 2012-0012, as amended by Resolution No. 2012-0031.) This Provision serves as the NPDES authorization for the County of San Mateo to discharge stormwater into the ASBS, provided the discharge meets the requirements below.

C.16.a. Discharges to the James V. Fitzgerald Marine Reserve ASBS

i. If the County of San Mateo meets all of the conditions set forth in Provision C.16.a.i. and C.16.a.ii., its stormwater discharges into the James V. Fitzgerald Marine Reserve ASBS from MS4 outfalls that were constructed or were under construction prior to January 1, 2005, are permitted. Permitted discharges must comply with the following:

(1) Be essential for flood control or slope stability, including roof, landscape, road, and parking lot drainage;

(2) Be managed or controlled to prevent soil erosion;

(3) Occur only during wet weather; and

(4) Be composed only of stormwater runoff, except as provided in the Special Protections of the ASBS Exception.

ii. The County of San Mateo shall comply with all applicable terms, prohibitions, and special conditions of the Special Protections of the ASBS Exception, including monitoring requirements, as they apply to stormwater. The Special Protections are hereby incorporated by reference into this Order and attached hereto as Attachment F. Notwithstanding anything to the contrary in this Order, the County of San Mateo shall not alter the natural ocean quality of the ASBS; shall not discharge trash into the ASBS; and shall not discharge non-stormwater into the ASBS except as provided in the Special Protections. As required by the Special Protections, the County of San Mateo shall address the preceding requirements (other than trash) in an ASBS Compliance Plan to

be approved by the Regional Water Board Executive Officer and comply with the compliance schedule set forth in the Special Protections.

iii. Reporting

(1) In addition to the monitoring requirements of the Special Protections, the County of San Mateo shall submit a copy of its ASBS Compliance Plan for approval by the Regional Water Board Executive Officer.

(2) If the results of any monitoring required under the Special Protections indicate that stormwater runoff is causing or contributing to an alteration of natural ocean water quality in the ASBS, the County of San Mateo shall submit a report to the State Water Board and Regional Water Board within 30 days of receiving the results according to the guidelines provided in the Special Protections.

(a) Within 30 days of the approval of the report by Regional Water Board Executive Officer, the County of San Mateo shall revise its ASBS Compliance Plan according to the guidelines provided in the Special Protections.

C.17. Discharges Associated with Unsheltered Homeless Populations

The purpose of this Provision is to identify and ensure the implementation of appropriate control measures, by all Permittees, to address non-stormwater discharges into MS4s associated with unsheltered homeless populations, including discharges from areas where unsheltered people congregate (e.g., formal and informal encampments including, but not limited to, informal tent or small cabin encampments, areas where people living in vehicles park, and safe parking areas). This Provision refers to such discharges collectively as discharges associated with homelessness.

C.17.a. Permittee Requirements

i. Task Description

(1) Permittees shall use results from biennial point-in-time census surveys and related information, such as municipal reports, databases, complaint logs, and other efforts, to gain a better understanding of unsheltered homeless population numbers within the Permittee's jurisdiction, the locations of unsheltered homeless residents, discharges and water quality-related impacts associated with homelessness, and associated sanitation-related needs.

(2) To encourage ongoing regional, countywide, and municipal coordination efforts, Permittees shall collectively develop a best management practice report that identifies effective practices to address non-storm water discharges associated with homelessness into MS4s that impact water quality and specific milestones for reducing such discharges within a given timeframe. The report shall:

(a) Describe practices that may be implemented by Permittees, including those currently being implemented, to address discharges associated with homelessness that are impacting water quality;

(b) Identify regional and/or countywide efforts and implementation actions to address discharges associated with homelessness (including how those efforts and actions have been affected by unsheltered homeless population growth). Include recommendations for engaging in these efforts and incorporating discharge-reduction strategies that also help meet the unsheltered population's clean water needs; and

(c) Identify actions taken during the COVID-19 pandemic to reduce the spread of the virus in homeless populations, such as temporarily housing homeless people in hotels, that may have reduced discharges associated with homelessness. Permittees shall consider the practicability of such actions for longer-term implementation.

This task's broader goals are to recognize non-stormwater pollutant sources associated with unsheltered homeless populations, reasons for discharges, and means by which they occur, and develop useful information that can be used toward prioritizing individual Permittee and collaborative best management practices for reducing or managing such discharges, while ensuring the protection of public health. Examples of collaborative implementation programs could include collaborative efforts between Permittees, Caltrans, sanitary sewer agencies, railroads, non-governmental organizations (NGOs), social service agencies and organizations, and other agencies.

ii. Implementation Level

(1) Each Permittee shall submit a map identifying, within its jurisdiction, the approximate location(s) of unsheltered homeless populations, including homeless encampments and other areas where other unsheltered homeless people live. The map shall identify those location(s) in relation to storm drain inlets and existing streams, rivers, flood control channels, and other surface water bodies within the Permittee's jurisdiction. The map shall be updated once during the Permit term, in 2025. Where Permittees are working collaboratively to address discharges associated with homelessness, they may collaborate to submit a joint map that covers their respective jurisdictions.

(2) Permittees shall report on the programmatic efforts being implemented within their jurisdiction, or at the countywide or regional level, to address MS4 discharges associated with homelessness. Examples of these efforts may include, but are not limited to: funding initiatives; adoption of ordinances to implement service programs; coordination with social services departments and NGOs; efforts to establish relationships with homeless populations; and alternative actions to reduce discharges to surface waters associated with homelessness, such as efforts towards providing housing, jobs, and related services for residents experiencing homelessness.

(3) Each Permittee shall identify and implement appropriate best management practices to address MS4 discharges associated with homelessness that impact water quality, including those impacts that can lead to public health impacts. In addition, Permittees shall also evaluate and assess the effectiveness of those practices, specifically by reporting on the BMP control measures being implemented, the approximate portion of the Permittee's unsheltered homeless population and locations being served by those control measures, and the portion and locations of the Permittee's unsheltered homeless population not reached, or not fully reached by the implemented control measures. Examples of actions that

may be implemented include, but are not limited to, access to emergency shelters; the provision of social services and sanitation services; voucher programs for proper disposal of RV sanitary sewage; establishment of designated RV "safe parking" areas or formalized encampments with appropriate services; provision of mobile pump-out services; establishing and updating sidewalk/street/plaza cleaning standards for the cleanup and appropriate disposal of human waste; and establishing trash and waste cleanup or pickup programs within the Permittee's jurisdiction, or at the countywide or regional level.

(4) Permittees shall use the information generated through the biennial point-in-time census surveys and related information, and the regional coordination tasks (as described above) to review and update their implementation practices.

iii. Reporting

(1) With the 2023 Annual Report, Permittees shall collectively submit, acceptable to the Executive Officer, a best management practice report as described in Provision C.17.a.i.(2).

(2) With the 2023 and 2025 Annual Reports, Permittees shall submit a map as described in Provision C.17.a.ii.(1).

With the 2023 and 2025 Annual Reports, each Permittee shall report on the best management practices being implemented and include the effectiveness evaluation reporting required in Provision C.17.a.ii.(3) and additional actions or changes to existing actions that the Permittee will implement to improve existing practices.

C.18. Control of Sediment Discharges from Coastal San Mateo County Roads

San Mateo County shall implement the following control program for sediment. San Mateo County shall perform and report on the control measures according to this Provision, which implements requirements of the Pescadero-Butano Sediment TMDL and actions being taken on San Gregorio Creek to reduce sediment delivery from road-related erosion on San Mateo County-maintained roads to stream channels. For the purpose of this Provision, road-related erosion includes, but is not limited to, erosion of the road surface, road shoulder, road drainage structures such as ditches and culverts, and erosional features such as gullies, landslides, or sloughing that are road-related. Road-related means either i) the road is the primary cause of an observed erosion feature that, without the road, would not have formed or ii) the road is significantly increasing erosion rates from an erosion feature that existed prior to road construction.[58] This Provision does not apply to erosion sites that are not road-related, such as erosion from a private property that discharges onto a County-maintained road during a rain event. This Provision applies to San Mateo County-maintained roads in the Pescadero and Butano Creek watersheds (Pescadero-Butano Creek watershed), and in the San Gregorio Creek watershed in San Mateo County. This Provision is in addition to and does not supersede Provision C.2.e for Rural Road and Public Works Construction and Maintenance.

C.18.a. Road Erosion Inventory

i. **Task Description** – San Mateo County shall prepare a road erosion inventory to identify and prioritize actions to reduce road-related erosion from hydrologically connected County roads. Hydrologic connectivity refers to the length or proportion of a road that drains runoff directly to streams or other water bodies. A hydrologically connected road is any road or road segment that has a continuous surface flow path to a natural stream channel during a storm runoff event.[59] A suitable design runoff event for most purposes is a 1-year 6-hour storm, with antecedent moisture conditions corresponding to the wettest month of the year. Connectivity usually occurs through road ditches, road surfaces, gullies, or other drainage structures or disturbed surfaces.

[58] For example, a landslide that existed prior to road construction would not be a road-related erosion feature, but a significant increase in erosion from the landslide caused by a poorly located road cross-drain would be a road-related erosion feature. Only the increased erosion caused by the cross-drain would need to be addressed under this provision.

[59] Weaver, W.E., Weppner, E.M. and Hagans, D.K. 2015. *Handbook for Forest, Ranch and Rural Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Upgrading, Maintaining and Closing Wildland Roads (Rev. 1st ed.),* prepared by Pacific Watershed Associates for Mendocino County Resource Conservation District, Ukiah, California, pp. 8 – 10, 50 – 51, and 332.

ii. Implementation Level – To comply with this subprovision, San Mateo County shall:

(1) Inventory all San Mateo County roads and include the following information: i) road location; ii) road segments that are hydrologically connected, iii) type of road (e.g., all-weather, seasonal, or abandoned); and iv) type of road surface (e.g., paved, gravel, or native soil).

For hydrologically connected road segments only, the Permittee shall comply with (2), (3), and (4) as follows:

(2) All road-related erosion sites with the potential to discharge at least 5 cubic yards of sediment to streams or other water bodies shall be documented. At a minimum, the location, type, and approximate dimensions of the erosion feature, an estimate of the sediment volume that could erode, its potential for delivery to a waterbody (e.g., high, moderate, or low), a site photo, a brief description of the proposed treatment for erosion repair, and permits required for the repair shall be documented.

(3) The location, shape (e.g., circular, elliptical, arch, box), size, and condition of all culverts along the roadway shall be documented. The following shall also be assessed:

(a) whether the culvert opening is clear and free of debris or sediment,

(b) the potential for the culvert to plug with debris carried from upstream during future runoff events; and

(c) the potential for flow diversion onto the roadway if the culvert is overtopped during a future runoff event.

Culvert plugging and flow diversion potential shall at a minimum be documented as 'none,' 'low,' 'moderate,' or 'high,' consistent with appropriate standards.[60,61,62]

(4) For culverts with a moderate to high plugging potential, the Permittee shall develop a brief description of the proposed improvement(s), priority for treatment, and required permits.

iii. Reporting – The road erosion inventory for the Pescadero-Butano Creek watershed shall be submitted to the Water Board in the 2023 Annual Report. The road erosion inventory for the San Gregorio Creek watershed shall be submitted to the Water Board in the 2025 Annual Report. The road erosion inventory shall be submitted in ArcGIS and Google Earth KML format with an accompanying report that provides all the information listed in the subprovision above, in addition to:

(1) A summary table for both the Pescadero-Butano Creek and San Gregorio Creek watersheds that lists the total drainage area, the total length of all San Mateo County roads, the total length of all hydrologically connected San Mateo County roads; and the percentage of unpaved San Mateo County roads that are hydrologically connected.

(2) Summary tables documenting the results of the road erosion inventory by watershed, where watershed means either the Pescadero-Butano Creek watershed or the San Gregorio Creek watershed.

New erosion sites identified during routine patrols shall be added to the road erosion inventory. San Mateo County shall provide a status update of these new erosion sites each year as part of its Annual Report.

C.18.b. Prioritized List and Schedule of Actions

i. Task Description – Based on the results of the road erosion inventory (C.18.a), San Mateo County shall develop a prioritized list and schedule of

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[60] Weaver, W.E., Weppner, E.M. and Hagans, D.K. 2015. *Handbook for Forest, Ranch and Rural Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Upgrading, Maintaining and Closing Wildland Roads (Rev. 1st ed.),* prepared by Pacific Watershed Associates for Mendocino County Resource Conservation District, Ukiah, California, pp. 99 – 106 and 136 – 150.

[61] Cafferata, P., Lindsay, D., Spittler, T., Wopat, M., Bundros, G., Flanagan, S., Coe, D. and Short, W. 2017. *Designing Watercourse Crossings for Passage of 100-year Flood Flows, Wood and Sediment (Updated 2017)*, California Forestry Report No. 1 (revised), State of California Department of Forestry and Fire Protection, Sacramento, California, pp. 23 - 43.

[62] Furniss, M.J, Flanagan, S. and McFadin, B. 2000. *Hydrologically-connected roads: an indicator of the influence of roads on chronic sedimentation, surface water hydrology, and exposure to toxic chemicals*, Stream Notes, July 2000. Stream Systems Technology Center, U.S. Forest Service, Rock Mountain Research Station, Fort Collins, Colorado.

actions to reduce road-related erosion and sediment delivery to stream channels. The goal of these efforts is to attain the following performance standards for San Mateo County roads identified in the Pescadero-Butano Sediment TMDL implementation plan:

(1) **For Roads**: Design, construct, and maintain roads to reduce road-related sediment delivery to channels to ≤ 500 cubic yards per mile per 20-year period; or i) limit the length of unpaved roads that are hydrologically connected to 25 percent of total road length; ii) ensure culvert inlets have low plugging potential; and, iii) install appropriate best management practices, such as critical dips,[63] at culverted crossings that have a diversion potential; and

(2) **For Gullies and/or shallow landslides**: Promote natural recovery and minimize human-caused increases in sediment delivery from unstable areas. Manage existing roads and other infrastructure to prevent additional erosion of legacy sediment delivery sites and/or delivery from potentially unstable areas.

ii. Implementation Level – To comply with this provision element, San Mateo County shall:

(1) Develop a prioritized list of control measures and pollution prevention strategies for all road-related erosion sites and for all culvert crossings to achieve the performance standards described in C.18.b.i(1). The list shall include a brief description of the control measure(s) to be taken and a projected completion date for each control measure. For paved roads, erosion and sediment control actions could primarily focus on road crossings to meet the performance standards.

(2) Develop a schedule to implement the prioritized list of control measures such that twenty percent (20%)[64] of the control measures for the Pescadero-Butano Creek watershed are scheduled for completion by June 30, 2027. Implementation of control measures for San Gregorio Creek is not required during this Permit term.

(3) If the length of hydrologically connected unpaved roads identified in C.18.a exceeds 25 percent of the total San Mateo County unpaved road length in a watershed,[65] then the prioritized list and schedule shall include

[63] A critical dip is a low berm and/or a dip in the road surface constructed across the roadway, used to divert flow off the road that would otherwise flow down the road surface.

[64] 20 percent means 20 percent of the total estimated cubic yards of potential sediment erosion identified in the road erosion inventory required by Provision C.18.a. .

[65] 25 percent is measured from road segments located within the watershed. It excludes road segments located outside the watershed.

an implementation plan and schedule of actions to reduce the percentage of hydrologically connected unpaved roads to 25 percent or less. Examples of treatments to reduce overall hydrologic connectivity of roads are provided by Weaver et al. (2015, Chapter 4).

iii. **Reporting** – The prioritized list and schedule for the Pescadero-Butano watershed shall be completed and submitted to the Water Board in the 2023 Annual Report. The prioritized list and schedule for the San Gregorio Creek watershed shall be completed and submitted to the Water Board in the 2025 Annual Report. San Mateo County shall update the prioritized list and schedule annually thereafter and submit it each year with its Annual Report. The submittal shall include a list of completed, in-progress, and scheduled control measure and pollution prevention strategies and shall include at a minimum the following information for each control measure:

(1) The project name

(2) The project location and a brief project description

(3) Authorizations required to implement the project, including status

(4) The actual or estimated project start and end dates

C.18.c. Implement Control Measures to Attain Performance Standards

i. **Task Description** – San Mateo County shall implement control measures and pollution prevention strategies to reduce road-related sediment delivery from County roads to stream channels in the Pescadero-Butano Creek and San Gregorio Creek Watersheds. At least twenty percent (20%) of the control measures identified in Provision C.18.b.ii shall be implemented and completed in the Pescadero-Butano Creek watershed by 2027.

ii. **Implementation Level** – To comply with this subprovision, San Mateo County shall:

(1) Continue to follow all the requirements of Provision C.2.e for Rural Road and Public Works Construction and Maintenance.

(2) Based on the priority list and schedule of actions developed in C.18.b, implement the control measures and pollution prevention strategies for road related erosion sites and culvert crossings to achieve the road performance standards described in C.18.b.i.(1).

(3) New County-maintained roads constructed on hillslopes exceeding 5 percent shall be constructed as storm-proofed roads, as defined by Weaver et al. (2015, Chapter 6), and shall meet the following specifications where applicable:

(a) Stream crossings have a drainage structure designed for the 100-year flood flow including woody debris and sediment (Cafferata, et al., (2017)).

(b) Stream crossings do not have the potential for flow diversion onto the roadway if the culvert is overtopped during a future runoff event.

(c) Culvert inlets have a low plug potential (trash barriers or deflectors are installed where needed).

(d) Culverts are installed at the base of the fill and in line with the natural channel.

(e) Emergency overflow culverts that emerge higher in the fill have full round, anchored downspouts that extend to the natural channel.

(f) Deep fills (deeper than a backhoe can reach from the roadbed) with undersized culverts or culverts with high plugging potential are fitted with an emergency overflow culvert.

(g) Bridges have stable, non-eroding abutments and do not significantly restrict 100-year flood flow.

(h) Stream crossing fills are stable.

(i) Approaching road surfaces and ditches are hydrologically disconnected from streams and stream crossing culverts to the maximum extent feasible using road shaping and road drainage structures.

(j) Class I (fish-bearing) stream crossings meet California Department of Fish and Wildlife and National Marine Fisheries Service fish passage criteria.

(k) Road surfaces and ditches are hydrologically disconnected from streams and stream crossing culverts to the maximum extent feasible. Road surface runoff is dispersed, rather than collected and concentrated.

(l) Ditches are drained by functional ditch relief culverts and/or rolling dips.

(m) Outflow from ditch relief culverts does not discharge to streams.

(n) Ditches and road surfaces drainage does not discharge (through culverts and/or rolling dips) onto active or potential landslides and/or into gullies.

(o) Fine sediment contributions from roads, cutbanks, and ditches are minimized by utilizing seasonal closures and installing a variety of

surface drainage techniques including road surface shaping (outsloping, insloping, or crowning), rolling dips, ditch relief culverts, water bars, and other measures to disperse road surface runoff and reduce or eliminate sediment delivery to the stream.

New County-maintained roads that are under construction within one year of the start of this Permit term shall be exempt from this requirement (C.18.c.ii.(3)).

iii. Reporting – A report documenting project status shall be submitted with the Annual Report each year starting the first year of project implementation. The report shall include a list of projects from the priority list and schedule of actions in Provision C.18.b that have been completed or are in-progress, including:

(1) An estimate of the potential sediment delivery to stream channels prevented by the implemented control measure or pollution prevention strategy.

(2) The percent of control measures in the prioritized list completed to date so that progress in achieving the implementation of 20 percent of the control measures for the Pescadero-Butano Creek watershed by June 30, 2027, is documented.

(3) A summary of projects scheduled for completion since the last Annual Report submittal that were delayed or not completed and an explanation of why they were delayed or not completed.

C.18.d. Monitoring

i. Task Description – San Mateo County shall conduct implementation, effectiveness, and forensic monitoring to assess the performance of implemented control measures.

ii. Implementation Level – To comply with this provision element, San Mateo County shall:

(1) Conduct implementation monitoring to assess whether the implemented control measure from C.18.c was fully and properly carried out as specified. Monitoring shall be performed once and conducted via a visual observation of the completed project.

(2) Conduct effectiveness monitoring to assess whether each of the implemented control measure(s) from C.18.c is adequately protective of water quality. Effectiveness monitoring shall be performed once and conducted via a visual inspection of the construction or repair site and the adjacent area. It shall be performed after the control measure has gone

through one year or one winter season in order to evaluate the effectiveness of the control measure during winter rain events.

(3) Conduct forensic monitoring in cases where an implemented control measure has failed. Forensic monitoring shall be conducted via a visual inspection of the failed control measure. Site photos shall be taken to adequately document the failure and a brief description of the mechanism and/or circumstances of failure shall be documented.

(4) Conduct routine monitoring of San Mateo County roads per the guidelines set forth in the County of San Mateo Routine Maintenance Program Manual (San Mateo County 2020, as may be amended).

iii. Reporting – San Mateo County shall document the results of the implementation, effectiveness, and forensic monitoring in a monitoring report submitted with the Annual Report each year starting in the first year of project implementation. If preferred, implementation monitoring information may be included with the implementation reporting required pursuant to Provision C.18.c.iii. The report shall include the following:

(1) Results of implementation and effectiveness monitoring, including:

(a) The monitoring point location and description of the project, or a reference to the specific project in the completed projects report.

(b) A brief description of the visual observations made during the monitoring inspection.

(c) The date the monitoring inspection was conducted.

(2) Results of any forensic monitoring conducted in the past year, including:

(a) The monitoring point location and description of the project, or a reference to the specific project in the completed projects report.

(b) Site photos documenting the failed control measure

(c) A brief description of the mechanism and/or circumstances of failure

(d) Proposed corrective measures to be taken and timeline for completion

(e) The date the monitoring inspection was conducted

(3) Results of annual monitoring conducted in the past year, including:

(a) A summary of all unpaved roads inspected at the end of the rainy season.

(b) A brief description of general road conditions and any specific problems noted, particularly with regard to sediment delivery to stream

channels. These observations will be used to make annual updates to the Road Erosion Inventory as required by Provision C.18.a. Any new road-related erosion sites identified during this effort shall be documented in the report and added to the Road Erosion Inventory required by Provision C.18.a.

(c) The date(s) the monitoring inspections were conducted.

C.19. Cities of Antioch, Brentwood, and Oakley, Unincorporated Contra Costa County, and the Contra Costa County Flood Control and Water Conservation District Requirements

The cities of Antioch, Brentwood, and Oakley, unincorporated Contra Costa County, and the Contra Costa County Flood Control and Water Conservation District (collectively, East County Permittees), located in the Central Valley Regional Water Quality Control Board's (Central Valley Water Board's) geographic jurisdiction, are included in the definition of "Permittees" as used throughout and shall comply with all requirements of this Order No. R2-2022-0018 except as provided for in this Provision. This Provision also incorporates requirements from Central Valley Water Board's TMDLs and control programs applicable to the East County Permittees.

C.19.a. Mercury Controls

The East County Permittees are exempt from Provision C.11, Mercury Controls.

C.19.b. Polychlorinated Biphenyls (PCBs) Controls

The East County Permittees are exempt from Provision C.12, PCBs Controls.

C.19.c. Diazinon and Chlorpyrifos Controls

i. **Task Description** – The East County Permittees shall continue compliance with the Central Valley Water Board's Sacramento-San Joaquin Delta Diazinon and Chlorpyrifos TMDL and continue to meet wasteload allocations for diazinon and chlorpyrifos.

ii. **Implementation Level –** The East County Permittees shall implement Provision C.9.

C.19.d. Methylmercury Control Measure Plan and Monitoring

The methylmercury wasteload allocations for the East County Permittees in the Sacramento-San Joaquin Delta Methylmercury TMDL (Resolution No. R5-2010-0043) by Delta subarea are as follows:

- Central Delta subarea: 0.75 grams/year
- Marsh Creek subarea: 0.30 grams/year
- West Delta subarea: 3.2 grams/year

Methylmercury wasteload allocations shall be met as soon as possible, but no later than the final compliance date of January 1, 2030. As part of the Delta Mercury Control Program Review, the Central Valley Water Board may adopt revised wasteload allocations and a new final compliance date.

i. Task Description – Pursuant to the Central Valley Water Board's Water Quality Control Plan for the Sacramento San Joaquin Basins' Delta Mercury Control Program and associated Methylmercury TMDL, the East County Permittees were required to develop, conduct, and report on a methylmercury control study for urban runoff. The submitted control study[66] proposed conducting a Reasonable Assurance Analysis (RAA) to determine the achievable methylmercury load reduction. The control study also stated that monitoring will be conducted to answer the management questions outlined in Provision C.19.d.ii(2)a-e. Therefore, the East County Permittees shall submit a control measure plan and conduct a corresponding RAA as well as implement methylmercury monitoring as described below. With the Central Valley Water Board's Executive Officer's approval, the East County Permittees may participate in the Delta Regional Monitoring Program (Delta RMP) or other collective monitoring efforts in lieu of some or all of the individual monitoring requirements required by this Provision. Participation in the Delta RMP or other collective monitoring efforts shall consist of providing funds and/or in-kind services to the Delta RMP or other collective monitoring effort at least equivalent to the discontinued monitoring efforts in order for the Central Valley Water Board Executive Order to approve the alternative monitoring.

ii. Implementation Level – The East County Permittees shall:

(1) Prepare and submit by November 1, 2022, a Control Measure Plan and schedule to achieve the TMDL wasteload allocations. The Plan shall include a corresponding RAA for total mercury and methylmercury demonstrating that sufficient control measures will be implemented during this Permit term to attain the methylmercury Delta Mercury Control Plan wasteload allocations by January 1, 2030, or any revised final compliance date adopted by the Central Valley Water Board as part of the Delta Mercury Control Program Review. The Control Measure Plan, including RAA, shall comply with the following:

(a) The Plan shall identify all technically and economically feasible mercury and methylmercury MS4 control measures to be implemented (including green stormwater infrastructure (GSI) projects).

(b) The Plan shall include a schedule according to which these technically and economically feasible control measures will be fully implemented.

(c) The Plan shall provide an evaluation and quantification of mercury and methylmercury load reductions of such measures as well as an

[66] *Contra Costa Clean Water Program Methylmercury Control Study Final Report (Rev. 1),* September 2020.

evaluation of costs, control measure efficiency, and significant environmental impacts resulting from their implementation.

(d) The RAA for total mercury must be evaluated using the California Toxics Rule for mercury (0.05 µg/L).

(e) The RAA for methylmercury must be evaluated using the methylmercury load allocations specific to each Delta subarea within Contra Costa County subject to the DMCP (i.e., the Central Delta, Marsh Creek, and West Delta subareas).

(f) The RAA shall demonstrate quantitatively that the plan will result in mercury and methylmercury load reductions sufficient to attain the methylmercury wasteload allocations by January 1, 2030, (or any revised final compliance date adopted by the Central Valley Water Board as part of the Delta Mercury Control Program Review) and address the following questions:

(i) What are the annual mercury and methylmercury loads from the MS4 discharge to the Central Delta, Marsh Creek, and West Delta subareas?

(ii) Do the mercury and methylmercury loads to each subarea meet the assigned methylmercury wasteload allocations?

(iii) What is the achievable mercury and methylmercury load reduction in discharges from the MS4 by implementation of reasonable, foreseeable controlmeasures?

(iv) What controllable MS4 water quality factors affect methylmercury production and transport in the MS4 discharge and in the receiving waters draining to the Delta?

(v) Are there MS4 design features that increase or decrease mercury methylation.

(vi) Are there reasonable and foreseeable managementactions to reduce methylmercury concentrations within the MS4 boundary?

(g) Permittees shall ensure that the calculation methods, models, model inputs, and modeling assumptions used to fulfill Provision C.19.ii.(1)(a)-(f) have been validated through a peer review process. The East County Permittees may use the approach developed by the Contra Costa Clean Water Program or an equivalent approach developed by another program during the previous permit term.

(2) Conduct annual monitoring in waterways within the East County Permittees' MS4 boundary to answer the questions in Provision

C.19.d.ii(2)(a)-(e). Monitoring shall include, but is not limited to, Marsh Creek, downstream of Marsh Creek Reservoir, and Central and West Delta Subarea tributaries within the MS4 boundary. Permittees shall collect fifty (50) samples throughout the Permit term, with at least eight (8) samples annually, for aqueous methylmercury analysis. Samples shall be collected in each subarea to be representative of the discharge during wet and dry year conditions and analyzed using U.S. EPA- or SWAMP-approved methods.

(a) What are the annual methylmercury loads from the MS4 discharge to the Central Delta, Marsh Creek, and West Delta subareas?

(b) Do the methylmercury loads to each subarea meet the assigned methylmercury wasteload allocations?

(c) Are there any MS4 design features that increase mercury methylation in the discharge?

(d) What MS4 water quality controls have been implemented or are planned to be implemented to reduce methylmercury production and transport in the MS4 discharge?

(e) By January 1, 2024, address whether eutrophication and low dissolved oxygen concentrations increase methylmercury in ponded areas of Marsh Creek during low flow periods (depending on the year, low flow periods can range between mid-March and mid-November), and, if so:

(i) Under what hydrologic or seasonal circumstances do increased methylmercury concentrations reach the Delta?

(ii) Are there reasonable and foreseeable management actions to ameliorate increased methylmercury concentrations?

(3) Prepare an Annual Mercury Monitoring Plan and submit it to the Central Valley Water Board for Executive Officer approval. The monitoring plan shall describe the annual monitoring design and specify the proposed sampling locations for methylmercury sampling required under Provision C.19.d.ii.(2).

iii. Reporting

(1) Annual Mercury Monitoring Plan – by October 1, 2022, and annually thereafter with the Urban Creeks Monitoring Report due March 31.

(2) Annual Report **–** The East County Permittees shall provide the following:

(a) Monitoring and assessment results answering the questions required under Provision C.19.d.ii.(2), and

(b) Upon completion by the deadline in Provision C.19.d.ii.(1), submit the Control Measure Plan, including RAA.

A copy of each Annual Report shall also be submitted to the Central Valley Water Board.

(3) Pollutants of Concern Monitoring Report **–** The East County Permittees shall report monitoring and assessment activities relevant to the Delta Methylmercury TMDL from the past water year and planned for the next water year as a separate section within the Pollutants of Concern Monitoring Report required under Provision C.8.h.iv. A copy of each Pollutants of Concern Monitoring Report shall also be submitted to the Central Valley Water Board.

(4) Integrated Monitoring Report **–** The East County Permittees shall report the monitoring and assessment results as a separate section within the Integrated Monitoring Report as required under Provision C.8.h.v. A copy of each Integrated Monitoring Report shall also be submitted to the Central Valley Water Board.

(5) The East County Permittees shall report progress on the Delta Methylmercury TMDL and recommendations for the next permit re-issuance as a separate section within the Report of Waste Discharge (ROWD) required by Provision C.25. A copy of the ROWD shall also be submitted to the Central Valley Water Board.

C.19.e. Delta Mercury Control Program Minimum BMPs

i. Task Description – The East County Permittees shall implement inorganic mercury reduction BMPs as well as provide ongoing education and outreach to address mercury pollution prevention and risk reduction.

ii. Implementation Level – At a minimum, the East County Permittees shall implement the following inorganic mercury reduction BMPs, consistent with the Delta Methylmercury TMDL.

(1) **Mercury Collection and Recycling** - To minimize mercury in storm water the East County Permittees shall continue implementing:

(a) Collection and recycling of mercury containing devices and equipment at the consumer level (e.g., thermometers, thermostats, switches, bulbs); and

(b) Collection, recycling and/or diversion of mercury-containing waste products (e.g., gauges, batteries, fluorescent and other lamps, switches, relays and sensors) from the waste stream from industrial and commercial entities (e.g., auto dismantlers), and municipal facilities.

(2) **Enhanced Municipal Management Practices to Reduce Sediment Discharges** - The East County Permittees shall continue to implement BMPs to minimize sediment discharges during municipal operations and municipal maintenance activities. Municipal operations and municipal maintenance activities include but are not limited to the following: storm drain drop inlet and pipeline cleaning, landscaping, road construction, road repair, and pump station cleaning.

(3) **Public Education and Risk Reduction** - The East County Permittees shall continue to conduct ongoing education to the public on mercury pollution prevention and mercury risk reduction. The East County Permittees shall continue to:

(a) Provide mercury pollution prevention messages to residents, commercial businesses, and industrial facilities with mercury-containing products or emissions. This may be implemented as part of Provision C.7; and

(b) Provide notices to communities on the health risk associated with eating mercury contaminated fish. These notices shall also include the Office of Environmental Health Hazard Assessment's fish consumption advisories.

(4) **Methylmercury Controls** – the East County Permittees shall implement control measures that reduce mercury methylation potential and retrofit existing BMPs that show an increase of mercury methylation.

(a) New development projects shall use BMPs that either prevent an increase of methylmercury or have been shown to decrease methylmercury.

(b) For existing BMPs that increase methylmercury within subareas that are meeting the assigned wasteload allocation, retrofitting of these BMPs may occur as part of any capital improvement, redevelopment, operation, or maintenance plan as resources are available.

(c) For existing BMPs that increase methylmercury within subareas that are not meeting the assigned wasteload allocation, retrofitting of these BMPs shall occur as soon as feasibly possible, but no later than the final compliance date of January 1, 2030 (or any revised final compliance date adopted by the Central Valley Water Board as part of the Delta Mercury Control Program Review).

iii. Reporting – In each Annual Report, the East County Permittees shall:

(1) Describe Mercury Collection and Recycling efforts.

(2) List the municipal operations and municipal maintenance activity BMPs that are implemented to minimize sediment discharges.

(3) Discuss the mercury pollution prevention messages provided and

(4) Summarize tasks implemented to provide notices on the health risk associated with eating mercury contaminated fish.

(5) Report on implementation of methylmercury controls required in C.19.2.ii.(4).

C.19.f. Pyrethroid Control Program

i. Task Description – The East County Permittees shall comply with the Central Valley Water Board's conditional prohibition of the discharges of pyrethroid pesticides and associated monitoring and reporting requirements established in the Amendment to the Water Quality Control Plan for the Sacramento and San Joaquin River Basins for the control of Pyrethroid Pesticide Discharges (Resolution No. R5-2017-0057).

ii. Implementation Level – The East County Permittees shall:

(1) Continue to implement a pesticide control program as required by Provision C.9, which is consistent with Central Valley Water Board requirements for a pyrethroid management plan.

(2) Continue pesticides and toxicity monitoring as specified in Provision C.8.g. In addition to the pollutants and organisms listed in Table 8-5, the East County Permittees shall also analyze total and particulate organic carbon, as required by the Central Valley Water Board's Basin Plan Amendment (R5-2017-0057).

(3) Submit a baseline monitoring report by September 19, 2022, that:

(a) Summarizes the pyrethroid and toxicity monitoring results from 2012 through 2019;

(b) Assesses the compliance of the discharge with the conditional prohibition triggers in the Basin Plan established by Resolution No. R5-2017-0057;

(c) Summarizes toxicity of water and sediment samples to the test organism Hyalella azteca; and

(d) Summarizes any other pyrethroid monitoring data collected by the East County Permittees during the above period.

iii. Reporting – The East County Permittees shall:

(1) With the 2024 and subsequent Annual Reports, provide a progress report to document the management practices that have been implemented, evaluate pyrethroid concentrations with respect to the pyrethroid triggers, and identify effective control actions to be taken in the future. A copy shall be provided to the Central Valley Water Board.

(2) Urban Creeks Monitoring Report (UCMR) – The East County Permittees shall report monitoring, assessment results, relevant to the Pyrethroids Control Program as a separate Pyrethroid Trend Monitoring section within the 2024 UCMR required under Provision C.8.h.iii. A copy of the 2024 UCMR shall also be submitted to the Central Valley Water Board. The Pyrethroid Trend Monitoring section of the 2024 UCMR, shall include an analysis of data collected in East County Permittees receiving waters for pesticides and toxicity from 2019 through 2024 to assess the following:

(a) Whether discharges from MS4s are exceeding the acute and chronic pyrethroid triggers set forth in the Amendment to the Water Quality Control Plan for the Sacramento and San Joaquin River Basins for the Control of Pyrethroid Pesticide Discharges (Resolution No. R5-2017-0057);

(b) Whether pyrethroid pesticides are causing or contributing to exceedances of the narrative water quality objective for toxicity in surface waters or bed sediments.

(c) The effectiveness of management practices that are implemented to reduce pyrethroid levels in discharges;

(d) Whether alternatives to pyrethroid pesticides are being discharged at concentrations with the potential to cause or contribute to exceedances of applicable water quality objectives.

C.20. Cost Reporting

C.20.a. Task Description – Each Permittee shall annually prepare and submit a fiscal analysis of the capital and operation and maintenance costs incurred to comply with this Order's requirements listed in Provision C.20.b.(iii).

C.20.b. Implementation Level

i. The Permittees shall develop a cost reporting framework and methodology to perform the fiscal analysis. Permittees are encouraged to collaboratively develop the framework and methodology for purposes of efficiency, cost-savings, and regionwide consistency and comparability. The framework shall consider identification of costs incurred solely to comply with this Order's requirements as listed in Provision C.20.b.(iii) as compared to costs shared with other programs or regulatory requirements, provide meaningful data to assess costs of different program areas, and allow for comparisons and to identify trends over time.

ii. The analysis shall include a description of the source of funds that are proposed to meet the necessary expenditures, including legal restrictions on the use of such funds, and identify any funding resources shared on a regional or countywide basis. The analysis shall include the costs incurred to comply with this Permit, and an estimate of costs for the upcoming Permit year.

iii. The analysis shall include the following program areas, specifically as required under this Order**:**

(1) Program management

(2) Municipal operations

(3) New development and redevelopment

(4) Industrial and commercial site controls

(5) Illicit discharge detection and elimination

(6) Construction site controls

(7) Public information and outreach

(8) Water quality monitoring

(9) Pesticides toxicity control

(10) Trash load reduction

(11) Mercury controls

(12) PCBs controls

(13)Copper controls

(14)Bacteria controls

(15)Discharges associated with unsheltered homeless populations

(16)Asset management plan development and implementation

iv. The costs reported for each program area shall address the following categories:

(1) Total cost

(2) Capital expenditures

(3) Land costs

(4) Personnel costs

(5) Consultant costs

(6) Overhead costs

(7) Construction costs

(8) Operation and maintenance costs

(9) Other costs

C.20.c. Reporting

i. The Permittees shall submit the cost reporting framework and methodology, acceptable to the Regional Water Board Executive Officer, by June 30, 2023.

ii. The Permittees shall submit their fiscal analyses annually according to the accepted cost reporting framework and methodology starting with the 2025 Annual Report.

C.21. Asset Management

C.21.a. Task Description – Each Permittee shall develop and implement an Asset Management Plan in order to ensure the satisfactory condition of all hard assets[67] constructed during this and Previous Permit terms pursuant to Provisions C.2 Municipal Operations, C.3 New Development and Redevelopment, C.10 Trash Load Reduction, C.11 Mercury Controls, C.12 PCBs Controls, C.13 Copper Controls, C.14 Bacteria Controls for Impaired Water Bodies, C.17 Discharges Associated with Unsheltered Homeless Populations, C.18 San Mateo County Sediment Controls, and C.19 Cities of Antioch, Brentwood, and Oakley, Unincorporated Contra Costa County, and the Contra Costa County Flood Control and Water Conservation District Requirements.

C.21.b. Implementation Level – Each Permittee shall:

i. Develop an Asset Management Plan by June 30, 2025, which, at a minimum, shall include the following:

(1) A description of the asset categories to be included.

(2) An inventory (or link to such an inventory) of Permittees' existing hard assets built pursuant to the Provisions cited in Provision C.21.a, including at a minimum all LID/GSI systems and trash capture devices.

(3) An Operation, Maintenance, Rehabilitation, and Replacement Plan (Asset Management O&M Plan), to evaluate data obtained through asset assessment in order to inform a strategy for prioritizing and scheduling maintenance, rehabilitation, and replacement of inventoried assets, including:

(a) A process for prioritizing and scheduling operation and maintenance activities.

(b) A process(es) for evaluating the current condition, and identifying the need for and carrying out, as appropriate, the rehabilitation and replacement of inventoried assets. The process(es) shall account for:

(i) The minimum condition necessary to achieve minimum performance level(s) for each type of hard asset, including an assessment of stormwater volume and pollutant load reduction, necessary to comply with applicable Permit Provisions and TMDLs.

[67] Hard assets are structural controls that serve a water quality function, for example: bioretention cells, pervious pavement systems, full trash capture devices, trash receptacles, and pet waste stations.

(ii) Current performance level and effectiveness, as indicated by condition. Permittees may implement a risk-based condition assessment, or comparable assessment method, to cost-effectively and -efficiently assess condition. Permittees shall base the effectiveness evaluation on, at a minimum, factors such as design, capacity, and condition and function relative to the asset's design, intended operating conditions, and intended function.

(iii) Consequence of failure and likelihood of failure.

(c) An evaluation or forecast of costs necessary for the implementation of (a)-(b) above, at least through the end of the current permit term. On an ongoing basis, the Permittees shall compare these projections with available funding sources to determine the best manner in which to fund the operation, maintenance, rehabilitation, and replacement of inventoried assets. This evaluation or forecasting may supplement Permittees' compliance with Provision C.20 Cost Reporting.

(4) Recommendations for a reporting strategy, which may have a nexus with the tracking systems referenced in Permittees' Green Infrastructure Plans, to include:

(a) Municipality-specific reporting;

(b) Assessment of the programmatic benefit from countywide or regional roll-up of collected information.

ii. Begin implementation of the Asset Management Plan no later than July 1, 2025.

iii. Reassess and update their Asset Management Plan on an as-needed basis, to address changing conditions and resources.

iv. Provide the latest version of the Asset Management Plan to Water Board staff during inspections and audits, or otherwise upon request.

v. Complete a Climate Change Adaptation Report to identify potential climate change-related threats to assets and appropriate adaptation strategies. The report shall assess existing, new, and increasing threats from climate change to the condition of Permittees' inventoried hard assets over the next 50 years, and identify approaches that Permittees may implement to address those threats, such as the modification of design standards and countywide technical guidance documents. The Climate Change Adaptation Report may be developed on an all-Permittee (regional) scale or countywide scale.

C.21.c. Reporting

i. The Permittees shall submit their Asset Management Plans with the 2025 Annual Reports.

ii. The Permittees shall report on the implementation of their Asset Management Plans annually, starting with the 2026 Annual Reports, as follows:

(1) Provide (or link to) an inventory of all assets accounted for in the Asset Management Plan.

(a) Different categories of assets (e.g., trash controls, LID/GSI controls, bacteria controls) may be maintained in separate inventories.

(2) At a minimum, for each asset in the inventory, provide the following: category or type of water quality control; relevant design information; tributary drainage area; location; condition based on periodic inspections either by municipal or contracted staff; and operation and maintenance need (for example, while most assets may require normal operation & maintenance, Permittees may identify a subset of assets in need of rehabilitation or replacement).

This information does not have to be submitted in tabular format in the Annual Report; it may be provided externally, at the linked location identified in Provision C.21.c.ii.(1) above.

iii. The Permittees shall submit the Climate Change Adaptation Report described in Provision C.21.b.v with their 2026 Annual Reports. The Permittees may submit the Climate Change Adaptation Report(s) on an all-Permittee (regional) scale or countywide scale.

C.22. Annual Reports

C.22.a. The Permittees shall submit Annual Reports electronically, including a verified electronic signature (e.g., Adobe e-signature, DocuSign, or equivalent), in all cases by September 30 of each year, in the manner specified by the Water Board. Each Annual Report shall report on the previous fiscal year beginning July 1 and ending June 30. The annual reporting requirements are set forth in Provisions C.1 – C.21, with the exception of the 2022 annual reporting requirements for Provisions C.2 – C.9, which are set forth in Provisions C.2 - C.9 of the previous Permit, Order No. R2-2015-0049, as amended. The Permittees shall retain documentation as necessary to support their Annual Report. The Permittees shall make this supporting information available upon request within a timely manner, generally no more than ten business days unless otherwise agreed to by the Executive Officer.

C.22.b. The Permittees shall collaboratively develop a common annual reporting format for acceptance by the Executive Officer by March 1, 2023. The resulting Annual Report Form, once approved, shall be used by all Permittees. The Annual Report Form may be changed by March 1 of each year for the following Annual Report, to more accurately reflect the reporting requirements of Provisions C.1 – C.21, with the agreement of the Permittees and by the approval of the Executive Officer.

C.22.c. The Permittees shall certify in each Annual Report that they are in compliance with all requirements of the Order. If a Permittee is unable to certify compliance with a requirement, it must submit, in the cover letter of the Annual Report, the reason for its failure to comply, a description and schedule of tasks necessary to achieve compliance, and an estimated date for achieving full compliance.

C.23. Modifications to this Order

The Water Board may modify or reopen this Order, or alternatively, revoke or reissue it, before the expiration date in any of the following circumstances or as authorized by law:

C.23.a. To address significant changed conditions identified in the technical or Annual Reports required by the Water Board, or through other means or communication, that were unknown at the time of the issuance of this Order;

C.23.b. To incorporate applicable requirements of statewide water quality control plans adopted by the State Water Board or amendments to the Basin Plans for the San Francisco Bay and the Sacramento and San Joaquin River Basins approved by the State Water Board;

C.23.c. To comply with any applicable requirements, guidelines, or regulations issued or approved under section 402(p) or other applicable provision of the CWA, if the requirement, guideline, or regulation so issued or approved contains different conditions or additional requirements not provided for in this Order;

C.23.d. To provide an alternative compliance program for exchanges of impervious surface treatment credits in Provision C.3.e.i; or

C.23.e. To incorporate applicable requirements from the Central Valley Regional Water Board's Phase 1 Delta Mercury Control Program Review under the Basin Plan for the Sacramento and San Joaquin River Basin.

C.24. Standard Provisions

Each Permittee shall comply with all parts of the Standard Provisions contained in Attachment G of this Order.

C.25. Expiration Date

This Order expires on June 30, 2027, five years from the effective date of this Order. The Permittees must file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, not later than 180 days in advance of such date as application for reissuance of waste discharge requirements.

C.26. Rescission of Old Order

Order No. R2-2015-0049, as amended by Order No. R2-2019-0004, is hereby rescinded, except for enforcement purposes, on the effective date of this Order, which shall be July 1, 2022, provided that the Regional Administrator of U.S. EPA, Region IX, does not object.

C.27. Effective Date

The Effective Date of this Order and Permit shall be July 1, 2022, provided that the Regional Administrator of U.S. EPA, Region IX, does not object.

I, Thomas Mumley, Interim Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on May 11, 2022.



Thomas Mumley
Interim Executive Officer

ACRONYMS & ABBREVIATIONS

ACCWP	Alameda Countywide Clean Water Program
BAHM	Bay Area Hydrology Model
Basin Plan	Water Quality Control Plan for the San Francisco Bay Basin
BAMSC	Bay Area Municipal Stormwater Collaborative
BASMAA	Bay Area Stormwater Management Agencies Association
BMPs	Best Management Practices
Caltrans	California Department of Transportation
CASQA	California Stormwater Quality Association
CCC	California Coastal Commission
CCCWP	Contra Costa Clean Water Program
CDFW	California Department of Fish and Wildlife
CEDEN	California Environmental Data Exchange Network
Central Valley Water Board	California Regional Water Quality Control Board, Central Valley Region
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CSBP	California Stream Bioassessment Procedures
CSCI	California Stream Condition Index
CWA	Federal Clean Water Act
CWC or Water Code	California Water Code
DCIA	Directly Connected Impervious Area
DDCP	Direct Discharge Control Plan
DPR	California Department of Pesticide Regulation

East County Permittees or East Contra Costa Permittees	The cities of Antioch, Brentwood, and Oakley, and portions of Unincorporated Contra Costa County and the Contra Costa County Flood Control and Water Conservation District that are in the Central Valley Water Board's region
ERP	Enforcement Response Plan
FR	Federal Register
FSURMP	Fairfield-Suisun Urban Runoff Management Program
GI or GSI	Green Stormwater Infrastructure
GIS	Geographic information System
HBANC	Homebuilders Association of Northern California
HM	Hydromodification Management
HMP	Hydromodification Management Plan
IC/ID	Illicit Connections and Illicit Discharges
ISWEBE	Inland Surface Waters, Enclosed Bays, and Estuaries Plan
IPM	Integrated Pest Management
LID	Low Impact Development
MEP	Maximum Extent Practicable
MRP	Municipal Stormwater Regional Permit (see Glossary for MRP 1, MRP 2, MRP 3)
MSDS	Material Safety Data Sheet
MS4	Municipal Separate Storm Sewer System
MTC	Metropolitan Transportation Commission
NAFSMA	National Association of Flood & Stormwater Management Agencies
NAICS	North American Industry Classification System
NGO	Non-governmental Organization
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System

NRDC	Natural Resources Defense Council
Ocean Plan	California Water Quality Control Plan for Ocean Waters of California
OFEE	Oil Filled Electrical Equipment
O&M	Operation and Maintenance
PAHs	Polynuclear Aromatic Hydrocarbons
PBDE	Polybrominated Diphenyl Ether
PCA	Pest Control Advisor
PCBs	Polychlorinated Biphenyls
PHAB	Physical Habitat (e.g., of streams)
POTW	Publicly Owned Treatment Works
QAPP	Quality Assurance Project Plan
RAA	Reasonable Assurance Analysis
RCRA	Federal Resource Conservation and Recovery Act
RMC	Regional Monitoring Coalition
RMP	Regional Monitoring Program
ROW	Right of Way
ROWD	Report of Waste Discharge
RTA	Rapid Trash Assessment
SARA	Federal Superfund Amendments and Reauthorization Act
SCURTA	Santa Clara Urban Rapid Trash Assessment
SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program
SIC	Standard Industrial Classification
SMCWPPP	San Mateo Countywide Water Pollution Prevention Program
SSA	Solano Stormwater Alliance
SSID	Stressor Source Identification

SOP	Standard Operating Procedure
SWAMP	Surface Water Ambient Monitoring Program
SWPPP	Stormwater Pollution Prevention Plan
State Water Board	State Water Resources Control Board
TIE	Toxicity Identification Evaluation
TMDLs	Total Maximum Daily Loads
TSCA	Federal Toxic Substances Control Act
TST	Test of Significant Toxicity
TU	Toxicity Units
UCMR	Urban Creeks Monitoring Report
U.S. EPA	Unites States Environmental Protection Agency
Water Board	San Francisco Bay Regional Water Quality Control Board
WLAs	Wasteload Allocations
WQBEL	Water Quality Based Effluent Limitation
WQS	Water Quality Standards

GLOSSARY

Actual Discharge	Observed or documented flow of unauthorized, illicit, or pollutant-containing stormwater discharges to the MS4.
Arterial Roads	Freeways, multilane highways, and other important roadways that supplement the Interstate System. Arterial roads connect, as directly as practicable, principal urbanized areas, cities, and industrial centers.
Beneficial Uses	The uses of water of the State protected against degradation, such as domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation and preservation of fish and wildlife, and other aquatic resources or preserves.
Base Course	A layer of constructed material (typically aggregate base – a construction aggregate typically composed of crushed rock or of recycled asphalt or concrete, capable of passing through a sieve with a certain pore diameter) located above the subbase course and/or subgrade course, and below the surface layer (which consists of a wearing course, and sometimes an extra binder course), applied to serve one or more functions, such as supporting the surface layer and distributing load.
Bituminous Surface Treatment	A thin protective wearing surface, which can provide, among other services, a waterproof layer to protect underlying pavement and a filler for existing cracks or raveled surfaces. This includes, but is not limited to: • Chip seal – a single layer of asphalt emulsion binder that is covered by embedded aggregate; • Slurry seal – a thick, cold mix paving treatment that contains aggregates, asphalt emulsion, binder and fines, water, and additives; and • Seal coat – an emulsion containing liquid asphalt and/or coal tar, mineral fillers and other anti-oxidation additives and admixtures. • Cape seal – a chip seal covered with a slurry or micro-surface, applied to existing pavements. Micro-surfacing is a polymer-modified cold-mix paving system that begins as a mixture of dense-graded aggregate, asphalt emulsion, water and mineral fillers.
Collector Roads	Major and minor roads that connect local roads with arterial roads. Collector roads provide less mobility than arterial roads at lower speeds and for shorter distances.
Commercial Development	Development or redevelopment to be used for commercial purposes, such as office buildings, retail or wholesale facilities, restaurants, shopping centers, hotels, and warehouses.

Construction Site	Any project, including projects requiring coverage under the Construction General Permit, that involves soil-disturbing activities including, but not limited to, grubbing, clearing, grading, paving, disturbances to ground such as stockpiling, leveling, fill, and excavation. Construction sites include all sites with disturbed or graded land area not protected by vegetation, or pavement, that are subject to a building or grading permit. Construction sites are considered active until site surfaces are permanently stabilized to control erosion and other polluted stormwater discharges effectively.
Conditionally Exempted Non-Stormwater Discharge	Non-stormwater discharges that are prohibited by A.1. of this Permit, unless such discharges are authorized by a separate NPDES permit or are not in violation of WQS because appropriate BMPs have been implemented to reduce pollutants to the maximum extent practicable, consistent with Provision C.15.
Discharger	Any responsible party or site owner or operator within the Permittees' jurisdiction whose site discharges stormwater runoff, or a non-stormwater discharge.
Detached Single-family Home Project	The building of one single new house or the addition and/or replacement of impervious surface associated with one single existing house, which is not part of a larger plan of development.
Development	Construction, rehabilitation, redevelopment, or reconstruction of any public or private residential project (whether single-family, multi-unit, or planned unit development); or industrial, commercial, retail or other nonresidential project, including public agency projects.
Estate Residential Development	Development zoned for a minimum 1 acre lot size.
Emerging Pollutants	Pollutants in water that either: (1) May not have been thoroughly studied to date but are suspected by the scientific community to be a source of impairment of beneficial uses and/or present a health risk; or (2) Are not yet part of a monitoring program.
Erosion	The diminishing or wearing away of land due to wind, or water. Often the eroded debris (silt or sediment) becomes a pollutant via stormwater runoff. Erosion occurs naturally, but can be intensified by land disturbing and grading activities such as farming, development, road building, and timber harvesting.
Floor Area Ratio	The ratio of the total floor area on all floors of all buildings at a project site (except structures or floors dedicated to parking) to the total project site area.

Full Trash Capture Device	A Full Capture Device or System is a treatment control, or series of treatment controls, including, but not limited to, a multi-benefit project (as defined in the Trash Amendments) or a low-impact development control that traps all particles that are 5 mm or greater, and has a design treatment capacity that is either: a) of not less than the peak flow rate, Q, resulting from a one-year, one-hour storm in the subdrainage area, or b) appropriately sized to, and designed to carry at least the same flows as, the corresponding storm drain.
General Permits	Waste Discharge Requirements or NPDES Permits containing requirements that are applicable to a class or category of dischargers. The State has general stormwater permits for construction sites that disturb soil of 1 acre or more; industrial facilities; `Phase II smaller municipalities (including nontraditional Small MS4s, which are governmental facilities, such as military bases, public campuses, and prison and hospital complexes); and small linear underground/overhead projects disturbing at least 1 acre, but less than 5 acres (including trenching and staging areas).
Grading	The cutting and/or filling of the land surface to a slope or elevation.
Green Infrastructure	Infrastructure that uses vegetation, soils, and natural processes to manage water and create healthier urban environments. At the scale of a city or county, green infrastructure refers to the patchwork of natural areas that provides habitat, flood protection, cleaner air, and cleaner water. At the scale of a neighborhood or site, green infrastructure refers to stormwater management systems that mimic nature by soaking up and storing water.
Gross Density	The total number of residential units divided by the acreage of the entire site area, including land occupied by public right-of-ways, recreational, civic, commercial and other non-residential uses.
Hydrologic source control measures	Site design techniques that minimize and/or slow the rate of stormwater runoff from the site.
Hydromodification	The modification of a stream's hydrograph, caused in general by increases in flows and durations that result when land is developed (e.g., made more impervious). The effects of hydromodification include, but are not limited to, increased bed and bank erosion, loss of habitat, increased sediment transport and deposition, and increased flooding.
Illicit Discharge	Any discharge to a municipal separate storm sewer (storm drain) system (MS4) that is prohibited under local, State, or federal statutes, ordinances, codes, or regulations. The term *illicit discharge* includes all non-stormwater discharges not composed entirely of stormwater and discharges that are identified under Section A. (Discharge Prohibitions) of this Permit. The term illicit discharge does not include discharges that are regulated by an NPDES permit (other than the NPDES permit for discharges from the MS4) or authorized by the Executive Officer.

Impervious Surface	A surface covering or pavement of a developed parcel of land that prevents the land's natural ability to absorb and infiltrate rainfall/stormwater. Impervious surfaces include, but are not limited to, roof tops; walkways; patios; driveways; parking lots; storage areas; impervious concrete and asphalt; and any other continuous watertight pavement or covering. Landscaped soil and pervious pavement, including pavers with pervious openings and seams, underlain with pervious soil or pervious storage material, such as a gravel layer sufficient to hold at least the C.3.d volume of rainfall runoff are not impervious surfaces. Open, uncovered retention/detention facilities shall not be considered as impervious surfaces for purposes of determining whether a project is a Regulated Project under Provisions C.3.b. and C.3.g. Open, uncovered retention/detention facilities shall be considered impervious surfaces for purposes of runoff modeling and meeting the Hydromodification Standard.
Industrial Development	Development or redevelopment of property to be used for industrial purposes, such as factories; manufacturing buildings; and research and development parks.
Infill Site	A site in an urbanized area where the immediately adjacent parcels are developed with one or more qualified urban uses or at least 75% of the perimeter of the site adjoins parcels that are developed with qualified urban uses and the remaining 25% of the site adjoins parcels that have previously been developed for qualified urban uses and no parcel within the site has been created within the past 10 years.
Infiltration Device	Any structure that is deeper than wide and designed to infiltrate stormwater into the subsurface, and, as designed, bypass the natural groundwater protection afforded by surface soil. These devices include dry wells, injection wells, and infiltration trenches (includes french drains).
Integrated Pest Management[68]	An ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties. Pesticides are used only after monitoring indicates they are needed according to established guidelines (and when it has been concluded that the use of non-chemical controls is insufficient), and treatments are made with the goal of removing only the target organism. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and nontarget organisms, and the environment (DPR, 2018).

[68] Roadmap for Integrated Pest Management, CDPR 2018, https://www.cdpr.ca.gov/docs/pestmgt/ipm_roadmap.pdf

Integrated Pest Management, Biological Controls	Biological controls are the beneficial action of predators, parasites, pathogens, and competitors to control pests and pest damage. These controls rely on predation, parasitism, herbivory, or other natural mechanisms, but typically require active human intervention, such as releasing ladybugs.
Integrated Pest Management, Least Hazardous Chemical Controls	Chemical controls involve targeted application of traditional chemical pesticides, as well as alternative products, such as oils and soaps.
Integrated Pest Management, Cultural Controls	Cultural controls reduce pest establishment, reproduction, dispersal, and survival. Examples include scheduling planting, irrigation, and fertilization; soil solarization; and planting native vegetation and xeriscape to reduce water, pesticide, and fertilizer needs. Changing irrigation practices can reduce pest problems, since too much water can increase root disease and weeds.
Integrated Pest Management, Mechanical and Physical Controls	Mechanical and physical controls kill pests directly, exclude pests, or make the environment unsuitable for pests. Physical controls may involve manual removal of pests or mowing. Barriers (screens, mesh, caulk and other sealants) are physical controls that keep pests out of buildings and structures, and may be used to enclose sensitive plants. Mulch is a physical control that inhibits weed growth. Rodent traps are mechanical controls.
Integrated Pest Management, Pest Action Threshold	The point at which pest populations or environmental conditions indicate that one or more pest control actions must be taken. Sighting a single pest does not always mean control is needed. The level at which pests will either become an economic or health threat is critical to guide appropriate, least toxic pest control decisions.
Joint Stormwater Treatment Facility	A stormwater treatment facility built to treat the combined runoff from two or more Regulated Projects located adjacent to each other.
Local Roads	Roads that provide limited mobility and are the primary access to residential areas, businesses, farms, and other local areas. Local roads offer the lowest level of mobility and usually contain no bus routes. Service to through traffic movement usually is deliberately discouraged in local roads.
Maximum Extent Practicable (MEP)	A standard for implementation of stormwater management actions to reduce pollutants in stormwater. CWA 402(p)(3)(B)(iii) requires that municipal stormwater permits “shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the state determines appropriate for the control of such pollutants.” Also see State Water Board Order WQ 2000-11.

Mixed-use Development or Redevelopment	Development or redevelopment of property to be used for two or more different uses, all intended to be harmonious and complementary. An example is a high-rise building with retail shops on the first 2 floors, office space on floors 3 through 10, apartments on the next 10 floors, and a restaurant on the top floor.
MRP 1	Order No. R2-2009-0074, as amended by Order No. R2-2011-0083.
MRP 2 or Previous Permit	Order No. R2-2015-0049, as amended by Order No. R2-2019-0004.
MRP 3, Permit, or Order	Order No. R2-2022-0018.
Municipal Separate Storm Sewer System (MS4)	A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains), as defined in 40 CFR 122.26(b)(8): (1) Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to state law...including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization or a designated and approved management agency under section 208 of the CWA) that discharges into waters of the United States; (2) Designed or used for collecting or conveying stormwater; (3) Which is not a combined sewer; and (4) Which is not part of a Publicly Owned Treatment Works (POTW), as defined in 40 CFR 122.2.
Municipal Corporation Yards, Vehicle Maintenance/Material Storage Facilities/	Any Permittee-owned or -operated facility, or portion thereof, that: (1) Conducts industrial activity, operates or stores equipment, and materials; (2) Performs fleet vehicle service/maintenance including repair, maintenance, washing, or fueling; and/or (3) Performs maintenance and/or repair of machinery/equipment;
National Pollutant Discharge Elimination System (NPDES)	A national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA sections 307, 402, 318, and 405.
Notice of Intent (NOI)	The application form by which dischargers seek coverage under General Permits, unless the General Permit requires otherwise.
Parking Lot	Land area or facility for the parking or storage of motor vehicles used for business, commerce, industry, or personal use.
Permittee/Permittees	Municipal agency/agencies that are named in and subject to the requirements of this Permit.
Permit Effective Date	The date at least 45 days after Permit adoption, or other date as specified, provided the Regional Administrator of U.S. EPA Region 9 has no objection, whichever is later.

Pervious Pavement	A pavement system consisting of permeable interlocking concrete pavement (PICP), pervious or permeable concrete unit pavers, pervious grid pavements, pervious concrete, porous asphalt, turf block, grasscrete, and bricks and stones, set on a gravel base with gravel joints, which stores and infiltrates rainfall at a rate equal to immediately surrounding unpaved, landscaped areas, or that stores and infiltrates the rainfall runoff volume described in Provision C.3.d.
Point Source	Any discernible, confined, and discrete conveyance including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operations, landfill leachate collection systems, vessel, or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.
Pollutants of Concern	Pollutants that impair waterbodies listed under CWA section 303(d), pollutants associated with the land use type of a development, including pollutants commonly associated with urban runoff. Pollutants commonly associated with stormwater runoff include, but are not limited to, total suspended solids; sediment; pathogens (e.g., bacteria, viruses, protozoa); heavy metals (e.g., copper, lead, zinc, and cadmium); petroleum products and PAHs; synthetic organics (e.g., pesticides, herbicides, and PCBs); nutrients (e.g., nitrogen and phosphorus fertilizers); oxygen-demanding substances (e.g., decaying vegetation and animal waste); and trash.
Potable Water	Water that is safe for domestic use, drinking, and cooking.
Potential Discharge	Conditions with the potential to result in unauthorized, illicit, or pollutant-containing stormwater discharges to the MS4. These include, but are not limited to, housekeeping issues, inadequate waste or materials management, evidence of actual discharges that are not ongoing, lack of emergency response plans, lack of BMPs, inadequate BMPs, and inappropriate BMPs.
Pre-Project Runoff Conditions	Stormwater runoff conditions that exist onsite immediately before development activities occur. This definition is not intended to be interpreted as that period before any human-induced land activities occurred. This definition pertains to redevelopment as well as initial development.
Public Development	Any construction, rehabilitation, redevelopment or reconstruction of any public agency project, including but not limited to, libraries, office buildings, roads, and highways.
Redevelopment	Land-disturbing activity that results in the creation, addition, or replacement of exterior impervious surface area on a site on which some past development has occurred.

Regional Monitoring Program (RMP)	A monitoring program aimed at determining San Francisco Bay Region receiving water conditions. The program was established in 1993 through an agreement among the Water Board, wastewater discharger agencies, dredgers, Municipal Stormwater Permittees and the San Francisco Estuary Institute to provide regular sampling of Bay sediments, water, and organisms for pollutants. The program is funded by the dischargers and managed by the San Francisco Estuary Institute.
Regional Project	A regional or municipal stormwater treatment facility that discharges into the same watershed that the Regulated Project does.
Regulated Projects	Development projects as defined in Provision C.3.b.ii.
Residential Housing Subdivision	Any property development of multiple single-family homes or of dwelling units intended for multiple families/households (e.g., apartments, condominiums, and town homes).
Retrofitting	Installing improved pollution control devices at existing facilities to attain water quality objectives.
Sediments	Soil, sand, and minerals washed from land into water, usually after rain.
Solid Waste	All putrescible and nonputrescible solid, semisolid, and liquid wastes as defined by California Government Code Section 68055.1 (h).
Source Control BMPs	Land use or site planning practices, or structural or nonstructural measures, that aim to prevent runoff pollution by reducing the potential for contact with rainfall runoff at the source of pollution. Source control BMPs minimize the contact between pollutants and urban runoff.
Stormwater Pumping Station	Mechanical device (or pump) that is installed in MS4s or pipelines to discharge stormwater runoff and prevent flooding.
Stormwater Treatment System	Any engineered system designed to remove pollutants from stormwater runoff by settling, filtration, biological degradation, plant uptake, media absorption/adsorption or other physical, biological, or chemical process. This includes landscape-based systems such as grassy swales and bioretention units as well as proprietary systems.
Surface Water Ambient Monitoring Program (SWAMP)	The State Water Board's program to monitor surface water quality; coordinate consistent scientific methods; and design strategies for improving water quality monitoring, assessment, and reporting.
Total Maximum Daily Loads (TMDLs)	The maximum amount of a pollutant that can be discharged into a waterbody from all sources (point and nonpoint) and still maintain WQS. Under CWA section 303(d), TMDLs must be developed for all waterbodies that do not meet WQS even after application of technology-based controls, more stringent effluent limitations required by a state or local authority, and other pollution control requirements such as BMPs.

Toxicity Identification Evaluation (TIE)	TIE is a series of laboratory procedures used to identify the chemical(s) responsible for toxicity to aquatic life. These procedures are designed to decrease, increase, or transform the bioavailable fractions of contaminants to assess their contributions to sample toxicity. TIEs are conducted separately on water column and sediment samples.
Trash and Litter	Trash consists of litter and particles of litter. California Government Code Section 68055.1 (g) defines litter as all improperly discarded waste material, including, but not limited to, convenience food, beverage, and other product packages or containers constructed of steel, aluminum, glass, paper, plastic, and other natural and synthetic materials, thrown or deposited on the lands and waters of the State, but not including the properly discarded waste of the primary processing of agriculture, mining, logging, sawmilling, or manufacturing.
Treatment	Any method, technique, or process designed to remove pollutants and/or solids from polluted stormwater runoff, wastewater, or effluent.
Waste Load Allocations (WLAs)	A portion of a receiving water's TMDL that is allocated to one of its existing or future point sources of pollution.
Water Quality Control Plan (Basin Plan)	The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State within the Region, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives and discharge prohibitions. The Basin Plan was duly adopted and approved by the State Water Board, U.S. EPA, and the Office of Administrative Law where required.
Water Quality Objectives	The limits or levels of water quality elements or biological characteristics established to reasonably protect the beneficial uses of water or to prevent pollution problems within a specific area. Water quality objectives may be numeric or narrative.
Water Quality Standards	State-adopted and U.S. EPA-approved water quality standards for waterbodies. The standards prescribe the use of the waterbody and establish the WQS that must be met to protect designated uses. Water quality standards also include the federal and State anti-degradation policy.
Water Year	The Water Year spans twelve months and begins on October 1 of each year. It is designated by the calendar year in which it ends. For example, the 2023 Water Year starts on October 1, 2022, and ends on September 30, 2023.

Wedge Grinding	The process of milling the asphalt areas directly adjacent to concrete curbs, gutter pans and metal structures (e.g., manhole covers) to a specified width and depth. To tie into the elevations of the existing concrete and metal structures, asphalt is removed along the perimeter to allow proper depth of asphalt on the edge and to preserve the appropriate drainage patterns on the asphalt surface.
Wet Season	October 1 of a given year through April 30 of the following year.

ATTACHMENT A

MUNICIPAL REGIONAL STORMWATER PERMIT

FACT SHEET

FACT SHEET/RATIONALE
TECHNICAL REPORT

for

ORDER NO. R2-2022-0018

NPDES Permit No. CAS612008

Municipal Regional Stormwater NPDES Permit
and
Waste Discharge Requirements

for

The cities of Alameda, Albany, Berkeley, Dublin, Emeryville, Fremont, Hayward, Livermore, Newark, Oakland, Piedmont, Pleasanton, San Leandro, and Union City, Alameda County, the Alameda County Flood Control and Water Conservation District, and Zone 7 of the Alameda County Flood Control and Water Conservation District, which have joined together to form the Alameda Countywide Clean Water Program (Alameda Permittees)

The cities of Antioch, Brentwood, Clayton, Concord, El Cerrito, Hercules, Lafayette, Martinez, Oakley, Orinda, Pinole, Pittsburg, Pleasant Hill, Richmond, San Pablo, San Ramon, and Walnut Creek, the towns of Danville and Moraga, Contra Costa County, the Contra Costa County Flood Control and Water Conservation District, which have joined together to form the Contra Costa Clean Water Program (Contra Costa Permittees)

The cities of Campbell, Cupertino, Los Altos, Milpitas, Monte Sereno, Mountain View, Palo Alto, San Jose, Santa Clara, Saratoga, and Sunnyvale, the towns of Los Altos Hills and Los Gatos, the Santa Clara Valley Water District, and Santa Clara County, which have joined together to form the Santa Clara Valley Urban Runoff Pollution Prevention Program (Santa Clara Permittees)

The cities of Belmont, Brisbane, Burlingame, Daly City, East Palo Alto, Foster City, Half Moon Bay, Menlo Park, Millbrae, Pacifica, Redwood City, San Bruno, San Carlos, San Mateo, and South San Francisco, the towns of Atherton, Colma, Hillsborough, Portola Valley, and Woodside, the San Mateo County Flood and Sea Level Rise Resiliency District, and San Mateo County, which have joined together to form the San Mateo Countywide Water Pollution Prevention Program (San Mateo Permittees)

The cities of Fairfield, Suisun City, and Vallejo, and the Vallejo Sanitation & Flood Control District which have joined together to form the Solano Stormwater Alliance (Solano Permittees)

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I. CONTACT INFORMATION

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II. PERMIT GOALS AND PUBLIC PROCESS

A. Goals

The Goals for the Municipal Regional Stormwater Permit (hereinafter, the Permit) include:

(1) Continue regulating six Phase I municipal stormwater NPDES permits in one consistent permit that is regional in scope.

(2) Include concrete, rigorous, and enforceable requirements building on the expertise gained during the previous permit cycle. Continue requiring (A) stormwater management actions, (B) a specific level of implementation for each action or set of actions, and (C) reporting and effectiveness evaluation requirements for each action sufficient to determine compliance.

(3) Incorporate the Stormwater Management Plan level of detail and specificity into the Permit. Stormwater Management Plans have always been considered integral to the municipal stormwater NPDES permits, but have not received the level of public review in the adoption process necessary relative to their importance in adequate stormwater pollutant management implementation.

(4) Implement and enhance actions to control federal Clean Water Act (CWA) section 303(d)-listed pollutants, pollutants of concern, and achieve Waste Load Allocations adopted under Total Maximum Daily Loads.

(5) Implement more specific and comprehensive stormwater monitoring, including monitoring for 303(d)-listed pollutants.

B. Public Process

Water Board staff conducted stakeholder meetings with the Permittees and other interested parties to develop this Permit. These meetings included Water Board staff, representatives of the Permittees, the U.S. Environmental Protection Agency (U.S. EPA), and representatives of environmental groups.

C. Implementation

It is the Water Board's intent that this Permit shall ensure attainment of applicable water quality objectives and protection of the beneficial uses of receiving waters and associated habitat. This Permit requires that discharges shall not cause exceedances of water quality objectives nor shall they cause certain conditions to

occur that create a condition of nuisance or water quality impairment in receiving waters. Accordingly, the Water Board is requiring that these standard requirements be addressed through the implementation of technically and economically feasible control measures to reduce pollutants in stormwater discharges to the maximum extent practicable as provided in CWA section 402(p). In addition, this Permit contains water quality-based effluent limitations to implement TMDLs. Compliance with the Discharge Prohibitions, Receiving Water Limitations, and Provisions of this Permit is considered compliance with the requirements of this Permit. If these measures, in combination with controls on other point and nonpoint sources of pollutants, do not result in attainment of applicable water quality objectives, the Water Board may invoke Provision C.1. and C.18 to impose additional conditions that require implementation of additional control measures.

Each of the Permittees is individually responsible for adoption and enforcement of ordinances and policies, for implementation of assigned control measures or best management practices (BMPs) needed to prevent or reduce pollutants in stormwater, and for providing funds for the capital, operation, and maintenance expenditures necessary to implement such control measures/BMPs within its jurisdiction. Each Permittee is also responsible for its share of the costs of the area-wide component of the countywide program to which the Permittee belongs. Enforcement actions concerning non-compliance with the Permit will be pursued against individual Permittee(s) responsible for specific violations of the Permit.

III. BACKGROUND

A. Early Permitting Approach

The CWA was amended in 1987 to address urban stormwater runoff pollution of the nation’s waters. One requirement of the amendment was that many municipalities throughout the United States were obligated for the first time to obtain National Pollutant Discharge Elimination System (NPDES) permits for discharges of urban runoff from their Municipal Separate Storm Sewer Systems (MS4s). In response to the CWA amendment (and the pending federal NPDES regulations that would implement the amendment), the Water Board issued municipal stormwater Phase I permits in the early 1990s. These permits were issued to the entire county-wide urban areas of Santa Clara, Alameda, San Mateo and Contra Costa counties, rather than to individual cities over 100,000 population threshold. The cities chose to collaborate in countywide groups, pool resources and expertise, and share information, public outreach, and monitoring costs, among other tasks.

During the early permitting cycles, the county-wide programs developed many of the implementation specifics that were set forth in their Stormwater Pollution Prevention Management Plans (Plans). The permit orders were relatively simple documents that referred to the Plans for implementation details. Often specific

aspects of permit and Plan implementation evolved during the five-year permit cycle without significant public review and comment.

B. Merging Permit Requirements and Specific Requirements Previously Contained in Stormwater Management Plans

U.S. EPA stormwater rules for Phase I stormwater permits envisioned a process in which municipal stormwater management programs contained the detailed BMP and specific level of implementation information, and are reviewed and approved by the permitting agency before the municipal NPDES stormwater permits are adopted. The previous permits established a definition of a stormwater management program and required each Permittee to submit an urban runoff management plan and annual work plans for implementing its stormwater management program. An advantage to this approach was that it provided flexibility for Permittees to tailor their stormwater management programs to reflect local priorities and needs. However, Water Board staff found it difficult to determine Permittees' compliance with the permits, due to the lack of specific requirements and measurable outcomes of some required actions in the plans.

Moreover, these stormwater management plans and amendments thereto made by the Permittees were not subject to public input, contrary to the U.S. Ninth Circuit Court's decision in the Phase II stormwater context that public participation is required for a stormwater management plan, because the substantive information about how an operator will reduce pollutants to the maximum extent possible was found in the stormwater management plan rather than the permit itself (*Environmental Defense Center v. EPA* (9th Cir. 2003) 344 F.3d 832, 857.).

This Permit continues to modify these previous approaches by establishing the stormwater management program requirements and defining up front, as part of the permit development process, the minimum acceptable elements of the municipal stormwater management program. The advantages of this approach are that it satisfies the public involvement requirements of both the CWA and the California Water Code (CWC). An advantage for Permittees and the public is that the permit requirements are known at the time of permit issuance and not determined later through an iterative review and approval of stormwater management plan amendments, during which time was spent more on getting an acceptable plan than on-the-ground actions. While it may still be necessary to amend the Permit prior to expiration where allowed, any need to do this should be minimized.

This Permit does not require approval of all Permittees' stormwater management programs or annual reports as part of the administration of the Permit. To do so would require significantly increased staff resources. Instead, minimum measures have been established to simplify compliance determinations for the Water Board and make Permittees' performance more transparent to the public. Each Permit provision and its reporting requirements are written with transparency and

(comparative) administrative efficiency in mind. That is, each provision establishes the required actions, minimum implementation levels (i.e., minimum percentage of facilities inspected annually, escalating enforcement, reporting requirements for tracking projects, number of monitoring sites), and specific reporting elements to substantiate that these implementation levels have been met. Water Board staff will evaluate each Permittee's compliance through annual report review and the audit process.

The challenge in drafting the Permit is to set the rigorous enforceable baseline described above, while still allowing flexibility to numerous Permittees with a range of sizes and resources. To achieve this, the Permit frequently prescribes minimum measurable outcomes, while allowing Permittees to tailor the approaches they use to meet those outcomes. Enforceability has been found to be a critical aspect of the Permit. A balance between flexibility and enforceability has been crafted into the Permit.

C. Current Permit Approach

This Permit specifies the following: 1) requirements to effectively prohibit non-stormwater discharges into the storm drain system, pursuant to CWA § 402(p)(3)(B)(ii); 2) technology-based effluent limitations that require controls to reduce the discharge of pollutants to the "maximum extent practicable" (MEP)[1] pursuant to CWA § 402(p)(3)(B)(iii); and 3) water quality-based effluent limitations (WQBELs) pursuant to CWA § 402(p)(3)(B)(iii), which authorizes the inclusion of "such other provisions as the Administrator or the State determines appropriate for the control of…pollutants," for pesticides, trash, mercury, PCBs, bacteria, and sediment, in addition to technology-based effluent limitations. WQBELs for these pollutants are appropriate for control because water quality standards are not being met and these pollutants have impaired waters. The Permit includes requirements for the following components:

- Provision A. Discharge Prohibitions

[1] The CWA and its regulations have not specifically defined "MEP"; rather, it is a flexible and evolving standard. Congress established this flexible MEP standard so that administrative bodies would have "the tools to meet the fundamental goals of the Clean Water Act in the context of stormwater pollution"(*Building Industry Ass'n of San Diego County v. State Water Resources Control Board* (2004) 124 Cal.App.4th 866, 884.). This standard was designed to allow permit writers flexibility to tailor permits to the site-specific nature of MS4s and to use a combination of pollution controls that may be different in different permits (*In re City of Irving, Texas, Municipal Storm Sewer System* (July 16, 2001) 10 E.A.D. 111 (E.P.A.).). The MEP standard is also expected to evolve in light of programmatic improvements, new source control initiatives, and technological advances that serve to improve the overall effectiveness of stormwater management programs in reducing pollutant loading to receiving waters. This is consistent with U.S. EPA's interpretation of stormwater management programs. As explained by U.S. EPA in its 1990 rulemaking, "EPA anticipates that storm water management programs will evolve and mature over time" (55 Fed.Reg. 47990, 48052 (Nov. 16, 1990)).

- Provision B. Discharge Prohibitions and Receiving Water Limitations
- Provision C.1. Compliance with Discharge Prohibitions and Receiving Water Limitations
- Provision C.2. Municipal Operations
- Provision C.3. New Development and Redevelopment
- Provision C.4. Industrial and Commercial Site Controls
- Provision C.5. Illicit Discharge Detection and Elimination
- Provision C.6. Construction Site Control
- Provision C.7. Public Information and Outreach
- Provision C.8. Water Quality Monitoring
- Provision C.9. Pesticides Toxicity Control
- Provision C.10. Trash Load Reduction
- Provision C.11. Mercury Controls
- Provision C.12. PCBs Controls
- Provision C.13. Copper Controls
- Provision C.14. Bacteria Control for Impaired Water Bodies
- Provision C.15. Exempted and Conditionally Exempted Discharges
- Provision C.16. Discharges to Areas of Special Biological Significance
- Provision C.17. Discharges Associated with Unsheltered Homeless Populations
- Provision C.18. San Mateo County Sediment Controls
- Provision C.19. Cities of Antioch, Brentwood, and Oakley, Unincorporated Contra Costa County, and the Contra Costa County Flood Control and Water Conservation District Requirements
- Provision C.20. Cost Reporting
- Provision C.21. Asset Management
- Provision C.22. Annual Reports
- Provision C.23. Modifications to this Order
- Provision C.24. Standard Provisions

- Provision C.25. Expiration Date
- Provision C.26. Rescission of Old Order
- Provision C.27. Effective Date

IV. ECONOMIC ISSUES AND WATER CODE SECTION 13241

CWC section 13241 requires the Water Board to consider certain factors, including economic considerations, in the adoption of water quality objectives. CWC section 13263 requires the Water Board to take into consideration the provisions of CWC section 13241 in adopting waste discharge requirements.

In *City of Burbank v. State Water Resources Control Bd.* (2005) 35 Cal.4th 613, the California Supreme Court considered whether regional water boards must comply with CWC section 13241 when issuing waste discharge requirements under CWC section 13263(a) by taking into account the costs a permittee will incur in complying with the permit requirements. The Court concluded that whether it is necessary to consider such cost information "depends on whether those restrictions meet or exceed the requirements of the federal Clean Water Act" (*Id*. at p. 627.). The Court ruled that regional water boards may not consider the factors in CWC section 13241, including economics, to justify imposing pollutant restrictions that are less stringent than applicable federal law requires (*Id*. at pp. 618, 626-627 ["[Water Code section 13377 specifies that…discharge permits issued by California's regional boards must meet the federal standards set by federal law. In effect, section 13377 forbids a regional board's consideration of any economic hardship on the part of the permit holder if doing so would result in the dilution of the requirements set by Congress in the Clean Water Act.... Because CWC section 13263 cannot authorize what federal law forbids, it cannot authorize a regional board, when issuing a…discharge permit, to use compliance costs to justify pollutant restrictions that do not comply with federal clean water standards."]). However, when pollutant restrictions in an NPDES permit are more stringent than federal law requires, CWC section 13263 requires that the regional water boards consider the factors described in CWC section 13241 as they apply to those specific restrictions.

As discussed in Section V.C, State Mandates, the Water Board finds that the requirements in this Order are not more stringent than the minimum federal requirements. Among other requirements, federal law (CWA section 402(p)(3)(B)(ii)) requires MS4 permits to include requirements to effectively prohibit non-storm water discharges into the MS4s, in addition to requiring controls to reduce the discharge of pollutants in stormwater to the MEP, and other provisions as U.S. EPA or the State determines are appropriate for the control of pollutants in MS4 discharges. The permitting agency must therefore include provisions when it finds it is appropriate to do so and to determine what permit conditions are necessary to control pollutants in a specific geographic area.

MS4 discharges in the San Francisco Bay region are a continuing and significant source of pollutants to receiving waters, many of them impaired. As such, the Water Board finds that inclusion of all of the requirements in the Order are necessary and appropriate to control pollutants in MS4 discharges including, but not limited to, requirements for non-stormwater discharges, technology and water quality-based effluent limitations, TMDLs, receiving water limitations, and monitoring and reporting to ensure that the requirements of the Order are being met.

The requirements in this Order may be more specific or detailed than those enumerated in federal regulations under 40 CFR 122.26 and guidance; however, the requirements have been designed to be consistent with and within the federal statutory mandates described in CWA section 402(p)(3)(B)(ii) and (iii) and the related federal regulations and guidance. The conditions in this Order are no more stringent than federal law (See *Defenders of Wildlife v. Browne*r (9th Cir. 1999) 191 F.3d 1159, 1166.). Each of the requirements in the Order, especially when implemented together, constitute the critical means towards achieving the requirements and goals of the CWA.

Moreover, the inclusion of numeric WQBELs in this Order does not cause this Order to be more stringent than federal law (See State Water Board Order No. WQ2021-0052-EXEC, p. 72.). Federal law authorizes both narrative and numeric effluent limitations to meet state water quality standards. The inclusion of WQBELs as discharge specifications in an NPDES permit in order to achieve compliance with water quality standards is not a more stringent requirement than the inclusion of BMP-based permit limitations to achieve water quality standards (*Ibid.*; State Water Board Order No. WQ 2006-0012 (Boeing)). This is supported by U.S. EPA in its guidance on incorporating TMDL WLAs for stormwater in NPDES permits, which explains that the permit's administrative record needs to demonstrate that WQBELs will achieve the WLAs, whether the WQBEL is expressed numerically or as a BMP.[2]

In light of the foregoing, consideration of the factors set forth in CWC section 13241 is not required for permit requirements to implement the effective prohibition on the discharge of non-stormwater discharges into the MS4 or for controls to reduce the discharge of pollutants in stormwater to the MEP, or other provisions that the Water Board has determined appropriate to control such pollutants, as those requirements are mandated by federal law.

While the Water Board need not consider the CWC section 13241 factors, the Water Board nevertheless considers them below, namely the past, present, and probable future beneficial uses of water; the environmental characteristics of the

[2] U.S. EPA, Memorandum, "Revisions to the November 22, 2002 Memorandum 'Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs,'" (Nov. 26, 2014), p. 6; U.S. EPA, Memorandum, "Establishing Total Maximum Daily Load Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs" (Nov. 22, 2002) (2002 U.S. EPA Memorandum).

hydrographic unit under consideration, including the quality of water available thereto; the water quality conditions that could reasonably be 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.

Water Code section 13241 "does not specify how a water board must go about considering the specified factors. Nor does it require the board to make specific findings on the factors" (*City of Arcadia et al v. State Water Resources Control Board and Los Angeles Regional Water Quality Control Board* (2011) 191 Cal.App.4th 156, 177.). In *City of Duarte v. State Water Resources Control Board* (2021) 60 Cal.App.5th 258, 272, the Court of Appeal held that the "manner in which the Water Control Boards consider and comply with Water Code section 13241 is within their discretion" and that "the Water Control Boards are charged with taking into account economic considerations, not merely costs of compliance with a permit.… [E]conomic considerations also include, among other things, the costs of not addressing the problems of contaminated water" (*Id*. at p. 276.). Lastly, consideration of section 13241 does not require a "cost-benefit analysis" (*See* State Water Board Order WQ 2020-0038 (*In the Matter of Review of Approval of Watershed Management Programs and an Enhanced Watershed Management Program Submitted Pursuant to Los Angeles Regional Water Quality Control Board Order R4-2012-0175*) at p. 31.).

The Water Board finds that the requirements in the Order are necessary to ensure the reasonable protection of beneficial uses of waterbodies and the prevention of nuisance. None of the factors of section 13241, including costs of compliance, is sufficient to justify failing to protect those beneficial uses. Nor is it sufficient to justify omitting any requirement in the Order, as the Board finds that doing so would unreasonably affect the designated beneficial uses of the region's waters. Additionally, it would be wholly inconsistent with federal requirements not to include the requirements in the Order, as the Board has deemed them necessary for the control of MS4 discharges. Where appropriate, the Board has provided Permittees with additional time to implement control measures to achieve final WQBELs and/or receiving water limitations and provided significant flexibility where appropriate. The Order builds on the knowledge gained from implementing the Previous Permit. In addition, the Board has provided significant flexibility for Permittees to choose how to implement the requirements of the Order, including by working with other Permittees to implement cost-effective control measures. The Order allows Permittees the flexibility to address critical water quality priorities, particularly discharges to waters subject to TMDLs, but aims to do so in a focused and cost-effective manner while maintaining the level of water quality protection mandated by the CWA.

The CWC section 13241 factors are considered as follows:

A. Past, Present, and Probable Future Uses of Water and Environmental Characteristics of the Hydrographic Unit Under Consideration

With respect to the “past, present, and probable future uses of water” and “environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto”: the beneficial uses of the region’s waters affected by MS4 storm water discharges are set forth in the Basin Plan, the Ocean Plan, and the Inland Surface Waters, Enclosed Bays, and Estuaries (ISWEBE) Plan, (as well as the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, applicable to the East County Permittees), which the Water Board has considered. The environmental characteristics of the waters under consideration, including water quality, have been affected by MS4 discharges of stormwater and non-stormwater, which convey myriad pollutants to surface waters, including hydrocarbons, heavy metals, pesticides, trash, mercury, PCBs, bacteria, and sediment, which have impaired waters in the regions, ultimately impacting present and probable future beneficial uses. For example, this has led to fish consumption advisories, adverse ecosystem and recreational impacts from trash and debris, and toxic conditions for aquatic life, among others. The requirements of the Order are necessary to protect and restore the past, present, and probable future beneficial uses of surface waters in the region.

B. Water Quality Conditions Reasonably Achievable

The “water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area” are not reconsidered when issuing waste discharge requirements, as water quality objectives have already been established and the purpose of permitting is to regulate a particular type of discharge or a discharge from a specific source, not all possible sources of pollutants to a receiving water. The water quality objectives implemented by the Order have already been subject to separate regulatory processes, and those water quality objectives were deemed reasonable and achievable when they were promulgated. The Water Board has found that water quality objectives can reasonably be achieved, in many cases over time in accordance with implementation schedules, such as those in TMDLs, through the coordinated control of all factors which affect water quality in the area. Achieving and maintaining water quality objectives is a coordinated effort and all regulated dischargers must contribute, including the Permittees, since MS4 discharges are a significant source of pollutants in receiving waters. The requirements in this Order are key to ensuring reasonable achievement of water quality objectives.

C. Housing Needs

With respect to the "need to develop housing within the region," the Water Board is mindful that housing demands have not kept up with population growth in the Bay Area. An increase in population creates a higher demand for water, exacerbates usage of natural resources, and increases generation of waste and pollution. In order to conserve and protect the quantity and quality of our natural resources, development must be done systematically. To protect human health and the environment, create economic opportunities, and provide attractive and affordable neighborhoods, U.S. EPA encourages smart growth and low impact development.[3] Stormwater management is an essential smart growth strategy. According to U.S. EPA, using smart growth and low impact development strategies, communities and developers can reduce runoff quantity, protect water quality, and conserve water by developing compactly, preserving ecologically critical open space, and using green infrastructure strategies.[4]

The Order helps to address the water needs associated with the need for housing by controlling the quality and quantity of MS4 discharges, and requiring some stormwater to be recycled and re-used. The low impact development requirements of the Order help to balance growth with the protection of water quality, by requiring new development to implement cost effective, lot-level strategies that replicate the natural hydrology of the site and reduce the negative impacts of development. By avoiding the installation of more costly conventional stormwater management strategies and harnessing runoff at the source, LID practices enhance the environment while providing cost savings to both developers and local governments.

The Order also incentivizes much-needed affordable housing in the Bay Area by providing regulatory flexibility for affordable housing projects in meeting low impact development requirements. The new requirements to address discharges associated with unsheltered homelessness may also encourage the development of housing, as Permittees may control discharges associated with homelessness by providing and expanding access to temporary or permanent housing.

D. Recycled Water Needs

On the "need to develop and use recycled water" factor, the Order allows Permittees, via their green infrastructure planning and alternative compliance

[3] According to U.S. EPA, "'[s]mart growth' covers a range of development and conservation strategies that help protect our health and natural environment and make our communities more attractive, economically stronger, and more socially diverse." Principles of smart growth include, but are not limited to, use of compact building design, creating a range of housing opportunities and choices, and preserving open space and critical environmental areas. United States Environmental Protection Agency. About Smart Growth. https://www.epa.gov/smartgrowth/about-smart-growth. Accessed on June 23, 2020.

[4] U.S. EPA. Smart Growth and Water. https://www.epa.gov/smartgrowth/smart-growth-and-water

processes in Provision C.3, to support or implement multi-benefit projects that capture and use runoff. During MRP 2, the City of South San Francisco and the San Mateo Countywide Water Pollution Prevention Program developed the Orange Memorial Park design, which incorporates water capture and use and is expected to be constructed during the Permit term. Permittees, in their Green Infrastructure Plans and Stormwater Resource Plans completed during MRP 2, have identified additional opportunities for such projects, and Order Provision C.3.j allows credit for their implementation.

E. Economic Considerations

Finally, with respect to the "economic considerations" factor, the Water Board has considered cost of compliance, especially since it is a consideration in the implementation of technology controls to the MEP. In 2000, the State Water Board issued a precedential order (State Water Board Order WQ 2000-11 (*Cities of Bellflower, et al*.) stating that cost of compliance with the programs and requirements of a municipal stormwater permit is a relevant factor in determining MEP. The Order also explicitly stated that a cost benefit analysis is not required. The State Water Board discussed costs as follows:

> *While the standard of MEP is not defined in the stormwater regulations or the Clean Water Act, the term has been defined in other federal rules....*
>
> *These definitions focus mostly on technical feasibility, but cost is also a relevant factor. There must be a serious attempt to comply, and practical solutions may not be lightly rejected. If, from the list of BMPs, a permittee chooses only a few of the least expensive methods, it is likely that MEP has not been met. On the other hand, if a permittee employs all applicable BMPs except those where it can show that they are not technically feasible in the locality, or whose cost would exceed any benefit to be derived, it would have met the standard. MEP requires permittees to choose effective BMPs, and to reject applicable BMPs only where other effective BMPs will serve the same purpose, the BMPs would not be technically feasible, or the cost would be prohibitive. Thus while cost is a factor, the Regional Water Board is not required to perform a cost-benefit analysis.*

(State Water Board Order WQ 2000-11, *supra*, p.20; see also State Water Board Order WQ 2020-0038, *supra*, p. 31.) The cost of complying with TMDL waste load allocations is not required to be considered since TMDLs are not subject to the MEP standard. Federal law requires that NPDES permits contain effluent limitations consistent with the assumptions of any applicable wasteload allocation in a TMDL

(40 C.F.R. §122.44(d)(1)(vii)(B).). Nevertheless, for purposes of CWC section 13241, these costs are considered.

Economic discussions of urban runoff management programs focus primarily on costs incurred by municipalities in developing and implementing the programs. This is appropriate, and these costs are significant and a major issue for the Permittees. However, the true cost of implementation of the Permittees' urban runoff management programs is difficult to ascertain because reported costs of compliance for the same program element can vary widely from Permittee to Permittee, often by a very wide margin.[5] Permittees do not have a standardized approach to reporting costs, and in some cases attribute the full cost of pre-existing programs, program elements that serve purposes other than stormwater control, and grant-funded projects to the cost of complying with the stormwater permit. Below, we discuss these challenges in more detail, consider cost estimates from other regions, and provide estimates of both past and projected costs of this region's identify urban runoff management programs. In addition, we have also attempted to quantify both costs that would be incurred by not fully implementing the programs, as well as the benefits that result from program implementation.

1. Difficulties in Estimating Costs

Reported costs of compliance for the same program element can vary widely from Permittee to Permittee, and stormwater pollution reduction approaches and costs are difficult to standardize. There are appropriate grounds for differences among municipal stormwater permits: what is practicable and prudent in one community may not work in another because of differences in population, hydrology, pollution sources, water uses, and municipal infrastructure, among other factors. In addition, Permittees have discretion in deciding how to comply with permit requirements, including requirements to implement TMDL wasteload allocations and achieve full-trash capture equivalency. Nevertheless, differences of a very wide margin are not easily explained.[6] While Permittees may be in a better position than Water Board staff to estimate the costs of compliance, they may have incentives to over-report costs or report costs they would have incurred regardless of the permit requirements. Thus, it continues to be difficult to ascertain the cost, for planning purposes, of fully implementing decades-long stormwater and urban runoff management programs, especially where significant flexibility has been provided to the Permittees to comply, both with regard to the manner of compliance and the timeframes for achieving compliance.

[5] LA Regional Water Board, 2003. Review and Analysis of Budget Data Submitted by the Permittees for Fiscal Years 2000-2003. p.2

[6] Radulescu, Dan, and Xavier Swamikannu. *Review and Analysis of Budget Data Submitted by the Permittees for Fiscal Years 2000-2003*. Los Angeles Regional Water Board, January 2003. p. 2. Web. June 20, 2019.

In addition, challenges in projecting costs include:

- Innovations in BMPs over time may reduce costs and/or increase pollutant removal;
- Changes in consumer products, land use, and demographics may increase, reduce or eliminate pollutants in MS4 discharges;
- Limitations of modeling used to identify appropriate BMPs to achieve required water quality outcomes, requiring water quality data for verification and periodic recalibration;
- Imprecise data at the planning stage on site-specific conditions for siting BMPs, which can significantly affect BMP sizing requirements as well as the types of BMPs that can be used at a site;
- Evolving science and evaluation of local conditions that may support site-specific water quality objectives; and
- Infrastructure age and condition, which may require significant rehabilitation or reconstruction projects to which Permit-required BMPs could be added at a reduced incremental cost relative to a standalone BMP retrofit project;[7]
- BMP implementation drivers outside the Permit, such as climate change, which may result in changes to the depth, duration, and frequency of precipitation events, as well as changes to urban temperatures and water availability; urban land use changes such as densification or multi-modal ("active") transportation design implementation; modified urban designs to improve air quality around transportation infrastructure; or modified street tree planting designs to improve street tree health, size, and longevity, leading to green stormwater infrastructure implementation for other purposes, that coincidentally satisfies Permit requirements.

Several ongoing initiatives seek to address the challenges described above, including efforts by the State Water Board's Office of Research, Planning, and Performance (ORPP)[8] to provide guidance on estimating TMDL implementation costs, and a project of the Environmental Finance Center (EFC) at California State

[7] As an example, in its 2019 stormwater fee funding initiative, the City of Alameda noted that "on average, the industry-standard life expectancy of a storm drain system is approximately 60 years. The majority of the City's storm drainage pipes were installed more than 50 years ago, leaving the City with a system that is approaching the end of its useful life." (City of Alameda, July 2019. *Fee Report: Water Quality and Flood Protection Fee*. p. 1). Many of the MRP Permittees own and operate MS4s that were built prior to or shortly after WWII and, as such, are systems due for significant rehabilitative or restorative maintenance. This has been one driver for MS4 master planning efforts by Permittees including the cities of Alameda (2008), Oakland (bids solicited in 2020), Palo Alto (2015 update), San Jose (2017), and Vallejo.

[8] State Water Board, ORPP, 2019. *Guidance for Future Total Maximum Daily Load (TMDL) Municipal Storm Water Cost Estimation,* p.2.

University, Sacramento's to compile existing resources on stormwater infrastructure costs and develop best practices for estimating costs. EFC's effort is evolving from CSU Sacramento's 2005 work, presented below in part, and will include estimates of costs for permit compliance activities, technical resources that assist stormwater managers, and project costs for both green and grey stormwater infrastructure.

ORPP's guidance describes methods for obtaining information on compliance approaches and associated costs and for completing an independent analysis of costs. The guidance promotes greater consistence and transparency related to estimation of costs to implement TMDLs. ORPP notes that, even with improved guidance, precise cost estimation remains challenging and the level of precision possible may be low in many cases. For example, industry-wide, there is no uniform database of projects' components and costs to date. [9]

The Permit specifies expectations for cost reporting in Provision C.20, Cost Reporting, which is intended to improve the Board's understanding of Permittee costs to comply with the Permit. The Water Board hopes that in conjunction with ORPP's guidance and the EFC's resources, Provision C.20 will provide valuable cost information that will improve the Water Boards' consideration of economic factors in issuing future permits.

a. Differentiating Stormwater Program Costs from Other Municipal Program Costs

Reported program costs are not all attributable to compliance with MS4 permits. Many program components and associated costs predate the MS4 permitting program, while other program components serve multiple purposes, only one of which is stormwater control, or would have been implemented irrespective of a permitting requirement. Therefore, true program cost resulting from MS4 permit requirements is sometimes some fraction of reported costs.

In the San Francisco Bay Region, most costs that will be incurred to implement the Order will not be new. Urban runoff management programs have been in place in this region for over 25 years. Municipalities have funded street sweeping and trash collection for decades, so their costs are not solely or even principally attributable to MS4 permit compliance. Some municipalities' source control ordinances, such as Berkeley's 1988 ban on Styrofoam, predated the stormwater permit's source control credits. Many municipalities had creek cleanup initiatives, long before doing so was eligible for a credit under the stormwater permit. Thus, any increase in cost to the Permittees as a result of this Order's requirements will be incremental in nature. This incremental increase may be quite low. A California State University, Sacramento study found that only 38 percent of program costs are new costs fully attributable to

[9] Radulescu, Dan, and Xavier Swamikannu. *Review and Analysis of Budget Data Submitted by the Permittees for Fiscal Years 2000-2003*. Los Angeles Regional Water Board, January 2003. p. 2. Web.

MS4 permits. The remainder of program costs were either preexisting or resulted from enhancement of preexisting programs.[10] The County of Orange found that an even smaller percentage, 20 percent, of its total stormwater management program budget was attributable to MS4 permit compliance. The remaining 80 percent is attributable to preexisting programs.[11]

In some cases, stormwater control is only one element of a larger project. For instance, stormwater control measures may be integrated into multi-benefit projects serving many objectives, such as green stormwater infrastructure elements of sidewalks and bike paths that also reduce the urban heat island effect and improve pedestrian and cyclist safety. Another example is the stormwater filtration pond at Northside Drive in Dublin, Alameda County, which filters runoff from upstream residential and commercial land use while serving as a significant urban park amenity. Other measures may start out as stormwater control measures only to become expected by residents for their other benefits (e.g., dog waste bags along trails or in public parks, trash receptacles at trailheads and parking areas, and restrooms or portable toilets at trailheads and in public parks). As for the costs associated with upgrading existing programs, only a fraction of the cost of a multi-benefit project should be attributed to MS4 permit implementation.

2. Current Permit Costs - Estimates from Other Regions

Despite the challenges in quantifying permit implementation costs, past efforts to identify urban runoff management program costs have produced useful information.

Studies on urban runoff management program costs and have found annual per-household costs ranging from about $15 – 67 (2021 dollars).[12]

For example, in 1999, U.S. EPA reported on multiple studies it conducted to determine the cost of urban runoff management programs.[13] A study of Phase II municipalities determined that the annual cost of the Phase II program was expected to be $9.16 ($14.58)[14] per household per year. U.S. EPA also studied 35

[10] State Water Board, 2005. NPDES Stormwater Cost Survey. p. 58.

[11] County of Orange, 2000. A NPDES Annual Progress Report. p. 60. More current data from the County of Orange is
not used in this discussion because the County of Orange no longer reports such information.

[12] Federal Register / Vol. 64, No. 235 / Wednesday, December 8, 1999 / Rules and Regulations. pp. 68791-68792.
State Water Board, 2005. NPDES Stormwater Cost Survey. p. ii

[13] U.S. EPA, 1999. *Preliminary Data Summary of Urban Storm Water Best Management Practices, EPA 821-R99-012*. Web.

[14] Figures in parentheses reflect adjustments for inflation to 2021 dollars using the U.S. Bureau of Labor Statistics' CPI Inflation Calculator: https://www.bls.gov/data/inflation_calculator.htm

Phase I municipalities, finding costs to be similar to those anticipated for Phase II municipalities, at $9.08 ($14.46) per household per year.[15]

The Los Angeles Regional Water Board also conducted a study on program cost based on costs reported in the municipalities' annual reports.[16] The Los Angeles Regional Water Board estimated that average per-household cost to implement the MS4 program in Los Angeles County was $12.50 ($18.18) per year.

The State Water Board commissioned a study by CSU Sacramento to assess costs of the Phase I MS4 program. Annual cost per household in the study ranged from $18 to $46 ($25.98 to $66.51) with the City of Encinitas in San Diego County representing the upper end of the range.[17] The higher cost of the City of Encinitas' program reflects its coastal location, reliance on tourism, consent decree with environmental groups, and overall superior program. In a separate review, the Central Coast Regional Water Board estimated that the costs imposed by its Phase I MS4 Permit for the City of Salinas (Order No. R3-2012-0005) were similar to those for Encinitas, since the Salinas permit's requirements were similar to those for Encinitas. Other MS4s assessed in the CSU Sacramento study were the cities of Corona and Santa Clarita, which were found to expend $32 ($46.76) and $39 ($40.53) per household on their stormwater programs, respectively. The range of costs for broadly similar programs in Southern California is likely representative of Permittees' costs to implement the programs.

3. Estimates of Permit Costs in the San Francisco Bay Region

Because the Permittees have not been required to report comprehensively on program implementation costs, estimates like those developed in CSU Sacramento's study are not available for the San Francisco Bay Region. Nevertheless, stormwater management fees implemented by certain Permittees provide some indication of the previous permit's implementation costs. The MRP Permittees' generally successful implementation of their urban runoff management programs for the past 25 years demonstrates that they have the resources available to implement them. We consider these costs below:

In 2019, the City of Alameda property owners approved the Water Quality and Flood Protection Initiative, which increased Alameda's existing Clean Water Program fee, originally adopted in 1992, to comply with state and federal clean

[15] National Pollutant Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Dischargers, Final Rule. Federal Register 64 (December 8, 1999): 68791. Web.

[16] Radulescu, Dan, and Xavier Swamikannu. *Review and Analysis of Budget Data Submitted by the Permittees for Fiscal Years 2000-2003*. Los Angeles Regional Water Quality Control Board, January 2003. p. 2. Web.

[17] State Water Board, 2005. Currier, Brian K., et al. *NPDES Storm Water Cost Survey Final Report.* Office of Water Programs, CS Sacramento, January 2005. pp. ii, iv

water requirements (28 percent); operate and maintain Alameda's MS4 (56 percent); and complete capital improvements to protect flooding (16 percent).[18] The initiative increased Alameda's existing fee revenues to $5.45 million per year from $2.89 million per year, and to $69.40 per capita from about $36.80 per capita. While the allocation of the fee funds suggests Alameda's costs to implement Permit requirements may not be more than about $20 per capita per year ($69.40 x 28 percent). However, because costs are not clearly separated and because Alameda incurs other costs that are recovered outside of the fee (e.g., costs for plan review for Provision C.3 projects, inspection of commercial, industrial, and construction facilities pursuant to Provisions C.4 and C.6, with recovery of those costs via fees for plan review or inspection), the true program cost is greater.

In April 2017, Palo Alto property owners approved a Storm Water Management Fee of about $164 per year for a typical single-family residence. This new fee replaced Palo Alto's then-existing Storm Drainage Fee, increasing it by about 2.3 percent. The fee was originally established in 1989 at $39 per year per "equivalent residential unit" and was raised to $51 per year in 1994-95, for a typical single-family residence.[19] The 2017 fee was to fund: storm drain system construction projects; green stormwater infrastructure projects; commercial and residential rebate programs to encourage installation of green stormwater infrastructure; floodplain management programs; debris and litter reduction; and public and residential integrated pest management activities. Palo Alto noted that the funding necessary to support "a minimum level of storm drainage service" would cost approximately $3.5 million per year, consisting of $2.5 million in baseline staff and expenses, and $1 million in annual debt service for past storm drain capital project revenue bonds, or about $52.60 per capita.[20]

Both fee increases provide a Bay Area estimate of current program costs and indicate the challenges of determining stormwater program-specific costs. While the fees include costs to comply with Permit, they also include other costs associated with MS4 construction, operation, and maintenance, which are not required by the Permit. At the same time, the fees do not cover all costs to implement the Permit. For example, the cities incur costs under Provision C.3 associated with plan review and approval, inspection of urban runoff treatment, and in some cases hydromodification control systems. In addition, they may incur costs for Permit-required inspections of construction sites and commercial and industrial businesses, and actions to address illicit discharges pursuant to Provisions C.4, C.5, and C.6. These costs are recovered through other fees, e.g., for plan review, permitting, and inspections, and business licenses. Permit-required work such as commercial and

[18] City of Alameda, 2019. *City of Alameda Water Quality & Flood Protection Initiative Official Ballot Information Guide.* Web. July 22, 2021.

[19] https://www.paloaltoonline.com/weekly/morgue/cover/2000_Sep_13.SIDEBAR.html

[20] City of Palo Alto, Sept. 22, 2015. *Finance Committee Staff Report: Storm Drainage Fee Renewal.* p.7.

industrial business inspections may be combined with inspections for purposes not required by the Permit, such as hazardous materials inspections completed by the local Certified Unified Program Agency (CUPA).

Similarly, Permittees may use General Fund revenues for purposes such as capital improvement projects, which could include provision of matching funds for grant-funded green stormwater infrastructure projects. The City of East Palo Alto experienced budget surpluses of up to $17.2 million per year from 2011 to 2019, and in 2019 transferred a portion of the surplus to provide cost match for grant-funded water infrastructure projects. Other cities experiencing surpluses in 2019 included Palo Alto ($76 million) and Mountain View ($118 million).[21] These expenditures may not be reflected in storm water fees.

Palo Alto's and Alameda's fees are similar to the reported costs for other municipalities to implement broadly similar MS4 permits. Given the significant limits noted herein, the Water Board concludes that the discussion describes costs that are generally representative of costs to implement the Previous Permit.

4. Program Costs

Below, we consider in greater detail the costs associated with compliance with the renewed Permit.

This economic analysis combines cost estimates at a macro level (e.g., per capita costs based on typical implementation costs compiled from multiple sources) and, where possible, estimated costs for Permittees to comply with specific Permit provisions.

For estimates of the projected costs to comply with the Permit, Water Board staff sought examples from published sources and experts, including:

- Permittees' stormwater program managers and staff
- Stormwater program managers around the State
- Stormwater staff at the Regional and State Water Boards
- Grant funding applications (e.g., Props. 1 and 84) and reports submitted to the State Water Board's Division of Financial Assistance (e.g., Storm Water Resource Plans)
- Information on projects implemented cooperatively with the California Department of Transportation (Caltrans)

[21] East Palo Alto Daily Post, Feb. 5, 2020. *East Palo Alto Posts a $15.6 million surplus.* Web. July 25, 2021.

- Total Maximum Daily Loads adopted by the Water Board and other Regional Water Boards
- Economic analyses conducted for other Regional and State Water Board orders and amendments to Water Quality Control Plans (e.g., the Trash Amendments)
- Available peer-reviewed and gray literature on the implementation of measures similar to those that are reasonably foreseeable under the Permit (e.g., reports on green stormwater infrastructure implementation for Philadelphia's Green City, Clean Waters program and others; collected cost information available at the International Stormwater BMP Database; and published reports and articles from the American Society of Civil Engineers and the Water Environment Federation)

Possible errors in cost estimates can result from extrapolating costs from other jurisdictions to the Permittees' on a per capita or per area basis because of differences in regional economies, population density, and other factors. A more accurate estimation of costs would seek to normalize cost factors before extrapolating in this manner. However, as discussed herein, because of limitations in the available data and uncertainties regarding Permittees' methods of compliance with the Permit, further effort to refine the estimates provided here would not necessarily improve them.

The Permittees' determination of a method of compliance will also affect cost. Permittees can choose to implement the least expensive measures that are effective in meeting the Permit requirements. The Permit also does not require Permittees to fully implement all requirements within a single permit term. Where appropriate, the Water Board has provided Permittees with additional time to implement control measures to achieve water quality objectives. In addition, changes to the Permit are typically incremental in nature, expanding upon or better defining existing programs or requirements. Estimates of new program costs can be inflated if they reflect the unit costs for grant-funded projects, often pilots being completed for the first time, that include measures that would be excluded if they were not being subsidized by grant funding.

The Permit generally maintains existing requirements, such that many MS4 program costs are continuing costs that may be well represented by the discussion above. At the same time the Permit's continuing requirements may result in additional implementation actions, which can result in new costs. In addition, the Permit includes new or revised expectations as described below, which may result in program costs not captured by the above analysis.

a. Continuing Requirements

Provisions for which requirements are substantially continuing, or continuing in a manner likely to result in similar costs to Permittees as under MRP 2, include:

- C.1 – Compliance with discharge prohibitions
- C.2 – Municipal operations
- C.4 – Industrial and commercial site controls
- C.5 – Illicit discharge detection and elimination
- C.6 – Construction site control
- C.7 – Public information and outreach
- C.9 – Pesticides toxicity control
- C.13 – Copper controls
- C.14.b – City of Pacifica and San Mateo County bacteria controls
- C.15 – Exempted and conditionally exempted discharges
- C.16 – Discharges to areas of special biological significance
- C.19 – East Contra Costa County Permittees

Provision C.5 includes a continuing requirement that Permittees maintain their MS4 maps, along with a requirement to develop a plan and schedule to update their existing maps. Permittees are likely to incur modest costs to develop this plan and schedule. Those permittees who have recently updated maps are likely to incur lower costs.

In addition, while Provision C.8, Monitoring, incorporates certain revised monitoring expectations, they are expected to result in costs similar to those incurred by the Permittees during MRP 2, including for monitoring conducted pursuant to Provision C.10, which has been moved into Provision C.8. That is because while some monitoring has been maintained (e.g., pesticides and pollutants of concern monitoring) or added (e.g., green stormwater infrastructure monitoring), other monitoring expectations were removed (e.g., creek status monitoring) and replaced with monitoring that is expected, overall, to have similar total costs. In addition, the provision incorporates flexibility to allow Permittees to complete monitoring efforts collectively and/or collaboratively, or in coordination with other efforts, such as the San Francisco Bay Regional Monitoring Program. All monitoring requirements are relevant and necessary to demonstrate compliance with permit requirements and to answer or to inform answer to critical specified management questions related to pollutant source identification, effectiveness of pollutant controls and management practices and actions, and attainment of water quality objectives in receiving waters. The monitoring requirements reflect a balance between minimizing monitoring costs and ensuring monitoring is scientifically sound and sufficient to provide usable

results. Any increased costs associated with new or revised monitoring requirements are modest compared to the costs of implementation of pollutant controls and management practices and actions, and the benefit of better-informed basis for cost-effective pollutant controls and management practices and actions, which will cost hundreds of millions of dollars over time, far outweigh any additional monitoring costs. In addition, reduced or inadequate monitoring efforts that do not produce usable results is a consequential waste of resources.

Further, trash monitoring requirements have been moved to Provision C.8 from Provision C.10. While they have been updated to reflect next steps based on work the Permittees completed during MRP 2, they are expected to involve a similar level of effort and cost.

Provision C.15 includes a continuing requirement to implement appropriate BMPs for non-stormwater discharges, including emergency firefighting discharges. This includes a requirement to convene a workgroup to update practices for emergency firefighting discharges and to implement training on the updated practices once during the permit term. This may result in costs to attend workgroup meetings, prepare updated BMPs and outreach materials, and train affected municipal staff.

Provision C.19 incorporates changes reflecting that subject East Contra Costa County Permittees, who were added to MRP 2 during the MRP 2 permit term, were granted time during MRP 2 to come up to speed with requirements of other Order provisions. Those Permittees are thus expected to be affected similarly to the other Permittees with respect to costs, as described elsewhere in this analysis. In addition, Provision C.19 incorporates requirements to achieve applicable wasteload allocations for mercury, in part by completing a study on Marsh Creek. However, those costs are roughly offset by reduced costs associated with work completed during MRP 2 that is now no longer required.

b. Continuing Requirements with additional costs

The Permit includes a number of provisions with requirements that may increase program costs. In many cases, these costs may be offset in whole or in part through collection of additional fees (e.g., for plan review and inspections), grant funding, completion of cooperative projects with other entities (e.g., Caltrans), or other sources.

The Permit would require additional costs as compared to MRP 2 to implement updated requirements for the following Provisions:

- C.3 – New and Redevelopment
- C.10 – Trash Control

- C.11 – Mercury Control and
- C.12 – PCBs Control

For Provisions C.3, C.10, C.11, and C.12, substantial portions of the Provisions' expectations are continuing requirements and expected to have costs similar to MRP 2. They also incorporate updated requirements, and the costs to implement those updated requirements are likely to be dominated by costs for green stormwater infrastructure implementation and implementation of full trash capture devices or measures equivalent to full trash capture, as described below. That is in part because building projects on the ground is more expensive than implementing municipal planning processes to require others to do so, to evaluate contaminated sites for referral to other agencies for cleanup, etc.

Green stormwater infrastructure implementation costs have a substantial potential range, depending on factors including project type, size, location, and constraints. In general, larger district- or regional-scale projects may have lower unit costs (i.e., costs per acre of impervious surface treated, or per unit of pollutants reduced) than smaller green street or parcel-scale projects.[22] In their Green Infrastructure planning processes and in comments on the Order's Administrative Draft, Permittees expressed the expectation that they would seek to implement a cost-efficient combination of measures sufficient to address Order requirements. Thus, it is likely that Permittees will choose to implement a combination of projects that is below the highest-cost analysis considered here.

To the extent these provisions contain updated measures that would impose additional costs on Permittees to implement, it is likely that those additional costs are within the range of implementation costs for green stormwater infrastructure and trash capture.

c. Continuing provisions with updated requirements

The Order includes post-construction stormwater requirements, including requirements to reduce discharges of mercury and PCBs, which green stormwater infrastructure will help achieve. Low impact development (LID), as a mode of implementing post-construction requirements, has been shown to be cost-effective and compares favorably to conventional stormwater management. "As LID was [originally] developed by a local government, it is sensitive to addressing local government's unique environmental and regulatory needs in the most economical manner possible by reducing costs associated with stormwater infrastructure design, construction, maintenance, and enforcement. LID also provides for local governments' need for economic vitality through reasonable and continued growth and redevelopment. LID allows for greater development potential with less environmental impact using smarter designs and

[22] WEF, Dec. 2, 2015. *Spotlight: The Real Cost of Green Infrastructure.*

advanced technologies to achieve a better balance between conservation, growth, ecosystem protection, and public health/quality of life."[23]

Traditional approaches to stormwater management involve conveying runoff off-site to receiving waters, to a combined sewer system, or to a regional facility that treats runoff from multiple sites. These designs typically include hard infrastructure, such as curbs, gutters, and piping. LID-based designs, in contrast, are designed to use natural drainage features or engineered swales and vegetated contours for runoff conveyance and treatment. In terms of costs, LID techniques like conservation design can reduce the amount of materials needed for paving roads and driveways and for installing curbs and gutters. Conservation designs can be used to reduce the total amount of impervious surface, which results in reduced road and driveway lengths and reduced cost. Other LID techniques, such as grassed swales, can be sued to infiltrate roadway runoff and eliminate or reduce the need for curbs and gutters, thereby reducing infrastructure costs. LID techniques can reduce creek and flood control channel maintenance needed due to erosion and sedimentation, and reduce the size and cost of flood control structures.[24]

The Water Board considered costs of implementing LID measures. In comments on the Administrative Draft of the Permit, the Permittees submitted an estimated average cost of $215,000 per impervious acre treated by bioretention.[25] However, the ACCWP noted a per-acre cost of approximately $660,000 for a single high-cost project, Union City's grant-funded H Street Green Street retrofit pilot project,[26] which incorporated substantial amounts of relatively more-expensive pervious pavement and concrete work. It is likely that increased municipal experience over time will reduce unit costs from this high number. Additionally, it is unlikely that municipalities implementing retrofit projects would incorporate cost drivers like large areas of pervious pavers and substantial underlying concrete work, when less-expensive options (e.g., bioretention bulb-outs, district- or regional-scale projects) are available.

In addition, costs to implement GSI include operation and maintenance costs. The Water Board reviewed available estimates of annual O&M costs, including general estimates about $1,120 – 2,240 (2021 dollars) per treated acre of impervious surface for bioretention cells, with somewhat higher numbers for porous and pavement and porous pavers (about $1,680 – 2,800 per acre

[23] Coffman, Larry. *Low Impact Development: Smart Technology for Clean Water, Definitions, Issues, Roadblocks, and Next Steps.* American Society of Civil Engineers, 2004. Web. August 3, 2021. p.1.

[24] U.S. EPA. *Reducing Stormwter Costs Through Low Impact Development (LID) Strategies and Practices*. EOA 841-F-07-006, December 2007.

[25] E.g., SCVURPPP and CCCWP comment letters of April 8, 2021, on MRP 3.0 Administrative Draft.

[26] ACCWP comment letter on MRP 3 Administrative Draft, April 8, 2021. p.7 of 31.

treated, 2021 dollars).[27] An ASCE survey of maintenance costs found that annual bioretention maintenance costs varied substantially, from $70 – 5,450 per acre treated, but averaged about 5-7 percent of capital costs, which was consistent with U.S. EPA guidance.[28] O&M costs may be borne by a Permittee or an implementing private party. The costs are incremental; in the absence of an O&M cost for GSI, a Permittee or private party typically would incur an O&M cost for the landscaping or other surface that would have been present if the GSI had not been built.

Further cost estimates are discussed below. This analysis considers a range of costs running from $50,000 per treated impervious acre as a potentially low cost for larger district- or regional-scale projects; $213,000 per treated acre as a potentially typical cost, and $660,000 per treated acre as a potentially high-end implementation cost for implementation of green stormwater infrastructure.

Provision C.3 would require Permittees to implement green stormwater infrastructure retrofit of up to 216.92 ac, while providing flexibility to include projects that may already be under way but not yet constructed (pursuant to Provision C.3.j.ii.(2)(e)), as well as certain projects that have not been completed by the end of the Permit term (pursuant to Provision C.3.j.ii.(2)(f)). In addition, it allows a reduction in GSI retrofit requirements for Permittees who implement ordinances to more broadly incorporate retrofit requirements into their planning and approval processes for C.3 Regulated Projects.

As a result, Permittees would be expected to incur costs ranging from $13.7 million to $181 million, with a more-typical expectation of about $58 million, to comply with the Permit's GSI retrofit requirements during the coming Permit term. As noted above, those costs are likely overstated because of flexibility provided within the Permit.

In a 2013 study,[29] the County of Orange, on behalf of the Orange County Stormwater Program, partnered with the Construction Industry Coalition on Water Quality to develop estimates of the costs of incorporating different combinations of LID BMPs into several of the most commonly encountered Orange County development scenarios. The study examined four different development project scenarios in Orange County, ranging in size from a small urban mixed-use commercial retail and residential property with no parking provided (0.14 ac), up to a large "big-box" type commercial retail center on 12.4

[27] WEF, Dec. 2, 2015. *Spotlight: The Real Cost of Green Infrastructure.*

[28] U.S. EPA, 199. *Preliminary data summary of urban stormwater best management practices.* EPA-821-R-99-012, Washington, DC.
Clary and Piza, 2017. *Cost of Maintaining Green Infrastructure*. EWRI of the American Society of Civil Engineers, ch. 3.

[29] Grey et al., March-April 2013. *The costs of LID: low-impact-development BMP installation and operation and maintenance costs in Orange County, CA.* Stormwater Magazine.

ac. In three of four scenarios, the percentage of impervious area assumed was 90 percent, with LID BMPs sited predominantly within landscaping and parking areas. The study considered five different LID BMPs for application within four categories of LID BMPs: infiltration basins and concrete pavers, harvest and use cisterns, green roofs, and biofiltration systems.

The study found that "infiltration and biofiltration systems were the least-cost practice to manage the Design Capture Volume for a given project, and the least costly BMPs to operate and maintain over a 20-year period. This finding is generally consistent with a small amount of published literature and reports on LID BMP costs in the U.S." Specific costs for LID BMP installation and O&M "ranged from just over $50,000 for an infiltration paver system serving the small urban mixed-use residential and commercial scenario (0.14 ac, 2,800-gal design capture volume) up to $4.7 million for a cistern and green roof combination serving the 12.4-ac big-box commercial project.

The Orange County study found: "Assuming no technical infeasibility constraints, the least-cost LID BMPs are infiltration and biofiltration systems, regardless of volume managed or project type…. Where space is available within a project site (the case studies assumed 3 percent or less of the total site area) to install an infiltration basin or biofiltration system, the cost of installing these two types of LID BMPs is under…$2 per square foot [about $87,000 per acre] of [impervious area]."

A 2011 study from the Minnesota Pollution Control Agency[30] reported data on 69 BMP projects and illustrates a wide variability in costs of different LID BMPs (Table A-1). In addition, costs are with a given BMP type are expected to vary substantially depending on factors described above.

Table A-1. BMP scost estimates.

Stormwater BMP	Dollars/Cubic Foot of Runoff
Large wet detention basin	$3.20 (treating more than 100,000 cubic feet)
Small detention basin	$231.67 (treating less than 10,000 cubic feet)
Constructed wetland	$1.60
Infiltration trench	$17.58
Bioretention basin	$92.67
Underground infiltration	$12.78
Pervious pavement	$25.56

Finally, Alcosan completed a GSI cost literature review that found an estimated cost of about $311,500 (2021 dollars) per acre of impervious surface treated for

[30] Minnesota Pollution Control Agency, 2011. *Best Management Practices Construction Costs, Maintenance Costs, and Land Requirements.* Prepared by Barr Engineering Company.

a range of projects that included BMPs including bioretention, infiltration trenches, pervious pavements, underground storage, and tree trenches.[31] Together, these estimates support the range of estimates used to estimate Permittee costs during the Permit term.

While substantial portions of Provision C.3 are the same as during MRP 2, the provision includes updated expectations for Regulated Projects, including roads, that are expected to result in additional municipal costs. Those include changes to Regulated Project definitions, including roads. To the extent those create additional oversight costs, the costs should be recoverable through fees including permitting, plan review, and inspection fees. To the extent they create additional construction costs for municipal road projects, the costs are likely to be funded through funding sources including Prop 1 gas tax funding and through reprioritization of work that excludes water quality measures.

SCVURPPP estimated that the road reconstruction requirements would cost Santa Clara County Permittees up to $300 million during the Permit term to treat about 1,400 acres of new or reworked impervious surface at an average cost of $213,000 per acre treated.[32] That estimate was prepared based on an expansive identification of what might qualify as a Regulated Project in this category, including ADA curb cuts, and particularly included a significant number of maintenance projects, as well as distributed, non-contiguous projects, that would not be expected to be regulated. That cost estimate is conservative and well in excess of Provision C.3's effect. Other commenters noted that the road reconstruction requirements would apply primarily, if not exclusively, to full-street reconstruction projects, such as active transportation/complete streets projects. While the total cost is unknown because the range of municipal projects that would be completed during the Permit term is unknown, costs are expected to be incremental relative to the total costs of those projects and within the range of unit costs described above.

Provision C.3 includes updated expectations for Special Project category C that are expected to result in minimal costs to Permittees, because implementing the category is optional, costs to implement it can be recovered via plan review and related fees, and because it replaces a similar, but more-expansive, category from MRP 2.

Provision C.3 includes an option for the Contra Costa Permittees to submit a hydromodification management report that would consist of refinements to work largely completed during MRP 2. This is expected to result in a modest cost for staff and consultant time.

[31] Alcosan, 2012. *Starting at the Source: How our Region Can Work Together for Clean Water.* Appendix C: GSI Cost Literature Review. Pittsburgh.

[32] SCVURPPP, April 8, 2021. Comment letter on Administrative Draft. p.4.

Finally, Provision C.3 includes expectations that Permittees implement and, as appropriate, update the Green Infrastructure Plans they completed during MRP 2. This represents a lower level of effort from MRP 2, with likely some level of cost savings relative to MRP 2. Overall, it is continuing implementation, including programmatic work generally tied to ongoing practices (e.g., no missed opportunities, specific and general planning, policy review, outreach to elected officials and policy makers), and work that is consistent with what the Permittees determined was feasible in their GI Plans. Green infrastructure planning expectations include the retrofit requirement discussed above.

Provision C.10 will require Permittees to incur costs to control discharges of trash. These are largely continuing costs to implement controls required under MRP 2. Permittees will incur additional costs to proceed from MRP 2's required 80 percent reduction in trash discharges to the Permit's required 100 percent reduction, to be achieved using a combination of measures determined by each Permittee, and consisting of full trash capture, or implementation of a range of controls equivalent to full trash capture.

Absent more information on the specific costs the Permittees would incur for trash reduction, this economic analysis presents a range of costs from the economic analysis completed for the Trash Amendments.[33] Statewide, the economic analysis estimates that between $2.93 and 7.77 more per resident might need to be spent each year for the next ten years to implement the proposed Trash Amendments. The economic analysis provides estimates of compliance costs and considers the incremental costs (those beyond current costs) MS4 dischargers may incur based on implementation provisions and time scheduled in the Trash Amendments.

Permittees typically use a combination of full trash capture devices and equivalent measures. The economic analysis calculated an average per capita cost of $9.68 for a mix of measures implemented by MS4 permittees outside the Los Angeles Region. The economic analysis also found that a broad range of compliance options is available to permittees. For example, the selection of full capture systems depends on many site-specific factors and conditions. The analysis reports that capital cost per unit ranges from $300 per catch basin insert for installation and $330 for annual maintenance, to $80,000 per vortex separator system for installation (capital costs) and $30,000 for annual maintenance. Different methods may cover different areas. For example, a drop inlet filter may cover only one acre, whereas a vortex separator system may

[33] State Water Board Resolution No. 2015-0019. Amendment to the Water Quality Control Plan for Ocean Waters of California to Control Trash and Part 1 Trash Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California.

cover many acres, and therefore a normalized cost per acre was estimated at $800 in capital cost and $342 in annual O&M.[34]

Large full trash capture devices may have substantially lower per-acre capital and O&M costs. For example, Permittees have successfully executed 18 cooperative implementation agreements (CIAs) with Caltrans as of the end of FY 2021, with a total funding contribution of over $55 million. These municipal partnership projects could potentially treat approximately 2,000 acres and 30,500 acres of Caltrans' and municipalities' significant trash generating areas, respectively.

In addition, Permittees may claim the benefit from other implemented controls, such as GSI, that also control trash. Thus, this estimate is conservative because there would not be additional cost to implement trash controls where GSI has been implemented, and in many cases the GSI will be implemented by a private party, so that Permittees will not incur the cost of construction, operation, or maintenance, although they would incur recoverable costs for plan review and inspection.

Water Board staff's December 2019 analysis of Permittee trash control found that as of July 1, 2019, Permittees reported having controlled trash from 65,900 acres with a moderate, high, or very high trash generation rate, and that 52,600 acres remained to be controlled.[35] Permittee work has continued since July 1, 2019, including substantial areas controlled by cooperative projects implemented in part with Caltrans funding (Table A-2). Caltrans funding will continue to be available to Permittees for qualifying projects, partly offsetting project costs.

In addition, Permittees would incur costs to prepare an impracticability report and to complete continuing reporting. These costs are expected to be within the estimate above.

[34] State Water Bboard, June 2014. Draft Staff Report Including the Draft Substitute Environmental Documentation, Draft Amendments to Statewide Water Quality Control Plans to Control Trash, Appendix C: Economic Considerations for the Proposed Amendments to Statewide Water Quality Control Plans to Control Trash, p.C-44.

[35] Kalyan, December 11, 2019. Staff Summary Report: Item 8. Municipal Regional Stormwater NPDES Permit, Permittee Compliance with the 80 Percent Trash Load Reduction Requirement – Information Item. Water Board meeting of December 11, 2019.

Table A-2. Caltrans-funded cooperative projects by FY 2021.

County	Permittee	Location/Project Name	Funding Agreement Year	Estimated Caltrans Acres Treated	Estimated Permittee Acres Treated	Caltrans Contribution
San Mateo	San Mateo	Memorial Park - Phase 1	2017/2018	234.0	6,336.0	$9,500,000
San Mateo	San Mateo	Memorial Park - Phase 2	2018/2019			$6,000,000
Contra Costa	Richmond	Parkway and S. 8th Street	2017/2018	74.0	960.0	$2,500,000
San Mateo	San Mateo	Poplar/Dore (implemented in 2019) and Coyote Point	2017/2018	42.0	765.0	$2,123,000
Contra Costa	Richmond	Meeker Slough	2018/2019	41.4	2,265.0	$3,000,000
Santa Clara	San Jose	Various	2017/2018	480.0	2,728.0	$5,500,000
Alameda	Hayward	2 locations - Tennyson Arf funded	2020	119.0	1,128.0	$1,841,000
Solano	Vallejo Waste Water	3 locations- BW Williams and Solano Ave + Austin Creek (amended)	2020	379.4	7,992.0	$3,338,000
San Mateo	City of San Mateo	Poplar Golf Course	2019/2020	16.0	333.0	$830,000
San Mateo	East Palo Alto	O'Connor Pump Station	2019/2020	39.0	864.0	$521,000
Alameda	Alameda County	Estudillo Canal	2019/2020	256.0	2,620.0	$2,175,000
San Mateo	Daly City	Vista Grande	2019/2020	154.0	1,915.8	$3,440,000

County	Permittee	Location/Project Name	Funding Agreement Year	Estimated Caltrans Acres Treated	Estimated Permittee Acres Treated	Caltrans Contribution
Contra Costa	Concord	Hillcrest Park Regional Project	2019/2020	90.0	509.3	$4,300,000
Contra Costa	Contra Costa County	Tara Hills	2019/2020	41.0	457.8	$3,945,000
Contra Costa	Richmond/El Cerrito	Bayview	2020/2021	31.0	840.0	$2,300,000
Alameda	Oakland	Mandela & 24th	2020/2021	16.8	583.9	$2,900,000
Alameda	Emeryville	MacArthur	2020/2021	3.8	77.0	$680,000
Santa Clara	Palo Alto	Embarcadero	2020/2021	20.5	189.0	$598,000
Total				2,038	30,563	$55,491,000

Provision C.11 will require Permittees will incur costs to control discharges of mercury. Those costs are largely for continuing requirements and, thus, are expected to be broadly similar to MRP 2. To the extent that Permittees implement GSI retrofit to achieve mercury reductions, that work would also reduce PCBs loads. Because the same control action is likely to reduce both mercury and PCBs, estimated costs for implementation have been considered below, under the Provision C.12 discussion.

Provision C.12 will require Permittees to continue to implement measures to reduce discharges of PCBs consistent with the applicable TMDL. Key aspects of this provision are consistent, or roughly consistent, with expectations under MRP 2. Lower costs should be incurred for some expectations. For example, in MRP 2, the Permittees developed a demolition debris control program, which they are now implementing. The cost to develop the program was likely higher than the implementation cost, which consists significantly of outreach and education using materials prepared during MRP 2. There are some small additional costs (relative to the current cost of implementing the current demolition debris program) associated with enhanced requirements for the demolition debris program. These include small costs for additional efforts to obtain official

documentation to ensure that building materials from demolished buildings containing PCBs concentrations greater than 50 ppm were properly disposed. There will also be small additional costs for demolition site inspection to ensure implementation of control measures at project sites to minimize off-site migration of PCBs. These inspection costs should be minor as economies of scale can be realized by integrating these inspections into the inspection program required pursuant to Provision C.6. Permittees will continue to investigate contaminated sites for referral to the Water Board, DTSC, or U.S. EPA for cleanup. While that may result in continuing costs or somewhat increased costs as compared to MRP 2, overall the requirements are expected to be roughly equivalent.

Permittees are expected to continue to implement actions to reduce discharges of PCBs to the MS4. These include implementing controls to capture PCBs before they can discharge to the MS4, which could include GSI, diversion of flows to the sanitary sewer for treatment, or other controls. To demonstrate progress towards achieving the wasteload allocation during the Permit term, Permittees are expected to address discharges from about 3,000 ac of impervious surface in old industrial areas using a combination of measures that they determine.

Based on the above GSI unit cost estimates, the cost to accomplish that reduction is likely to range from about $150 million to $2 billion, with a typical cost of about $639 million. This estimate is likely to be conservative (i.e., likely greater than the actual cost incurred) because GSI or treatment control measures implemented by private parties would reduce Permittee costs to self-implement controls; Permittees can account for benefit from other actions, including their GSI retrofit work pursuant to Provision C.3 and implementation of trash controls pursuant to Provision C.10, and Permittees are likely to implement a mix of BMPs that is less costly than the maximum, and to include less-costly district-scale or regional BMPs. In addition, costs for diversion to sanitary sewers may be lower on a unit cost basis than GSI costs. A portion of project funding will be available from Caltrans pursuant to alternative compliance associated with its MS4 permit, and Caltrans ROW is constrained, so off-ROW implementation is a preferred path for Caltrans, which has indicated its intent to continue to support cooperative projects, including through its Clean California initiative.

Provision C.12 also requires the creation of a two new program to control PCBs. The first program is to control PCBs when bridge and overpass roadways are replaced or undergo major repair. The costs associated with creation of this new program will be small because the effort consists in ensuring that roadway crews follow a protocol (to be developed by Caltrans) to ensure proper management and disposal of PCB-containing caulk in roadway expansion joints when bridge and overpass roadways are replaced or substantially repaired. Small additional

costs should be expected associated with the creation of the second new program Permittees must develop to ensure proper management of PCBs in oil-filled electrical equipment (OFEE) for municipally owned electrical utilities and collaborate with the Water Board to determine PCBs loadings in OFEE from non-municipally owned electrical utilities. Costs for both of these new programs is expected to be small because both involve simply making sure that proper procedures are being followed.

Provision C.14 requires Permittees to control discharges of bacteria consistent with applicable TMDLs or to address identified exceedances of water quality objectives.

Provision C.14.a requires two Permittees, the cities of Mountain View and Sunnyvale, to implement measures to control bacteria to address identified exceedances of water quality objectives. While this work is being called out in a subprovision that was not present in MRP 2, the expectations largely reflect continuation of work the cities were implementing during MRP 2 pursuant to MRP 2's, and the Permit's, prohibition on discharges of non-stormwater to the MS4. That includes evaluation of municipal operations for bacteria discharges, inspect for illicit connections of sanitary flows to the storm sewer system, incorporation of bacteria concerns into commercial and industrial business inspections, provision of pet waste stations, collection of trash, control of bacteria sources associated with unsheltered homeless populations, and public outreach. C.14.a requires the Permittees to focus or increase these actions, which are also conducted across municipalities broadly, in areas near the known bacteria water quality exceedance locations. The cities may incur additional incremental costs associated with additional inspections, coordination with the sanitary sewer agencies on collection system operation and maintenance, and greater levels of effort in each of the categories. These costs are expected to be recoverable through inspection fees with existing staff resources. Where new actions are required, their unit costs are expected to be similar to those presented in the San Pedro Creek and Pacifica State Beach Bacteria TMDL Staff Report, Section 12.3: Economic Considerations,[36] and with estimates presented above for green stormwater infrastructure implementation.

Provision C.14.c requires the City of San Mateo to control discharges of bacteria to its Marina Lagoon beaches. Similar to Provision C.14.a, the initial measures are continued effort, with incremental expansion, of existing work required under MRP 2, like illicit discharge detection and elimination, trash control, and public information and outreach. The City is expected to incur some additional costs for a potentially elevated level of effort, including monitoring. If water quality objectives are not achieved, then the City will incur costs to complete a report

[36] San Francisco Bay Regional Water Board, Nov. 2012. *TMDL for Bacteria in San Pedro Creek and at Pacifica State Beach: Staff Report.* pp.105-110).

evaluating additional actions sufficient to achieve the objectives, which may lead to costs in this permit term. Depending on the report content, an outside contractor may charge approximately $70,000 – 200,000 to complete this report (assuming a contractor rate of $150/hr).

Provision C.14.d requires the City of Half Moon Bay and San Mateo County to control bacteria discharging to Pillar Point Harbor and Venice Beach. Similar to Provision C.14.a, the initial measures are continued effort, with incremental expansion, of existing work required under MRP 2, like beach bacteria monitoring, illicit discharge detection and elimination, trash control, and public information and outreach. Expansion of work includes, for example, including bacteria control in staff training. The City and County may incur some additional costs for a potentially elevated level of effort. If water quality objectives are not achieved, then the City and County will incur costs to complete a report evaluating additional actions sufficient to achieve the objectives, which may lead to costs in a subsequent permit term.

The Permittees covered by the above C.14 subprovisions could implement green stormwater infrastructure to eliminate discharges and reduce bacteria concentrations in remaining discharges. Where GSI is implemented pursuant to Provision C.3 requirements, there is not expected to be an additional cost to the Permittees for a bacteria control benefit to be realized. Similarly, trash control measures implemented pursuant to Provision C.10 may provide some bacteria control benefit, but would not result in additional incremental costs to the Permittees. However, where the Permittees undertake control actions, such as green stormwater infrastructure retrofit, that go beyond Provision C.3 requirements, then the cost of that work would be expected to be consistent with the estimates presented above for Provisions C.3 and C.12.

Provision C.18 requires the County of San Mateo to control discharges of sediment in the Pescadero-Butano watershed consistent with the applicable TMDL. Specifically, the County would be required to create a prioritized list of road projects with the potential to contribute sediment to the Pescadero-Butano and San Gregorio watersheds. The County would be required to take measures to reduce sediment delivery from County roads in the Pescadero-Butano watershed. The Water Board staff report for the TMDL economic analysis estimated such costs at about $35,000 per mile for unpaved roads, and $60,000 per mile per paved roads. The total lengths of roads to be controlled under the TMDL are 325 (unpaved) and 325 (paved), and the total costs for the work were estimated at about $37 million over a 20-year implementation period.[37] The Permit requires implementation of actions in 20 percent of the Pescadero-Butano watershed, but none in the San Gregorio Creek watershed during this

[37] San Francisco Bay Regional Water Quality Control Board, Dec. 11, 2018. *TMDL for Sediment and Habitat Enhancement Plan for Pescadero-Butano Watershed: Staff Report.*

Permit term. As a result, implementation costs are estimated conservatively at about $7.2 million during the Permit term. However, projects may be completed as part of other prioritized maintenance projects or otherwise such that the Permittee does not incur that full level of costs, but rather a reduced amount that is offset by the Permittee's costs for projects it would have completed anyway. In addition, the Permittee may incur costs associated with creating the prioritized list and with monitoring the effectiveness of completed projects.

d. New provisions

Although C.17, C.20, and C.21 are new provisions, their substantive requirements generally reflect work that was already required or already being completed, as described further below. Permittees may incur costs for going beyond required or continuing work.

Provision C.17 requires Permittees to coordinate internally and use existing resources to report on the locations of homeless populations in their jurisdictions. Permittees already have this information at different levels of detail. Some permittees, such as Fremont, Oakland, and San Jose, have detailed databases or maps of populations; other Permittees are small enough that municipal staff are familiar with where the populations are located; others rely on heat maps for a general understanding. The Permit allows flexibility in this reporting, but Permittees would be expected to incur a modest cost to collect and report this information.

Permittees must collectively prepare a BMP report that identifies what Permittees and stakeholders are doing to control discharges associated with unsheltered homelessness, and the effectiveness of these controls. Permittees are likely to incur costs for coordination and report preparation. In addition, Permittees must prepare two reports on their implementation of BMPs, including the portion(s) of the population reached and the gap—that is, the work left to be done.

MRP 2 required the Permittees to control illicit non-stormwater discharges, including discharges of trash and human waste from unsheltered homeless populations. To the extent that Provision C.17 simply refines and clarifies the pre-existing mandate, it is a continuing requirement, with an additional expectation for coordination and reporting as noted above.

Overall, the solutions to homelessness are broadly outside Permit requirements. A 2015 report found that effective implementation of such solutions, such as providing housing to unsheltered individuals, could reduce costs to government, because shifting costs from emergency services and the justice system use to housing and jobs would be cheaper and generate more revenue than the *status*

quo.[38] Thus, while there is a cost to implementing measures to address unsheltered homelessness, the overall effect of implementing effective measures, including those to control discharges of trash and human waste, could be to reduce costs to government.

Provision C.20 requires Permittees to develop a cost reporting methodology by December 31, 2022, and then to submit fiscal analyses annually starting in 2024. Permittees are expected to incur costs to collectively develop the methodology and then to implement it. In general, this provision requires tracking and reporting of information that should be available, but for which there will be needed internal coordination. The work to prepare a methodology allows flexibility to understand the form that cost information is available and develop efficient means for reporting. The work likely to be completed using existing Permittee staff resources and consulting assistance available within the programs.

Provision C.21 requires development of an asset management program to manage Permittee (i.e., public) hard assets (e.g., bioretention cells, pervious pavements, trash capture devices). The asset management plan is expected to improve the Permittees' understanding of the condition and performance of their stormwater infrastructure, to account for additional stressors related to climate change, and to identify cost factors to support more-accurate forecasting and budget development.

U.S. EPA's Water Finance Clearinghouse and the CSU Sacramento Office of Water Program's Environmental Finance Center (EFC) are conducting work to support stormwater asset management. The EFC has developed draft stormwater finance and asset management guidance and toolkits, including resources for estimating stormwater costs, and is supporting California municipal stormwater programs to test and refine the toolkit with the intent of using the results of asset management planning to support the development of stormwater utilities to fund stormwater programs.[39]

The Permittees have implemented measures to support asset management planning. They have mapped many of their hard assts (e.g., structural stormwater control measures) and regularly inspected them to determine their condition. They use modern data collection tools, including databases and GIS systems, to improve information collection and tracking efficiencies and improve their understanding of the condition and performance of their stormwater assets. The Water Board expects the Permittees' costs to comply with the Permit's

[38] Flaming et al., 2015. *Home not found: The cost of homelessness in Silicon Valley.* Destination Home and the County of Santa Clara.

[39] Odusoga, March 28, 2019. "Asset Management Storm Water Roundtable Presentation," U.S. EPA, slide 28.

asset management requirements to be mitigated to some degree by these efforts.

Asset management results in potential cost savings over time and may provide a sound basis for establishing utility fees to support sustained funding of stormwater programs, but the initial investment of resources and time can be high. The City of San Diego's much more comprehensive asset management plan (including, for example, hard assets like flood management infrastructure and soft assets like outreach materials) was developed over a period of about five years and cost approximately $2 million, not including staff time.[40] Since 2013, when the plan was finished, San Diego has spent as much or more on follow-up work, like expanding its asset inventory. $4 million is a significant investment, but for context, San Diego has a roughly $3 billion stormwater quality and flood management program over 18 years. There are also cost-saving benefits for an effective asset management program.[41]

San Diego's asset management plan is significantly larger in scope than that required by the Permit, which focuses on publicly owned hard assets. As a result, Permittee costs to develop asset management plans are expected to be substantially less, in part because, as noted above, they are primarily tracking and reporting on existing controls for which MRP 2 already required tracking and reporting efforts, and for which the Permittees have established systems to accomplish that work. As such, the asset management approach primarily will require organization of existing efforts with an additional incremental cost.

5. Costs of Not Implementing the Permit

While it is important to consider the cost of compliance, it is also important to consider the costs that would be incurred by not fully regulating or controlling MS4 discharges to receiving waters. The Water Boards have long recognized that water quality impairment negatively impacts the economy, while improved water quality can have a positive impact (see, for example, Order WQ 2000-11). The costs of not implementing the Permit are likely to be significant and could include adverse impacts to public health associated with illness from water contact recreation and ingestion of water with harmful levels of pathogens; increased threat of disease, including cancer, from consumption of fish containing harmful levels of mercury and PCBs; threats to public and private infrastructure, properties, and aquatic habitat from erosion and sedimentation; impacts to contact and non-contact water recreation, including swimming, boating, surfing, wind- and kite-surfing, wading, birding, walking, and hiking, associated with discharges of trash; impacts to property

[40] Region 3 Water Board Fact Sheet for Order No. R3-2019-0073, Citing personal communication with Drew Kleis, Deputy Director, City of San Diego Transportation and Storm Water Department Storm Water Division, April 22, 2019.

[41] URS Corporation. July 19, 2013. Transportation and Storm Water Department Storm Water Division: Watershed Asset Management Plan, City of San Diego. p.7.

values associated with the short- or long-term presence of pollutants in receiving waters, and associated impacts to the Bay Area quality of life, that includes a significant outdoor component engaged with the Bay Area's water bodies. Below, a few of these costs are discussed in more detail.

Impairments in water quality can lead directly to increased health care costs. Urban runoff in southern California has been found to cause illness in people bathing near storm drains.[42] A study of south Huntington Beach and north Newport Beach found that an illness rate of about 0.8 percent among bathers at those beaches resulted in about $3 million annually in health-related expenses.[43] These numbers can likely be extrapolated to the Bay Area, where many beaches support significant contact recreation while at the same time exhibiting bacteria impairments. Thus, failure to bacteria controls could result in significant health expenses to the public, while implementing such controls could result in significant savings.

Urban runoff and its impact on receiving waters also place a cost on tourism. The California Division of Tourism has estimated that each out-of-state visitor spends $101 a day. The experience of Huntington Beach provides an example of the potential economic impact of poor water quality. Approximately 8 miles of Huntington Beach were closed for two months in the middle of summer of 1999 due to bacteria exceedances, impacting beach visitation and undoubtedly impacting the local economy.

Similarly, proper trash management can save a municipality significant amounts of money in addition to providing water quality benefits. Even with the changes in recycling markets over the past few years, certain items, such as metals, remain profitable to divert from residential waste streams.[44] Similarly, adequate trash pickup and collection can cut down on complaints by residents and the resources associated with responding to them[45] and can also reduce the costs of maintaining full-trash capture devices.[46] Finally, source control methods, such as bans, taxes, or fees that reduce the use of certain items, can generate an income stream for local

[42] Haile, R.W., et al, 1996. An Epidemiological Study of Possible Adverse Health Effects of Swimming in Santa
Monica Bay. Santa Monica Bay Restoration Project.

[43] Los Angeles Times, May 2, 2005. Here's What Ocean Germs Cost You: A UC Irvine Study Tallies the Cost of
Treatment and Lost Wages for Beachgoers Who Get Sick.

[44] Brosnahan, Cori. "Despite Recycling Success, S.F.'s Zero Waste Goal Remains Elusive," *San Francisco Public Press* (Nov. 6, 2020).

[45] Daly, Clara-Sophia. "Newsom's experiment to get rid of public trash bins in San Francisco seems to have failed," *Mission Local* (March 21, 2021).

[46] San Francisco Estuary Partnership, "Bay Area-wide Trash Capture Demonstration Project," (May 8, 2014), pp. 39-40.

governments, reduce full trash capture maintenance costs, and reduce tipping fees for disposing of the materials removed from the devices.[47]

As noted above, the costs of not implementing the Permit are likely to be significant, including economic and non-economic: adverse impacts to public health associated with illness from water contact recreation and ingestion of water with harmful levels of pathogens; increased threat of disease, including cancer, from consumption of fish containing harmful levels of mercury and PCBs; threats to public and private infrastructure, properties, and aquatic habitat from erosion and sedimentation; impacts to contact and non-contact water recreation, including swimming, boating, surfing, wind- and kite-surfing, wading, birding, walking, and hiking, associated with discharges of trash; impacts to property values associated with the short- or long-term presence of pollutants in receiving waters, and associated impacts to the Bay Area quality of life, that includes a significant outdoor component engaged with the Bay Area's water bodies.

The Santa Clara Valley Open Space Authority, focusing on open space, estimated that ecosystem services in Santa Clara County provide an estimated benefit of $1.6 to 3.8 billion annually, or about $1,900 to 4,600 per acre, noting they were provided by "natural capital like…wetlands, rivers and streams…as well as urban parks and open spaces.[48] In the absence of the Permit, as noted above, those services are likely to be impaired, resulting in reduced economic value to Santa Clara County and the Bay Area. Extrapolating that estimate to the other four counties with MRP Permittees shows a potentially even more significant economic impact from not implementing the Permit.

The Center for Neighborhood Technology issued a 2010 guide to recognizing the value of one component of the Permit's program, green infrastructure.[49] The guide includes descriptions of impacts in the absence of GI implementation, including higher costs for alternate means of accomplishing the benefits, reduced community livability, and impacts to public health.

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[47] EOA, City of Milpitas Trash Capture Feasibility Study, 2017, pp. 1, 13 (estimating reduction achieved by plastic bag ban and achievable by polystyrene ban.); see also Stieb, Matt. "Maine Makes U.S. Recycling Actually Work Again," *New York Magazine* (July 21, 2021).

[48] Santa Clara Valley Open Space Authority, 2014. *Healthy Lands and Healthy Economies: Nature's Value in Santa Clara County.* https://www.openspaceauthority.org/system/user_files/Documents/NaturesValue_SCC_int.pdf. Santa Clara Valley Open Space Authority, 2018. *Healthy Lands and Healthy Economies: Natural Capital in Santa Clara, Santa Cruz, and Sonoma Counties.* https://www.openspaceauthority.org/system/user_files/Documents/HLHE%20-%20Regional%20Report.pdf.

[49] Center for Neighborhood Technology, 2010. *The Value of Green Infrastructure: A guide to recognizing its economic, environmental and social benefits. https://www.cnt.org/sites/default/files/publications/CNT_Value-of-Green-Infrastructure.pdf.*

6. Benefits associated with implementing the Permit

Permit implementation must also be viewed in terms of its value, both quantitative and qualitative, to the public. One way of measuring this value quantitatively is by estimating how willing residents are to pay for improvements to water quality. However, benefits from stormwater controls go beyond improving water quality. They include reducing the urban heat island effect, helping to make the water supply more reliable and cost effective, and supplying ecosystem services. These benefits are discussed in more detail below.

a. Public Willingness to Pay for Water Quality Improvement

U.S. EPA estimated household willingness to pay for such improvements to be $158 - 210 annually or $13 - $17.50 monthly.[50] This estimate can be considered conservative, since it does not include important considerations such as marine waters benefits, wildlife benefits, or flood control benefits. The California State University, Sacramento, study corroborates U.S. EPA's estimates, reporting annual household willingness to pay for statewide clean water to be $180, or $15 monthly.[51] When viewed in comparison to household costs of existing urban runoff management programs, these household willingness to pay estimates exhibit that per household costs incurred by Permittees to implement their urban runoff management programs remain reasonable.

Los Angeles voters' 2018 approval of Measure W, which imposes a parcel tax that is projected to raise approximately $300 million per year to clean stormwater runoff, promote capture and use projects, and add urban green space, is another indication of willingness to pay for water quality improvement. Measure W, which imposes an impervious surface-based fee, was estimated to cost a typical household about $83/year.[52] That cost is necessarily in addition to existing expenditures in LA for clean water, which include, but are not limited to, urban runoff management program costs of up to $67 per household. This is consistent with the U.S. EPA and California State University, Sacramento findings above.

A study conducted by USC/UCLA assessed the costs and benefits of implementing various approaches for achieving compliance with the MS4 permits in the Los Angeles Region. The study found that non-structural systems would cost $2.8 billion but provide $5.6 billion in benefit. If structural systems were determined to be needed, the study found that total costs would be $5.7 to

[50] Federal Register / Vol. 64, No. 235 / Wednesday, December 8, 1999 / Rules and Regulations. p. 68793.

[51] State Water Board, 2005. NPDES Stormwater Cost Survey. p. iv.

[52] McNary, Oct. 19, 2018. *Measure W: A needless tax on rain, or LA's best solution to drought?* LAist. https://laist.com/news/measure-w-a-new-tax-on-landowners-to-catch-las-rain.

$7.4 billion, while benefits could reach $18 billion.[53] Costs are anticipated to be borne over many years – probably ten years at least. Thus, the benefits of the programs are expected to considerably exceed their costs. Such findings are corroborated by U.S. EPA, which found that the benefits of implementation of its Phase II stormwater rule would also outweigh the costs.[54]

b. Urban Heat Island Mitigation

Installing green infrastructure mitigates urban heat island effects, with greater returns on investment for installations located in areas lacking tree canopies and green spaces. In urban areas, buildings and pavement retain heat, making them hotter than surrounding non-urban areas, known as the urban heat island effect. Climate change will continue to exacerbate urban heat island effects, but trees and vegetation can decrease local temperatures, particularly if they are distributed throughout an area. Reduced temperatures during hot weather not only make it more comfortable for people to recreate outside, but can also save lives during extreme heat events. The San Francisco Estuary Institute found that if Los Angeles County had tree coverage at 40 percent, as opposed to the baseline of 16 percent, during a September 2010 dry Santa Ana event, there would have been a 29 percent reduction in mortality, equivalent to saving 23 lives. In Los Angeles, De Guzman et al. (2020) found that relative to the average mortality rate, during an average five-day heat wave in Los Angeles County there are 4.1 percent more deaths on the first day and 11.9 percent more deaths on the fifty day.[55] While the study only modeled mortality, it can reasonably be expected that hospitalizations and health conditions brought on by heat stress would be reduced, as well. In addition to trees, other GSI, such as bioswales, rain gardens, and green roofs can also reduce temperatures.[56]

Installing green infrastructure in economically disadvantaged areas may have additional benefits. In metropolitan areas nationwide, neighborhoods with lower median household incomes are associated with less urban tree cover.[57] In areas where the federal government historically redlined, current average incomes tend to be lower and temperatures tend to be hotter because of historic

[53] LA Regional Water Board, 2004. Alternative Approaches to Stormwater Control.

[54] Federal Register / Vol. 64, No. 235 / Wednesday, December 8, 1999 / Rules and Regulations. P. 68791.

[55] De Guzman, et al., 2020. *Rx for Hot Cities: Climate Resilience Through Urban Greening and Cooling in Los Angeles.* TreePeople. https://www.treepeople.org/wp-content/uploads/2020/09/RX-for-hot-cities-report.PDF

[56] Georgetown Climate Center. ND. Green infrastructure strategies and techniques. https://www.gerogetownclimate.org/adaptation/toolkits/green-infrastructure-toolkit/green-infrastructure-strategies-and-techniques.html

[57] Schwarz et al., 2015. *Trees grow on money: Urban tree canopy cover and environmental justice.* PLoS ONE 10(4): e0122051. https://doi.org/10.1371/journal.pone.0122051

disinvestment in those neighborhoods.[58] Deaths from heat waves are disproportionately suffered by the poor.[59] Accordingly, green infrastructure projects in economically disadvantaged areas could help to alleviate longstanding inequities and improve health outcomes for particularly vulnerable populations.

c. Water Supply Cost Savings and Co-Benefits

Stormwater capture can be an effective way for Permittees to achieve the goals of the CWA and Permit requirements by preventing stormwater and associated pollutants from discharging to receiving waters, although Bay Area soils with limited infiltration rates can limit the applicability of measures that rely substantially on infiltration. Stormwater capture has also become the focus of intense interest during California's current drought and in the wake of California's most-recent 2012-2019 drought. The Water Boards have recognized the importance of treating stormwater as a valuable resource where capture and use can result in water supply cost savings, as well as multiple other benefits within a watershed. Among other efforts, the State Water Board's Strategy to Optimize Resource Management of Stormwater (STORMS) seeks to promote stormwater capture and use. STORMS' recent 2018 report, *Enhancing Urban Runoff Capture and Use*, points out that among a variety of benefits, "stormwater capture can also reduce reliance on imported water from distant sources, which reduces inter-basin (or inter-region) transfers and polluted runoff. Stormwater supports the fit-for-purpose water supply concept by satisfying less-sensitive water demands, such as certain household, landscaping, and commercial needs, with mildly polluted water. Runoff from roads and driveways can be captured and harvested locally using distributed hybrid systems (for example, bioretention with an underdrain that feeds a cistern used for irrigation) configured to provide non-potable water for human use."[60]

The Permit supports investment in infrastructure to create a resilient local water supply. The potential for water usage from stormwater is significant, with Diringer et al. (2020) from the Pacific Institute estimating that stormwater capture from paved surfaces and rooftops in the urbanized Bay Area and Southern

[58] Hoffman, et al., 2020. *The effects of historical housing policies on resident exposure to intra-urban heat: a study of 108 U.S. urban areas.* Climate. https://www.mdpi.com/2225-1154/8/1/12/htm

[59] Kesslen, Ben. "Heat waves fall hardest on poor and elderly, experts say," *NBC News* (July 20, 2019); Kaplan, Sarah, "Heat waves are dangerous. Isolation and inequality make them deadly," *Washington Post* (July 21, 2021).

[60] State Water Board, April 10, 2018. STORMS: Projects 1a Promote Stormwater Capture and Use and 1b Identify and Eliminate Barriers to Stormwater Capture and Use. Products 1 – CSU Sacramento. Final Report: Enhancing Urban Runoff Capture and Use. pp. 18-19/

California could add 420,000 to 630,000 acre-feet in average annual water supply, or about 6 to 10 percent of annual water usage in those areas in 2014.[61]

The Permit gives Permittees the flexibility to develop multi-benefit stormwater management projects that will improve water quality while also providing benefits such as recharging of groundwater basins for local water supply and implementation of LID and green streets policies. Shimabaku et al. (2018) from the Pacific Institute emphasizes that effective urban stormwater capture provides an opportunity to address multiple benefits, including flood control, water quality impairments, improving water supply reliability, providing habitat, reducing urban temperatures, reducing energy use, creating community recreation spaces, and increasing property values.[62]

Diringer et al. analyzed stormwater capture project costs and benefits as they affect the cost of an acre-foot of water. They found that failing to consider the effects of co-benefits results in inflated net project costs. They gathered data from rounds 1 and 2 of Prop 1E and Prop 84 project proposals. Of a total of fifty projects, 26 addressed urban runoff and 24 dealt with non-urban runoff. The authors found that after accounting for the projects' benefits, the net levelized cost for urban stormwater capture projects decreased from $1,030/acre-foot to $150/acre-foot, with some projects yielding net benefits. Monetized benefits considered in their calculation included flood damage reduction, water quality, energy savings, community recreation, public use, property values, habitat value, CO_2 equivalents, and avoided costs. Because many projects reported limited benefits categories, the overall cost per acre-foot would likely be even lower than $150 when other cobenefits are considered.

d. Ecosystem Services Benefits

In addition to the foregoing, there are various other environmental benefits resulting from the Permit. For example, the 2018 STORMS report describes a range of benefits of capture and use, suggesting that "designing stormwater infrastructure to directly support ecosystems broadens the traditional approach to stormwater management. In this broader sense, retained stormwater can be put into soil where soil biota, macrophytes, and stream interflow systems improve water quality and ecosystems supported by baseflow or high groundwater. Ecosystem benefits include habitat improvement, increased food sources, carbon sequestration, pollutant uptake, reduced ozone, and reduced heat island effects…. Improved baseflow results in decreased water temperatures and prolonged dry weather flows, and increased amounts and

[61] Diringer et al., March 24, 2020. *Economic evaluation of stormwater capture and its multiple benefits in California.* PLoS ONE 15(3): e0230549.

[62] Shimabuku et al., June 2018. *Stormwater capture in California: Innovative policies and funding opportunities.* Pacific Institute. p.2.

types of soil biota will aid in carbon sequestration and pollutant uptake. Local stormwater capture can also lead to energy-saving schemes that (1) capture water before it becomes contaminated with the pollutants on streets and in sewers; (2) rely on energy-efficient processes for removing contaminants; (3) treat water only to the extent necessary for intended use (fit-for-purpose water); and (4) obviate the need for diversion and large, centralized, energy-intensive treatment and distribution approaches."[63]

e. Other Benefit Considerations

The Pacific Institute and the University of Santa Barbara's Bren School of Environmental Science and Management framed the topic of moving towards multiple benefit approaches for water management. The organizations plan to develop a systematic framework for identifying and incorporating the costs and benefits of water management strategies into decision making. They find a broader consideration of the benefits associated with water management decisions will achieve broader project support, avoid unintended consequences, optimize resources and cost sharing, and increase transparency."[64]

Such a framework would support a more robust consideration of potential economic benefits of stormwater management projects not considered in this economic analysis, such as:

- Reduced frequency, area, and impact of flooding. Stormwater BMPs that reduce runoff volumes and consequently flood volumes. The decrease in potential damage provides economic benefit.
- Reduced cost of public infrastructure. On-site volume control and stormwater BMPs can downsize or eliminate stormwater conveyance infrastructure, and reduce costs to address downstream erosion and sedimentation, resulting in reduced costs.
- Reduced water treatment costs. A reduction in runoff volume can reduce downstream costs of water treatment, while also increasing the value of riparian properties and the utility of recreational visitors. Stormwater BMPs that include infiltration can improve and sustain stream baseflow conditions to better maintain downstream habitat.65
- Increased property values where GSI and LID projects are implemented. In a series of studies listed in a 2013 U.S. EPA report, the benefit-to-cost ratios of

[63] State Water Board, April 10, 2017. *Enhancing Urban Runoff Capture and Use.* STORMS Projects 1a and 1b.

[64] Pacific Institute and Bren School, April 2019. *Executive Summary: Moving toward a multi-benefit approach for water management.* UCSB. pp. II-III.

[65] WERF, 2010. *Using rainwater to grow livable communities.* Web.

four LID/GSI projects in Sun Valley were listed. All four showed a ratio of greater than 1, indicating that, over the 50-year evaluation period, the benefits of these projects are higher than their cost.66

Considering the foregoing, the Water Board finds that the requirements in this Order are reasonably necessary to protect beneficial uses and the economic cost information supports protecting those beneficial uses.

V. RELEVANT STATUTES, REGULATIONS, PLANS AND POLICIES

A. Legal Authorities

This Order is issued pursuant to CWA section 402 and implementing regulations adopted by the U.S. EPA and CWC chapter 5.5, division 7 (commencing with section 13370). This Order serves as an NPDES permit for point source discharges to surface waters. This Order also serves as waste discharge requirements pursuant to CWC article 4, chapter 4, division 7 (commencing with section 13260).

In addition to the legal authority citations below, they are also provided with each permit provision in this Fact Sheet.

CWA 402(p)(3)(B)(ii) – The CWA requires in section 402(p)(3)(B)(ii) that permits for discharges from municipal storm sewers "shall include a requirement to effectively prohibit non-stormwater discharges into the storm sewers."

CWA 402(p)(3)(B)(iii) – The CWA requires in section 402(p)(3)(B)(iii) that permits for discharges from municipal storm sewers "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants."

40 CFR 122.26(d)(2)(i) – Federal NPDES regulations 40 CFR 122.26(d)(2)(i) require that each Permittee's permit application "shall consist of: (i) Adequate legal authority. A demonstration that the applicant can operate pursuant to legal authority established by statute, ordinance or series of contracts which authorizes or enables the applicant at a minimum to: (A) Control through ordinance …or similar means, the contribution of pollutants to the municipal storm sewer by storm water discharges associated with industrial activity and the quality of storm water discharged from sites of industrial activity; (B) Prohibit through ordinance, order or similar means, illicit discharges to the municipal separate storm sewer; (C) Control through ordinance, order or similar means the discharge to a municipal separate

[66] U.S. EPA, August 2013. *Case studies analyzing the economic benefits of low impact development and green infrastructure programs*, EPA 841-R-13-004.

storm sewer of spills, dumping or disposal of materials other than storm water; (D) Control through interagency agreements among co-applicants the contribution of pollutants from one portion of the municipal system to another portion of the municipal system; (E) Require compliance with condition in ordinances, permits, contracts or orders; and (F) Carry out all inspection, surveillance and monitoring procedures necessary to determine compliance and noncompliance with permit conditions including the prohibition on illicit discharges to the municipal separate storm sewer."

40 CFR 122.26(d)(2)(iv) – Federal NPDES regulation 40 CFR 122.26(d)(2)(iv) requires "a comprehensive planning process which involves public participation and where necessary intergovernmental coordination, to reduce the discharge of pollutants to the maximum extent practicable using management practices, control techniques and system, design and engineering methods, and such other provisions which are appropriate. The program shall also include a description of staff and equipment available to implement the program. […] Proposed programs may impose controls on a system wide basis, a watershed basis, a jurisdiction basis, or on individual outfalls. […] Proposed management programs shall describe priorities for implementing controls."

40 CFR 122.26(d)(2)(iv)(A -D) – Federal NPDES regulations 40 CFR 122.26(d)(2)(iv)(A -D) require municipalities to implement controls to reduce pollutants in urban runoff from new development and significant redevelopment, construction, and commercial, residential, industrial, and municipal land uses or activities. Control of illicit discharges is also required.

CWC 13377 – CWC section 13377 requires that "[n]otwithstanding any other provision of this division, the state board or the regional boards shall, as required or authorized by the CWA, as amended, issue waste discharge requirements and dredged or fill material permits which apply and ensure compliance with all applicable provisions of the act and acts amendatory thereof or supplementary, thereto, together with any more stringent effluent standards or limitation necessary to implement water quality control plans, or for the protection of beneficial uses, or to prevent nuisance."

B. State and Federal Regulations, Policies, and Plans

1. Water Quality Control Plans – San Francisco Bay and Sacramento and San Joaquin River Basins

The CWA requires the Water Board to establish water quality standards for each water body in its region. Water quality standards include beneficial uses, water quality objectives and criteria that are established at levels sufficient to protect beneficial uses, and an antidegradation policy to prevent degrading of waters. The Water Board adopted the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan), which designates beneficial uses, establishes water quality

objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan.

Section 4.14, the Urban Runoff Management, Comprehensive Control Program section, of the Basin Plan, requires the Permittees to address existing water quality problems and prevent new problems associated with urban runoff through the development and implementation of a comprehensive control program focused on reducing current levels of pollutant loading to storm drains to the maximum extent practicable. The Basin Plan's comprehensive program requirements are designed to be consistent with federal regulations (40 CFR Parts 122-124) and are implemented through issuance of NPDES permits to owners and operators of MS4s. Pursuant to CWC sections 13263 and 13377, the requirements in this Order implement the Basin Plan.

Section 4.8 - Stormwater Discharges of the Basin Plan established the Water Board's phased approach towards attainment of water quality objectives in waters that receive stormwater discharges and recurrent permit term consideration of water quality based effluent limitations, wherein the Water Board will first require entities subject to NPDES permits for stormwater discharges to complete implementation of technically and economically feasible control measures to reduce pollutants in stormwater to the maximum extent practicable. NPDES permits for stormwater discharges will require completion of technically and economically feasible control measures as soon as possible. If this first phase does not result in attainment of water quality objectives, the Water Board will consider permit conditions which may require implementation of additional control measures. In such circumstances, the Water Board may consider dischargers' proposed schedules for identification and implementation of additional control measures designed to attain water quality objectives. Such schedules shall be as short as practicable and will only be considered for inclusion in permits when a discharger has demonstrated the following:

(a) A diligent effort to quantify pollutant levels and the sources of the pollutant in stormwater discharges; and

(b) Documentation of completion of implementation of all technically and economically reasonable control measures.

The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Region 5 Basin Plan) similarly includes water quality standards for each water body it covers, including total maximum daily loads. It contains requirements for MS4 permittees that discharge into waters covered by the plan, such as the East Contra Costa Permittees.

2. Ocean Plan

In 1972, the State Water Board adopted the Water Quality Control Plan for Ocean Waters of California, California Ocean Plan (Ocean Plan). The State Water Board adopted the most recent amended Ocean Plan on October 16, 2012, and it was approved by the Office of Administrative Law and U.S. EPA. The Ocean Plan is applicable, in its entirety, to ocean waters of the state. In order to protect beneficial uses, the Ocean Plan establishes water quality objectives and a program of implementation. Pursuant to CWC sections 13263 and 13377, the requirements of this Order implement the Ocean Plan.

The Ocean Plan prohibits the discharge of waste to designated Areas of Special Biological Significance (ASBS). ASBS are ocean areas designated by the State Water Board as requiring special protection through the maintenance of natural water quality. The California Ocean Plan states that the State Water Board may grant an exception to California Ocean Plan provisions where the State Water Board determines that the exception will not compromise protection of ocean waters for beneficial uses and the public interest will be served. In 2012, the State Water Board adopted Resolutions 2012-0012 and 2012-0031 (ASBS Exception), which grant an exception to the Ocean Plan prohibition on discharges to ASBS for a limited number of applicants, including San Mateo County for stormwater discharges into the James V. Fitzgerald Marine Reserve ASBS. The ASBS Exception contains “Special Protections” to maintain natural water quality and protect the beneficial uses of the ASBS. In order to legally discharge into an ASBS, San Mateo County must comply with the terms of the Special Protections and obtain coverage under this Order. This Order incorporates the terms of the Special Protections for San Mateo’s discharges into the ASBS.

3. Inland Surface Waters, Enclosed Bays, and Estuaries Plan

The State Water Board adopted various provisions that collectively which make up the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries (ISWEBE) of California. Part 1 Trash Provisions was adopted by the State Water Board on April 7, 2015 through Resolution No. 2015-0019. OAL approved it on December 2, 2015 and U.S. EPA approved it on January 12, 2016. Part 2 Tribal Subsistence Beneficial Uses and Mercury Provisions was adopted by State Board on May 2, 2017 through Resolution No. 2017-0027. OAL approved it on June 28, 2017 and U.S. EPA approved it on July 14, 2017. Part 3 Bacteria Provisions and Variance Policy was adopted by State Board on August 7, 2018 through Resolution No. 2018-0038. OAL approved it on February 4, 2019 and U.S. EPA approved it on March 22, 2019. This Order implements the ISWEBE.

4. Statewide Trash Provisions

To control trash, the State Water Board on April 7, 2015, adopted trash provisions into both the Ocean Plan and the ISWEBE. Together, they are collectively referred

to as "the Trash Amendments." The Trash Amendments: (1) establish a narrative water quality objective for trash, (2) establish a prohibition on the discharge of trash, (3) provide implementation requirements for permitted storm water and other discharges, (4) set a time schedule for compliance, and (5) provide a framework for monitoring and reporting requirements. The Water Board is required to implement the new Trash Provisions through NPDES permits for MS4 permits. The water quality objective established by the Trash Provisions serves as a water quality standard federally mandated under CWA section 303(c) and the federal regulations (33 U.S.C. § 1312, 40 CFR § 131.). This water quality standard was specifically approved by U.S. EPA following adoption by the State Water Board and approval by the Office of Administrative Law. This Order implements the Trash Amendments.

5. Enclosed Bays and Estuaries Plan

In 2008, the State Water Board adopted the Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1, Sediment Quality Provisions. It is was most recently amended on June 5, 2018 and became effective on March 11, 2019. This plan supersedes other narrative sediment quality objectives and establishes new sediment quality objectives and related implementation provisions for specifically defined sediments in most bays and estuaries. This Order implements the Sediment Quality Provisions to the extent they are applicable.

6. National Toxics Rule (NTR) and California Toxics Rule (CTR)

U.S. EPA adopted the NTR on December 22, 1992, and amended it on May 4, 1995 and November 9, 1999. About 40 criteria in the NTR apply in California. On May 18, 2000, U.S. EPA adopted the CTR. The CTR promulgated new toxics criteria for California and incorporated the previously adopted NTR criteria that applied in the State. U.S. EPA amended the CTR on February 13, 2001. These rules contain water quality criteria for priority pollutants. This Order is consistent with NTR and CTR

7. Antidegradation Policy

Federal regulations at 40 CFR section 131.12 require that state water quality standards include an antidegradation policy consistent with federal requirements. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16 ("Statement of Policy with Respect to Maintaining High Quality of Waters in California"). Where the federal antidegradation policy is applicable, the State Water Board has interpreted Resolution No. 68-16 to incorporate the federal antidegradation policy.[67] The Basin Plan implements both the State and federal antidegradation policies. A permitted discharge must be consistent with the antidegradation provision of 40 CFR section 131.12 and State Water Board Resolution No. 68-16. These policies require that

[67] State Water Board Order WQ 86-17 (Fay), pp. 16-19.

high quality waters be maintained unless degradation is justified based on specific findings. The Water Board finds that the permitted discharges authorized by this Order are consistent with the antidegradation provision of 40 CFR section 131.12 and State Water Board Resolution No. 68-16, as set forth herein.

In the context of this Order, a federal NPDES permit, compliance with the federal antidegradation policy requires consideration of the following. First, the Water Board must ensure that "existing instream uses and the level of water quality necessary to protect the existing uses" are maintained and protected.[68] Second, if the baseline quality of a waterbody for a given constituent "exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected" through the requirements of the Order unless the Water Board makes findings that: (1) any lowering of the water quality is "necessary to accommodate important economic or social development in the area in which the waters are located"; (2) "water quality adequate to protect existing uses fully" is assured; and (3) "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" are achieved.[69] Under this second tier review, the Board may identify the waters for protection through the public process of a permitting action, as it is here. Before allowing any lowering of high quality water, the Board must conduct an analysis of alternatives that evaluates practicable alternatives that would prevent or lessen the degradation associated with the discharges permitted. In the context of 40 CFR § 131.12(a)(2)(ii), practicable means "technologically possible, able to be put into practice, and economically viable."[70]

The Order must also comply with any requirements of State Water Board Resolution No. 68-16 beyond those imposed through incorporation of the federal antidegradation policy.[71] Resolution No. 68-16 requires findings that any lowering of water quality is "consistent with the maximum benefit to the people of the State" and "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" and further that the discharge is subject to "waste discharge requirements which will

[68] 40 CFR § 131.12(a)(1). This provision has been interpreted to mean that, "[i]f baseline water quality is equal to or less than the quality as defined by the water quality objective, water quality shall be maintained or improved to a level that achieves the objectives." (State Water Board, Administrative Procedures Update, Antidegradation Policy Implementation for NPDES Permitting, 90-004 (APU 90-004), p. 4.)

[69] 40 CFR § 131.12(a)(2).

[70] 40 CFR § 131.3(n).

[71] See State Water Board Order WQ 86-17 (Fay), p. 23, fn. 11.

result in the best practicable treatment or control of the discharge."[72] The baseline quality considered in making the appropriate findings is the best quality of the water since 1968, the year of adoption of Resolution No. 68-16, or a lower level if that lower level was allowed through a permitting or other regulatory action, such as establishing a water quality objective, that was consistent with the federal and state antidegradation policies.[73]

Here, the baseline water quality is the level authorized under the previous permit consistent with federal and state antidegradation policies. To the extent some water bodies are high quality waters with regard to some constituents, the Water Board allowed limited degradation of such waters in the Previous Permit. This Order does not authorize lowering water quality as compared to the level of discharge authorized in the Previous Permit such that no antidegradation analysis is required. The Administrative Procedures Update, Antidegradation Policy Implementation for NPDES Permitting, 90-004 (APU 90-004), provides that no antidegradation analysis is required where the regional water board has no expectation that water quality will be reduced by the permitting action. Nevertheless, the Water Board undertakes herein an antidegradation analysis, assuming, without deciding, that the baseline for antidegradation analysis is the best water quality since 1968.[74]

a. The Board Is Not Required to Make Waterbody by Waterbody and Pollutant by Pollutant Antidegradation Findings:

The Water Board finds that it is not required to conduct a waterbody by waterbody and pollutant by pollutant antidegradation analysis for this Order. The Water Board makes this finding for two reasons. First, APU 90-004, which

[72] State Water Board Resolution No. 68-16, Resolve 2. Best practicable treatment or control is not defined in Resolution No. 68-16; however, the State Water Board has evaluated what level of treatment or control is technically achievable using "best efforts" (See State Water Board Orders WQ 81-5 (City of Lompoc), WQ 82-5 (Chino Basin Municipal Water District), WQ 90-6 (Environmental Resources Protection Council).). A Questions and Answers document on Resolution No. 68-16 by the State Water Board states as follows: "To evaluate the best practicable treatment or control method, the discharger should compare the proposed method to existing proven technology; evaluate performance data, e.g. through treatability studies; compare alternative methods of treatment or control; and/or consider the method currently used by the discharger or similarly situated dischargers . . .The costs of the treatment or control should also be considered . . . " (Questions and Answers, Resolution No. 68-16, State Water Board (Feb. 16, 1995), pp. 5-6.).

[73] APU 90-004, p.4. The baseline for application of the federal antidegradation policy is 1975, which is the date used in 40 CFR § 131.3(e) to define existing uses of a waterbody. For state antidegradation requirements, see also *Asociacion de Gente Unida por el Agua (AGUA) v. Central Valley Water Board* (2012) 210 Cal.App.4th 1255,1270. The baseline for the application of the state antidegradation policy is generally the highest water quality achieved since 1968, the year the policy was adopted.

[74] For ease of analyses, 1968 is used herein. As stated above, a permitting action with appropriate antidegradation findings allowing degradation may establish a new baseline, as occurred under the Previous Permit. In addition, the appropriate baseline is determined by the date on which a policy establishing the level of water quality to protect was effective (Resolution No. 68-16, Resolve 1.). The Basin Plan has been updated and amended several times since it was first adopted to include new or revised water quality objectives.

specifies a waterbody by waterbody and pollutant by pollutant analysis for some permitting actions, does not address permitting for diffuse MS4 discharges. Second, APU 90-004 itself indicates that a waterbody by waterbody and pollutant by pollutant analysis is only required when conducting a "complete" antidegradation analysis; a complete analysis is not required where any reduction in water quality is temporally limited and would not result in any long-term deleterious effects on water quality."[75] Here, the Order requires compliance with the non-stormwater discharge prohibition, receiving water limitations, TMDL requirements designed to bring MS4 discharges and receiving waters into compliance with water quality objectives, and other requirements for pollutants of concern. The discussion below elaborates on these two reasons.

i. APU 90-004 is a State Water Board internal guidance document establishing methods for implementing the federal and state antidegradation policies in NPDES permits. APU 90-004 suggests that an antidegradation analysis requires a pollutant by pollutant and waterbody by waterbody analysis in certain contexts, specifically where the discharge at issue is a discrete discharge from a singular facility. However, APU 90-004 has limited value when considering antidegradation in the context of MS4 discharges from diffuse sources, conveyed through multiple outfalls, with multiple pollutants impacting multiple water bodies within region.[76] This interpretation is sensible for this Order, given that reliable data on the baseline water quality is not readily available since 1968 for a region that spans about 4,600 square miles, including hundreds of miles of coastline, hundreds of rivers and streams, tens of thousands of acres of wetlands, lakes, and impoundments, and the 1,600-square-mile San Francisco Bay Estuary. The Water Board estimates that there are thousands or tens of thousands of combinations of waterbodies and pollutants that could potentially require individual consideration in the Region.[77] The antidegradation analysis for

[75] APU 90-004, p. 2.

[76] The State Water Board held so in Order WQ 2021-0052-EXEC. In *Natural Resources Defense Council v. State Water Resources Control Board*, the superior court did not invalidate this particular conclusion. (Super. Ct. Los Angeles County, No. BS156962, Order, March 29, 2021). The State Water Board's interpretation of its own guidance is entitled to deference. See also State Water Board Order WQ 2018-0002, p. 77 (reaching the same conclusion for agricultural discharges).

[77] See Basin Plan Chapter 2, Beneficial Uses; Surface Water Body Beneficial Use Tables at: https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/planningtmdls/amendments/WaterBodies/Documt%20tables%20FINAL%20new%20cover%20BOOKMARKS%204-6-2012.pdf**;** and Chapter 3, Water Quality Objectives. While the Basin Plan designates beneficial uses for many waterbodies in the Region, there are thousands or tens of thousands of water bodies (e.g., headwaters creeks, isolated seasonal wetlands, seeps, and ponds) for which beneficial uses have not been specifically designated. Thus, the number of potential combinations of waterbodies and pollutants that could require individual consideration could be substantially higher than estimated here. If it could be done at all, a waterbody by waterbody antidegradation analysis would be extremely time-consuming and take years to complete.

this Order instead relies on a general assessment of the existing water quality data that is reasonably available and makes findings regarding the social and economic benefits and costs of permitting stormwater and non-stormwater MS4 discharges in accordance with the Order terms.

ii. The Water Board additionally finds that even if APU 90-004 applies to the issuance of this Order, it requires at most a "simple" antidegradation analysis. APU 90-004 contemplates that a "simple" antidegradation analysis is appropriate under specified circumstances. In particular, as stated above, APU 90-004 states that a simple antidegradation analysis is allowed when a "Regional Board determines the reduction in water quality is temporally limited and will not result in any long-term deleterious effects on water quality" or where a "Regional Board determines the proposed action will produce minor effects which will not result in a significant reduction of water quality."[78] Here, the Order continues the requirements of the Previous Permit or imposes equivalent or more protective requirements such that the water quality established under the prior permit is expected to be maintained and improved. Generally, the Previous Permit instituted controls such as a prohibition on non-stormwater discharges that are a source of pollutants through the MS4s, receiving water limitations, WQBELs based on TMDLs, and monitoring programs to help ensure that water quality will be maintained at the level it is now, or improve it, and this new Order institutes further controls. Any degradation permitted while controls are continuing to be implemented and refined will be temporally limited and will not result in any long-term deleterious effects on water quality.[79] Such a finding would not be appropriate if, for example, the Order declined to require long-term compliance with water quality objectives, but that is not the case here.

APU 90-004 does not provide guidance on the scope and content of a simple antidegradation analysis. The Water Board determines that the findings made below meet the requirements of a simple antidegradation analysis and are also consistent with an antidegradation analysis done at a generalized level, as appropriate for this Order. With these findings, based on the information available to it and using its best professional judgment, the Water Board concludes that the discharge will not be adverse to the intent and purpose of the State and federal antidegradation policies.

[78] APU 90-004, p. 2. In an unpublished decision, the Second District Court of Appeal affirmed that a simple antidegradation analysis applied to the 2012 Los Angeles County MS4 permit (*Natural Resources Defense Council v. State Water Resources Control Board* (2018) 2018 WL 6735201, at *6).

[79] The Order's requirements put the Permittees on a path to achieving TMDL wasteload allocations for impairing pollutants and meet water quality objectives, consistent with what the TMDL implementation schedules established as feasible and appropriate. For impairing pollutants like trash for which there is no TMDL, the Order requires 100 percent trash load reduction or no adverse impact to receiving waters from trash within the term of the Order.

b. The Water Board Makes the Following Antidegradation Findings:

The discharges permitted in the Order are consistent with the antidegradation provisions of 40 CFR section 131.12 and Resolution No. 68-16. The Water Board's conclusion is based on the following analysis.

i. Water bodies that do not meet water quality objectives (water bodies that are not high quality):

Many of the waters within the area covered by this Order are impaired by multiple pollutants discharged through MS4s and are not high quality waters with respect to these pollutants. They are not attaining water quality objectives necessary to protect beneficial uses. This is evidenced in part by the fact that many of these waterbodies are listed on the State's CWA section 303(d) List of impaired waters and the Water Board has established numerous TMDLs to address many of the impairments.[80] Under both federal and state antidegradation policies, these receiving waters are not considered "high quality" waters for these pollutants. In most cases, there are insufficient data to determine whether the waters addressed by this Order were impaired as early as 1968, but limited available data shows impairment dating back for more than several decades.[81]

For receiving waters that are not high quality waters, the federal antidegradation policy requires that regulatory actions ensure that existing instream uses and the level of water quality necessary to protect the existing uses is maintained and protected (40 CFR § 131.12(a)(1).). The Order ensures that existing instream (beneficial) uses and the level of water quality necessary to protect the existing uses is maintained and protected through requirements to not cause or contribute to exceedances of water quality

[80] It should be noted that impaired waters, or waters that are not high quality, are not confined to those listed only on the 303(d) List. There are several reasons for this, including, but not limited to, the fact that the Water Board's ability to comprehensively evaluate the water quality of each of the substantial numbers of waterbodies and waterbody segments within the Region's 4,600 square miles is limited by available staff resources and data sufficient to justify a 303(d) listing. Accordingly, the 303(d) List itself does not reflect all of the waterbodies in the Region that are impaired or fail to meet water quality standards.

[81] For example, the 1975 Water Quality Control Plan San Francisco Bay Basin Part II points to poor water quality in the Bay for numerous parameters. (See p. 14-5 to 14-18.) There was, among other problems, widespread toxicity, heavy metals, periodic fish kills, and low dissolved oxygen. (*Ibid*.) The South Bay had some of the poorest bacteriological quality, with a mean coliform concentration of 20,000 MPN/ml (the then-water quality objective for total coliform for contact recreation was 240 MPN/ml). (*Id*, p. 14-9; 1975 Water Quality Control Plan San Francisco Bay Basin Abstract, p. 21.)

objectives in the receiving water and to restore impaired water bodies.[82] This is achieved through the following provisions:

(1) The Order requires compliance with receiving water limitations to meet water quality standards in the receiving water through timely implementation of control measures and other actions specified in Provisions C.2 through C.24. The Order requires implementation of specific structural and non-structural stormwater and non-stormwater controls, consistent with TMDL implementation plans, including an adaptive implementation strategy, that are demonstrated to have a reasonable assurance of achieving compliance with receiving water limitations and that must be implemented in accordance with the deadlines set forth in the Permit.

(2) The Order requires Permittees to comply with WQBELs and/or receiving water limitations consistent with the assumptions and requirements of TMDL WLAs assigned to MS4 discharges established in TMDLs to restore water quality sufficient to protect the beneficial uses of the impaired water bodies.

(3) The Order requires Permittees to effectively prohibit non-stormwater discharges that are a source of pollutants through the MS4 to receiving waters.

(4) The Order includes requirements for monitoring and reporting designed to identify pollutants in receiving waters and the effectiveness of implemented measures to meet water quality objectives.

These provisions are collectively designed to halt any further degradation of impaired water bodies and improve the quality of such waters to a level protective of existing uses over a time schedule that is as short as possible. The antidegradation policies do not explicitly or implicitly override the authority and discretion the Clean Water Act and the Water Code grant to the Water Board as to how it structures a permit to ensure water quality necessary to protect beneficial uses. The law does not require immediate restoration of impaired water bodies nor does it require an immediate prohibition of discharges that contribute to an exceedance in the waterbody. Rather, federal regulations at 40 CFR section 122.47 allow NPDES permits, including MS4 permits, to have compliance schedules. Similarly, Water Code section 13263, subdivision (c), authorizes the Water Board to include a time schedule for achieving water quality objectives in waste discharge requirements. Where a TMDL has been established, CWC section 13242

[82] These actions also ensure that discharges will not unreasonably affect present and anticipated beneficial uses and will not result in water quality less than water quality objectives, as required by Resolution No. 68-16.

states that the TMDL implementation plan, as incorporated into the water quality control plan, shall include a time schedule for actions to be taken. When issuing waste discharge requirements, CWC section 13263 requires regional boards to implement any relevant water quality control plans that have been adopted. Certainly, water quality objectives must be achieved; but the law, as cited above, recognizes and allows for the fact that it can take time to restore or achieve the objectives.[83] This period of time before improvement may be as long as multiple years. This is not contrary to the authorities for compliance schedules stated above and is not contrary to the antidegradation policies.[84]

ii. High quality water bodies:

Some of the waterbodies within the area covered by the Order may be high quality waters with regard to some pollutants. Some of these waterbodies may be currently high quality as compared to currently applicable objectives. Others of these waterbodies may be currently impaired, but may be classified as high quality waters because they were historically high quality for certain pollutants. MS4 discharges of stormwater and non-stormwater into such water bodies may have resulted in lowering of the quality of the water bodies since 1968 with regard to the pollutants in the discharge.

For high quality water bodies,[85] the Water Board finds as follows:

[83] Additionally, while MS4 permits must include a technology-based standard of effectively prohibiting non-storm water discharges through the MS4 and reducing pollutants in the discharge to the MEP, requiring strict compliance with water quality standards (e.g., by requiring immediate compliance with receiving water limitations or water quality based effluent limitations) is at the discretion of the permitting agency (33 U.S.C. § 1342(p)(3)(B); *Defenders of Wildlife v. Browner* (9th Cir. 1999) 191 F.3d 1159, 1166-67). This Order imposes water quality-based effluent limitations to implement TMDL WLAs and requires compliance with receiving water limitations for all constituents in the MS4 discharges. The fact that the Board also allows reasonable time schedules to achieve compliance with the effluent limitations and receiving water limitations is not contrary to the law for this additional reason.

[84] With regard to waterbodies that are not high quality, the antidegradation policies do not require socioeconomic findings justifying any continued degradation of such waterbodies that may occur while the Permittees implement requirements in accordance with a compliance schedule. Even if such findings were required, the Water Board finds that this potential, limited, and temporary further lowering of water quality is justified for the same reasons articulated below related to high quality water bodies.

[85] The quality of some currently high quality waters that are close to or at objectives may degrade below water quality objectives temporarily while Permittees implement appropriate controls in accordance with the compliance schedules in the Order and some historically high quality waters may stagnate or continue to degrade below water quality objectives during the same period. The Water Board finds that the potential, limited, and temporary lowering of water quality below the objectives is authorized by 40 CFR § 122.47 and the time schedule provisions of the Water Code set out above in the subsection entitled "Water bodies that do not meet the water quality objectives (water bodies that are not high quality)" , and, to the extent any findings are required under the antidegradation policies, is justified for the same reasons articulated in this subsection entitled "High quality water bodies."

(1) Practicable Alternatives: The Water Board has evaluated a range of practicable alternatives that would prevent or lessen any degradation associated with permitted MS4 discharges to high quality waters. These alternatives are discussed below.

(a) Alternative 1 - Complete prohibition on some or all pollutants in MS4 non-stormwater discharges to high quality waters: This alternative would prohibit MS4 discharges of some or all pollutants in non-stormwater to high quality receiving waters. By eliminating these discharges, pollutants from non-stormwater discharges would not reach high quality receiving waters during dry weather and thus not cause any degradation. In high quality water areas, this alternative could require the Permittees to either divert all non-stormwater to a facility for treatment, or retain all non-stormwater through retention basins, infiltration galleries, and other controls that would prevent non-stormwater from reaching surface waters through storage, infiltration, or reuse. Alternatively, Permittees could install specific pollutant control measures that prevent specific pollutants from being discharged through the MS4.

(b) Alternative 2 – Complete prohibition on some or all pollutants in MS4 stormwater discharges to high quality waters: This alternative would prohibit MS4 discharges of some or all pollutants in stormwater to high quality receiving waters. By eliminating these discharges, pollutants from stormwater would not reach high quality receiving waters during wet weather and not cause any degradation. As wet weather will always occur, this alternative could require the permittees to either divert all stormwater in the MS4 to a facility for treatment, or retain all stormwater through retention basins, infiltration galleries, and other controls that would prevent stormwater from reaching surface waters through storage, infiltration, or reuse. Permittees could also install pollutant control measures that are specific to preventing specific pollutants from being discharged through the MS4.

(c) Alternative 3 – Implement controls consistent with Permit requirements, applicable TMDL Implementation Plans, and adaptive management. This alternative would require Permittees to implement a mix of structural and non-structural controls and associated actions sufficient to achieve receiving water limitations, WQBELs, and other requirements, with flexibility to allow implementation of controls that are relatively more effective with respect to pollutant control, feasibility, or cost, while still achieving

required outcomes. Alternative 3 includes, or may include, controls that could be implemented under Alternatives 1 and 2.

(i) Alternative 3, Option A:

Under Alternative 3, where requirements and controls reflect those established in applicable TMDLs, the controls would constitute compliance with receiving water limitations for the waterbody-pollutant combinations addressed by the relevant TMDL, but Option A would not allow for implementation of control measures to constitute compliance with receiving water limitations for waterbody-pollutant combinations not addressed by a TMDL.

(ii) Alternative 3, Option B:

Option B would add one component to Alternative 3. Under Option B, implementation of the controls would additionally constitute compliance with receiving water limitations for a narrow set of waterbody-pollutant combinations not subject to a TMDL where the pollutant of concern is addressed in a comparable TMDL applicable to other water bodies and the controls reflect the controls and timeline of the comparable TMDL.

(d) Alternative 4 – Establish WQBELs for MS4 discharges to high quality waters: This alternative includes the Board establishing WQBELs for MS4 discharges of certain pollutants to high quality waters. These WQBELs would apply to both stormwater and non-stormwater discharges. MRP 2 only includes WQBELs where they are based on either TMDL wasteload allocations applicable to MS4 discharges (i.e., for impaired waters and not high quality waters) or the trash provisions in the Ocean Plan and ISWEBE. This alternative would require the Board to establish WQBELs where no TMDLs have been established.

(2) Economic and Social Development Considerations and Consistency with Maximum Benefit to the People of the State: The Water Board incorporated Alternative 3, Option B, and included aspects of Alternatives 1 and 2, into the Permit. This alternative could allow limited degradation of high quality water bodies by MS4 discharges, but ultimately requires MS4 discharges to meet and not fall below water quality standards.

Such degradation of high quality waters is necessary to accommodate important economic or social development in the area and is consistent

with the maximum benefit to the people of the state for the following reasons:

(a) Alternatives 1 and 2, if implemented as full prohibitions, would hamper important social and economic development.

(i) The MS4 discharges of stormwater and non-stormwater in certain circumstances are to the maximum benefit to the people of the state because they may be necessary for flood control and public safety. MS4 discharges also can assist with maintaining, or comprise the flows necessary to maintain, instream flows that support beneficial uses.[86] In addition, complete diversion or retention of MS4 discharges that would reach the MS4 and receiving water would require extensive structural controls that are not technologically feasible in many locations, for example due to: lack of available space at those sites; soils with limited infiltration capacity or landslide proclivity; challenging topography; conflicts with utilities and existing infrastructure; lack of available sanitary sewer collection system connections or capacity; typical Bay Area MS4 system designs, which involve relatively short runs of storm drain that discharge into local creeks, streams, or the Bay. That system would require substantial replumbing, often against available grades, to direct flows to controls or the sanitary sewer system.[87]

[86] The Permittees' MS4 systems are frequently relatively short, discharging into headwaters or low-order creeks and providing all or substantial portions of those creeks' flows. Diversion of flows to the sanitary sewer could substantially reduce flows, impacting beneficial uses, including associated riparian habitat and vegetation. While use of infiltration basins could recharge local groundwater, beneficially increasing creek baseflows, that benefit is likely to be most-pronounced in the limited areas of Bay Area soils that are more infiltrative, and less so in the majority of the Bay Area that is comprised of less-infiltrative C and D soils. In an example in the Los Angeles Region, the Los Angeles River Flows Project studied the impacts of reduced flows on beneficial uses in the Los Angeles River as a pilot application of the California Environmental Flows Framework. At the beginning of this project, Los Angeles Water Board staff presented on the importance of minimum flows for recreation and wildlife in both concrete and soft-bottom channels of the river (https://www.waterboards.ca.gov/water_issues/programs/docs/lar/002_r4_la_river_info_item_20171103rev.pdf) Wading shorebirds, for example, rest and feed in the shallow waters of the concrete lined portion of the lower Los Angeles River. The final report for the project, "Process and Decision Support Tools for Evaluating Flow Management Targets to Support Aquatic Life and Recreational Beneficial Uses of the Los Angeles River," quantified the flow ranges associated with different species, habitats, and recreational uses in the river and evaluated the impacts of various combinations of reductions in wastewater, stormwater, and non-stormwater discharges. In general, if all discharges were eliminated, there would not be enough flow to protect beneficial uses including habitat for local plant and animal species.

[87] E.g., SCVURPPP, August 2019. *Santa Clara Basin Stormwater Resource Plan*; CCAG, January 2021. *San Mateo Countywide Sustainable Streets Master Plan*, App. B, pp. 27-28.

(ii) The vast majority of the Permittees are cities and counties that provide essential and valuable public services. This Fact Sheet considers economics, including Permittees' compliance costs associated with meeting the requirements of the Order. Controlling storm water discharges to the point that there is no potential degradation of any potentially high quality waters by requiring complete diversion or retention would be an enormous opportunity cost that could preclude MS4 permittees from spending substantial funds on other important social and economic needs. This may manifest itself in the reduction of some public services or prevent other public services from being provided in the first place. Permittees have previously provided public comments (on the Administrative Draft of the Permit and during consideration of MRP 2) that spending limited municipal resources on immediately addressing all pollutants in MS4 discharges (all stormwater and non-stormwater discharges) will adversely impact municipal budgets, public health priorities, such as implementing active transportation projects including Safe Routes to Schools or measures to reduce unsheltered homelessness, such as provision of housing and supportive services, and other social services.[88]

(iii) As another example, unsheltered homelessness, in a context of limited municipal budgets, the high Bay Area cost of living, driven in part by local land use planning decisions that have produced insufficient affordable housing, and limited supportive services, results in substantial public expenditures including emergency medical care, and police and justice system engagement.[89] Those public expenditures can be significant, without reducing unsheltered homelessness or preventing discharges of trash and human waste associated with it. Municipal efforts to provide affordable housing, supportive services, and related needs, while expensive, can

[88] For example, in comments on the February 2021 Administrative Draft of the Permit, many Permittees identified that limited resources are available to protect water quality, and some Permittees expressed concern that Permit requirements could lead to a reduction in needed road maintenance (Santa Clara Valley Urban Runoff Pollution Protection Program comment letter of April 8, 2021) or reduced implementation of active transportation (multi-modal) projects (City of San Pablo comment letter of April 6, 2021, Town of Danville comment letter of April 7, 2021), and that a focus on addressing the water quality impacts associated with unsheltered homelessness could reduce resources used for housing or provision of supportive services (Contra Costa Countywide Clean Water Program letter of April 8, 2021), and that fiscal impacts associated with the COVID-19 pandemic emphasized the need to prioritize certain actions to protect water quality (e.g., Alameda Countywide Clean Water Program comment letter of April 8, 2021).

[89] Flaming et al., 2015. *Home Not Found: The Cost of Homelessness in Silicon Valley.*

be relatively much less expensive than jail and emergency services. In addition, by reducing homelessness, they have the potential to reduce associated discharges of trash and human waste. Alternatives 1 and 2, by prohibiting non-stormwater or stormwater discharges, respectively, would preclude this kind of equivalent benefit weighing analysis and the more-efficient achievement of water quality goals.

The Los Angeles Water Board conducted an analysis that estimates the equivalent public benefit that may be provided through affordable housing and services if full retention and diversion were not required under Region's MS4 permit. The results of the analysis support the finding that the social and economic benefits of a society where there would be significantly fewer unhoused residents would be far greater than the additional benefits created by taking water quality from the point where water quality standards are achieved to a level of higher quality that may only be achieved with full retention.[90] The same funds that would have to be used to

[90] In 2012, Los Angeles County projected that it would cost $120B, or $134.8B in 2019 dollars, for complete diversion or retention of MS4 discharges, whereas the cost of implementing enhanced watershed management programs (EWMPs), which require addressing the 85th percentile, 24-hour storm event or otherwise reducing or treating stormwater discharges to attain water quality standards, was estimated by Board staff to be $21.0B - $21.3B (see Section XIII, Economic Considerations). Instead of using this cost differential of $113.5B - $113.8B to further improve waters that would already have achieved water quality standards, thereby already being able to support designated beneficial uses, this money could be better spent addressing the homeless problem in the region. In 2020, there were an estimated 66,436 unhoused residents in Los Angeles County (Los Angeles Homeless Services Authority. 2021. 2020 Greater Los Angeles Homeless Count – Total Point-In-Time Homeless Population by Geographic Areas. https://www.lahsa.org/documents?id=4692-2020-greater-los-angeles-homeless-count-total-point-in-time-homeless-population-by-geographic-areas.pdf.). The median cost in Los Angeles County of constructing a permanent housing unit for the homeless is about $531,000 (Galperin, Ron. 2019. The High Cost of Homeless Housing: Review of Proposition HHH. Ron Galperin LA Controller. https://lacontroller.org/audits-and-reports/high-cost-of-homeless-housing-hhh/.). Supportive services to address the homeless housing gap were estimated in 2016 to be $428.8M per year, or $455.3M in 2019 dollars (Los Angeles Homeless Services Authority. 2016. Report on Homeless Housing Gaps in the County of Los Angeles. https://homeless.lacounty.gov/wp-content/uploads/2019/02/Report-on-Homeless-Housing-Gaps-in-the-County-of-Los-Angeles-1-2016-1....pdf). Adjusting for the increase in the homeless population since then yields an estimated annual cost in supportive services of $1.2B in 2019 dollars. (Assuming the same supportive services cost per person estimated in 2016, multiplied by the number of homeless residents in LA County in 2020.) The stormwater capture cost differential could build enough units to house every homeless person in Los Angeles County and pay for supportive services for the next 67 years, even with the conservative assumption of one person per housing unit. Housing a homeless person in Los Angeles County results in average cost savings of about $2,731 per person per month in 2019 dollars in terms of reduced need for public services, such as medical and policing expenses (Economic Roundtable. 2008. Where We Sleep: Costs when Homeless and Housed in Los Angeles. https://economicrt.org/wp-content/uploads/2009/11/Where_We_Sleep_2009.pdf). This means that there

prevent all MS4 discharges (as opposed to only 85 percent of those discharges) could be invested instead in addressing homelessness, and could support affordable housing and several decades of supportive services for a significant number of residents at-risk of being unhoused. The Bay Area faces similar challenges and drivers associated with unsheltered homelessness, as well as similar costs associated with pollution control. Permittees are currently facing the kinds of tradeoffs described above because they are implementing a range of measures to address unsheltered homelessness as described in the Fact Sheet section for Provision C.17, and which provide an indirect benefit to water quality, including provision of permanent supportive housing, job programs, and services. Those are in addition to measures, like trash collection and provision of sanitary waste services, that provide a direct water quality benefit. As a result, the Los Angeles Regional Water Board's conclusion is expected to be generally applicable to the Bay Area.

(iv) The prohibition on discharges of pollutants in Alternatives 1 and 2 is not practicable without substantial diversion to the sanitary sewer. Stormwater BMPs that do not fully retain, evapotranspire, and/or infiltrate all flows into the groundwater generally will discharge low, but non-zero, amounts of pollutants downstream.[91] Those kinds of controls (e.g., bioretention cells, flow-through planters) are common in the Bay Area because of the preponderance of Bay Area soils with

would be annual cost savings of about $2.2B from housing all homeless residents in Los Angeles County, and over 67 years the cost savings would be about $145.1B-$145.8B, greater than the storm water capture cost differential of $113.5B-$113.8B. An analysis of Ventura County finds similar results where each of its 1,743 unhoused residents could be provided permanent housing for at least 55 years with its stormwater capture cost differential, assuming that Ventura County's cost of full capture would be their estimated MS4 compliance costs multiplied by the same ratios of Los Angeles County's E/WMP costs to cost of full stormwater capture, yielding cost differentials ranging from $2.5B-$23.4B (https://www.vcstar.com/story/news/2020/12/12/covid-ventura-county-continuum-of-care-2021-homeless-count/3868785001/). This analysis was also based on an average cost per unit of $480,000 for housing the homeless in Ventura County in 2019 and the same supportive services cost per person as in LA County (https://humanimpact.org/wp-content/uploads/2020/10/HIP-Ventura-County-Lets-Invest-Sources-2020.pdf). It can be expected that there would be substantial additional benefits for these housed residents and for the local economy from being more fully able to engage in society.
A similar opportunities analysis for unsheltered homeless populations in the South San Francisco Bay Area can be found in Flaming et al., 2015. *Home Not Found: The Cost of Homelessness in Silicon Valley.*

[91] Clary, et al., 2020. *International Stormwater BMP Database: Summary Statistics.* Water Research Foundation.

limited infiltration rates. As such, they would not achieve the Alternative 1 or 2 goals.

(v) The significantly higher cost of complete storm water diversion or retention could lead to increased fees for residents with little benefit in return after water quality standards have been met. To achieve retention, stormwater control sizes would need to increase substantially over the post-construction stormwater treatment control sizing in Provision C.3.d. That sizing is based on work by Urbonas and Guo that determined a point of diminishing returns for control sizing. That work found that, while larger controls could control larger storms, the size increased out of proportion to the declining marginal benefit gained, in part because of the need to capture the larger storms that are relatively infrequent and comprise a relatively small portion of average annual rainfall. As noted above, storm water diversion would require substantial replumbing of existing systems.

The literature is sparse on the impact of MS4 project costs on user fees, but Kea et al. (2016) found higher rates of user fee establishment in the years directly before and after MS4 permit deadlines,[92] indicating that utilities often rely on user fees to meet permit requirements.

It is also possible that higher costs could be passed down to residents through increased housing prices driven by higher impact fees, which cities often charge developers to help fund public services, or higher construction costs. The literature finds that overall impact fees lead to higher home prices.[93] Requiring complete storm water diversion or retention from properties could also lead to higher construction costs for

[92] Kea, Kandace, Randel Dymond, Warren Campbell. 2016. An Analysis of Patterns and Trends in United States Stormwater Utility. Journal of the American Water Resources Association, 52(6). See, also, Comment Letter on 2012 Los Angeles MS4 Permit from City of Lakewood, Lisa A. Rapp, Director of Public Works, July 23, 2012, Comment Letter from City of La Verne, Daniel W. Keesey, Director of Public Works, July 23, 2012, and Comment Letter from LA Permit Group, July 23, 2012 (discussing the need to, and difficulty of, levying additional special taxes to pay for the permit).

[93] Mathur, Shishir, Paul Waddell, and Hilda Blanco. 2004. The Effect of Impact Fees on the Price of New Single-family Housing. Urban Studies, 41(7); Ihlanfeldt, Keith R. and Timothy M. Shaughnessy. 2004. An empirical investigation of the effects of impact fees on housing and land markets. Regional Science and Urban Economics, 34(6); Mathur, Shishir. 2013. Do All Impact Fees Affect Housing Prices the Same? Journal of Planning Education and Research, 33(4).

housing, which is one of the drivers of higher home prices.[94] There is extensive literature showing that higher housing prices are associated with proximity to cleaner waterbodies,[95] which provide benefits to society. However, higher housing prices driven by higher impact fees or construction costs that do not contribute toward discernible improvements in water quality would likely provide lower marginal benefits compared to a scenario where residents could avoid additional housing costs by not having to pay higher impact fees or construction costs in a region where housing costs are already high, or a scenario where this cost could be spent on more pressing public services or societal problems.

(vi) Because waterbodies may be high quality for some pollutants and not others it is difficult, if not impossible, to designate specific areas as high quality waters. As a result, Alternatives 1 and 2 are inconsistent with achieving the maximum benefit to the people of the state because they may require broader-than-necessary implementation of measures to ensure their prohibitions are met. The inconsistency stems from potential impacts to other municipal and public services associated with those increased expenditures.

(b) Aspects of Alternatives 1 and 2 that are practicable are part of Alternative 3 and have been incorporated into this Order. The Order generally implements a prohibition on trash discharges through the installation of full capture systems or controls to achieve full capture equivalency. The Order also largely prohibits the discharge of non-stormwater into and through the MS4 to receiving waters. While there are some limited exceptions where the non-stormwater discharge is expected not to be a source of pollutants, where the discharge is determined to be a source of pollutants it must be prohibited. The Order, through its green infrastructure planning and implementation provision (Provision C.3.j) and its alternative compliance provision (Provision C.3.e), also supports efforts to maximize the capture of stormwater through retention basins, infiltration galleries, and other controls.

[94] Emmons, William R. 2019, Sept. 5. Construction Costs, Not Another Housing Bubble, Are Driving House Prices Higher. St. Louis Fed On the Economy Blog. https://www.stlouisfed.org/on-the-economy/2019/september/construction-costs-housing-bubble-driving-housing-prices-higher

[95] See, e.g., Guignet, Dennis, Matthew T. Heberling, Michael Papenfus, Olivia Griot, and Ben Holland. 2020. Property values, water quality, and benefit transfer: A nationwide meta-analysis. Working Papers 20-04, Department of Economics, Appalachian State University. https://ideas.repec.org/p/apl/wpaper/20-04.html

(c) Alternative 3, if implemented, could result in limited degradation of high quality water bodies. Any degradation that would occur under the alternative is consistent with the maximum benefit to the people of the state because the combination of structural and non-structural controls implemented under the alternative will ultimately be effective at maintaining and restoring water quality protective of beneficial uses, and allow a greater benefit to the people of the state than full prohibitions of discharge when considering social and economic parameters that could be affected, such as employment, housing, community services, income, tax revenues, and land value.

The Permit terms require implementation of objective technical solutions that must be designed to meet the Permit's maximum extent practicable- or water quality standards-based regulatory standards. Such controls necessarily take time to design and construct, but it is to the maximum benefit of the people of the state that such controls be designed and implemented properly so as to be protective of water quality in the long run. These measures that control impacts from stormwater and non-stormwater discharges in the Order are typically effective across multiple pollutants. The alternatives would concurrently address other constituents of concern that may not be causing impairment, but may still be leading to degradation, resulting in improvements in levels of all pollutants, including those for which the receiving water may be high quality.

(d) Alternative 3 avoids the high economic and social costs associated with decreased public services associated with Alternatives 1 and 2. At the same time, Alternative 3 is still structured to encourage retention of stormwater and non-stormwater. As incorporated into the Permit, Alternative 3 provides additional economic and social benefits to the people of the state by incentivizing and incorporating multi-benefit and green infrastructure projects that include benefits beyond water quality protection such as increased local water supplies, beautified streets, plazas, and parking areas, facilities that support habitat and recreation, and climate change resiliency, such as reduced flood flows and reduced temperatures on the urban surface. For example, both the regional stormwater treatment wetland in the City of Fremont's Pacific Commons project and the stormwater pond in the city park downhill of the City of Dublin's Dublin Ranch protect clean water while providing an opportunity for recreation and urban connections with nature. Bioretention cells along streets and in parking lots can reduce the urban heat island

effect, help calm traffic, and protect cyclists and pedestrians, increasing the benefit of active transportation designs.

Multi-benefit projects are projects that provide multiple benefits, which may include not just runoff treatment, but water capture and use, climate change resilience, encouragement of active transportation and protection of multi-modal users, greenhouse gas reductions, and improvements to urban quality of life– are actively encouraged by the State of California, which administers Proposition 1 funds ($200 million in grant funds) for such multi-benefit projects. In the Bay Area, such projects have received funding through Proposition 1 and other state and federal grant programs, as well as Caltrans, pursuant to requirements of its statewide MS4 NPDES permit, and through its cooperative funding program for projects that also provide benefit for discharges from Caltrans rights of way. For example, the Rumrill Boulevard green street retrofit in San Pablo, which will control pollutants of concern, improve pedestrian safety, and provide climate change resilience.[96] Table A-3 provides further examples of multi-benefit grant-funded projects completed by the Permittees. While Prop 1 funding has been expended, construction of multi-benefit projects from Permittee Green Infrastructure Plans and Stormwater Resource Plans will likely qualify for these types of grant monies in the future. Additionally, the construction of these projects also creates good-paying jobs that do not require advanced degrees, accessible to those in disadvantaged communities.[97]

Capacity-building projects are projects that build Permittee understanding of and the allow for planning or increase the toolbox of measures available to address pollutants in MS4 discharges. As shown in Table A-3, funded projects have included the

[96] U.S. EPA, *Rumrill Boulevard: Complete Green Street* (web). Accessed August 2, 2021. https://www.epa.gov/sfbay-delta/rumrill-boulevard-complete-green-street
City of San Pablo, *Rumrill Boulevard Complete Streets Project* (web). Accessed August 2, 2021. https://www.sanpabloca.gov/2590/Rumrill-Boulevard-Complete-Streets-Proje

[97] Sustainable Business Network, May 2021. *Green Stormwater Infrastructure (GSI): A tool for economic recovery and Growth in Pennsylvania*, reviewed ten years of GSI implementation in Pennsylvania, and found that GSI was supporting 34,000 jobs in Philadelphia, with more than half paying at least $15 per hour, even without requiring a high school diploma. Building on the findings by Economic Roundtable, Los Angeles Alliance for a New Economy estimated that over 30 years, the Safe, Clean Water Program (Measure W) in the Los Angeles Water Board region will create about 6,530 construction jobs and 1,347 O&M jobs, as well as about 1,559 annual indirect and induced jobs. This would yield about $14B in overall regional economic benefits from $9B in investment. Furthermore, many of these jobs created would be good-paying jobs that do not require an advanced degree, accessible to those in disadvantaged communities (Los Angeles Alliance for a New Economy (LAANE). Liquid Assets. How Stormwater Infrastructure Builds Resilience, Health, Jobs, and Equity. March 2018.).

development of Permittee stormwater resource plans, efforts to enact building code changes to support low impact development and green stormwater infrastructure implementation, and the Tracking California's trash project. It is likely that such projects could qualify for funds from similar grant programs in the future.

Table A-3. Multi-benefit and capacity-building grant-funded projects

Grant Program	Permittee	Project	Funded Amount
Prop 84 2011 Stormwater Implementation Grants	San Jose	Park Avenue: Green Avenue Pilot Project	$859,128
(same)	San Jose	Martha Gardens Green Alleys Pilot Project	$945,180
(same)	Union City	South Decoto Green Streets Project (Implementing LID)	$3,000,000
(same)	Alameda County Public Works Agency	Alameda County Public Works Agency Low Impact Development Implementation and Demonstration Project: Parking Lot Stormwater Treatment Improvements	$1,600,000
Prop 84 2011 Stormwater Planning and Monitoring Grants	Contra Costa County	Bay Area Green Infrastructure Master Planning Project	$597,901
(same)	Multiple counties in Water Board Regions 2 and 4	Tracking California's Trash	$870,000
(same)	Statewide	Removing Barriers to LID in Local and State Codes: Technical Assistance for Municipal Code Updates and Evaluation of the California Building Standards Code	$996,135
Prop 84 2013 Stormwater Implementation Grants	Albany	Brighton Avenue Pilot Green Street Project	$296,000

Grant Program	Permittee	Project	Funded Amount
(same)	San Jose	Ocala Avenue Green Street Project	$1,429,355
(same)	Town of San Anselmo	SADPW Stormwater LID Demonstration	$546,517
(same)	Union City	H Street - Green Street Improvements	$3,000,000
(same)	Bay Area Rapid Transit District	BART Lafayette Station Parking Lots Improvement Project	$2,245,259
2014 Drought Response Outreach Program for Schools	StopWaste	DROPS - OPS (Oakland and Piedmont Schools)	$1,491,503
Prop 1 2016 Stormwater Implementation Grants	City of San Mateo	City of San Mateo Sustainable Streets and Parking Lot	$630,031
2016 Storm Water - Proposition 1 - Implementation Grants - Round 1	Daly City	Vista Grande Drainage Basin Improvement Project	$10,000,000
2016 Storm Water - Proposition 1 - Implementation Grants - Round 1	Redwood City	Redwood City Sustainable Streets	$608,099
2016 Storm Water - Proposition 1 - Planning Grants	Santa Clara County	SWRP for the Santa Clara Basin in Santa Clara County	$471,708
2016 Storm Water - Proposition 1 - Planning Grants	Contra Costa County Flood Control & Water Conservation District	Contra Costa Watersheds Storm Water Resource Plan	$499,420

Grant Program	Permittee	Project	Funded Amount
2020 Prop 1 Round 2 Storm Water Grant Program	San Pablo	Sutter Avenue Green Street Project	$1,560,000

As discussed above, Alternative 3 provides important socioeconomic benefits such as creation of new jobs, increased local water supplies, beautified streets, plazas, and parking areas, and facilities that support habitat and recreation, while allowing the local governments to maintain important public services. This alternative therefore has the greatest chance of success, within the shortest time frame, and furthers the goal of maintaining and achieving water quality standards.

(e) Alternative 3 could result in limited degradation of high quality waters, in particular currently impaired waters that may nevertheless be considered high quality waters based on a historic baseline. The federal antidegradation policy does not require consideration of economic and social costs associated with degradation; it only requires findings that "allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located." The state antidegradation policy does not define the exact factors that must be considered in determining "maximum benefit to the people of the state." APU 90-004 states that factors to be considered in a complete antidegradation analysis include economic and social costs of the discharge compared to its benefits, but this Order is subject only to a simple antidegradation analysis.[98] The Water Board has nevertheless considered the costs associated with water quality degradation that may occur under Alternative 3, but has done so necessarily at a generalized level. Specifically, in choosing Alternative 3, the Water Board finds as follows:

(i) There are significant environmental, public health, and economic costs associated with exceedances of water quality objectives. The Bay Area economy thrives on a healthy environment, as does the health of its population. By way of

[98] Outside of the complete antidegradation analysis context, APU 90-004 states only that the "findings should indicate . . . [t]he socioeconomic and public benefits that result from lowered water quality" (APU 90-004, p. 1.).

example, the failure to control stormwater runoff (which would result in exceedances of water quality objectives) would, among other things, negatively impact Bay and ocean water quality, which would negatively impact tourism and the fishing industry. Similarly, the failure to meet water quality objectives in Bay and ocean waters would negatively impact recreation and public health of beachgoers. These costs are discussed in detail in the Economic Analysis section of this Fact Sheet.

(ii) The considered costs are associated with exceedances of water quality objectives rather than limited degradation of high quality waters to a level that remains better than objectives. This is because the objectives are set to protect beneficial uses in the first place.

(iii) Where Alternative 3 may allow a currently high quality waterbody to degrade below water quality objectives, or where it will allow a currently impaired, but historically high quality waterbody to stagnate or worsen in quality, even for multiple years, this allowance is for a finite period of time defined by the compliance schedule specified in the Permit. The Water Board finds that the temporary degradation is justified based on the social and economic benefits discussed in these findings, notwithstanding the potential costs of degradation. In particular, the Water Board anticipates that the combination of non-structural controls and structural controls that are designed and built over a longer timeframe are more likely to lead to water quality improvements than other measures.

(iv) Alternative 3 Option A, as compared to Option B, could potentially avoid some of the costs discussed above if some Permittees are able to correct some exceedances earlier if required to comply immediately with receiving water limitations for all waterbody-pollutant combinations with no applicable TMDL. From a practical perspective, however, the Water Board finds that immediate compliance, particularly for those waters that may have been high quality historically but are not high quality currently, is unrealistic even if required, given the technical and financial constraints faced by Permittees. There are no known specific sources of bacteria that can be controlled immediately. There are also no viable means to control bacteria in discharges by treating discharges. Some stormwater treatment or retention systems may reduce levels of bacteria in discharges, but they cannot be implemented

immediately and there are constraints that affect locating them where they would intercept discharges from bacteria sources, e.g., land availability and underground utilities. Most importantly, even though they may have viability due other benefits, such as control of other pollutants and water supply augmentation using captured stormwater, none are able to reduce levels of bacteria equivalent to water quality objectives.[99] They also have hydraulic capacity constraints that result in bypassing of untreated runoff during large storm events. Even municipal wastewater treatment systems cannot reduce bacteria to such low levels of bacteria without disinfection of the treated wastewater through chlorination/dichlorination, ozone disinfection, or ultra-violet light disinfection, which are not feasible for episodic stormwater discharges. Since it is unrealistic for Permittees to comply immediately, any costs avoided would be non-existent to minimal. Further, the Permit limits application of Option B to the receiving water limitations for bacteria in water bodies (specifically, Stevens Creek, Calabazas Creek and Sunnyvale East Channel/Guadalupe Slough) receiving discharges from Mountain View and Sunnyvale and monitoring demonstrates that these water bodies are not currently high quality for bacteria.[100]

(f) Regarding Alternative 4, WQBELs are for the most part set to be protective of beneficial uses, which is the floor of the level of protection required under the antidegradation policies and may not be protective of water quality higher than necessary to protect beneficial uses. Therefore, this alternative is not more protective of high quality water bodies than requiring compliance with receiving water limitations, which already require permittees' MS4 discharges to not cause or contribute to exceedances of water quality objectives. This alternative would impose a significant analytical hurdle on development and adoption of a permit by requiring the Water Board to spend extensive efforts to analyze tens or hundreds of thousands of waterbody-pollutant combinations and then further

[99] Clary et al., 2020. International Stormwater BMP Database: 2020 Summary Statistics. Water Research Foundation, pp. 21-33. Accessed at: https://www.waterrf.org/system/files/resource/2020-11/DRPT-4968_0.pdf

Clary, Pitt, and Steets, August 2014. Pathogens in Urban Stormwater Systems. ASCE. Accessed at: https://collaborate.ewrinstitute.org/ewri/ourlibrary/viewdocument?DocumentKey=fffe8a76-18b2-4f85-9b54-b0eac23f12a0

[100] See, e.g., Exhibit A of Baykeeper Notices of Violation and Intent to File Suit Under the Clean Water Act to the cities of Mountain View and Sunnyvale, December 4, 2019.

conduct an infeasible set of reasonable potential analyses to determine whether the permittees' discharges are impacting high quality waters and for what pollutants. Ultimately, the alternative would divert staff resources from oversight of the implementation of potentially more effective and practical permit requirements, as well diverting staff from the Water Board's other programs.

(3) Requirement for Highest Statutory and Regulatory Requirements and Best Practicable Treatment and Control: The Order requires the highest statutory and regulatory requirements and requires that the Permittees meet best practicable treatment or control.

(a) The Order prohibits all non-stormwater discharges, with a few enumerated exceptions, through the MS4 to all receiving waters.

(b) The Permittees must comply with the "maximum extent practicable" technology-based standard set forth in CWA section 402(p)(3)(B)(iii) and implement control measures under the program elements of a stormwater management program.

(c) As required by CWA section 402(p)(3)(B)(iii) and 40 CFR section 122.44(d)(1)(vii)(B), the Permittees must comply with applicable WQBELs based on TMDL WLAs.

(d) The Order also contains provisions to require treatment of stormwater from the 85th percentile, 24-hour storm event and, via the Permit's low impact development design philosophy, to implement measures that will reduce and retain runoff. This stormwater design standard is based on robust engineering and technical evaluations to determine state-of-the-art design standards for post-construction site scale BMPs and catchment scale regional BMPs.[101]

(e) The measures that control impacts from stormwater and non-stormwater discharges in the Order are typically effective across multiple pollutants.[102] For example, retention basins, low-impact development controls, and low flow diversions can prevent stormwater and non-stormwater from reaching the receiving water at all—preventing degradation to the receiving water from all types of constituents. The Order's provisions are designed to achieve

[101] See, for example, State Water Board Order WQ 2000-11, the "LA SUSMP Order" and Concept Development: Design Storm for Water Quality in the Los Angeles Region (SCCWRP, Technical Report 520, October 2007).

[102] Clary, et al., 2020. *International Stormwater BMP Database: Summary Statistics.* Water Research Foundation.

water quality standards for those constituents that are impairing the receiving water, as well as to address other constituents of concern that may not be causing impairment as defined in CWA section 303(d) and State policy. The measures implemented pursuant to these provisions will likely result in improvements in levels of all pollutants, including those for which the receiving water may be high quality.

As a final backstop against degradation, the Order includes an extensive monitoring and reporting program, including:

(i) Stormwater control monitoring to ensure controls implemented pursuant to Provision C.3 are installed and operating consistent with their design and intended function;

(ii) Participation in a San Francisco Estuary monitoring program to answer the management questions identified in Provision C.8.c;

(iii) Specified low impact development (LID) control measure monitoring pursuant to Provision C.8.d, intended to measure the compliance and effectiveness of LID controls.

(iv) Trash monitoring pursuant to Provision C.8.e, intended to verify whether Permittees' trash control actions have effectively prevented trash from their jurisdictions from discharging to receiving waters, and to evaluate whether a no adverse effect condition in receiving waters has been achieved where controls have been installed;

(v) Pollutants of concern monitoring pursuant to Provision C.8.f., intended to assess inputs of select POCs to the Bay from local tributaries and urban runoff, provide information to support implementation of TMDLs and other pollutant control strategies, assess progress toward achieving wasteload allocations for TMDLs and help resolve uncertainties associated with loading estimates and impairments associated with these pollutants;

(vi) Pesticides and toxicity monitoring pursuant to Provision C.8.g, on wet and dry weather pesticide discharges and toxicity in receiving waters;

(vii) Monitoring of full trash capture devices installed pursuant to Provision C.10 to ensure that they are installed and operating consistent with their design and intended function;

(viii) Visual monitoring of measures equivalent to full trash capture implemented pursuant to Provision C.10, to ensure their effectiveness;

(ix) Bacteria monitoring pursuant to applicable subprovisions of Provision C.14, intended to assess progress toward achieving wasteload allocations for TMDLs and inform adaptive management to achieve them; and

(x) Monitoring and reporting on populations experiencing unsheltered homelessness, and the portion(s) of those populations receiving services, as a proxy for control of discharges of associated materials, such as trash and human waste, to the MS4.

8. Anti-backsliding Regulations

The CWA contains both statutory anti-backsliding provisions in section 402(o) and regulatory anti-backsliding provisions in 40 CFR section 122.44(l). The CWA's statutory prohibition against backsliding applies under a narrow set of criteria specified in section 402(o). Section 402(o)(1) prohibits relaxing technology based effluent limitations (TBELs) originally established based on best professional judgment (BPJ) to reflect subsequently promulgated effluent limitation guideline. This section is inapplicable here since none of the WQBELs in the Order are TBELs based on BPJ. Section 402(o)(1) also prohibits relaxing of WQBELs imposed pursuant to CWA sections 301(b)(1)(C) or 303(d) or (e), unless an exception in CWA section 402(o)(2) applies. Relaxation of WQBELs may also be allowed if such backsliding is consistent with the provisions in CWA section 303(d)(4). CWA section 303(d)(4) allows backsliding in the following circumstances. First, "CWA section 303(d)(4)(A) allows the establishment of a less stringent effluent limitation when the receiving water has been identified as not meeting applicable water quality standards (i.e., a nonattainment water)" if: (a) the existing WQBEL is based on a TMDL or other WLA ; (b) the cumulative effect of such revisions assures attainment of water quality standards; or (c) the designated use is removed." Second, section 303(d)(4)(B) applies to "waters where the water quality equals or exceeds levels necessary to protect the designated use, or to otherwise meet applicable water quality standards (i.e., an attainment water). Under CWA section 303(d)(4)(B), a WQBEL may be relaxed as long as relaxation complies with the state's antidegradation policy." "U.S. EPA has consistently interpreted CWA section 402(o)(1) to allow relaxation of WQBELs and effluent limitations based on state standards if the relaxation is consistent with the provisions of CWA section 303(d)(4) or if … [certain] of the exceptions in CWA section 402(o)(2)… [apply]. The two provisions [303(d)(4) and 402(o)(2)] constitute independent exceptions to the prohibition against relaxation of effluent limitations. If either is met, relaxation is

permissible." This Order complies with anti-backslidin[g] requirements because no WQBEL has been relaxed from the Previous Permit.

9. Impaired Waters on CWA 303(d) List

CWA section 303(d)(1) requires each state to identify specific water bodies within its boundaries where water quality standards are not being met or are not expected to be met after implementation of technology-based effluent limitations on point sources. Water bodies that do not meet water quality standards are considered impaired and are placed on the state's "303(d) List." Periodically, U.S. EPA approves the state's 303(d) List. In June 2021, U.S. EPA approved a revised list of impaired waters prepared pursuant to CWA section 303(d), which requires identification of specific water bodies where it is expected that water quality standards will not be met af[t]er implementation of technology-based effluent limitations on point sources. Where it has not done so already, the Water Board plans to adopt Total Maximum Daily Loads (TMDLs) for pollutants on the 303(d) list. TMDLs establish wasteload allocations for point sources and load allocations for nonpoint sources, and are established to achieve the water quality standards for the impaired waters.

The Water Board has established TMDLs or Water Quality Improvement Plans for pesticide-related toxicity, mercury, PCBs, pathogens (bacteria), and sediment to remedy water quality impairments in water bodies in and around San Francisco Bay. These TMDLs identify MS4 discharges as a source of pollutants to these water bodies, and, as required, establish wasteload allocations (WLAs) for MS4 discharges to reduce the amount of pollutant discharged to receiving waters. CWA section 402(p)(3)(B)(iii) requires the Water Board to impose permit conditions, including: "management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants." Federal regulations also require that NDPES permits contain WQBELs consistent with the assumptions and requirements of all available WLAs (40 CFR 122.44(d)(1)(vii)(B)). CWC sections 13263 and 13377 also require that permits include limitations necessary to implement water quality control plans. Therefore, this Order includes WQBELs and other provisions to implement the TMDL WLAs assigned to Permittees regulated by this Order.

10. California Environmental Quality Act

The action to adopt an NPDES Permit is exempt from the provisions of the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.) pursuant to CWC section 13389, since the adoption or modification of a NPDES permit for an existing source is statutorily exempt and this Order only serves to implement a NPDES permit (County of Los Angeles v. State Water Resources Control Board (2006) 143 Cal.App.4th 985; Pacific Water Conditioning Assn, Inc. v. City Council of City of Riverside (1977) 73 Cal.App.3d 546, 555-556.).

11. Endangered Species Act Requirements

This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code §§ 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. §§ 1531 to 1544). This Order requires compliance with discharge prohibitions, receiving water limits, and other requirements to protect the beneficial uses of waters of the state, including protecting rare, threatened, or endangered species. Permittees remain independently responsible for meeting all applicable federal and state Endangered Species Act requirements.

12. Climate Change

The observed and predicted impacts of climate change in Northern California include an increase in temperatures, heightened frequency of extreme weather conditions including extreme precipitation, flooding, and droughts, wildfires, and sea level rise. Sea level rise threatens to drown the tidal marshes that sustain the health of the Bay and Delta, increase the risk of catastrophic floods in low-lying neighborhoods, inundate crucial shoreline infrastructure, including wastewater treatment plants and storm sewers, and increase erosion and beach/land loss along the Pacific Coast. The combined impacts of climate change will affect water quality and many beneficial uses of waters.

The State Water Board adopted on March 7, 2017, a resolution that requires a proactive approach to climate change in all State Water Board actions, including drinking water regulation, water quality protection, and financial assistance (Resolution No. 2017-0012). The resolution lays the foundation for a response to climate change that is integrated into all State Water Board actions, by giving direction to the State Water Board divisions and encouraging coordination with the regional water boards. In addition, Executive Order N-10-19, signed on April 29, 2019, directs the California Natural Resources Agency, the California Environmental Protection Agency, and the California Department of Food and Agriculture to prepare a water resilience portfolio that meets the needs of California’s communities, economy, and environment, and expand and/or reassess the priorities in the California Water Action Plan.

This Order follows the guiding principles of the State Water Board Resolution and well as Executive Order N-10-19 by contributing to an adaptive climate change and water resilience strategy. Through low impact development and green infrastructure projects, stormwater and non-stormwater runoff can be captured, infiltrated, and used to mitigate periodic drought conditions, reduce flood hazards and erosion rates, and recharge depleted groundwater aquifers and other water supply sources, all while reducing pollutant loads, maintaining beneficial uses in receiving waters and improving community health.

13. Human Right to Water

The Order is consistent with CWC section 106.3, which establishes the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. The Order implements CWC section 106.3 and promotes the State Water Board's resolution adopting the human right to water as a core value and directing its implementation in Water Board programs and activities (Resolution No. 2016-0010) by requiring receiving waters to meet adopted water quality standards that are designed to protect human health and ensure that water is safe for domestic use and by regulating discharges to minimize loading to attain the highest water quality which is reasonable, considering all demands being made on those waters and the total values involved (Wat. Code, §§13000, 13050, subdivisions (i)-(m), 13240, 13241, 13263; State Water Board Resolution No. 68-16.).

C. State Mandates

Article XIII B, section 6(a) of the California Constitution provides that whenever "any state agency mandates a new program or higher level of service on any local government, the state shall provide a subvention of funds to reimburse that local government for the costs of the program or increased level of service." No provision of the Order constitutes an unfunded state mandate subject to subvention under Article XIII B, section (6)(a) of the California Constitution.

1. Renewal of the Permit Is Not a New Program or Higher Level of Service.

As a threshold matter, MS4 permitting is not a "program" as that term is used in Article XIII B, section 6. The California Supreme Court has defined a "program" for purposes of Article XIII B, section 6, as: (1) programs that carry out the governmental function of providing services to the public, or (2) laws which, to implement a state policy, impose unique requirements on local governments and do not apply generally to all residents and entities in the state (*San Diego Unified School Dist. v. Commission on State Mandates* (2004) 33 Cal.4th 859, 874 (reaffirming the test set forth in County of Los Angeles v. State of California (1987) 43 Cal.3d 46, 56); Lucia Mar Unified School District v. Honig (1988) 44 Cal.3d 830, 835.).

Although a requirement can be a program if it meets either prong (see *Dept. of Finance v. Comm'n on State Mandates* (2021) 59 Cal.App.5th 546,557; *County of Los Angeles v. Dept. of Industrial Relations* (1989) 214 Cal.App.3d 1538, 1545), the two prongs are interrelated. As the California Supreme Court put it, "the intent underlying section 6 was to require reimbursement to local agencies for the costs involved in carrying out functions peculiar to government, not for expenses incurred by local agencies as an incidental impact of laws that apply generally to all state residents and entities" (*San Diego Unified School Dist. v. Com. on State Mandates* (2004) 33 Cal.4th 859, 875 [citing *County of Los Angeles v. State of Cal*. (1987) 43 Cal.3d 46, 56–57.]). Thus, the applicability of a requirement to entities other than local governments can indicate that the requirement does not carry out a governmental function that provides services to the public (See *County of Los Angeles v. Dept. of Industrial Relations* (1989) 214 Cal.App.3d 1538, 1546 [Requirement that all elevators, including county elevators, be equipped with fire and earthquake safety features "simply [was] not a governmental function of providing services to the public," even if county elevators, specifically, were used to obtain governmental services.]; see also *San Diego Unified School Dist., supra,* 33 Cal.4th at 876 [noting that state-mandated requirements applicable to both private- and public-sector employers to provide employee benefits did not increase or enhance government services, even if such requirements could indirectly improve the public employee applicant pool].).

Here, updated low impact development (LID) and trash provisions do not discharge a governmental service or apply only to local government. The LID requirements, including the reduced impervious surface threshold for implementing LID, do not, in any direct way, mandate the provision of a service to the public. LID will contribute in a general way to the overall reduction of pollution in stormwater, but its primary benefits will be localized, in many cases sited on private property and not shared broadly with the public.

LID provisions do not impose unique requirements on local governments, either. Other permits impose similar size thresholds on both public and private permittees as a way of reducing runoff or generating other water quality benefits. See Fact Sheet for Provision C.3, *infra* (listing other permits containing a 5,000 sf impervious surface threshold); see also, e.g., Construction Stormwater General Permit (Order No. 2009-0009-DWQ) (imposing 1-acre threshold); Overwater Structures WDRs (Order No. R2-2018-0009) (imposing general permit requirements for small overwater structure construction projects).

Similarly, the green infrastructure requirements are not unique to local agencies. The Regional Water Board imposes stormwater treatment requirements on independently-permitted development projects (See, *e.g.,* Order No. R2-2018-0019, pp. 7-8 [requiring stormwater treatment proportionate to amount of impervious surface constructed]; see also Order No. R2-2015-0020, pp. 4-5 [establishing

WDRs for voluntary habitat restoration, including low impact/green erosion control measures].). The Regional Water Board also requires stormwater control measures to be installed on roads maintained by private parties in multiple permits (See generally, *e.g.*, Order No. R2-2017-0033 [requiring erosion control measures for roads on vineyards]; Order No. R2-2016-0031 [requiring erosion-control measures for roads at confined animal facilities].).

As with the adjusted LID thresholds, changes in trash provisions do not discharge a governmental function that provides services to the public. As demonstrated by the statewide applicability of the Trash Amendments and the regionwide applicability of the Water Board's prohibition on the discharge of trash, the elimination of trash discharges is not a uniquely governmental function, but a responsibility that private and public entities, as well as individuals, collectively share.

Indeed, the requirements of the Trash Amendments apply to private and public entities across California. The Amendments require Caltrans, a state agency, private industrial dischargers, private or public operators of recreational facilities, and municipalities alike to comply with the prohibitions on trash discharges by implementing full trash capture systems or their equivalent.[103] Cease and Desist Order No. R2-2019-0007, which determined that Caltrans was out of compliance with its NPDES MS4 Permit requirement to timely implement trash control measures in all high trash generating areas in the San Francisco Bay Region, requires Caltrans to "implement structural and non-structural trash controls to meet full trash capture equivalency" in all significant trash-generating areas within its right-of-way by 2030 (Order No. R2-2019-0007, pp 5-6.). This requirement and its deadlines are comparable to the requirements and deadlines with which Permittees must comply. Indeed, as discussed further below, Caltrans and numerous permittees have jointly implemented full-trash capture projects that meet both of their permit requirements.[104]

Even if MS4 requirements could be considered a "program," the requirements of the Order do not constitute a *new* program or a *higher level of service* as compared to the requirements contained in the previous permits issued by the Water Board to the Permittees. The overarching requirement to impose controls to reduce the pollutants in discharges from MS4s is dictated by the CWA (33 U.S.C. § 1342(p)(3)(B)) and is not new to this permit cycle. The Permittees have been required to have stormwater permits for the past three decades, and to comply with

[103] State Water Board, Final Part I Trash Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California, p. E-2 – E-4; see also Basin Plan, Table 4-1, Prohibitions 7 & 8 (prohibiting the discharge of all "rubbish, refuse…or other solid wastes" and "floating materials" by any discharger, public or private, in the San Francisco Bay Region).

[104] Yan, Qi. *Summary of Caltrans' Trash Control Cooperative Implementation Agreement Projects* (July 2021).

prohibitions on the discharge of trash, sediment, untreated human waste, spills, pesticides, and toxic substances, like PCBs and mercury, for a half-century. (Basin Plan, Table 4-1, Prohibitions 6, 7, 8, 9, 11, 13 & 15.) Similarly, Permittees carried out tasks like street sweeping, pollution prevention, public education about litter and illegal dumping, and elimination of illicit connections, long before MS4 permits required it. The MRP's LID provisions have been in place for four permit cycles. The inclusion of improved measures as the MS4 programs evolve and mature over time is specifically anticipated under the CWA (55 Fed. Reg. 47990, 48052 (Nov. 16, 1990); 61 Fed. Reg. 43761 (Aug. 26, 1996); U.S. EPA "*Interim Permitting Approach for Water Quality Based Effluent Limitations in Storm Water Permits*," EPA 833-D-96-001 (September 1996)) because the experience gained in implementation of existing permits and ongoing technological developments help direct appropriate adaptation of the programs to better address pollution. Such refinements improve the effectiveness of the ongoing program and do not constitute a new program or higher level of service. And while the new or advanced measures may result in additional costs to the Permittees, resulting new costs is not the test for a higher level of service. "If the Legislature had intended to continue to equate 'increased level of service' with 'additional costs,' then the provision would be circular: 'costs mandated by the state' are defined as 'increased costs' due to 'an increased level of service,' which, in turn would be defined as 'additional costs'" (*County of Los Angeles v. Com. on State Mandates* (2003) 110 Cal.App.4th 1176, 1191, quoting *Workers' Compensation Mandates Decision*, *supra*, 43 Cal.3d. at p. 55.).

2. The Permit Requirements Fall Under Several Exceptions to Mandates Rules

Even if some of the requirements imposed on the Permittees with this reissuance could be considered to be new programs or higher levels of service, the following exceptions to a finding of unfunded mandates preclude subvention here:

a. The permit provisions are required by the CWA and its implementing regulations:

Where a law imposes a requirement that is mandated by a federal law or regulation and results in costs mandated by the federal government, no subvention is required unless the statute or executive order mandates costs that exceed the mandate in that federal law or regulation (Gov. Code, § 17556(c).). The MRP implements federally mandated requirements under the CWA and implementing regulations, so its requirements are therefore not subject to subvention of funds. This includes federal requirements to: (i) effectively prohibit non-storm water discharges through the MS4 to receiving waters; (ii) reduce the discharge of pollutants in stormwater to the maximum extent practicable; (iii) include such other provisions as the permitting authority (here, the Water Board) determines appropriate for the control of such pollutants; (iv) attain applicable TMDL wasteload allocations; and (v) conduct monitoring and reporting.

i. Non-stormwater discharge prohibition: Federal law requires that an MS4 permit effectively prohibit non-stormwater discharges through the MS4 to receiving waters (33 U.S.C. § 1342(p)(3)(B)(ii).). The Order's requirements to achieve the effective prohibition of non-stormwater discharges are thus compelled by federal law. For instance, firefighting foam and water discharges are non-stormwater discharges that can have significant impacts on water quality. The requirements to control these discharges, which include the development and implementation of BMPs to prevent firefighting foam and water from entering storm drains, implement the prohibition on non-stormwater discharges.

Other permit requirements implement the federal mandate to reduce pollutants to the maximum extent practicable and the effective prohibition on non-stormwater discharges at different times of year. For instance, trash enters waterways as a non-stormwater discharge during dry weather, when it can reach storm drains by direct discharge or in non-stormwater, and as a pollutant in stormwater discharges during wet weather. On-land trash control efforts, such as pollution prevention, street-sweeping, source control initiatives, and controls applicable to private lands apply in both dry and wet weather, and are necessary both to reduce pollutants in stormwater to the maximum extent practicable and to eliminate non-stormwater discharges of trash to the storm drain system (See *Environmental Protection Information Center v. Pacific Lumber* Co. (N.D. Cal. 2004) 301 F.Supp.2d 1102, 1111 [where stormwater runoff was mixed with pollutants, it was "not 'composed entirely of stormwater'].).

Similarly, new controls to manage discharges from unsheltered homeless populations largely implement the non-stormwater discharge prohibition by supplementing Permittees' existing Direct Discharge Programs, and by targeting illicit discharges of human waste and trash to the storm drain system. To the extent that enhanced bacteria controls require Sunnyvale and Mountain View to intensify efforts to discover leaks and illicit connections, manage municipal operations to prevent dry-weather discharges to the storm drain, and reduce illegal dumping, these provisions also implement the prohibition on non-stormwater discharges.

ii. TMDL requirements:

The CWA requires TMDLs to be established for waterbodies that do not meet federal water quality standards (33 U.S.C. § 1313(d).). The CWA also requires that MS4 permits include "such other provisions as the Administrator or the State determines appropriate for the control of [] pollutants" (33 U.S.C. § 1342(p)(3)(B)(iii).). U.S. EPA interprets this provision to mandate "controls to reduce the discharge of pollutants to the

maximum extent practicable, *and where necessary water quality-based controls*."[105]

Once U.S. EPA or a state establishes a TMDL, federal law requires that NPDES permits must contain water quality-based effluent limitations (WQBELs) consistent with the assumptions and requirements of any applicable wasteload allocation. (40 C.F.R. § 122.44(d)(1)(vii)(B); see also State Water Board Order No. WQ 2021-0052-EXEC, p. 73.) Indeed, TMDLs are developed for the purpose of specifying requirements for the achievement of water quality standards in impaired waters (33 U.S.C. § 1313(d); 40 C.F.R. § 130.7). The Order's requirements for attainment of TMDL wasteload allocations are therefore compelled by federal law.

Several generations of the MS4 permits issued in California have prohibited discharges that cause or contribute to exceedances of water quality standards in the receiving water. TMDL provisions, including WQBELs, simply add a process for meeting this requirement, generally based on a compliance schedule.

iii. Monitoring and reporting requirements:

Federal law requires that NPDES permits incorporate monitoring and reporting provisions (33 U.S.C. §§ 1318(a); 1342(a)(2); 40 C.F.R. §§ 122.26(d)(2)(i)(F); 122.41(h), (j)-(l); 122.42(c); 122.44(i); 122.48.). The Order's monitoring and reporting requirements are thus imposed pursuant to federal law.

iv. Maximum Extent Practicable (MEP) standard:

The CWA mandates that the Order "require controls to reduce the discharge of pollutants to the maximum extent practicable" (33 U.S.C. § 1342(p)(3)(B)(iii).). *Department of Finance v. Commission on State Mandates* (2016) 1 Cal.5th 749, as modified on denial of rehearing (Nov. 16, 2016) (*Department of Finance*) analyzed whether the CWA's MEP standard required four particular provisions concerning trash receptacles and inspections in the 2001 Los Angeles County MS4 permit. In concluding that the provisions were not required by federal law, the Supreme Court stated that, "[h]ad the Regional Board found when imposing the disputed permit conditions, that those conditions were the only means by which the maximum extent practicable standard could be implemented, deference to the board's expertise in reaching that finding would be appropriate" (*Department of Finance, supra*, 1 Cal.5th at p. 768.). The Supreme Court

[105] Phase I Stormwater Regulations, Final Rule, 55 Fed. Reg. 47990, 47994 (Nov. 16, 1990) (emphasis added); see also *Building Industry Ass'n of San Diego County v. State Water Resources Control Bd*. (2004) 124 Cal.App.4th 866, 882-887; Phase II Stormwater Regulations, Final Rule, 64 Fed. Reg. 68722, 68737.

further stated that "[s]uch findings are "case specific, based among other things on factual circumstances" (*Id*., fn. 15.).

To be entitled to deference, regional water boards must make an express finding that the particular set of permit conditions in a given permit is required to meet that federal standard and must support that finding with evidence. The Water Board expressly finds that the Order specifies requirements necessary for the Permittees to reduce the discharge of pollutants in MS4 discharges to the MEP. The requirements relate to municipal operations, new development and redevelopment, industrial and commercial controls, construction controls, and public information and outreach. The mix of program elements in the Order reflects the necessary pollutant reduction expected by the demanding federal MEP standard, but also represents a balancing of competing interests such as effectiveness, ease of implementation, and practicability. To the extent there may be multiple means of achieving pollutant reductions and that there could be trade-offs between program areas with potentially higher costs and greater pollutant reductions, the permit programs are structured to provide the optimum reduction of pollutants necessary to reduce pollutants to MEP. This finding is the expert conclusion of the principal state agency charged with implementing the NPDES program in California and therefore entitled to deference under *Department of Finance*.

The Order's requirements represent structural and non-structural water quality control measures that are effective, technically feasible, and generally accepted as appropriate. They are necessary to meet the MEP standard, an ever evolving, flexible, and advancing concept, which considers technical and economic feasibility. As knowledge and technology regarding controlling stormwater runoff continue to evolve, so too must the actions that are taken to comply with the standard.[106]

For example, based on advancing knowledge and technology related to limiting stormwater pollutants from impervious surfaces through low impact development strategies, economic considerations, and consideration of the evolving MEP standard, this Order contains new requirements for smaller new developments and redevelopments, including roads, and green infrastructure. They are necessary to meet the federal MEP standard and consistent with other U.S. EPA-issued municipal storm water permits, as explained in the Fact Sheet for Provision C.3. The Supreme Court in

[106] See also 55 Fed. Reg. 47990, 48052 ("EPA anticipates that storm water management programs will evolve and mature over time."); 64 Fed. Reg. 68722, 68754; Dec. 8, 1999 ("EPA envisions application of the MEP standard as an iterative process."); and Interim Permitting Approach for Water Quality-Based Effluent Limitations in Stormwater Permits (Sept. 1, 1996) ("The interim permitting approach uses BMPs in first-round storm water permits, and expanded or better-tailored BMPs in subsequent permits, where necessary, to provide for the attainment of water quality standards.").

Department of Finance suggested that the inclusion of equivalent or substantially similar provisions by the U.S. EPA in other permits may support a finding that the provisions are necessary to achieve MEP (*Dept. of Finance*, supra, 1 Cal.5th at p. 772.).

Similarly, enhanced bacteria provisions do not require affected Permittees to implement sweeping new programs or state-of-the-art technologies. Instead, they require Permittees whose stormwater discharges contribute to bacteria exceedances to ensure that streets are clean, storm drain catchments are clean, and that litter and pet waste laws are enforced. The fact that all elements of enhanced bacteria controls are already in place demonstrates that these elements are practicable. Intensifying use of these existing controls ensures that they do, in fact, reduce bacteria pollution to the MEP.

b. Permittees have authority to fund the costs through service charges, fees, or assessments:

Even if any of the permit provisions could be considered unfunded state mandates, under Government Code section 17556, subdivision (d), a state mandate is not subject to reimbursement if the local agency has the authority to fund the costs through service charges, fees, or assessments (*Connell v. Superior Court* (1997) 59 Cal.App.4th 382, 398.). Here, Permittees have the authority to levy service charges, fees, or assessments sufficient to pay for compliance with the Order. Permittees certainly have fee authority under their police powers (See, Cal. Const., art. XI, § 7; *Freeman v. Contra Costa County Water Dist.* (1971) 18 Cal.App.3d 404, 408 ("It cannot be denied that prevention of water pollution is a legitimate governmental objective, in furtherance of which the police power may be exercised."); *Department of Finance v. Commission on State Mandates* (2021) 59 Cal.App.5th 546, 561-62 (holding in part that local governments have the authority sufficient to pay for inspection requirements for commercial and industrial facilities and construction sites to ensure compliance with various environmental regulations in an MS4 permit under their police powers for the prevention of water pollution).

This Fact Sheet demonstrates that numerous activities contribute to the pollutant loading from the MS4. Local agencies can levy service charges, fees, or assessments on these activities, independent of real property ownership (See, e.g., *Apartment Ass'n of Los Angeles County, Inc. v. City of Los Angeles* (2001) 24 Cal.4th 830, 842 (upholding inspection fees associated with renting property).). The authority of a local agency to defray the cost of a program without raising taxes indicates that a program does not entail a cost subject to subvention (*Clovis Unified School Dist. v. Chiang* (2010) 188 Cal.App.4th 794, 812 ["To the extent a local agency or school district 'has the authority' to charge for the mandated program or increased level of service, that charge cannot be recovered as a state-mandated cost."], quoting *Connell v. Superior Court* (1997)

59 Cal.App.4th 382, 401; *County of Fresno v. State of California* (1991) 53 Cal.3d 482, 487-488.).

Permittees have argued in the past that their fee or taxation authority is constrained by California Constitution article XIII D, section 6, also known as Proposition 218 (Cal. Const., art. XIII D, § 6, subd. (c); *see also Howard Jarvis Taxpayers Association v. City of Salinas* (2002) 98 Cal.App.4th 1351, 1358-1359.). However, Proposition 218 is not an impediment to this Permittees' fee authority.[107] The Constitution has an exception to the voter approval requirements of Proposition 218, "for fees or charges for sewer, water, and refuse collection services" (Cal. Const. Article XIII D, section 6, subd. (c).).

The Legislature recently enacted two important pieces of legislation confirming fee authority without the need for voter approval. In Assembly Bill 2043 (2014), effective January 1, 2015, the Legislature amended the definition of "water" for purposes of articles XIII C and XIII D to mean "water from any source" (Gov. Code, § 53750, subd. (n), amended by Assembly Bill 2043 (Stats. 2014, ch. 78, § 2.). In doing so, the Legislature stated that its act "is declaratory of existing law." (Stats. 2014, ch. 78, § 1(c).) With Senate Bill 231 (2017), effective January 1, 2018, the Legislature "reaffirm[ed] and reiterate[d]" that the definition of "sewer" for purposes of article XIII D includes: systems, all real estate, fixtures, and personal property owned, controlled, operated, or managed in connection with or to facilitate sewage collection, treatment, or disposition for sanitary or drainage purposes, including lateral and connecting sewers, interceptors, trunk and outfall lines, sanitary sewage treatment or disposal plants or works, drains, conduits, outlets for surface or storm waters, and any and all other works, property, or structures necessary or convenient for the collection or disposal of sewage, industrial waste, or surface or storm waters (Gov. Code, § 53750, subd. (k); see also Gov. Code § 53751, subds. (h) and (i), added by Senate Bill 231, Stats. 2017, ch. 536, § 2.). These legislative actions confirm that the Permittees have authority to raise fees or charges, without voter approval, for costs related to their MS4s (See *Paradise Irrigation Dist. v. Com. on State Mandates* (2019) 33 Cal.App.5th 174, 197 [noting that effect of Senate Bill 231 was to exempt stormwater systems from voter approval requirement].).

In addition, Health and Safety Code section 5471, subdivision (a), gives dischargers fee authority for "services and facilities furnished…in connection with its water, sanitation, *storm drainage*, or sewerage system" (Health & Safety Code, § 5471, subd. (a) (emphasis added).). Similarly, Public Resources Code section 40059, subdivision (a)(1), also confers fee authority on counties, cities, districts, or other local governmental agencies for "[a]spects of solid waste

[107] Such authority is also undiminished by Proposition 26, which specifically excludes assessments and property-related fees imposed in accordance with Proposition 218 from the definition of taxes (Cal. Const., art. XIII C, § 1, subd. (e)(7).).

handling which are of local concern, including, but not limited to, frequency of collection, means of collection and transportation, level of services, charges and fees, and nature, location, and extent of providing solid waste handling services."

The ability of the Permittees to levy fees, assessments, or service charges to pay for compliance with the requirements of the Order cannot be disputed. In addition to the general authority above, some of the Permittees have specific authority to levy funds to pay for permit compliance through many means, including inspection fees, stormwater fees, development impact fees, trash fees, parks fees, and business improvement districts. Thus, the City of Palo Alto adopted an increased Storm Water Management Fee in 2017 to help pay for both routine maintenance of stormwater infrastructure, as well as new initiatives, including stormwater recycling and green infrastructure.[108] Voters in the City of Berkeley approved an increased stormwater fee in 2018 with provisions for annual increases of no more than 3 percent.[109] Voters in the City of Alameda adopted a stormwater management fee in 2019 for capital improvement, operation, and maintenance of the storm drain system, including clean water controls.[110] The City of Moraga included as part of its increased development impact fee schedule a "Storm Drainage Fee" to be "assessed on all types of development (within Town boundaries) that results in the addition of impervious surface, and which thereby increases demand on the Town's storm drainage facilities."[111] Many permittees impose park admissions fees or parks fees as a component of their development impact fees, which can help ensure improvements to park infrastructure (e.g., installation of pet waste stations) or operational costs (e.g., implementation of integrated pest management to comply with the pesticides TMDL).[112] Many, if not all, other municipalities and counties assess trash collection fees, which help cover the costs of implementing the trash provisions[113] and homeless encampment BMPs.[114] The

[108] City of Palo Alto, Storm Water Management Fee (2021); accessed at: https://www.cityofpaloalto.org/Departments/Public-Works/Engineering-Services/Storm-Water-Management-Fee

[109] City of Berkeley, Approval and Levy of 2018 Clean Stormwater Fee in FY 2020, p. 4 (July 16, 2019).

[110] City of Alameda, 2019 Water Quality & Flood Protection: Frequently Asked Questions (alamedaca.gov).

[111] Town of Moraga, 2016 Comprehensive Development Impact Fee Update (May 2016), p. 36.

[112] See, e.g., Sunnyvale Municipal Code, § 18.10.020, subd. (d).

[113] See, e.g., Alameda County Department of Environmental Health Fee Schedule (2021), pp. 6-8 (Several pages of waste managmement-related fees, including fees for inspections), accessed at: https://deh.acgov.org/deh-assets/docs/General-Fees.pdf

[114] City of San Jose, "BeautifySJ Trash and Waste Services Expand" (November 20, 2020) (City Council approved $3 million to pay for trash pickup at homeless encampments); see also Wipf, Carly. "Update:

City of Oakland has ten business improvement districts, or BIDs, in which businesses help to fund maintenance costs, including the costs of trash pickup and graffiti removal, in their respective districts.[115] The Permittees have authority to levy fees for firefighting and prevention.[116] In short, Permittees have multiple sources of fee funding to implement permit requirements.

Even if voter approval may be required prior to levying fees, that does not mean that a local agency lacks the authority to levy fees. In *Paradise Irrigation Dist. v. Commission on State Mandates* (2019) 33 Cal.App.5th 174, 182, the Court considered whether the majority protest procedure added by Proposition 218 deprived local agencies of authority to impose fees for water service. Article XIII D, section 6(a) requires a local agency to identify parcels subject to a new fee, calculate the fee amount, and provide notice to affected property owners (Cal. Const., art. XIII D, § 6, subd. (a)(1).). If a majority of the property owners submit written protests against the fee, the fee may not be imposed (*Id*., subd. (a)(2).). The Court held that the "majority protest procedures are properly construed as a power-sharing arrangement between the districts and their customers, rather than a deprivation of fee authority" (33 Cal.App.5th at p. 182.). It explained that, when considering how voter powers affect the ability of local governments to impose fees, courts "presume local voters will give appropriate consideration and deference to state mandated requirements . . . " (*Id*. at p. 194, citing *Bighorn Desert View Water Agency v. Verjil* (2006) 39 Cal.4th 205, 220.). "Although this power-sharing arrangement has the potential for conflict, we must presume that both sides will act reasonably and in good faith" (Id., at p. 192.) Further, the fact that, "as a matter of practical reality, the majority protest procedure allows water customers to defeat the District's authority to levy fees" was not dispositive; "the inquiry into fee authority constitutes an issue of law rather than a question of fact." (Id. at p. 195, citing Connell, supra, 59 Cal.App.4th at p. 401.). "Fee authority is a matter governed by statute rather than by factual considerations of practicality;" it is not controlled by whether municipalities have tried and failed to levy fees (Id.). If there is statutory authority to levy fees, then there is no right to subvention (Id.).

Grants, both state and federal, can also offset the costs of stormwater implementation. For instance, the State of California administers the Clean Water State Revolving Fund, which the 2021-2022 Intended Use Plan

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Spend $3 million more to pick up San Jose trash, officials recommend," *San Jose Spotlight* (Sept. 14, 2020); see also Bond Graham, Darwin. "Oakland's new budget doesn't 'defund' the police, but it boosts funding for alternatives," *The Oaklandside* (June 25, 2021) (Oakland approving extension of sanitation services to 107 homeless encampments.)

[115] See, e.g., maintenance services performed by Downtown Oakland Association (https://downtownoakland.org/clean-safe/).

[116] Markovich, Ally. "Berkeley firefighters get $12.7M to tackle growing wildfire threat," *Berkleyside* (July 1, 2021) (Measure FF funds to pay for additional staff, ambulances, vegetation management, and training);

specifically notes may be used to fund "[s]tormwater and dry weather runoff reduction from Municipal Separate Storm Sewer Systems" in the San Francisco Bay Region.[117] Proposition 1 authorized $200 million for "green infrastructure, rainwater and stormwater capture projects, and stormwater treatment facilities," and stormwater project planning.[118] The City of San Pablo is a recipient of a 2021 Proposition 1 grant award. Caltrans also provides significant funding for cooperative implementation of trash control projects. Atherton, Richmond, Vallejo, Hayward, Emeryville, San Jose, Palo Alto, East Palo Alto, San Mateo, Oakland and unincorporated Alameda County have all completed or received funding to implement full trash capture projects jointly with Caltrans.[119] The 2021 Clean California program expands Caltrans' funding for litter abatement and public education and incorporates a nearly $300 million local grant program.[120]

U.S. EPA also administers grant programs for various activities that this permit requires, such as TMDL implementation, nonpoint source control, and training.[121]

D. Statewide Industrial and Construction Stormwater General Permits

The State Water Board has issued NPDES general permits for the regulation of stormwater discharges associated with industrial activities and construction activities. To effectively implement the New Development (and significant redevelopment) and Construction Controls, Illicit Discharge Controls, and Industrial and Commercial Discharge Controls components in this Permit, the Permittees will conduct investigations and local regulatory activities at industrial and construction sites covered by these general permits. However, under the CWA, the Water Board cannot delegate its own authority to enforce these general permits to the Permittees. Therefore, Water Board staff intends to work cooperatively with the Permittees to ensure that industries and construction sites within the Permittees' jurisdictions are in compliance with applicable general permit requirements and are not subject to uncoordinated stormwater regulatory activities.

[117] State Water Resources Control Board, CWSRF, Prop 1, and Prop 68 Intended Use Plan (June 15, 2021), p. 12.

[118] Wat. Code § 79747.

[119] Correspondence with Qi Yan (July 23, 2021).

[120] Caltrans, Clean California (2021), p. 2; see also, Governor's Office, "Governor Newsom Kicks Off Clean California Day of Action Highlighting New Initiative to Clean and Revitalize Neighborhoods Across the State" (July 7, 2021).

[121] See generally, U.S. EPA Water Infrastructure and Resiliency Finance Center, "Federal and State Funding Programs -Stormwater &Green Infrastructure Projects" (April 2017).

E. Regulated Parties

Each of the Permittees listed in this Permit owns or operates a MS4, through which it discharges urban runoff into waters of the United States within the San Francisco Bay Region and, with respect to the East Contra Costa County Permittees, the Sacramento and San Joaquin River basins. These MS4s fall into one or more of the following categories: (1) a medium or large MS4 that services a population of greater than 100,000 or 250,000 respectively; or (2) a small MS4 that is "interrelated" to a medium or large MS4; or (3) an MS4 which contributes to a violation of a water quality standard; or (4) an MS4 which is a significant contributor of pollutants to waters of the United States.

F. Permit Coverage

The Permittees each have jurisdiction over and maintenance responsibility for their respective MS4s in the Region. Federal, state or regional entities within the Permittees' boundaries, not currently named in this Permit, operate storm drain facilities and/or discharge stormwater to the storm drains and watercourses covered by this Permit. The Permittees may lack jurisdiction over these entities. Consequently, the Water Board recognizes that the Permittees should not be held responsible for such facilities. Most of these facilities are regulated under the State Water Resources Control Board's general permit for stormwater discharges from small municipal separate storm sewer systems (WQ Order 2013-0001-DWQ, as amended) and are required to control the discharge of pollutants from their systems. The Water Board will consider additional such facilities for coverage under that NPDES permit or otherwise pursuant to U.S. EPA Phase II stormwater regulations..

VI. PERMIT PROVISIONS

A. Discharge Prohibitions

Prohibition A.1. Legal Authority – CWA 402(p)(3)(B)(ii) – The CWA requires in section 402(p)(3)(B)(ii) that permits for discharges from municipal storm sewers "shall include a requirement to effectively prohibit non-stormwater discharges into the storm sewers."

Neither the CWA nor federal regulations specifically define "non-stormwater." The definition of "non-storm water" is derived from the definition of "storm water." Federal regulations define "storm water" as "storm water runoff, snow melt runoff, and surface runoff and drainage" (40 CFR § 122.26(b)(13).). While "surface runoff and drainage" is not defined in federal law, U.S. EPA's preamble to the federal regulations demonstrates that the term is related to precipitation events such as rain and/or snowmelt (55 Fed.Reg. 47990, 47995-96 (Nov. 16, 1990)). For example, U.S. EPA states:

"In response to the comments [on the proposed rule] which requested EPA to define the term 'storm water' broadly to include a number of classes of discharges which are not in any way related to precipitation events, EPA believes that this rulemaking is not an appropriate forum for addressing the appropriate regulation under the NPDES program of such non-storm water discharges . . . . Consequently, the final definition of storm water has not been expanded from what was proposed."

(*Ibid*.) The storm water regulations themselves identify numerous categories of discharges including landscape irrigation, diverted stream flows, discharges from drinking water supplier sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, and street wash water as "non-storm water." While these types of discharges may be regulated under storm water permits, they are not considered storm water discharges (40 CFR §122.26(d)(2)(iv)(B)). This review of the storm water regulations and U.S. EPA's discussion of the definition of storm water in its preamble to these regulations strongly supports the interpretation that storm water includes only precipitation-related discharges. Therefore, non-precipitation related discharges are not storm water discharges and are not subject to the MEP standard in CWA section 402(p)(3)(B)(iii). Rather, non-storm water discharges are effectively prohibited pursuant to CWA section 402(p)(3)(B)(ii).

While federal regulations have no definition for "non-storm water discharges," "illicit discharges" is defined and the terms are often used interchangeably (See, e.g., 40 CFR § 122.26(d)(2)(iv)(B)(1).). "Illicit discharge" is defined by U.S. EPA as "any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit . . . and discharges

resulting from firefighting activities"[122] (40 CFR § 122.26(b)(2).). The federal regulations require that non-stormwater discharges be controlled if they are a significant source of pollutants and the permitting authority is expected to include permit conditions to prohibit or control specified categories of non-stormwater discharges if they are determined to be a source of pollutants to waters of the United States (40 CFR § 122.26(d)(2)(iv)(B)(1).).

Prohibition A.2. Legal Authority – San Francisco Bay Basin Plan, Chapter 4 Implementation, Table 4-1, Prohibition 7, and the trash discharge prohibitions in the ISWEBE and Ocean Plan.

B. Receiving Water Limitations

Receiving Water Limitation B.1. Legal Authority – San Francisco Bay Basin Plan, Chapter 3, Water Quality Objectives.

Receiving Water Limitation B.2. Legal Authority – CWA section 402(p)(3)(B)(iii) requires MS4 permits to include "such other provisions as the Administrator or the State determines appropriate for the control of [] pollutants." EPA interprets this provision to mandate "controls to reduce the discharge of pollutants to the maximum extent practicable, and *where necessary water quality-based controls*."[123]U.S. EPA has reiterated that MS4 "permit conditions must provide for attainment of applicable water quality standards (including designated uses), allocations of pollutant loads established by a TMDL, and timing requirements for implementation of a TMDL."[124] The State Water Board has also determined that limitations necessary to meet water quality standards are appropriate for the control of pollutants discharged by MS4s and must be included in MS4 permits (State Water Board Orders WQ 91-03, 98-01, 99-05, 2001-15,2021-0052-EXEC), and 2020-0038.). This Order accordingly requires that discharges shall not cause or contribute to violations of water quality standards. The receiving water limitations are necessary and appropriate to control MS4 discharges because storm water discharges can cause or contribute to excursions above water quality standards. The inclusion of receiving water limitations is also consistent with the Ninth Circuit Court of Appeal's ruling in *Defenders of Wildlife v. Browner* (191 F.3d 1159, 1166 (1999)) that the permitting authority has discretion regarding the nature and timing of requirements that it includes as MS4 permit conditions to attain water quality standards.

[122] While not illicit discharges, discharges from firefighting activities may be regulated where they contribute significantly to pollution in stormwater. 40 C.F.R. 122.26(d)(2)(iv)(B)(1); see also 64 Fed. Reg. 68722, 68756, 68758.

[123] Phase I Stormwater Regulations, Final Rule, 55 Fed. Reg. 47990, 47994 (Nov. 16, 1990) (emphasis added); see also Building Industry Ass'n of San Diego County v. State Water Bd. (2004) 124 Cal.App.4th 866, 882-887).

[124] See, e.g., Phase II Stormwater Regulations, Final Rule, 64 Fed. Reg. 68722, 68737.

C. Provisions

C.1. Compliance with Discharge Prohibitions and Receiving Water Limitations

Legal Authority

Broad Legal Authority: CWA sections 402(p)(3)(B)(ii-iii), CWC sections 13377 and 13263, and Federal NPDES regulations 40 CFR 122.26(d)(2)(i) and 40 CFR 122.26(d)(2)(iv).

Specific Legal Authority: The Water Board's Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) contains water quality objectives, as well as the following waste discharge prohibition: "The discharge of waste to waters of the state in a manner causing, or threatening to cause a condition of pollution, contamination, or nuisance as defined in [CWC] Section 13050, is prohibited."

CWC section 13050(l) states "(1) 'Pollution' means an alteration of the quality of waters of the state by waste to a degree which unreasonably affects either of the following: (A) The water for beneficial uses. (B) Facilities which serve beneficial uses. (2) 'Pollution' may include "contamination."

CWC section 13050(k) states "'Contamination' means an impairment of the quality of waters of the state by waste to a degree which creates a hazard to public health through poisoning or through the spread of disease. 'Contamination' includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected."

CWC section 13050(m) states "'Nuisance' means anything which meets all of the following requirements: (1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property. (2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal. (3) Occurs during, or as a result of, the treatment or disposal of wastes."

CWC Section 13243 provides that a water board, "in a water quality control plan or in waste discharge requirements, may specify certain conditions or areas where the discharge of waste, or certain types of waste, will not be permitted."

CWC Section 13263(a) provides that waste discharge requirements prescribed by the water board implement the Basin Plan.

Federal NPDES regulations 40 CFR 122.26(d)(2)(iv)(A -D) require municipalities to implement controls to reduce pollutants in urban runoff from commercial, residential, industrial, and construction land uses or activities.

Federal NPDES regulations 40 CFR 122.26(d)(2)(i)(A -D) require municipalities to have legal authority to control various discharges to their MS4.

Federal NPDES regulation 40 CFR 122.44(d)(1) requires NPDES permits to include any requirements necessary to "[a]chieve water quality standards established under section 303 of the CWA, including State narrative criteria for water quality."

Federal NPDES regulation 40 CFR 122.44(d)(1)(i) requires NPDES permits to include limitations to "control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality."

Federal NPDES regulation 40 CFR 122.44(d)(1)(vii) requires water quality-based effluent limits that are consistent with the assumptions and requirements of any available wasteload allocation.

State Water Board Orders WQ 98-01 and 99-05 are precedential orders that require municipal stormwater permits to not cause or contribute to exceedances of water quality standards in the receiving water. State Water Board Order WQ 99-05 specifically requires that Provision C.1 include language that Permittees shall comply with discharge prohibitions and receiving water limitations through timely implementation of control measures and other actions to reduce pollutants in the discharges and adopted an iterative approach to complying with the limitations where there are exceedances. Courts have held that compliance with the iterative process does not excuse liability for violations of water quality standards (*Building Industry Assn. of San Diego v. State Water Resources Control Board* (2004) 124 Cal.App.4th 866; *City of Rancho Cucamonga v. Regional Water Quality Control Bd*. (2006) 135 Cal.App.4th 1377; *Natural Resources Defense Council v. County of Los Angeles* (9th Cir. 2011) 673 F.3d. 880, rev'd on other grounds sub nom; *Los Angeles County Flood Control Dist. v. Natural Resources Defense Council* (2013) 133 S.Ct. 710, mod. by *Natural Resources Defense Council v. County of Los Angeles* (9th Cir. 2013) 725 F.3d 1194, cert. den. *Los Angeles County Flood Control Dist. v. Natural Resources Defense Council* (2014) 134 S.Ct. 2135.).

State Water Board Order WQ 2015-0075, as amended by Order WQ 2021-0052-EXEC, also affirmed that good faith implementation of the iterative process does not excuse liability for violations of water quality standards. It, however, allowed an alternative path to permit compliance that allows MS4 dischargers that are willing to pursue significant undertakings to be deemed in compliance with the receiving water limitations. It specifically directs regional water boards to follow the principles stated below when issuing a municipal stormwater permit, unless a board makes a specific showing that application of a given principle is not appropriate for region-specific or permit-specific reasons.

The receiving water limitations provisions of Phase I MS4 permits should continue to require compliance with water quality standards in the receiving water and should not deem good faith engagement in the iterative process to constitute such compliance. The Phase I MS4 permits should therefore continue to use the receiving water limitations provisions as directed by State Water Board Order WQ 99-05.

(1) The Phase I MS4 permits should include a provision stating that, for water body-pollutant combinations with a TMDL, full compliance with the requirements of the TMDL constitutes compliance with the receiving water limitations for that water body-pollutant combination.

(2) The Phase I MS4 permits should incorporate an ambitious, rigorous, and transparent alternative compliance path that allows permittees appropriate time to come into compliance with receiving water limitations without being in violation of the receiving water limitations during full implementation of the compliance alternative.

(3) The alternative compliance path should encourage watershed-based approaches, address multiple contaminants, and incorporate TMDL requirements.

(4) The alternative compliance path should encourage the use of green infrastructure and the adoption of low impact development principles.

(5) The alternative compliance path should encourage multi-benefit regional projects that capture, infiltrate, and reuse stormwater and support a local sustainable water supply.

(6) The alternative compliance path should have rigor and accountability. Permittees should be required, through a transparent process, to show that they have analyzed the water quality issues in the watershed, prioritized those issues, and proposed appropriate solutions. Permittees should be further required, again through a transparent process, to monitor the results and return to their analysis to verify assumptions and update the solutions. Permittees should be required to conduct this type of adaptive management on their own initiative without waiting for direction from the regional water board.

In State Water Board Order WQ 2020-0038, the State Water Board applied and further explained the alternate compliance path principles in Order WQ 2015-0075 when it reviewed the Los Angeles Regional Water Board's Los Angeles County MS4 permittees' watershed management plans and an enhanced watershed management program (LA County MS4 Permit), which were used as alternative paths to compliance. The State Water Board directed changes to those plans, reiterating State Board Order WQ 2015-0075's standards for rigor, transparency, and accountability for alternate compliance. The State Water Board referred regional water boards using alternative compliance approaches to ensure consistency with certain additional principles in Order

WQ 2020-0038, including "ensuring plans approved clearly explain their development process, identify enforceable milestones, and detail the water body-pollutant combinations to which the plans apply and, to the extent limiting-pollutant or similar approaches are used, that their use is justified such that there is confidence treatment of the limiting pollutant will address the other water body-pollutant combinations to be addressed" (State Water Board Order WQ 2020-0038 [Los Angeles County], p. 164.). At the same time, the State Water Board recognized its order is not intended to curtail the flexibility of the regional water boards to adopt alternative compliance approaches that best fit their particular regions or to restrain the evolution of the regional water boards' approaches to alternative compliance.

Alternative Path to Compliance with Receiving Water Limitations for Certain Pollutants and Consistency with State Water Board Precedent

This Order, as did the previous order, goes beyond requiring an open-ended iterative approach to compliance with water quality standards by including pollutant-specific provisions, C.9 through C.12. C.14, C.18 (pertaining to the Pescadero-Butano Sediment TMDL), and C.19.c-f, with numerical or narrative WQBELs with milestones and deadlines. These provisions, other than C.10, which implements the statewide Trash Amendments, and C.14.a, which address bacteria exceedances in two water bodies that have not been listed as impaired for bacteria, implement adopted TMDL wasteload allocations or Water Quality Improvement Plans and the associated implementation plans in the Basin Plan and the Water Quality Control Plan for the Sacramento and San Joaquin Basins and specify what Permittees must do during the term of the Order to manage discharges of the specific pollutants that may cause or contribute to violations of water quality standards. Provision C.10 requires controls to meet water quality objectives applicable to trash in the Basin Plan, ISWEBE, and Ocean Plan.

Provision C.1 provides a bridge between the receiving water limitations, which state that discharges shall not cause or contribute to a violation of any applicable water quality standard, and these pollutant-specific provisions that include enforceable water quality-based requirements that Permittees must meet during the term of this Order to manage their contributions to violations or to prevent violations of water quality standards in receiving waters. In accordance with Basin Plan Section 4.8 – Stormwater Discharges and the applicable TMDL implementation requirements specified in the implementation plans adopted into the Basin Plan for and with TMDLs associated with these provisions, the requirements in these pollutant specific provisions are based on an updated assessment and consideration of technically and economically feasible control measures to reduce pollutants in stormwater discharges. As such, each of these provisions establishes a path to compliance with associated receiving water limitations. These requirements are a direct outgrowth of knowledge and experience with the presence of these pollutants in receiving waters (e.g., San Francisco Bay segments and urban tributaries) based on monitoring and special studies conducted by the San Francisco Bay Regional Monitoring Program, required monitoring from previous permits,

special studies conducted by municipalities, and other studies conducted by the San Francisco Estuary Institute.

The alternative path to compliance in the Permit is structured differently than the LA County MS4 Permit's watershed management program-based alternative compliance path reviewed by the State Water Board in State Water Board Orders WQ 2015-0075, as amended by Order WQ 2021-0052-EXEC, and 2020-0038. Specifically, an alternative compliance path is incorporated into the permit as follows:

- The requirements constituting the alternative compliance path are spelled out in sections C.9 through C.12, C.14, C.18 (pertaining to the Pescadero-Butano Sediment TMDL), and C.19.c-f. In the LA County MS4 Permit, permittees were required to propose and develop watershed management programs with structural and non-structural controls that would then be approved by the Los Angeles Water Board as appropriate for alternative compliance. Here, Permittee requirements and controls are specified in the Permit itself rather than proposed by the Permittees in a plan.
- With one exception,[125] the alternative compliance path is available only for waterbody-pollutant combinations for which there is an established TMDL or Water Quality Improvement Plan (WQIP). The requirements and controls specified in the relevant alternative compliance sections closely track the requirements and controls specified in the TMDL or WQIP implementation plans including, as consistent with the implementation plans, refinements and updates based on the experience of the Board and the Permittees in implementing the TMDLs in prior permit terms. Sections C9 through C12, C.14, C.18, and C.19 of this Fact Sheet include a thorough discussion of the bases for these requirements and controls. Because the alternative compliance path follows established TMDLs or WQIP, milestones and deadlines in those TMDLs that occur within the term of the Permit are incorporated into the Permit. In this sense, the alternative compliance path in the Permit is largely the implementation of TMDLs or WQIPs that were duly adopted by the Board and incorporated into the Basin Plan, as is already required by the law even in the absence of an alternative compliance option. (Water Code §13263(a) (waste discharge requirements must implement the Basin Plan); 40 CFR 122.44(d)(1)(vii) (NPDES permits must include water quality-based effluent limits that are consistent with the assumptions and requirements of any available wasteload allocation).)
- The Permit allows alternative compliance where there is no established TMDL or WQIP for one set of waterbody-pollutant combinations. This alternative compliance path is specified in Section C.14.a. The section applies to "the cities of Mountain View and Sunnyvale for discharges that are causing or contributing to exceedances

[125] Although there is no TMDL for trash, Provision C.10 implements the statewide Trash Amendments, which establish a framework for coming into compliance with the statewide prohibition on trash discharges.

of applicable bacteria water quality objectives in Stevens Creek (both cities), Calabazas Creek (Sunnyvale), and Sunnyvale East Channel/Guadalupe Slough (Sunnyvale)." The requirements, controls, and timelines in Section C.14.a. mirror the requirements, controls, and timelines in bacteria TMDLs established for other waterbody segments in the region. (See Sections C.14.b.-14.d.) Accordingly, the Board relied on the analysis and planning that supported the development of those TMDLs as support for provisions in Section C.14.a.

- The Permit incorporates requirements and incentives for the use of green infrastructure, the adoption of low impact development principles, and multi-benefit regional projects that capture, infiltrate, and reuse stormwater and support a local sustainable water supply. Some of the alternative compliance path provisions specifically identify such projects as means of compliance with the provisions, including Provision C.11 for mercury discharges to San Francisco Bay and Provision C.12 for PCBs discharges to San Francisco Bay. Generally, however, the requirements are layered on top of the alternative compliance provisions, rather than built into provisions C.9 through C.12, C.14, C.18 (pertaining to the Pescadero-Butano Sediment TMDL), and C.19.c-f. Specifically, all Permittees, and not only Permittees with discharges subject to the alternative compliance path provisions, must comply with section C.3.

As stated above, State Water Board Orders WQ 2015-0075, as amended by Order WQ 2021-0052-EXEC, and 2020-0038 acknowledge that there is more than one acceptable approach to providing for an alternative compliance path in an MS4 Permit. (See, e.g. State Water Board Order WQ 2021-0052-EXEC, p. 64 ("[W]e acknowledge that regional differences may dictate a variation on the [watershed management program] approach."); State Water Board Order WQ 2020-0038, p. 164 ("This order is not intended to curtail the flexibility of the regional water boards. . . to adopt and develop alternative compliance plans that best fit their particular regions, and does not require modification of programs adopted by other regional water boards.") While structured differently than the alternative compliance path in the LA County MS4 Permit, the alternative compliance path in provisions C.9 through C.12, C.14, C.18, and C.19.c-f, is nevertheless consistent with the direction in State Water Board Orders WQ 2015-0075, as amended, and 2020-0038 as described below and in the sections of the Fact Sheet discussing the bases for the requirements and controls in those sections.

The requirements of provisions C.9 through C.12, C.14, C.18, and C.19.c-f are ambitious and rigorous because they require Permittees to fully commit to and implement challenging, but achievable, tasks to ultimately meet water quality objectives, including objective interim narrative or numeric effluent limitations. Accordingly, this Order explicitly applies principles 1, 2, and 3 (above) of State Water Board Order WQ 2015-0075, as amended, and provides an alternative path to compliance with Discharge Prohibitions and Receiving Water Limitations for the following pollutant – water body combinations: pesticides and pesticide-caused toxicity in all receiving waters (Provision

C.9); trash in all receiving waters (Provision C.10); mercury in all San Francisco Bay segments and receiving waters in the Guadalupe River watershed (Provision C.11); polychlorinated biphenyls (PCBs) in all San Francisco Bay segments (Provision C.12); fecal indicator bacteria in various impaired water bodies (Provision C.14); sediment in Pescadero and Butano creeks (Provision C.18); and diazinon and chlorpyrifos in the Sacramento/San Joaquin River Delta (Provision C.19.c), methylmercury in the Sacramento/San Joaquin River Delta (Provision C.19.d-e), and pyrethroid pesticides in the Sacramento and San Joaquin river systems (Provision C.19.f).

This rigorous compliance alternative also applies Order WQ 2015-0075, as amended, principle 4. It implements all applicable TMDL requirements and calls for or allows for implementation of trash, mercury, and PCBs controls in watershed and drainage areas where they are most needed and most likely to be effective and promotes and allows use of controls with multiple pollutant benefits. In particular, Provision C.10 allows compliance through use of low impact development and green infrastructure controls that may be implemented for other pollutants, e.g., mercury and PCBs, upon a demonstration that such controls provide full trash capture system equivalency, and alternatively Permittees may use full trash capture systems as a means of meeting provisions C.11 (mercury) and C.12 (PCBs) requirements. Also, by design, provisions C.11 (mercury) and C.12 (PCBs) include consistent categorical control measure requirements, e.g., Source Property Identification and Abatement, Control Measure Implementation in Old Industrial Areas, and Plan and Implement Green Stormwater Infrastructure, based on recognition of the multipollutant benefits of these actions.

However, the watershed-based approach addressing multiple pollutants is less or not appropriate for the pesticides and pesticide-caused toxicity requirements. Consistent with the TMDL wasteload allocation and implementation plan, these requirements are pollution prevention management practices specific to urban use pesticides and apply to all watersheds and drainage areas since urban use pesticides are used everywhere. Similarly, Provision C.14 fecal indicator bacteria requirements for discharges to receiving waters that are or may be impaired by bacteria implement or, where there is no TMDL, are consistent with TMDL requirements, and call for fecal indicator bacteria-specific pollution prevention controls consistent with current knowledge of sources and activities in the watersheds of these receiving waters. Provision C.14 does recognize there will be bacteria reduction benefits associated with control of some trash sources. Although there may be some pesticides and bacteria reduction benefits of low impact development and green infrastructure controls that may be implemented for other pollutants, those benefits are likely minimal.

Order Provision C.3 calls for adoption and implementation of low impact development consistent with Order WQ 2015-0075, as amended, principles 5 and 6. The mercury and PCBs provisions (C.11 and C.12) explicitly recognize and call for use of green infrastructure to meet pollutant load reduction requirements. The trash provisions in C.10 allow use of low impact development green infrastructure as full trash capture

systems, if appropriately designed, operated, and maintained. Although not directly required in the pesticides and fecal indicator bacteria provisions, low impact development principles and development and implementation of green infrastructure plans, including consideration of multi-benefit regional projects, could also have pesticides and bacteria load reduction benefits. However, there are no current available and viable treatment controls, including green infrastructure, that can reduce concentrations of pesticides or fecal bacteria to low levels consistent with applicable water quality objectives.

Consistent with Order WQ 2015-0075, as amended, principle 7, each of the pollutant-specific provisions also contain concrete milestones and deadlines and reporting requirements that provide rigor and accountability. Unlike the MS4 permit evaluated in Order WQ 2015-0075, as amended, where water quality objectives were to be achieved through watershed management plans or programs to be submitted, this Order explicitly sets forth the requirements for achieving over time receiving water limitations instead of relying on plans. As such, it is abundantly transparent as to what is required. The pollutant-specific requirements track the controls and the timelines for attaining the wasteload allocations established in adopted TMDLs; therefore, the analyses supporting the requirements for achieving receiving water limitations over time were provided in the first instance, in a transparent, public process, through the adoption of the TMDLs. Additionally, this Fact Sheet summarizes data and information collected under the prior permit's implementation of the TMDL and additional requirements and provides the analyses supporting additions and adjustments made to the pollutant-specific requirements and controls in this Permit. Moreover, as implementation of the Permit's alternative compliance provisions proceeds, all reports, plans, and other required submittals will be made available to all interested parties and input and feedback from interested parties will be considered in the evaluation of all submittals. State Water Board Order WQ 2015-0075, as amended, requires that an MS4 permit show "through a transparent process" that it has "analyzed the water quality issues in the watershed, prioritized those issues, and proposed appropriate solutions," but it does not require a specific type or form of analytical exercise to meet this principle. (See, e.g., State Water Board Order WQ 2020-0038, p. 81, acknowledging that evaluations other than modeling are acceptable.) The analyses supporting the TMDLs implemented in the Permit, as well as the additional analyses provided or referred to in this Fact Sheet, meet the direction provided by the State Water Board in principle 7.

The Order also includes monitoring requirements (Provision C.8 and Provision C.14) to assess water body and watershed conditions and effectiveness of control actions towards attainment of water quality standards and to inform selection and implementation of new control actions or adaptive improvements of control actions.

Consistent with the TMDLs, more time than the term of the Order will be necessary to attain water quality standards for mercury, PCBs, and fecal bacteria. In these cases, the associated Order provision includes an additional requirement for the Permittees to

submit updated plans of additional or improved control actions and schedule of implementation to attain water quality standards and TMDL wasteload allocations for the Water Board's consideration of numerical or narrative WQBELs in the subsequent order. It also requires updates to corresponding reasonable assurance analyses demonstrating sufficient control measures will be implemented to attain the TMDLs and water quality standards.

With respect to compliance with the trash discharge prohibition, the Trash Amendments provide that Permittees "with NPDES permits that contain specific requirements for the control of Trash that are consistent with these Trash Provisions shall be determined to be in compliance with this prohibition if the dischargers are in full compliance with such requirements." The requirements of this Order are consistent with the Trash Provisions, which include the water quality objective for trash, the discharge prohibition, and the implementation requirements of the Trash Amendments (see Fact Sheet for Provision 10).

C.2. Municipal Operations

Legal Authority

The following legal authority applies to Provision C.2:

Broad Legal Authority: CWA sections 402(p)(3)(B)(ii-iii) and 402(a), California Water Code (CWC) sections 13377 and 13263, and Federal NPDES regulations 40 CFR 122.26(d)(2)(i)(B, C, E, and F) and 40 CFR 122.26(d)(2)(iv).

Specific Legal Authority: Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(A)(1) requires "[a] description of maintenance activities and a maintenance schedule for structural controls to reduce pollutants (including floatables) in discharges from municipal separate storm sewers."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(A)(3) requires "[a] description for operating and maintaining public streets, roads and highways and procedures for reducing the impact on receiving waters of discharges from municipal storm sewer systems, including pollutants discharged as a result of deicing activities."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(A)(4) requires "[a] description of procedures to assure that flood management projects assess the impacts on the water quality of receiving waterbodies and that existing structural flood control devices have been evaluated to determine if retrofitting the device to provide additional pollutant removal from storm water is feasible."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(A)(5) requires "[a] description of a program to monitor pollutants in runoff from operating or closed municipal landfills or other treatment, storage or disposal facilities for municipal waste, which shall identify priorities and procedures for inspections and establishing and implementing control measures for such discharges."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(A)(6) requires "[a] description of a program to reduce to the maximum extent practicable, pollutants in discharges from municipal separate storm sewers associated with the application of pesticides, herbicides, and fertilizer which will include, as appropriate, controls such as educational activities, permits, certifications, and other measures for commercial applicators and distributors, and controls for application in public right-of-ways [sic] and at municipal facilities."

Federal NPDES regulation 40 CFR 122.44(d)(1)(i) requires NPDES permits to include limitations to "control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality."

Fact Sheet Findings in Support of Provision C.2

C.2-1 Municipal maintenance activities are potential sources of pollutants unless appropriate inspection, pollutant source control, and cleanup measures are implemented during routine maintenance works to minimize pollutant discharges to storm drainage facilities.

Discharges from paved surfaces, such as roads, parking lots, parks, sidewalks, landscaping, and corporation yards, can contain many pollutants, such as sediment, copper, petroleum products, trash, and pathogens. Provision C.2 requires the Permittees to designate minimum BMPs for all municipal facilities and activities as part of their ongoing pollution prevention. This Provision sets the minimum implementation level for such preventive measures, but does not bar Permittees from implementing additional pollution prevention actions.

Municipal maintenance personnel play a vital role in minimizing stormwater pollution because they work directly on municipal storm drains and at other municipal facilities. Through work such as inspecting and cleaning storm drain drop inlets and pipes and conducting municipal construction and maintenance activities upstream of the storm drain, municipal maintenance personnel are directly responsible for preventing and removing pollutants from the storm drain. Maintenance personnel also play an important role in identifying, reporting, and cleaning up illicit discharges.

C.2-2 Road construction and other municipal activities can disturb soil and drainage patterns in undeveloped areas, causing excess runoff and thereby erosion and the release of sediment. In particular, poorly designed roads can act as man-made drainages that carry runoff and sediment into natural streams, degrading water quality.

Provision C.2 also requires the Permittees to implement effective BMPs for the following rural works maintenance and support activities: (a) Road design, construction, maintenance, and repairs in rural areas that prevent and control road-related erosion and sediment transport; (b) Identifying and prioritizing rural roads maintenance on the basis of soil erosion potential, slope steepness, and receiving water habitat resources; (c) Developing and implementing road and road crossing (e.g., bridge and culvert) construction designs that do not impact creek functions, do not create a migratory fish passage barrier, where migratory fish are present, and do not lead to stream bank instability; (d) Developing and implementing an inspection program to maintain road structural integrity and prevent impacts to water quality; and (e) Adequately maintaining rural roads adjacent to streams and riparian habitat to reduce erosion, such as by replacing damaging shotgun culverts, re-grading roads to slope outward where consistent with road engineering safety standards, and installing water bars.

Specific Provision C.2 Requirements

Provision C.2.a-e. (Operation and Maintenance of Municipal Separate Storm Sewer Systems (MS4) facilities) requires that the Permittees implement appropriate pollution control measures during maintenance activities and to inspect and, if necessary, clean municipal facilities, such as conveyance systems, pump stations, and corporation yards, before the rainy season. The requirements will assist the Permittees to prioritize tasks, implement appropriate BMPs, evaluate the effectiveness of the implemented BMPs, and compile and submit annual reports.

Provision C.2.d. (Stormwater Pump Stations). Stormwater pump stations can be sources of pollutants including low dissolved oxygen, oxygen-demanding substances, and trash to receiving waters. As described below, the Permit requires Permittees to continue to inspect their pump stations and, as needed, take corrective actions to prevent adverse water quality impacts.

Water Board staff investigated the occurrence of low salinity and dissolved oxygen (DO) conditions in Old Alameda Creek (Alameda County) and Alviso Slough (Santa Clara County) in September and October of 2005. Water Board staff became aware of this problem in their review of receiving water and discharge sampling conducted by the U.S. Geological Survey as part of its routine monitoring on discharges associated with the former salt ponds managed by the U.S. Fish and Wildlife Service in Santa Clara County and the California Department of Fish and Wildlife in Alameda County.

Discharge of black-colored water from the Alvarado pump station to Old Alameda Creek was observed at the time of the data collection on September 7, 2005, confirming dry weather urban runoff as the source of the documented violations of the 5 mg/L (DO) water quality objective. Such conditions were measured again on September 21, 2005.

On October 17, 2005, waters in Alviso Slough were much less saline than the salt ponds and had the lowest documented dissolved oxygen of the summer, suggesting a dry weather urban runoff source. The (DO) sag was detected from surface to bottom at 2.3 mg/L at a salinity of less than 1 part per thousand (ppt), mid-day, when oxygen levels should be high at the surface. The sloughs have a typical depth of 6 feet.

Inspections of stormwater pump stations, which transport water from the storm drain system to receiving waters and operate during both dry and wet weather, indicate that pump stations may represent an overlooked source of controllable pollution, in particular low dissolved oxygen (DO) and trash, to the San Francisco Bay Estuary and its tidal sloughs. The discharges of dry weather urban runoff from these pump stations were historically not managed to protect water quality and surveillance monitoring detected measurable negative water quality consequences of this current state of pump station management.

Previous iterations of the MRP required Permittees to inventory and inspect pump stations during the dry season to identify and correct low-DO discharges. Permittees

now have inventories of pump stations, and this permit continues the requirements to inspect pump stations and implement corrective action if receiving water is found to have low DO. Pump stations within the storm drain system and pump stations that discharge to dry creeks are excluded because any low DO in discharges will not impact water quality.

This permit also continues to require Permittees to inspect all pump stations for trash and evidence of illicit discharges, and maintain or replace oil-absorbent booms, in order to comply with the prohibition on non-stormwater discharges.

40 CFR 122.26(d)(2)(I)(f) requires Permittees to carry out all inspection, surveillance, and monitoring procedures necessary to determine compliance and noncompliance with permit conditions, including the prohibition on illicit discharges to the MS4. Pump stations cannot contribute discharges with dissolved oxygen (DO) level below 3 mg/L. Previous pump station reporting shows that implementing corrective actions (i.e., BMPs) prior to the pumps, combined activating the pumps to discharge collected water, as opposed to simply allowing it to overflow, aerates the water to a DO level of at least 3 mg/L. Thus, this Permit removes the specific DO monitoring requirements and allows the Permittees greater flexibility to ensure that all water discharged from pumps stations is at least 3 mg/l. The reporting requirement has also been removed from this Permit, but Permittees must maintain any sampling records and make them available upon request.

Provision C.2.f. (Corporation Yard BMP Implementation). This provision continues the requirement for Permittees to implement BMPs in site-specific Stormwater Pollution Prevention Plans (SWPPPs) to minimize pollutant discharges in stormwater and non-stormwater discharges in municipal corporation yards. SWPPPs, which Permittees have been required to have in place since 2010, should have specific BMPs for different functions of the corporation yard and provide guidance for regular inspections to ensure that appropriate BMPs are implemented. After Water Board staff and U.S. EPA staff inspections indicated that despite the use of SWPPPs, corporation yards had actual and/or potential discharges, the Water Board required Permittees to customize their SWPPPs and conduct routine inspections in different areas of the corporation yard and at least one inspection prior to the start of the rainy season. However, subsequent annual reports indicated that Permittees' inspections were not consistently scheduled at times when they would detect potential discharges or runoff issues prior to the start of the rainy season. In addition, Permittees' reporting on corrective actions was too spotty for the Water Board to make compliance determinations. Therefore, this Permit clearly identifies the timeframe for the annual inspections to occur and requires corrective actions to be implemented before the next rain event, but no later than 10 business days after the potential and/or actual discharges are discovered. This is consistent with the timeframe for implementation of corrective actions in provisions C.4. and C.5.

Provision C.2.g. Storm Drain Inlet Marking. This requirement has been moved from Provision C.7, Public Information and Outreach, of the Previous Permit (Order No. R2-

2015-0049, as amended). Storm drain inlet marking is a long-established program of outreach to the public on the nature of the storm drain system, providing the information that the storm drain system connects directly to creeks and the Bay and does not receive treatment. Past public awareness surveys have demonstrated that this BMP has achieved significant impact in raising awareness in the general public and meets the MEP standard as a required action. Therefore, the Permit continues to require all municipally maintained inlets to be legibly labeled with a “no dumping” message. Volunteer storm drain marking events have additional public involvement value and may further raise awareness and compliance.

Provision C.2.h. Staff Training. This provision continues to require Permittees to conduct annual trainings for municipal staff. Trainings are necessary to keep staff current on implementation and maintenance of BMPs for municipal operations to control stormwater discharges. Since municipal employees are largely responsible for implementing Provision C.2, staff training is an essential component of controlling discharges from municipal operations.

C.3. New Development and Redevelopment

Legal Authority

Broad Legal Authority: CWA Sections 402(p)(3)(B)(ii-iii), CWA Section 402(a), CWC Sections 13377 and 13263, and Federal NPDES regulations 40 CFR 122.26(d)(2)(i)(B, C, E, and F), 40 CFR 131.12, and 40 CFR 122.26(d)(2)(iv).

Specific Legal Authority: Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(A)(1) requires "a] description of maintenance activities and a maintenance schedule for structural controls to reduce pollutants (including floatables) in discharges from municipal separate storm sewers."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(A)(2) requires "[a] description of planning procedures including a comprehensive master plan to develop, implement and enforce controls to reduce the discharge of pollutants from municipal separate storm sewers which receive discharges from areas of new development and significant redevelopment. Such plan shall address controls to reduce pollutants in discharges from municipal separate storm sewers after construction is completed."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(A)(3) requires "[a] description for operating and maintaining public streets, roads and highways and procedures for reducing the impact on receiving waters of discharges from municipal storm sewer systems, including pollutants discharged as a result of deicing activities."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(A)(4) requires "[a] description of procedures to assure that flood management projects assess the impacts on the water quality of receiving water bodies and that existing structural flood control devices have been evaluated to determine if retrofitting the device to provide additional pollutant removal from storm water is feasible."

Fact Sheet Findings in Support of Provision C.3

C.3-1 Urban development begins at the land use planning phase; therefore, this phase provides the greatest cost-effective opportunities to protect water quality in new development and redevelopment. When a Permittee incorporates policies and principles designed to safeguard water resources into its General Plan and development project approval processes, it has taken a critical step toward the preservation of local water resources for current and future generations.

C.3-2 Provision C.3. is based on the premise that Permittees are responsible for considering potential stormwater impacts when making planning and land use decisions for new development and redevelopment, including road improvement projects, and determining how to operate and maintain streets, roads, and highways, including reducing pollutants discharged from them. The goal of Provision C.3. is for Permittees to use their planning authority to reduce

pollutant discharges and runoff flow into the storm drain system primarily through the implementation of low impact development (LID) techniques.

C.3-3 To accomplish this goal, Permittees must require new development and redevelopment projects to implement appropriate source control, site design, and stormwater treatment measures to address both soluble and insoluble stormwater runoff pollutant discharges and prevent increases in runoff flow from these projects. Permittees are also required to implement their Green Infrastructure Plans for the inclusion of low impact development drainage design into storm drain infrastructure on public and private lands, including streets, roads, storm drains, parking lots, building roofs and other storm drain infrastructure elements. Provision C.3. is not intended to restrict or control local land use decision-making authority.

C.3-4 Certain control measures implemented or required by Permittees for urban runoff management might create a habitat for vectors (e.g., mosquitoes and rodents) if not properly designed or maintained. Close collaboration and cooperative efforts among Permittees, local vector control agencies, Water Board staff, and the State Department of Public Health are necessary to minimize potential nuisances and public health impacts resulting from vector breeding.

C.3-5 The Water Board recognized in its Policy on the Use of Constructed Wetlands for Urban Runoff Pollution Control (Resolution No. 94-102) that urban runoff treatment wetlands that are constructed and operated pursuant to that Resolution and are constructed outside a creek or other receiving water are stormwater treatment systems and, as such, are not waters of the United States subject to regulation pursuant to CWA Sections 401 or 404. This is consistent with the stayed 2015 Clean Water Rule exempting stormwater control features from the definition of “waters of the U.S.” (80 Fed. Reg. 37054 (June 29, 2015).) This Permit requires Permittees to ensure that constructed wetlands installed by Regulated Projects are consistent with Resolution No. 94-102 and the operation and maintenance requirements contained therein.

C.3-6 The Permit requires Permittees to ensure that pervious pavement systems of 3,000 square feet or more, onsite, joint, and offsite stormwater treatment systems, and HM controls installed by Regulated Projects are properly operated and maintained for the life of the Projects.

Specific Provision C.3 Requirements

Provision C.3.a. (New Development and Redevelopment Performance Standard Implementation) continues the requirements related to having adequate legal authority to address storm water, development review and permitting, environmental review, training, and outreach requirements of MRP 1.

Provision C.3.b. (Regulated Projects) establishes the different categories of new development and redevelopment projects that Permittees must regulate under Provision C.3. These categories are defined on the basis of the land use and the amount of impervious surface created and/or replaced by the project because all impervious surfaces contribute pollutants to stormwater runoff and certain land uses contribute more pollutants. Impervious surfaces can neither absorb water nor remove pollutants as the natural, vegetated soil they replaced can. Also, urban development creates new pollution by bringing higher levels of car emissions that are aerially deposited, car maintenance wastes, pesticides, household hazardous wastes, pet wastes, and trash, which can all be washed into the storm sewer.

This permit is a 4th generation permit containing stormwater treatment requirements for development projects. Past permits have grandfathered development projects approved prior to those permits' effective dates, essentially exempting the projects and allowing them to provide no or insufficient stormwater treatment. The Water Board believes a small number of these development projects that were approved more than a decade ago have still not begun construction. A decade is sufficient time to justify requiring the Permittees to revise and update these stagnant development permits to include current LID treatment requirements. Therefore, this provision does not grandfather development projects approved with no stormwater treatment requirements and that have not begun construction. However, this provision allows exemptions for some of these previously approved projects in situations where the Permittees lack legal authority to retroactively change their previous approvals. For a pending Regulated project that has not been approved as of June 30, 2023, and a Permittee has no legal authority to require changes under Government Code sections 66474.2 or 65589.5, subd. (o), this provision does not require the Permittee to require compliance with the new requirements of this Order, because it cannot.

To confirm that the total number of projects previously approved without any Provision C.3-compliant stormwater treatment is indeed small, Provision C.3.b.iv.(1) includes a requirement for Permittees to provide in their 2023 Annual Report a complete list of these types of development projects. For each such Project, the Permittee shall indicate the type of stormwater treatment system required or the specific exemption granted, pursuant to Provision C.3.b.i.(2)(a) and (b). This reporting requirement only applies to Permittees that have Projects subject to Provision C.3.b.i.(2).

Regulated Projects approved under previous permits with non-LID stormwater treatment measures in compliance with the hydraulic sizing criteria of Provision C.3.d. will continue to be grandfathered.

Provision C.3.b clarifies that sidewalks and any other portions of the public right of way that are developed or redeveloped as part of a Regulated Project must be included in the total impervious surface count when evaluating whether projects meet the Regulated Project thresholds, and when evaluating the area that must be treated by the Regulated Project. These impervious surfaces generate urban stormwater pollutants in

the form of aerially-deposited particulates and pollutants deposited by bicyclists (e.g., bicycle tire wear particles, and petroleum products) and pedestrians (e.g., PAH loading from adjacent roadways, and trash), they are a source of thermal pollution of runoff (which may contribute to adverse impacts threatening cold water wildlife habitat), and they contribute to hydromodification of receiving waters.[126]

The pavement maintenance practices defined in Provision C.3.b.ii.(1)(b) are adapted from Appendix 1 of the current (effective August 1, 2019) Western Washington Phase II MS4 Permit.[127] These definitions clarify which rehabilitative road maintenance/reconstruction practices do and do not qualify as Regulated Projects. For additionally clarity, bituminous surface treatments have been defined in the Glossary.

- Upgrading from a bituminous surface treatment with a layer of asphalt or concrete is an excluded pavement maintenance practice because a bituminous surface treatment itself results in an impervious surface, and therefore that upgrade will not produce a new impervious surface (as long as it does not also involve the removal or replacement of the pavement to the base course or lower). For example, if there is an existing dirt or gravel surface, over which there is an existing bituminous surface treatment, then the subsequent application of a new asphalt or concrete layer above the existing bituminous surface treatment is considered an excluded pavement maintenance practice because it does not produce a new impervious surface.

To preclude confusion, Provision C.3.b.ii.(1)(b)(iii) provides a redundant caveat that the listed pavement maintenance practices are included (i.e., not excluded) in the Road Reconstruction Projects category only if they trigger all the criteria specified in Provision C.3.b.ii.(5), including the criteria regarding contiguousness.

Provision C.3.b.ii.(1)(b)(iv) clarifies that, in the scenario in which a project includes a portion of work that is exempted (e.g., applying a bituminous surface treatment to an existing asphalt layer) and a portion of work that is *not* exempted (e.g., removing and replacing asphalt pavement to the base course, or reconstructing a sidewalk), the portion of work that is not exempted must be evaluated as to whether it meets the criteria for a Regulated Project. In other words, a Permittee may not exclude such a project altogether by categorizing it as the exempted portion; what must be evaluated is whether the non-exempted portion meets the criteria for a Regulated Project.

Public right of way projects (other than public road projects) are explicitly included within the definitions for Other Development Projects and Other Redevelopment Projects. Public right of way projects (other than public road projects) do not have the same constraints and challenges that public road projects have.

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[126] *The pollution conveyed by urban runoff: A review of sources*. December 2019. Alexandra Muller, Helene Osterlund, Jiri Marsalek, Maria Viklander. https://doi.org/10.1016/j.scitotenv.2019.136125

[127] https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits/Municipal-stormwater-general-permits/Western-Washington-Phase-II-Municipal-Stormwater

- Language has been added which clarifies that piecemeal public works projects which are not part of Regulated Projects – examples given are sidewalk gap closures, sidewalk section replacement, and ADA curb ramps (certain pavement maintenance practices within the road prism, such as pothole patching, are already excluded pursuant to Provision C.3.b.ii.(1)(b)(ii)) – are excluded from the Other Redevelopment Projects category, unless they create and/or replace 5,000 contiguous square feet or more of impervious surface. These types of public works projects are typically included in municipalities' CIPs as a budget line item for small patchwork projects to be completed through their jurisdictions, which individually may not create and/or replace 5,000 contiguous square feet of impervious surface, but which may (if combined together) create and/or replace 5,000 non-contiguous square feet of impervious surface. As we do not intend to consider the latter a Regulated Project, we have added clarifying language to Provision C.3.b.ii.(5) Other Redevelopment Projects, because this is the category under which these projects would likely qualify.
    - Sidewalk gap closures typically consist of the filling of gaps between sections of sidewalks, with pavement. For example, where a block has a sidewalk, but it is not continuous because it is missing across a parcel, completing the sidewalk across that parcel.
    - Sidewalk section replacement typically consists of repairing or replacing sidewalk sections that have been damaged or buckled by tree roots, tectonic action, etc.

Private road reconstruction projects are explicitly included within the definition for Other Redevelopment Projects. Permittees do not bear the burden of the design and capital construction costs of private road projects, and Permittees are able to recoup all or a significant portion of the cost of accounting for private road projects, for example, by charging project application review fees. Therefore, private road reconstruction projects are treated the same as all other types of private non-road reconstruction projects.

The Regulated Project category for Road Projects has been renamed from the Previous Permit to New or Widened Road Projects, and applies to both public and private projects.

The impervious surface thresholds for Other Development Projects, Other Redevelopment Projects, and New and Widened Road Projects are set at 5,000 square feet. These thresholds are MEP for this Permit and its Permittees, because:

(1) They align with the impervious surface area threshold of 5,000 square feet in Provision C.3.b.ii.(1) Special Land Use Categories, which has been in place since the Previous Permit term (Order No. R2-2015-0049).

(2) The 5,000 square foot threshold (or lower thresholds) for Regulated Projects is consistent with numerous other MS4 permits, including, but not limited to: the California State Water Board's NPDES Permit for WDRs for Stormwater

Discharges from Small MS4s (effective July 1, 2013),[128] the California Regional Water Quality Control Board Central Valley Region's NPDES and WDR General Permit for Discharges from MS4s (effective October 1, 2016),[129] the California Regional Water Quality Control Board Los Angeles Region's Regional MS4 NPDES Permit for Los Angeles and Ventura Counties,[130] the California Regional Water Quality Control Board Central Coast Region's NPDES MS4 Permit for the City of Salinas (effective October 1, 2019),[131] the City of Portland's NPDES MS4 Permit (effective January 31, 2011),[132] the State of Oregon's NPDES MS4 General Permit (effective March 1, 2019),[133] the State of Washington's NPDES and State Waste Discharge General Permit for Discharges from Large and Medium MS4s (effective August 1, 2019),[134] Eastern Washington's NPDES and State Waste Discharge General Permit for Discharges from Small MS4s (effective August 1, 2019),[135] Western Washington's NPDES and State Waste Discharge General Permit for Discharges from Small MS4s (effective August 1, 2019),[136] the City of Salem's NPDES MS4 Discharge Permit (effective December 30, 2010),[137] the City of Chicago's Stormwater Management Plan[138] for the State of Illinois's General Permit for Discharges from Small MS4s (effective March 1, 2016),[139] U.S. EPA's NPDES Stormwater Permit for the Boise/Garden City Area (effective October 1, 2021),[140] the City of Eugene's NPDES MS4 Discharge Permit (effective December 30, 2010),[141] U.S. EPA's

[128] https://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.html

[129] https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016-0040_ms4.pdf

[130] Order No. R4-2021-0105, NPDES Permit No. CAS004004, https://www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/municipal/

[131] https://www.waterboards.ca.gov/centralcoast/water_issues/programs/stormwater/salinas.html

[132] https://www.portlandoregon.gov/bes/37485

[133] https://www.oregon.gov/deq/FilterPermitsDocs/ms4ph2genpermit.pdf

[134] https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits/Municipal-stormwater-general-permits/Municipal-Stormwater-Phase-I-Permit#:~:text=The%20Phase%20I%20Municipal%20Stormwater,populated%20areas%20in%20the%20state

[135] https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits/Municipal-stormwater-general-permits/Eastern-Washington-Phase-II-Municipal-Stormwat-(1)

[136] https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits/Municipal-stormwater-general-permits/Western-Washington-Phase-II-Municipal-Stormwater

[137] https://www.cityofsalem.net/Pages/ms4-permits-and-annual-reports.aspx#:~:text=The%20City%20of%20Salem%20operates,directly%20to%20our%20local%20streams

[138]https://www.chicago.gov/content/dam/city/depts/water/general/Engineering/MS4/MS4_Stormwater_Plan.pdf

[139] https://www2.illinois.gov/epa/topics/forms/water-permits/storm-water/Pages/ms4.aspx

[140] https://www.epa.gov/npdes-permits/npdes-stormwater-permit-boisegarden-city-area-ms4s-idaho

[141] https://www.eugene-or.gov/476/NPDES-Municipal-Stormwater-Permit

Washington, D.C. NPDES MS4 Permit (effective June 22, 2018),[142] and the State of Maryland's NPDES General Permit for Discharges from Small MS4s (effective October 31, 2018).[143] The 5,000 square feet threshold is, therefore, consistent with reducing the discharge of pollutants from storm water to the MEP.

(3) The Permittees submitted a report[144] that the benefit provided by additionally capturing Regulated Projects in the 5,000-10,000 square foot range would likely provide similar benefit (with respect to acres of impervious surface treated) and similar cost (with respect to the burden on Permittees to review project applications and conduct inspections as well as other administrative burdens) as compared to Regulated Projects already captured, such as the 10,000-15,000 square foot range and the 15,000-20,000 square foot range.

(4) According to the Permittees' 2019 Green Infrastructure Plans,[145] existing and future Regulated Projects and Non-Regulated, public and private, development and redevelopment projects under the Previous Permit will result in about 2 percent of impervious surface collectively retrofitted in the five Permittee counties with clean water controls by 2020, 4 percent by 2030, and 6 percent by 2040. That pace of retrofit would not address stormwater pollutants discharged from Permittees' jurisdictions to the MEP. Therefore, in combination with other changes proposed for Provision C.3, this expansion of the Regulated Project threshold provides a significant incremental step towards increasing the amount of impervious surface within Permittees' jurisdictions retrofitted by clean water controls, regionwide.

(5) Permittees are able to recoup all or a significant portion of the cost of accommodating additional Regulated Projects in the 5,000-10,000 square foot range, for example, by charging fees for project application review and inspection.

(6) U.S. EPA supports the 5,000 square foot threshold for impervious surface area, as it is well understood that untreated stormwater contributes to the degradation of the San Francisco Bay and local creeks and streams, and dense urbanization,

[142] https://www.epa.gov/npdes-permits/dc-municipal-separate-storm-sewer-system-ms4

[143] https://mde.maryland.gov/programs/water/stormwatermanagementprogram/pages/npdes_ms4_new.aspx

[144] "'White Paper' on Provision C.3 in MRP 2.0," Final Report, Bay Area Stormwater Management Agencies Association, February 27, 2015.

[145] https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/stormwater/MRP/GIPlans2019.html

infrastructure, and impervious surfaces ring San Francisco Bay and contribute to an increase of contaminants that degrade receiving waters.[146,147]

The Permit includes language in Provision C.3.b.ii.(4) clarifying that a gravel surface is an impervious surface, except when it is constructed as part of appropriately designed pervious pavement system. Provision C.3.b.ii.(4) also identifies situations when a gravel surface may be excluded from treatment requirements, reflecting their landscape context, which is expected to often allow drainage to a vegetated area or other pervious area that is at least half the size of the contributing graveled surface. Gravel is considered impervious because it is typically compacted by design or by use. U.S. EPA has defined as impervious surfaces "…areas such as gravel roads…that will be compacted through design or use to reduce their impermeability."[148] It further has defined impervious surfaces as "[a]ny surface that prevents or significantly impedes the infiltration of water into the underlying soil. This can include but is not limited to: roads, driveways, parking areas and other areas created using non porous material; buildings, rooftops, structures, artificial turf and compacted gravel or soil."[149] The Ohio EPA includes gravel roads in its required calculations for impervious surfaces.[150] Municipalities including Asheville and Durham, North Carolina, and Avon, Ohio, consider gravel driveways impervious for the purpose of calculating those cities' stormwater utility fees, because compaction results in increased runoff from those surfaces.[151]

The Road Reconstruction Projects category (projects creating or replacing greater than or equal to one contiguous acre of impervious surface) is distinct from the New and Widening Road Projects category (which addresses only new road projects) because it addresses the significant reconstruction of existing public roads (reconstruction of private roads is addressed separately, in the Other Development Projects category). The definition of contiguous includes project areas interrupted by cross streets or intersections. Provision C.3.b.ii.(1)(b) distinguishes which public road reconstruction projects are and are not excluded.

- The treatment requirements for Road Reconstruction Projects are consistent with other MS4 permits, including, but not limited to: the City of Portland's NPDES MS4 Permit (effective January 31, 2011),[132] the State of Oregon's NPDES MS4 General

[146] SFEI, Wu, J., Trowbridge, P., Yee, D., McKee, L., and Gilbreath, A., 2018.

[147] Regional Monitoring Program Small Tributaries Loading Strategy: SFEI, McKee et al., 2006.

[148] U.S. EPA, July 2016. Summary of State Post Construction Stormwater Standards, p.13.

[149] Ibid., p.19

[150] Ohio EPA, Oct. 2018. Post-Construction Storm Water Questions and Answers, p.1. "What surfaces should be considered impervious? (…) rooftops, paved or gravel roads…."
and Ohio EPA, Oct. 2019. Guidance on Post-Construction Storm Water Controls for Solar Panel Arrays, p.1, "Paved or gravel roads…must also include post-construction storm water management."

[151] https://www.ashevillenc.gov/department/public-works/stormwater-services-utility/stormwater-fees/ https://www.durhamnc.gov/864/Impervious-Surface. Durham specifically references compacted gravel.

https://www.cityofavon.com/DocumentCenter/View/4298/Exhibit-A---Ordinance-No-105-17-Chapter-1056-FINAL?bidId=. "Impervious surfaces include…compacted gravel surface[s]" (p.2).

Permit (effective March 1, 2019),[133] the State of Washington's NPDES and State Waste Discharge General Permit for Discharges from Large and Medium MS4s (effective August 1, 2019),[134] Eastern Washington's NPDES and State Waste Discharge General Permit for Discharges from Small MS4s (effective August 1, 2019),[135] Western Washington's NPDES and State Waste Discharge General Permit for Discharges from Small MS4s (effective August 1, 2019),[136] the City of Salem's NPDES MS4 Discharge Permit (effective December 30, 2010),[137] the City of Chicago's Stormwater Management Plan[138] for the State of Illinois's General Permit for Discharges from Small MS4s (effective March 1, 2016),[139] U.S. EPA's NPDES Stormwater Permit for the Boise/Garden City Area (effective October 1, 2021),[140] the City of Eugene's NPDES MS4 Discharge Permit (effective December 30, 2010),[141] U.S. EPA's NPDES MS4 Permit for Washington, D.C. (effective June 22, 2018),[142] and the State of Maryland's NPDES General Permit for Discharges from Small MS4s (effective October 31, 2018).[143]

The Road Reconstruction Regulated Projects category – in addition to the Numeric Implementation retrofit requirements in Provision C.3.j.ii.(2) – is intended to address the significant pollutant loading and hydrologic impact to receiving waters from Permittees' existing public roads and to clarify the amount of road reconstruction that is redevelopment justifying an investment of resources to retrofit the road with clean water controls.

In subsequent Permits, the Water Board may consider removing or revising Provision C.3.b.ii.(5)(c), which allows the Permittees to use alternative sizing criteria for Road Reconstruction Projects, as well as Provision C.3.b.ii.(5)(d), which allows the Permittees to credit the acreage of impervious surface created or replaced for Road Reconstruction Projects towards the Numeric Implementation retrofit requirements specified in Provision C.3.j.ii.(2).

This Regulated Project category includes utility trenching projects which are - on average, over the entire length of the project - greater than or equal to 8 feet wide. This is intended to include utility trenching projects that alter a portion of the roadway sufficient to warrant retrofit with clean water controls. The Water Board will use information collected during the Permit term to consider modifying the utility trenching criteria in a subsequent permit.

The Large Detached Single-Family Home Projects category for Regulated Projects captures such projects that create and or replace 10,000 square feet or more of impervious surface, collectively over the entire project site, and that are not part of a larger development or redevelopment plan. This Regulated Project category coincides with Provision C.3.i, which prescribes site design measures for small detached single-family home projects which create and/or replace 2,500-10,000 square feet of impervious surface. Recognizing that SB 9 also allows for the construction of an

accessory dwelling unit (ADU) on a lot with an existing single-family home, without subdividing the lot, C.3.b.ii.(6)(d) clarifies that such an action would fall under the large single-family home threshold of 10,000 sq. ft. of impervious surface. This category for Regulated Projects is necessary and MEP because:

(1) Large Detached Single-Family Home Projects can cause the same urban runoff pollutant and hydromodification impacts that projects of similar sizes in any of the other Regulated Projects categories can produce, because of the created/replaced impervious surface, because those surfaces are similar in nature to other pollutant-generating surfaces in the urban environment, and because aerially deposited urban pollutants are deposited and discharged from those projects to the MS4. Additionally, when flows from these projects flow on-land (e.g., along public streets, ditches and gutters) prior to entering the MS4 system and discharging to receiving waters, they can mobilize stormwater pollutants from those surfaces, eventually transporting them to receiving waters.

(2) In certain Permittees' jurisdictions, a significant portion of development and redevelopment projects consists of large detached single-family home projects because a significant portion of those Permittees' land use is large lot single-family residential.[152] Therefore, this new category has been added to control the pollutant discharges associated with this category of development and redevelopment.

(3) Permittees are able to recoup all or a significant portion of the cost of accommodating this new category of Regulated Projects, for example, by charging project application review and inspection fees.

[152] For example: The City of Los Altos' zoning map is dominated by residential zoning, and within that residential zoning, the majority of lots have a minimum lot size of 20,000 to 40,000 square feet: (https://www.losaltosca.gov/sites/default/files/fileattachments/community_development/page/39021/los_altos-land_use_final_w_labels-24x36-20181026.pdf); the Town of Los Altos Hills's zoning map is dominated by residential zoning, and all residential lots have a minimum lot size of one acre: (http://www2.lynxgis.com/Html5Viewer/Index.html?configBase=http://www2.lynxgis.com/Geocortex/Essentials/REST/sites/Los_Altos_Hills/viewers/LAH/virtualdirectory/Resources/Config/Default); the Town of Atherton's zoning map (other than park space) is dominated by residential zoning, and within that residential zoning, the majority of lots have a minimum lot size of one acre, and the remainder have a minimum lot size of 10,000-15,000 square feet: (https://www.ci.atherton.ca.us/209/Maps); the Town of Woodside's zoning map (ignoring conservation areas and park space) is dominated by residential zoning, and within that residential zoning, the majority of lots have a minimum lot size of one or three acres, and the remainder have a minimum lot size of 20,000 square feet: (https://www.woodsidetown.org/planning/town-woodside-zoning-map); the Town of Portola Valley's zoning map is dominated by residential zoning, and within that residential zoning, the majority of lots have a minimum lot size of at least one acre, and the remainder have a minimum lot size of 15,000-20,000 square feet: (https://www.portolavalley.net/home/showpublisheddocument/6770/635634073606070000; https://library.municode.com/ca/portola_valley/codes/code_of_ordinances); and the Town of Hillsborough's zoning map is dominated by a single residential zone, which has a minimum lot size of half an acre: (https://isd.smcgov.org/gis-data-download).

(4) There are many other MS4 Permits that consider it MEP to include analogous treatment requirements for large detached single-family home projects, including, but not limited to: the Los Angeles Regional Water Board's Regional MS4 NPDES Permit (effective September 11, 2021),[153] the City of Portland's NPDES MS4 Permit (effective January 31, 2011),[132] the State of Oregon's NPDES MS4 General Permit (effective March 1, 2019),[133] the State of Washington's NPDES and State Waste Discharge General Permit for Discharges from Large and Medium MS4s (effective August 1, 2019),[134] Western Washington's NPDES and State Waste Discharge General Permit for Discharges from Small MS4s (effective August 1, 2019),[136] the City of Salem's NPDES MS4 Discharge Permit (effective December 30, 2010),[137] the City of Eugene's NPDES MS4 Discharge Permit (effective December 30, 2010),[141] U.S. EPA's NPDES MS4 Permit for Washington, D.C. (effective June 22, 2018),[142] and the State of Maryland's NPDES General Permit for Discharges from Small MS4s (effective October 30, 2018).[143] The 10,000 square foot threshold for this category is, therefore, consistent with reducing the discharge of pollutants from stormwater to the MEP.

(5) U.S. EPA Region 9 supports the expansion of these Regulated Project categories, as it is well understood that untreated stormwater contributes to the degradation of the San Francisco Bay and local creeks and streams, and dense urbanization, infrastructure and impervious surfaces ring San Francisco Bay and contribute to an increase of contaminants that degrade receiving waters.[146,147]

Provision C.3.b.iii Implementation Level directs the Permittees to implement the Regulated Project definitions in Provision C.3.b.ii beginning July 1, 2023.

Prior to July 1, 2023, the Regulated Project definitions in Provision C.3.b.ii in Attachment I, which are requirements from the Previous Permit, are effective and apply.

The purpose of this delayed implementation date for Provision C.3.b.ii is to allow Permittees the time needed to arrange all relevant planning authorities and municipal processes, train their staff, etc., regarding changes to Provision C.3.b.ii relative to the Previous Permit.

Provision C.3.c (Low Impact Development (LID)) recognizes LID as a cost-effective, beneficial, holistic, integrated stormwater management strategy.[154] The goal of LID is to reduce runoff and mimic a site's predevelopment hydrology by minimizing disturbed

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153 https://www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/municipal/regional_permit.html

154 U.S. EPA, *Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices* **(**Publication Number EPA 841-F-07-006, December 2007) http://water.epa.gov/polwaste/green/upload/2008_01_02_NPS_lid_costs07uments_reducingstormwatercosts-2.pdf**)**

areas and impervious cover and then infiltrating, storing, detaining, evapotranspiring, and/or biotreating stormwater runoff close to its source. LID employs principles such as preserving and recreating natural landscape features and minimizing imperviousness to create functional and appealing site drainage that treats stormwater as a resource, rather than a waste product. Practices used to adhere to these LID principles include measures such as preserving undeveloped open space, rain barrels and cisterns, green roofs, pervious pavement systems, and biotreatment through rain gardens, bioretention units, bioswales, and planter/tree boxes. This is a standard, current, ordinary, and regular practice being implemented in numerous jurisdictions in California, the U.S., and internationally, including: the Permittees' jurisdictions, Los Angeles, San Diego, San Francisco, Portland, OR, Seattle, Minneapolis, Milwaukee, Kansas City, Chicago, New York City, Philadelphia, Auckland, New Zealand, Chinese "sponge cities" such as Wuhan and Changde, and others.

This Provision sets forth a three-pronged approach to LID with source control, site design, and stormwater treatment requirements. The concepts and techniques for incorporating LID into development projects, particularly for site design, have been extensively discussed in BASMAA's Start at the Source manual (1999) and its companion document, Using Site Design Techniques to Meet Development Standards for Stormwater Quality (May 2003), as well as in various other LID reference documents.

- **Provision C.3.c.i.(1)** lists source control measures that must be included in all Regulated Projects as well as some that are applicable only to certain types of businesses and facilities. These measures are recognized nationwide as basic, effective techniques to minimize the introduction of pollutants into stormwater runoff.
- **Provision C.3.c.i.(2)(a)** lists site design elements that must be implemented at all Regulated Projects. These design elements are basic, effective techniques to minimize pollutant concentrations in stormwater runoff as well as the volume and frequency of discharge of the runoff. One design element requires each Regulated Project to include at least one site design measure from a list of six that includes recycling of roof runoff, directing runoff into vegetated areas, and installation of pervious pavement systems instead of traditional paving. All these measures serve to reduce the amount of runoff and its associated pollutants being discharged from the Regulated Project.
- **Provision C.3.c.i.(2)(b)** requires the Permittees to implement design specifications for pervious pavement systems. Design specifications are necessary because improperly designed and engineered pervious pavement systems may cause flooding and the discharge of insufficiently treated stormwater runoff.
- **Provision C.3.c.i.(2)(c)** requires each Regulated Project and all projects implemented pursuant to Provision C.3.j to treat 100 percent of the Provision C.3.d.

runoff with LID treatment measures onsite or with LID treatment measures at a joint stormwater treatment facility.

- **Provision C.3.c.i.(2)(c)(i)** defines LID treatment measures as harvesting and use, infiltration, evapotranspiration, or biotreatment.

  The Permittees completed a "White Paper" on Provision C.3. on February 27, 2015.[155] The White Paper concluded that the pollutant removal performance of biotreatment facilities, overall and on average, is equivalent or better than the likely real-world performance of harvest and use facilities and as good as the likely performance of infiltration facilities when considered over the long term. The White Paper also noted that biotreatment facilities require less maintenance and are less prone to failure than harvest and use facilities, and in some cases, are also preferable to direct infiltration facilities.

- **Provision C.3.c.i.(2)(c)(ii)** requires biotreatment systems to meet minimum performance specifications in order to be considered as LID treatment. This subprovision also requires biotreatment soil media to meet the current minimum specifications developed and included in MRP 1.[156] However, this subprovision recognizes that the current soil media specifications may need to be modified because of variability in climate, rainfall, and compost composition among the different counties. Therefore, this subprovision allows for the Permittees to collectively (on an all-Permittee scale or countywide scale) develop and adopt revisions to the current soil media minimum specifications, subject to the Executive Officer's approval.

- **Provision C.3.c.i.(2)(c)(ii)(a)** prompts the formation of a workgroup to discuss and investigate the pollutant removal effectiveness and hydrologic equivalency of – and suggested criteria for – high flow-rate media treatment systems in combination with retention/detention measures such as silva cells and structural soils, as compared to conventional bioretention, specifically for use in projects with significant technical site constraints. The workgroup should consider issues including: the MEP standard in relation to the use of such systems; the pollutant removal benefits and hydrologic criteria associated with the MRP's LID design approach and which are included in other MS4 permits, such as the Western Washington Phase II Municipal Stormwater Permit and the Los Angeles Regional MS4 Permit (NPDES Permit No. CAS004004).

  The outcomes of this workgroup may inform modifications to the Permit in a subsequent term.

Provision C.3.d (Numeric Sizing Criteria for Stormwater Treatment Systems) sets forth the hydraulic sizing design criteria that the stormwater treatment systems installed for

[155] BASMAA, February 27, 2015. "White Paper" on Provision C.3 in MRP 2.0: Final Report.

[156] Attachment L of Board Order No. R2-2009-0074, adopted October 14, 2009, and revised November 27, 2011.

Regulated Projects must meet. These criteria ensure that stormwater treatment systems will be designed to treat the optimum amount of relatively smaller-sized runoff-generating storms each year. That is, the treatment systems will be sized to treat the majority of rainfall events generating polluted runoff but will not have to be sized to treat the few very large annual storms as well. For many projects, such large treatment systems become infeasible to incorporate into the projects.

- **Provision C.3.d.iii**. defines infiltration devices and establishes limits on the use of stormwater treatment systems that function primarily as infiltration devices. The intent of the Provision is to ensure that the use of infiltration devices, where feasible and safe from the standpoint of structural integrity, must also not cause or contribute to the degradation of groundwater quality at the project sites.
- **Provision C.3.d.iv** is optional and allows the Permittees to collectively submit a proposal which evaluates the benefit of runoff reduction associated with trees and treatment control sizing of tree-based stormwater treatment in combination with structural soils and suspended pavement systems (or other methods which provide tree rooting volume), which will be considered for incorporation into a subsequent permit. This proposal is intended to learn from the findings of the ongoing Healthy Watersheds, Resilient Baylands project,[157] a San Francisco Estuary Partnership-led U.S. EPA Water Quality Improvement Fund (WQIF) project that is investigating similar criteria, and which has a technical action committee (TAC) that Water Board staff and Permittee representatives are participating in, to support the Permittees' submittal, and to ensure it has regional application. The purpose of this subprovision is to characterize the stormwater treatment and hydrologic benefit that new tree-based treatment systems provide when designed and maintained to a defined standard, not to credit existing trees that provide little water quality and hydrologic benefit because of the capacity and manner of treatment provided.

  This subprovision clarifies the status of the Permittees' collectively-submitted 2011 Feasibility/Infeasibility Criteria Report, submitted pursuant to Provision C.3.i.(2)(b)(iv) of MRP 1 (Order No. R2-2009-0074), in which the Permittees proposed to grant Interceptor Tree Credits for Regulated Projects. The credits would have allowed Regulated Projects to reduce the calculated amount of impervious surface that has to be treated by LID, thus reducing treatment control sizing. Interceptor Tree Credits are not allowed during the current Permit term because the 2011 Feasibility/Infeasibility Criteria Report did not sufficiently justify them, because they have not yet been sufficiently studied, and because the Water Board has not approved their use. In addition, this subprovision allows the Permittees to submit a report on this issue as described above that could be incorporated into a subsequent permit.

[157] https://www.sfei.org/projects/healthy-watersheds-resilient-baylands

Provision C.3.e (Alternative or In-Lieu Compliance with Provision C.3.b.) recognizes that not all Regulated Projects may be able to install LID treatment systems onsite because of site conditions, such as existing underground utilities, right-of-way constraints, and limited space.

- **Provision C.3.e.i.** This Provision allows any Regulated Project to provide LID treatment for up to 100% of the required Provision C.3.d. stormwater runoff at an offsite location or pay equivalent in-lieu fees to provide LID treatment at a Regional Project, as long as the offsite or Regional Project is in the same watershed as the Regulated Project and constructed within three years of the end of construction of the Regulated Project. The three years of additional time are allowed because more time may be required to complete construction of offsite and Regional projects because of administrative, legal, and/or construction delays. The Water Board acknowledges, in some instances, an even longer time may be required to complete construction of Regional Projects because they may involve a variety of public agencies and stakeholder groups and a longer planning and construction phase. Therefore, the timeline for completion of a Regional Project may be extended up to 5 years after the completion of the Regulated Project, with prior Executive Officer approval. Executive Officer approval will be granted contingent upon a demonstration of good faith efforts to implement the Regional Project, such as having funds encumbered and applying for the appropriate regulatory permits.

  Provision C.3.e.i language noting that Offsite Projects or Regional Projects must comply with Provision C.3.g “as appropriate” means that those projects (either Provision C.3.e.i.(1) or Provision C.3.e.i.(2)) must comply with Provision C.3.g if the original site seeking alternative compliance would otherwise be required to comply with Provision C.3.g.

  To increase the flexibility available to Permittees, Provision C.3.e.i.(1) alternative compliance projects may provide 100 percent of the amount of runoff identified in Provision C.3.d for the Regulated Project’s drainage area at Offsite Projects in the same watershed. Likewise, Provision C.3.e.i.(2) alternative compliance projects may provide 100 percent of the amount of runoff identified in Provision C.3.d for the Regulated Project’s drainage area at Offsite Projects or Regional Projects through payment to an in-lieu fee program. However, Provision C.3.e.i.(1) and Provision C.3.e.i.(2) qualify that by requiring Permittees to include as much LID onsite as possible, to the MEP.

  During the Permit term, the Permittees may submit new information for an alternative compliance program for exchanges of impervious surface treatment credits at the regional, county, and/or municipal level, resulting in offsite treatment or payment for equivalent offsite compliance for 100 percent of the required Provision C.3.c-d stormwater runoff (and Provision C.3.g, as appropriate).

Any such program should include at least the following: a clear organizational framework; demonstration of the treatment of an equivalent quantity of both stormwater runoff and pollutant loading (e.g., through the equivalent or net increase in impervious surface treated, and the equivalent or net reduction in flow and/or pollutant load, but not necessarily in the same watershed) and the achievement of net environmental benefit; an accounting and reporting system; a process for collection and timely use of funds; compliance with Provisions C.3.c-d and C.3.f-h; program oversight by an entity or entities; and expectations for timing and location. If or when such a program proposal is submitted, the Water Board will consider the new information and may consider amending the Permit to include a third option in Provision C.3.e.i that formally recognizes and allows the program specified in the proposal. This is in part a response to the City of San Pablo-led U.S. EPA Water Quality Improvement Fund (WQIF)-funded Regional Compliance for a Sustainable Bay project, which is investigating such a program that would facilitate alternative compliance exchanges between Permittees within Contra Costa County, but may be of interest in other counties and regionally.

As Permittees implement Provision C.3.e.i – which increases the flexibility available to Permittees when planning LID required by Regulated Projects – over the course of this Permit term, they will further incorporate their implementation of it into their municipal administrative and planning processes. Over the course of the Permit term, as Permittees become more accustomed to using Provision C.3.e.i, the Permittees will not be as reliant on Provision C.3.e.ii during their planning processes. Therefore, the Water Board will consider removing Provision C.3.e.ii in the subsequent Permit term, whose utility will be replaced by the Permittees' increased implementation of Provision C.3.e.i.

- **Provision C.3.e.ii. (Special Projects)** When considered at the watershed scale, certain types of smart growth and high density, and transit-oriented development can either reduce existing impervious surfaces, or create less "accessory" impervious areas and auto-related pollutant impacts, to the extent they replace or reduce development projects that do not have those characteristics. Incentive LID Treatment Reduction Credits approved by the Water Board may be applied to these types of Special Projects.

  This Provision includes specific criteria for determining which types of Regulated Projects may be considered Special Projects and establishes different categories of Special Projects based on size, land use type, and density. Except for Category A, which represents the smallest Special Projects, Category B and C also use location, density, and parking criteria to establish a tiered approach for determining the total LID Treatment Reduction Credit available for any given Special Project.

  Category C additionally includes affordable housing criteria for determining the total LID Treatment Reduction Credit available for Category C Special Projects. Affordable housing criteria are included in Category C, for two primary reasons.

First, affordable housing projects typically have high DUs/acre (as further incentivized by the Density Credits) and are typically located near public transportation (as further incentivized by the Location Credits), and thus they likely produce less automobile traffic (i.e., less pollutant loading to the MS4) compared to other development and redevelopment projects that do not have those characteristics. Second, affordable housing credited by this Provision will help reduce unsheltered homelessness, which will reduce pollutant discharges (e.g., of trash and sewage) from homeless encampments and other sources (e.g., RVs) into MS4s.[158] The Water Board recognizes that whether to allow for affordable housing is entirely within the Permittee's land use and zoning authority and discretion. Since such development can reduce pollutants from MS4 systems, the Affordable Housing Credits are provided in the Permit. It will benefit the unhoused population, as follows: The affordable housing criteria are structured in such a way that significant portions of the allowable rent/mortgage rates are capped for Extremely Low income households (0-30% of AMI), Very Low income households (31-50% of AMI), and Low income households (51-80% of AMI), rather than allowing all affordable housing units to qualify even if they only are affordable for Moderate income households (81-120% of AMI) which limit affordability to a significant portion of the population. The link to water quality improvement is expected to decline as rent/mortgage rates increase, as rent/mortgage rates as high as the Moderate level are likely to reduce unsheltered homelessness and its associated impacts at a much lower rate.

The other Category C credits (location, density, and parking criteria) are maintained from the Previous Permit, but reduced so that Affordable Housing Credits are the dominant credit for Category C projects while still recognizing the benefits provided by location, density, and parking criteria, and so that the total possible credit available for Category C Special Projects remains 100 percent. Category C of the Previous Permit primarily credited transit-oriented development (via Location Credits) and resulted in the treatment of approximately 324 acres of impervious surface by non-LID measures region-wide, most of which is attributable to projects for which the Permittees' reporting did not clearly demonstrate that it would have been infeasible to incorporate onsite LID or contribute to offsite LID, as allowed by Provision C.3.e.i. Therefore, Category C has been revised to solely target affordable housing development and redevelopment projects, as Provision C.3.e.i in this Permit already provides sufficient flexibility for other non-affordable housing development and redevelopments that would have qualified as Category C Special Projects in the Previous Permit.

[158] Batko, Oneto, and Shroyer, Dec. 2020. Unsheltered Homelessness: Trends, Characteristics, and Homeless Histories. Urban Institute, pp. 12-13.

Area Household Median Income (AMI) uses the most current Official State Income Limits (adjusted for household size), which are defined on the California Department of Housing and Community Development's website.[159,160]

The definitions included in Category C for affordable housing are adapted from the Metropolitan Transportation Commission (MTC),[161] the Association of Bay Area Governments (ABAG),[162] the East Bay Housing Organizations (EBHO),[163] and the Federal Department of Housing and Urban Development (HUD).[164] For example, HUD defines Affordable Housing as housing for which rent or mortgage costs (including utilities) are no greater than 30 percent of total household income;[165,166] for metropolitan areas, HUD defines Moderate household incomes as 81-120 percent of area median household income (AMI), Low household incomes as 51-80 percent of AMI, Very Low household incomes as 31-50 percent of AMI, and Extremely Low household incomes as 0-30 percent of AMI.[167,168,169,170] Furthermore, Affordable Housing is defined by the Metropolitan Transportation Commission (MTC) as housing with deed restrictions running at least 55 years.[171,172]

To be considered a Category C Special Project, the Regulated Project must be primarily a residential development project, achieve at least a gross density of 40 DU/acre, and the project's DUs must comply with the criteria outlined in Provision C.3.e.ii.(5)(c), which are: for 70 percent Affordable Housing Credit, 100 percent of the DUs within a Category C Special Project must have rent/mortgage rates (including utilities) no greater than 30 percent of the Moderate household income level (≤120 percent of AMI), 75 percent of the DUs must have rent/mortgage rates

[159] https://www.hcd.ca.gov/grants-funding/income-limits/state-and-federal-income-limits.shtml

[160] As of December 31, 2021, they are: https://www.hcd.ca.gov/grants-funding/income-limits/state-and-federal-income-limits/docs/income-limits-2021.pdf

[161] https://mtc.ca.gov/whats-happening/news/mtc-offers-cities-counties-big-carrot-spur-affordable-housing

[162] https://abag.ca.gov/sites/default/files/rhna_methodology_technical_documentation.pdf

[163] http://ebho.org/resources/what-is-affordable-housing/

[164] https://www.hud.gov/topics/rental_assistance

[165] https://archives.hud.gov/local/nv/goodstories/2006-04-06glos.cfm#:~:text=Affordable%20Housing%3A%20Affordable%20housing%20is,Reference%3A%20www.hud.gov

[166] https://www.hud.gov/program_offices/administration/hudclips/acts/nah-ac

[167] https://www.ffiec.gov/

[168] https://www.spur.org/news/2018-06-21/what-we-talk-about-when-we-talk-about-affordable-housing-primer

[169] https://www.planbayarea.org/2050-plan/plan-bay-area-2050-blueprint/plan-bay-area-2050-final-blueprint-documents

[170] https://abag.ca.gov/sites/default/files/rhna_methodology_technical_documentation.pdf

[171] https://mtc.ca.gov/whats-happening/news/mtc-offers-cities-counties-big-carrot-spur-affordable-housing

[172] https://mtc.ca.gov/our-work/fund-invest/investment-strategies-commitments/focused-growth/affordable-housing/housing

(including utilities) no greater than 30 percent of the Low household income level (≤80 percent of AMI), 50 percent of the DUs must have rent/mortgage rates (including utilities) no greater than 30 percent of the Very Low household income level (≤50 percent of AMI), and 25 percent of the DUs must have rent/mortgage rates (including utilities) no greater than 30 percent of the Extremely Low household income level (≤30 percent of AMI). Likewise, for 50 percent Affordable Housing Credit, 75 percent of the affordable housing DUs must have rent/mortgage rates (including utilities) no greater than 30 percent of the Moderate household income level (≤120 percent of AMI), 50 percent must have rent/mortgage rates (including utilities) no greater than 30 percent of the Low household income level (≤80 percent of AMI), 25 percent must have rent/mortgage rates (including utilities) no greater than 30 percent of the Very Low household income level (≤50 percent of AMI), and 15 percent must have rent/mortgage rates (including utilities) no greater than 30 percent of the Extremely Low household income level (≤30 percent of AMI). These criteria, when implemented for Category C Special Projects, will reduce pollutant discharges from unhoused peoples into MS4s when they are housed by the newly-provided affordable housing. Finally, for 25 percent Affordable Housing Credit, 50 percent of the affordable housing DUs must have rent/mortgage rates (including utilities) no greater than 30 percent of the Moderate household income level (≤120 percent of AMI), 25 percent must have rent/mortgage rates (including utilities) no greater than 30 percent of the Low household income level (≤80 percent of AMI), 15 percent must have rent/mortgage rates (including utilities) no greater than 30 percent of the Very Low household income level (≤50 percent of AMI), and 5 percent must have rent/mortgage rates (including utilities) no greater than 30 percent of the Extremely Low household income level (≤30 percent of AMI).

Density Credits for Category C may only use DU/acre, whereas in MRP 2 they could also use FAR. This is because Category C may only be used by primarily residential projects rather than also by nonresidential and mixed development projects.

In MRP 1 and MRP 2, applicable Category C Special Projects were required to first qualify for Location Credits before qualifying for any Density Credits or Minimized Surface Parking Credits. In the current Permit Term, applicable projects must first qualify for Affordable Housing Credits before qualifying for any Location Credits, Density Credits, or Minimized Parking Credits. This is because the primary credit by which Category C Special Projects are allowed to qualify is the Affordable Housing Credit – if a project does not meet any of the criteria required to achieve one of the Affordable Housing Credits, it does not qualify as a Category C Special Project.

The gross density required for 5 percent Density Credit for Category C Special Projects has been reduced from 45 DU/ac to 40 DU/ac, to match the required minimum density included for Category C Affordable Housing Projects.

Definitions of Gross Density and Floor Area Ratio are included in Provision C.3.b.ii to facilitate consistent implementation of this Provision by all Permittees. Gross

Density is defined as the total number of residential units divided by the acreage of the entire site area, including land occupied by public rights-of-way, recreational, civic, commercial and other non-residential uses. Floor Area Ratio (FAR) is defined as the ratio of the total floor area on all floors of all buildings at a project site (except structures, floors, or floor areas dedicated to parking) to the total project site area. Gross Density and FAR have been purposely defined to include public rights-of-way, recreational, civic, commercial, and other non-residential uses so as to raise the bar for Regulated Projects to qualify for the LID Reduction Credits allowed in Provision C.3.e.ii. That is, these more conservative Gross Density and FAR values may result in some Regulated Projects qualifying for less LID Reduction Credits or not qualifying at all.

The reporting data for Special Projects under the Previous Permit showed that “lack of space to provide full LID stormwater treatment” is among the most frequent reason invoked for why 100 percent LID treatment onsite is infeasible. Therefore, it is appropriate that the space reserved for public rights-of-way, recreation, civic, commercial, and other non-residential uses are included in the calculations for gross density and FAR, especially since many of these areas may be used for installation of LID treatment measures.

Density LID Treatment Reduction Credits are allowed for mixed use development projects, which consist of a mix of residential and commercial land uses, based on density measured by either DU/acre or FAR for Category B Special Projects and by DU/acre for Category C Special Projects. A prior permit (R2-2009-0074) did not accommodate this variability and penalized dense mixed-use projects that are mostly residential by restricting density LID Treatment Reduction Credits to only floor area ratio criteria.

The total available LID Treatment Reduction Credit may be used to reduce the amount of stormwater runoff that must be treated with LID stormwater treatment systems. The remaining amount of stormwater runoff must be treated with one or a combination of the following two specific non-LID treatment systems:

(1) Tree-box-type high flowrate biofilters

(2) Vault-based high flowrate media filters

An additional reporting requirement has been added to Provision C.3.e.v.(3) and to Table 3.1 Standard Tracking and Reporting Form for Potential Special Projects, Total Impervious Surface Created/Replaced: The total impervious surface in acres created or replaced by the project, which is subject to the treatment requirements listed in Provision C.3.e.ii.(1). The purpose of this additional reporting requirement is to better characterize the extent and lost opportunity (regarding no or reduced LID treatment) of Special Projects.

To reduce the burden of reporting, the semi-annual reporting of Special Projects that are being considered by Permittees prior to the Permittees granting final planning approval has been reduced to annual, within the Annual Report. Although the frequency of reporting has been reduced, the current reporting requirements for this Provision are not diminished because the data is necessary for Water Board staff to validate the Permittees' analysis of the number and size of potential Special Projects that may be approved during this permit term, and to ensure Permittees are taking all reasonable steps to ensure that the Special Projects Provision is only used when they certify that neither onsite nor offsite LID are feasible. The Water Board intends to use the data collected in the reporting requirements to revise the Special Projects criteria as appropriate for the next permit term.

The narrative summaries included in Permittees' Annual Reports generally have not properly justified the need for the Category C Special Projects Provision as it existed in MRP 2, because those narrative summaries have not sufficiently demonstrated the infeasibility of onsite or offsite LID. This further supports the change that has been made to Category C.

Provision C.3.e.ii Special Projects is temporarily retained in this Permit term, and will be considered for removal in subsequent permit terms. This is because Permittees will have had three Permit terms (Order Nos. R2-2009-0074, R2-2015-0049, and R2-2022-0018) to develop the alternative compliance programs allowed by Provision C.3.e.i. Provision C.3.e.ii Special Projects is intended to serve as an interim measure while Permittees further develop their Provision C.3.e.i alternative compliance programs, because Provision C.3.e.i is capable of providing the flexibility needed to accommodate the technical infeasibility of onsite LID for Regulated Projects, without foregoing the water quality and hydrologic benefits provided by LID. The non-LID treatment measures allowed by Provision C.3.e.ii Special Projects do not provide those benefits to the same degree, although that reduction may be somewhat offset by the water quality benefits associated with avoidance of or potential reductions in unsheltered homelessness.

Provision C.3.e.iii. Implementation Level directs the Permittees to implement Provision C.3.e.ii beginning July 1, 2023. Prior to July 1, 2023, Provision C.3.e.iii.(5) directs Permittees to implement Provision C.3.e.ii in Attachment I, which are requirements from the Previous Order, with dates adjusted for consistency. The rationale for these requirements is set forth in the Previous Permit's Fact Sheet and is incorporated herein. The purpose of the delayed implementation date for Provision C.3.e.ii is to allow Permittees the time needed to arrange all relevant planning authorities and municipal processes to implement changes to Provision C.3.e.ii relative to the Previous Permit.

Provision C.3.f. (Alternative Certification of Stormwater Treatment Systems) allows Permittees to have a third-party review and certify a Regulated Project's compliance with the hydraulic design criteria in Provision C.3.d. Some municipalities do not have the

staffing resources to perform these technical reviews. The third-party review option addresses this staffing issue. This Provision requires Permittees to make a reasonable effort to ensure that the third-party reviewer has no conflict of interest with regard to the Regulated Project being reviewed.

Provision C.3.g. (Hydromodification Management) requires that certain new development projects manage increases in stormwater runoff flow and volume so that post-project runoff shall not exceed estimated pre-project runoff rates and durations, where such increased flow and/or volume is likely to cause increased potential for erosion of creek beds and banks, silt pollutant generation, or other adverse impacts on beneficial uses due to increased erosive force.

Based on Hydrograph Modification Management Plans prepared by the Permittees, the Water Board adopted hydromodification management (HM) requirements for Alameda Permittees (March 2007), Contra Costa Permittees (July 2006), Fairfield-Suisun Permittees (March 2007), Santa Clara Permittees (July 2005), and San Mateo Permittees (March 2007). Those HM requirements are stated in Provision C.3.g., and Attachment C includes maps prepared by the Alameda, Santa Clara, San Mateo, and Fairfield-Suisun Permittees showing areas where HM requirements apply.

The Alameda, Santa Clara and San Mateo Permittees have adapted the Western Washington Hydrology Model[173] for modeling runoff from development project sites, sizing flow duration control structures, and determining overall compliance of such structures and other HM control structures (HM controls) in controlling runoff from the project sites to manage hydromodification impacts as described in the Permit. The adapted model is called the Bay Area Hydrology Model (BAHM).[174] All Permittees may use the BAHM if its inputs reflect actual conditions at the project site and surrounding area, including receiving water conditions. As Permittees gain experience in designing and operating HM controls, the Programs may make adjustments in the BAHM to improve its function in controlling excess runoff and managing hydromodification impacts. Notification of all such changes shall be given to the Water Board and the public through such mechanism as an electronic email list.

The Contra Costa Permittees have developed sizing charts for the design of flow duration control devices. MRP 1 allowed the Contra Costa Permittees to conduct a monitoring program to verify the performance of these devices and to identify whether streams to which Contra Costa Permittees discharge may have a different susceptibility to HM impacts, thus justifying a different threshold for control of flows resulting in those impacts. The Contra Costa Permittees submitted an IMP Monitoring Report,[175] which

[173] https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Stormwater-manuals/Western-Washington-Hydrology-Model

[174] See www.bayareahydrologymodel.org, Resources.

[175] Contra Costa Clean Water Program, September 15, 2013. IMP Monitoring Report: IMP Model Calibration and Validation Project.

found that Contra Costa HM measures generally, but not entirely, met MRP 1's HM requirements for the Alameda, Santa Clara, and San Mateo Permittees, and the City of Vallejo. The Contra Costa Permittees did not submit information showing that Contra Costa creeks had a different susceptibility to erosion. That is, they did not submit a justification for using erosion thresholds different than those accepted for the Alameda, Santa Clara, and San Mateo Permittees, and the City of Vallejo. Under MRP 1, the Water Board had accepted a higher threshold for control of HM effects (i.e., controlling the range of flows beginning at 20 percent of the 2-year pre-project peak flow, as opposed to 10 percent of the 2-year pre-project peak flow). Because this additional information was not submitted, and Contra Costa streams are generally similar to other Bay Area streams, MRP 2 extended the 10 percent standard to Contra Costa, and included requirements for Contra Costa to complete modifications to its HM approach to ensure that projects implement that consistent approach within a specified time.

Pursuant to Provision C.3.g.iii of MRP 2, the Contra Costa Permittees submitted a HM Technical Report[176] with the 2017 Annual Report, which suggested changes to sizing factors for an array of HM controls used by Contra Costa Permittees to comply with the HM Standard in Provision C.3.g.ii. Water Board staff's review of the 2017 HM Technical Report[177] and subsequent discussion with the Contra Costa Permittees culminated in modifications to Provision C.3.g.iii of this Permit, which requires the Contra Costa Permittees to revise their 2017 HM Technical Report so that HM Projects comply with the HM Standard of Provision C.3.g.iii, by excluding data that are not representative and assumptions that are not supported, and by producing a complete suite of sizing factors that are protective of all likely site and watersheds characteristics within Contra Costa County, for all types of HM controls that may be used in the County and for sites with Hydrologic Soil Group A, B, C, and D soils.

The CCCWP Permittees are required to use a base case sizing factor of 6.5 percent for the complete suite of sizing factors, which is a conservative sizing factor based on sites with project-scale built-out imperviousness in the upper watershed for the Lower Control Threshold of 0.1Q2, for soil percolation rates of 0.024 inches per hour, as presented in Table 5-7 on page 58 of the 2017 HM Technical Report. In developing the complete suite of sizing factors, the CCCWP Permittees are required to justify deviations from the base case as conditions of exception that could allow alternative sizing while still being protective (adhering to the HM Standard of maintaining EP ≤ 1) – for different soil types and different applicable geographic characteristics.

This requirement in Provision C.3.g.iii is attached to the reporting requirement in Provision C.3.g.vi.(2).

[176] Contra Costa Clean Water Program Hydromodification Technical Report. September 29, 2017.

[177] Lichten, March 19, 2021. Response to CCCWP's Hydromodification Management Memo of November 4, 2020, and next steps. SF Bay Water Board.

Within Provision C.3.g.vi.(2)(b): (A) "The additional mitigation measures shall not include: reliance on… the presence of existing or future HM and LID controls located elsewhere within the catchment," is distinct from: (B) "The Technical Report may additionally propose alternative or supplemental methods of compliance with Provision C.3.g.iii. HM Standard, including any combination of: ...additional new HM controls located offsite within the same catchment as the receiving stream..."

A) refers to hydromodification management controls that are outside the control of a project proponent and may be speculative or below the point of discharge to a receiving water body (e.g., a creek).

(B) refers to controls constructed concurrently and in combination with other controls specified in C.3.g.vi.(2)(b), as an alternative or supplemental method of compliance with the C.3.g.ii. HM Standard: "undersized onsite HM controls... and in-stream controls... which when implemented together achieve the C.3.g.iii HM Standard."

Provision C.3.g.v. of MRP 1 required the City of Vallejo to complete a hydrograph modification management plan (HMP) by July 1, 2013, in lieu of complying with that order's Provision C.3.g.i-iv. The City submitted its Final HMP on April 24, 2013,[178] and the HMP was subsequently accepted by Board staff. The Final HMP incorporates the same requirements as for the Alameda, Santa Clara, and San Mateo Permittees. The Permit requires the City to comply with those requirements.

The Fairfield-Suisun Permittees are required to comply with the HM criteria established in this Permit. However, they have a threshold for control of erosive flows that is greater than the other Permittees: 20 percent of the 2-year peak flow. This criterion, which is greater than the criterion allowed for other Bay Area Stormwater Countywide Programs, is based on data collected from Laurel and Ledgewood Creeks and technical analyses of these site-specific data.

The Water Board recognizes that the collective knowledge of management of erosive flows and durations from new and redevelopment is evolving, and that the topics listed below are appropriate topics for further study. Such a study may be initiated by Water Board staff, or the Executive Officer may request that all Bay Region municipal stormwater Permittees jointly conduct investigations as appropriate. Any future proposed changes to the Permittees' HM provisions may reflect improved understanding of these issues:

(1) Potential incremental costs, and benefits to waterways, from controlling a range of flows up to the 35- or 50-year peak flow, versus controlling up to the 10-year peak flow, as required by this Permit;

(2) The allowable low-flow (also called Qcp and currently specified as 10–20 percent of the pre-project 2-year runoff from the site) from HM controls;

[178] City of Vallejo (Geosyntec), April 2013. Final Hydromodification Management Plan (HMP).

(3) The effectiveness of self-retaining areas for management of post-project flows and durations; and/or

(4) The appropriate basis for determining cost-based impracticability of treating stormwater runoff and controlling excess runoff flows and durations.

- **Provision C.3.g.i**. defines the subset of Regulated Projects that must install hydromodification controls (HM controls). This subset, called HM Projects, are Regulated Projects that create and/or replace one acre or more of impervious surface and are not specifically excluded by the conditions expressed in C.3.g.i.(1)-(3). Those conditions identify areas where the potential for single-project and/or cumulative development hydromodification impacts to creeks is minimal, and thus HM controls are not required. Such areas include creeks that are concrete-lined or significantly hardened (e.g., with concrete) from point of discharge and continuously downstream to their outfall into San Francisco Bay; underground storm drains discharging to the Bay; and construction of infill projects in highly developed watersheds.[179] The Alameda, Santa Clara, San Mateo, and Fairfield-Suisun Permittees have developed maps showing where HM controls are required (Attachment C).

  This Provision requires Permittees that have not previously submitted an HM Applicability Map or equivalent information to prepare and submit that information, acceptable to the Executive Officer, consistent with the requirements of Provision C.3.g. This targets the Contra Costa Permittees, who submitted a HM Applicability Map[180,181] with the 2017 Annual Report, which was not satisfactory because it included areas that were not yet resolved (whether or not projects in those areas would be HM Projects), and it claimed certain channels are not hardened, which are in fact hardened. This requirement is attached to the reporting requirement in Provision C.3.g.vi.(1), which requires submittal of new or revised HM Applicability Maps by no later than with the 2023 Annual Report.

- **Provision C.3.g.ii.** establishes the standard HM controls that all HM Projects must meet. The HM Standard is based largely on the standards proposed by Permittees in their Hydrograph Modification Management Plans. The method for calculating post-project runoff in regards to HM controls is standard practice in Washington State and is equally applicable in California.

- **Provision C.3.g.iii.** provides a procedure for the Permittees to propose an additional method for demonstrating compliance with HM requirements. This method would

[179] Within the context of Provision C.3.g., "highly developed watersheds" refers to catchments or sub-catchments that are 70 percent impervious or more.

[180] Attachment 3.1 to 2017 CCCWP Annual Report: Hydromodification Applicability Mapping Methodology Technical Memorandum. September 11, 2017.

[181] Attachment 3.2 to 2017 CCCWP Annual Report: Hydromodification Applicability Map. September 28, 2017.

directly simulate erosion potential, and would be required to ensure that projects implementing HM controls with this method, if accepted by the Executive Officer, meet the Permit's HM criteria. This provision requires submittal of appropriate analyses (with the 2023 Annual Report, pursuant to the reporting requirement in Provision C.3.g.vi.(2)) demonstrating that the method will substantively comply with HM requirements; it may not be implemented on projects until accepted by the Executive Officer.

- **Provision C.3.g.iv.** identifies and defines three methods of hydromodification management.
- **Provision C.3.g.v.** establishes the timeframes for meeting the HM Standard defined in Provision C.3.g.ii.
- **Provision C.3.g.vi.** describes the information required to be collected and/or submitted in the Permittees' Annual Reports regarding HM Projects. This Provision also describes specific required information for Contra Costa Permittees to submit with the 2023 Annual Report, which follows from the requirements in Provision C.3.g.i (HM Applicability Map) and in Provision C.3.g.iii (revised HM Technical Report).

  Regarding the information to be submitted by the Contra Costa Permittees, Provision C.3.g.vi.(2)(b) includes two distinct criteria:

  (A) "The additional mitigation measures shall not include: reliance on… the presence of existing or future HM and LID controls located elsewhere within the catchment which do or will satisfy other NPDES or CWA requirements," is distinct from:

  (B) "The Technical Report may additionally propose alternative or supplemental methods of compliance with Provision C.3.g.iii. HM Standard, including any combination of: ...additional new HM controls located offsite within the same catchment as the receiving stream..."

  That's because (A) refers to existing and potential/future controls that have been (or that may or will be) implemented to satisfy other NPDES or CWA (e.g., mitigation required for 401 certification) requirements. For example, new bioretention cells that will be constructed for an anticipated or upcoming Regulated Project, or existing bioretention cells that were constructed several years ago for a Regulated Project, or potential bioretention cells that would be constructed if a potential Regulated Project becomes an actual Regulated Project at some point in the future.

  On the other hand, (B) refers to controls constructed concurrently and in combination with other controls specified in Provision C.3.g.vi.(2)(b), as an alternative or supplemental method of compliance with the Provision C.3.g.ii.

HM Standard: "undersized onsite HM controls... and in-stream controls... which when implemented together achieve the Provision C.3.g.iii HM Standard." This *does not* include taking credit for controls that are required for other NPDES or other CWA requirements; it's referring to new controls that are implemented specifically to mitigate hydromodification impacts for a given HM Project, that are not double-counted.

Provision C.3.h. (Operation and Maintenance of Stormwater Treatment Systems) establishes permitting requirements to ensure that proper maintenance for the life of the Regulated Project is provided for all pervious pavement systems of 3,000 square feet or more; onsite, joint, and offsite stormwater treatment systems; and HM controls installed.

This Provision adds a requirement for Permittees to include pervious pavement systems of 3,000 square feet or more in their Operation and Maintenance Agreements, database of Regulated Projects, and inspection checklists. Pervious pavement systems serve as site design measures that directly reduce the amount of impervious surface area and therefore, the size of the stormwater treatment system(s) required to comply with Provision C.3.d. Adequate routine maintenance of pervious pavement systems is essential because clogged systems become impervious and may result in untreated stormwater runoff or additional load on stormwater treatment systems that result in inadequately treated stormwater runoff. To lessen the burden of inspecting so many pervious pavement systems, only those of 3,000 square feet or more are required to be inspected and patios for private-use at single-family homes, townhomes, or condominiums are specifically excluded. In the case of large subdivisions where the total pervious pavement system area is equal to or greater than 3,000 square feet, but the pervious pavement installations are on individual driveways that are less than 3,000 square feet, inspection of a representative number of driveways will suffice.

- **Provision C.3.h.ii.(6).** MRP 1 required Permittees to inspect at least 20 percent of all stormwater treatment systems annually, at least 20 percent of all vault-based systems annually, and every treatment system at least once every 5 years. Permittees have indicated that each inspection of a Regulated Project routinely includes inspection of pervious pavement systems, stormwater treatment systems and HM controls installed at the Project. Therefore, this Provision requires the inspection frequency requirements such that the minimum number of inspections required annually is tied to a percentage of the total number of Regulated Projects, instead of the total number of individual treatment systems and HM controls. This lessens the tracking burden for the Permittees and better reflects the way actual inspections are conducted.

  This Provision requires each Permittee to inspect all its Regulated Projects at least once every 5 years and inspect an average of 20 percent, but no less than 15 percent of the total number of Regulated Projects annually. This requirement serves to prevent failed or improperly maintained pervious pavement systems, stormwater treatment systems, or HM controls from going undetected until the 5th year. Neither

of these inspection frequency requirements interferes with the Permittees' current ability to prioritize their inspections based on factors such as types of maintenance agreements, owner or contractor-maintained systems, maintenance history, past compliance problems at certain Projects, etc.

- **Provision C.3.h.ii.(6)(d)** This Provision allows Permittees to accept third party inspection reports for vault-based stormwater treatment systems in lieu of conducting Permittee inspections, but only if the third party inspections are conducted at least annually, which is the normal frequency for maintenance of these systems. Each third party inspection must be included in the database or tabular format required in Provision C.3.h.ii.(4) and (5) and clearly identified as a third party inspection. Each third party inspection report must document the third party inspection company, date of inspection, condition of the treatment unit(s) at the time of inspection, maintenance activities performed, and appearance of the inside of the vault units (with photos) before and after maintenance.
- **Provision C.3.h.ii.(7)** As the number of Regulated Projects grows, the Permittees' O&M inspection programs must grow as well. Therefore, this Provision requires each Permittee to develop and implement an Enforcement Response Plan (ERP) for O&M inspections. The ERP serves as a reference document for inspection staff so that consistent enforcement actions can be taken to bring development projects into compliance. This Provision establishes minimum requirements for the ERPs. One of these requirements is that corrective actions must be implemented within 30 days after a problem is identified by an inspector. Thirty days is more than adequate time, considering that many of the problems identified in past O&M inspection reports have been lack of maintenance service or build-up of sediment or debris. The correction of such deficiencies should not take more than 30 days. This Provision also allows for greater than 30 days to complete permanent corrective actions, such as installing additional curb cuts and making grading or vegetation improvements.
- **Provision C.3.h.iv.** This Provision requires Permittees to ensure that pervious pavement systems that total 3,000 square feet or more, stormwater treatment systems, and hydromodification controls are appropriately operated and maintained for the life of those systems and controls, which maintenance is necessary to ensure the systems and controls are operating effectively and protecting water quality consistent with their designs. It recognizes situations where maintenance may be delayed due to the need to obtain certain federal or state permits (e.g., special status species take authorization from a state or federal agency), and sets expectations regarding how Permittees should proceed. Specifically, Permittees should ensure a system's or controls' responsible party is working in good faith to obtain those authorizations. It directs Permittees to abide by the expectations set in the Water Board's Resolution No. 94-102 for applicable systems, including the maintenance thereof.

- **Provision C.3.h.v.** As in MRP 1 and MRP 2, this Provision requires the Permittees to maintain a database or equivalent tabular format with detailed information on each O&M inspection and any necessary enforcement actions against Regulated Projects. To lessen the burden of reporting, this Provision only requires summary data on inspections conducted each fiscal year to be reported in the Annual Report, instead of detailed information on each O&M inspection. However, upon request by the Executive Officer, detailed information from the database or tabular format must be submitted.

Provision C.3.i. (Required Site Design Measures for Small Projects and Detached Single-Family Homes Projects) contains requirements for detached single-family home projects that create and/or replace ≥ 2,500 ft^2 to <10,000 ft^2 of impervious surface and small development and redevelopment projects that create and/or replace ≥ 2,500 ft^2 to <5,000 ft^2 of impervious surface (collectively over the entire project). A detached single-family home project is defined as the building of one single new house or the addition and/or replacement of impervious surface to one single existing house, which is not part of a larger plan of development. Projects with new or replaced impervious surface of this size transport storm water pollutants that can be controlled through basic site design measures.

This Provision requires these projects to select and implement one or more stormwater site design measures from a list of six. These site design measures are basic methods to reduce the amount and flowrate of stormwater runoff from projects and provide some pollutant removal treatment of the runoff that does leave the projects. Under this Provision, only projects that already require approvals and/or permits under the Permittees' current planning, building, or other comparable authority are regulated. Hence this Provision does not require Permittees to regulate small development and single-family home projects that would not otherwise be regulated under the Permittees' current ordinances or authorities. Water Board staff recognizes that the stormwater runoff pollutant and volume contribution from each one of these projects may be small relative to other types of development and redevelopment projects; however, the cumulative impacts are likely to be significant. This Provision serves to address some of these cumulative impacts in a simple way that will not be too administratively burdensome on the Permittees.

Provision C.3.i.ii. Implementation Level directs the Permittees to implement Provision C.3.i beginning July 1, 2023.

Provision C.3.i.ii.(2) is as follows: Prior to July 1, 2023, it directs Permittees to implement Provision C.3.i in Attachment I, which are requirements from the Previous Permit. The rationale for these requirements is set forth in the Previous Permit's Fact Sheet and is incorporated herein. The purpose of this delayed implementation date for Provision C.3.i is to allow Permittees the time needed to arrange all relevant planning authorities and municipal processes, train their staff, etc., regarding changes made to Provision C.3.i relative to the Previous Permit.

Provision C.3.j. (Green Infrastructure Planning and Implementation) MRP 2 required Permittees to complete and begin implementation of a Green Infrastructure Plan (GI Plan) for the inclusion of low impact development drainage design into storm drain infrastructure on public and private lands, including streets, roads, storm drains, parking lots, building roofs, and other storm drain infrastructure elements. In particular, green infrastructure sited in the public right of way that collects stormwater from adjacent tributary parcels can be a more efficient use of public and private resources than treatment of individual parcels, and can also result in additional treatment compared to parcel-based treatment.[182] As such, Permittees have used green infrastructure approaches when siting treatment systems for Regulated Projects, such as for Provision C.3.e.i Alternative Compliance projects.

Public Law 115-436 Water Infrastructure Improvement Act approved on January 14, 2019, established section 402(s) of the CWA authorizing integrated plans that address both municipal wastewater and stormwater management as a potential compliance path that may be incorporated into an NPDES permit. Integrated planning is designed to help municipalities identify efficiencies in implementing requirements that arise from distinct permitting programs, particularly how best to make capital investments (Integrated Municipal Stormwater and Wastewater Planning Approach Framework, U.S. EPA, June 5, 2012). Under this law, an integrated plan can be used to implement any requirements relating to a combined sewer overflow, sanitary sewer collection system, municipal stormwater discharge, municipal wastewater discharge, and a water quality-based effluent limitation to implement an applicable wasteload allocation in a total maximum daily load. The integrated planning approach does not relax or change regulatory permitting standards, but rather recognizes existing flexibilities in the CWA to sequence and schedule compliance projects that may be relevant to multiple permitting programs (33 U.S.C. § 1342(s)(5).). Notably, Congress recognized the value of green infrastructure in meeting CWA requirements in allowing green infrastructure in integrated plans (*Id*. at subd. (s)(3)(b)(ii).). While this Order is not an integrated plan under CWA section 402(s), it shares the same principle of promoting integrated

[182] For example, see:

WEF, Dec. 2, 2015. *The Real Cost of Green Infrastructure*. WEF Stormwater Report. Web. July 24, 2021.

McGlynn, Dec. 2019. *Clock Ticking for Cities to Commit to Urban Greening*. Estuary News, the San Francisco Estuary Partnership.

CCAG, January 2021. *San Mateo Countywide Sustainable Streets Master Plan.*

Clary et al., 2020. *International Stormwater BMP Database: 2020 Summary Statistics.* The Water Research Foundation.

Sustainable Business Network, May 2021. *Green Stormwater Infrastructure (GSI): A Tool for Economic Recovery and Growth in Pennsylvania.*

Sustainable Business Network, 2021. *Excellence in GSI Awards,* Philadelphia, PA.

Stutz, Bruce, March 29, 2018. *With a Green Makeover, Philadelphia is Tackling Its Stormwater Problem.* Yale Environment 360.

planning in meeting various regulatory requirements, especially with regard to green infrastructure.

The GI Plan is intended to serve as an implementation guide and reporting tool during this and subsequent Permit terms to provide reasonable assurance that urban runoff TMDL wasteload allocations (e.g., for the San Francisco Bay mercury and PCBs TMDLs) will be met, and to set goals for reducing, over the long term, the adverse water quality impacts of urbanization and urban runoff on receiving waters. For MRP 2, the development of the GI Plan was in lieu of expanding the definition of Regulated Projects prescribed in Provision C.3.b.ii to include all new and redevelopment projects that create or replace 5,000 square feet or more of impervious surface areas and road projects that just replace existing imperious surface area. However, this Permit includes (and subsequent Permits may further include) different impervious surface thresholds or other criteria for Regulated Projects. The GI Plan also provides a mechanism to establish and implement alternative or in lieu compliance options for Regulated Projects.

Over the long term, the GI Plan is intended to describe how the Permittees will shift their impervious surfaces and storm drain infrastructure from gray, or traditional storm drain infrastructure where runoff flows directly into the storm drain and then the receiving water, to green—that is, to a more-resilient, sustainable system that slows runoff by dispersing it to vegetated areas, harvests and uses runoff, promotes infiltration and evapotranspiration, and uses bioretention and other green infrastructure practices to clean stormwater runoff.

The GI Plan also identifies means and methods to prioritize particular areas and projects within each Permittee's jurisdiction, at appropriate geographic and time scales, for implementation of green infrastructure projects. Further, it includes means and methods to track the area within each Permittee's jurisdiction that is treated by green infrastructure controls and the amount of directly connected impervious area. As appropriate, it incorporates plans required elsewhere within this Permit, and specifically plans required for the monitoring of and to ensure appropriate reductions in trash and PCBs, mercury, and other pollutants. Permittees may comply with the requirements of this Provision through collaborative efforts.

MRP 2 specified minimum elements that each GI Plan must contain to ensure that each GI Plan is robust and appropriately identifies the means and methods that each Permittee will employ to implement green infrastructure over time. These minimum elements are not overly prescriptive, so as to allow Permittees flexibility in developing their GI Plans. They are repeated here, to guide the Permittees' ongoing updates and addenda to their Plans as prescribed by Provision C.3.j.ii.(1):

(1) A mechanism to prioritize and map areas for potential and planned projects, both public and private, on a drainage-area specific basis. Implementation of these projects is required to be projected over the same timeframes as specified

in Provisions C.11. and C.12. for assessing mercury and PCB load reductions because green infrastructure and projects are an acknowledged means of pollutant load reductions. Each Permittee has flexibility in choosing the mechanism as long as it includes criteria for prioritization and outputs that can be incorporated into its long-term planning and capital improvement processes.

(2) Targets for the amount of impervious surface, from public and private projects, within the Permittee's jurisdiction to be retrofitted over the same timeframes as specified in Provisions C.11. and C.12. for assessing mercury and PCB load reductions. These self-determined targets represent the green infrastructure work that each Permittee has proactively identified will be completed beyond what would be completed in its community anyway.

(3) A process for tracking and mapping completed projects, public and private, and making the information publicly available. Again, each Permittee has flexibility in what they use to comply with this Provision.

(4) General guidelines and standard specifications for overall streetscape and project design and construction to ensure that projects have a unified, complete design that implements the range of functions associated with the projects. These guidelines and standard specifications, while crucial to a Green Infrastructure Plan, already exist in many reference documents for green infrastructure design and are readily available.

(5) Requirement(s) that projects be designed to meet the treatment and hydromodification sizing requirements in Provisions C.3.c. and C.3.d. In recognition of space and drainage constraints that may occur for public green infrastructure road projects not subject to Provision C.3.b.ii (i.e., non-Regulated Projects), this Provision allows Permittees to collectively propose a single approach for how to proceed should project constraints preclude fully meeting the C.3.d. sizing requirements. The single approach can include different options to address specific issues, constraints, or scenarios.

(6) A summary of the planning documents the Permittee has updated or otherwise modified as well as how the Permittee will ensure that green infrastructure requirements will be included in future plans. The purpose of this element is to show that each Permittee is considering green infrastructure in all aspects of its urban planning.

(7) A workplan to complete prioritized projects identified as part of a Provision C.3.e Alternative Compliance program or part of Provision C.3.j Early Implementation.

(8) An evaluation of prioritized project funding options, including, but not limited to: Alternative Compliance funds; grant monies, including transportation project grants from federal, state, and local agencies; existing Permittee resources; new tax or other levies; and other sources of funds.

In addition to the development of the GI Plans, MRP 2 required each Permittee to:

(1) Prepare a framework or workplan that describes specific tasks and timeframes for developing its GI Plan. The framework or workplan was required to be approved by each Permittee's governing body, mayor, city manager, or county manager by June 30, 2017. This approval process provided assurance to the Water Board that Permittees are committed to the development and implementation of the GI Plan and green infrastructure.

(2) Document in its 2017 Annual Report that the framework or workplan for development of its GI Plan was approved by June 30, 2017, as required by Provision C.3.j.i.(1) of MRP 2. This Provision also required each Permittee to submit its GI Plan and documentation of the legal mechanisms to implement the GI Plan with the 2019 Annual Report.

(3) Prepare and maintain a list of green infrastructure projects, public and private, that are already planned for implementation during the permit term and infrastructure projects planned for implementation that have potential for green infrastructure measures.

The Permittees were required to submit the list with each Annual Report along with a summary of planning or implementation status for each public green infrastructure project and each private green infrastructure project that is not also a Regulated Project under Provision C.3.b.ii. This Provision also required each Permittee to include a summary of how each public infrastructure project with green infrastructure potential will include green infrastructure measures to the maximum extent practicable during the permit term. For any public infrastructure project where implementation of green infrastructure measures is not practicable, the Permittee was required to submit a brief description of the project and the reasons green infrastructure measures were impracticable to implement.

The purpose was to ensure that each Permittee is proactively developing green infrastructure projects and including green infrastructure elements into already planned infrastructure projects as much as possible, both while the GI Plan was being developed, and subsequent to its development.

This requirement is retained in the Permit, in Provision C.3.j.iii, No Missed Opportunities.

(4) Individually or collectively, to track processes, assemble and submit information, and provide information, materials, and presentations as needed to assist relevant regional, state, and federal agencies to plan, design, and fund green infrastructure measures in local infrastructure projects, including public transportation projects.

(5) Individually or collectively, to develop and implement regionally consistent methods to track and report implementation of green infrastructure measures including treated area and connected and disconnected impervious area on both public and private parcels within their jurisdictions. The methods shall also address tracking needed to provide reasonable assurance that wasteload allocations for TMDLs, including the San Francisco Bay PCBs and mercury TMDLs, and reductions for trash, are being met.

The GI Plans were completed during MRP 2; therefore, the focus of Provision C.3.j in the Permit shifts from planning to implementation. U.S. EPA supports the Permit's movement from planning to implementation of green infrastructure on a more regional basis.[183] Provision C.3.j.i. Task Description requires the Permittees to (continue to) implement their GI Plans, as may be updated and supplemented to comply with this Order.

Provision C.3.j.ii Implementation Level, prescribes programmatic requirements, numeric requirements, and design criteria that Permittees must comply with when implementing their GI Plans during the Current Permit Term.

Provision C.3.j.ii.(1) describes the Programmatic Implementation requirements requiring Permittees to update and supplement their GI Plans to ensure that municipal processes and ordinances allow and appropriately encourage implementation of green infrastructure, and incorporate lessons learned, by:

(1) Revising the implementation mechanisms in the GI Plans to include consideration or reconsideration of cooperation with non-municipal entities such as schools on green infrastructure implementation, and otherwise updating implementation mechanisms as appropriate.

This is necessary because Permittees may need to update their implementation mechanisms as certain processes are refined or adapted to better support green infrastructure implementation. Cooperation with non-municipal entities like school districts is required to be considered or reconsidered because schools can offer excellent opportunities for green infrastructure implementation for a number of reasons, including their likely coverage under the California Small MS4 General Permit, which is expected to clarify the clean water role they can play going forward; their role in climate change adaptation planning efforts; their often substantial impervious surface coverage; and the ability of municipalities to

[183] U.S. EPA provides many resources at a national level that document the multiple benefits that green infrastructure can have on water quality and community well-being: https://www.epa.gov/green-infrastructure/benefits-green-infrastructure

regulate discharges from schools into their MS4s.[184] Often, schools have some of the most-available area for green infrastructure implementation, along with budget needs that can facilitate cooperation when municipalities or others contribute sources of funding. Because of the opportunities for implementation, funding, and shared need, GI Plans should be revised to include, in their prioritization approaches, green infrastructure projects that may be implemented in a joint or cooperative manner, including not only those coordinated with schools, but also those coordinated with Bay Area Rapid Transit (BART), Caltrans, and others as appropriate.

(2) Following through with the development or updates of general plans, specific plans, urban forestry plans, climate change adaptation plans, complete streets plans and other planning documents with a green infrastructure nexus to include language which is more supportive of green infrastructure implementation, as identified by the Permittees in their GI Plans. Upon request by Water Board staff, Permittees are required to provide justifications for planning documents that they assert do not need to be updated to further support green infrastructure implementation.

This is necessary because not all Permittees sufficiently updated their planning documents as required in the Previous Permit term to demonstrate that they are considering green infrastructure in all aspects of urban planning. In many cases, it was unclear how the planning documents supported green infrastructure implementation. Water Board staff's complete review of the GI Plans, which provides guidance on this and other facets of Provision C.3.j.ii.(1), is detailed in an October 2020 memo.[185]

GI Plans that identify overarching policy or planning documents are worthwhile for other Permittees to consider. For example, San Mateo County references the City/County Association of Governments of San Mateo County's (C/CAG's) Sustainable Streets Master Plan, which prioritizes locations to integrate green infrastructure into street rights of way and considers how those projects may contribute to climate change resilience. This opportunity to more legibly consider and coordinate the multiple benefits of green infrastructure could facilitate implementation over time.

Several GI Plans reference specific plans, neighborhood plans, street master plans, or similar documents, which can allow municipalities to focus their green infrastructure implementation in an intentional and targeted manner. Examples

[184] For example, L.A. Unified School District: Storm Water Management and Low Impact Development. http://learninggreen.laschools.org/stormwater-management.html. Accessed July 26, 2021.
Sharon Danks, *A vision for green schoolyards across California*. Green Technology Magazine, Web. accessed July 26, 2021. https://www.green-technology.org/magazinenews/a-vision-for-green-schoolyards-across-california/

[185] *Water Board Staff's Review of the 2019 Green Infrastructure Plans.* October 1, 2020.

include the City of El Cerrito's 2014 San Pablo Avenue Specific Plan, which, among other things, charges private development with impact fees to fund frontage improvements on San Pablo Avenue, and the City of Berkeley's 2019 Adeline Corridor Specific Plan, which has identified several promising green infrastructure opportunities. Master planning efforts like those framed in specific plans have long been tools for effective green infrastructure implementation. More than twenty years ago, Fremont's plan for the 840-acre Pacific Commons site enabled comprehensive district-scale stormwater planning and expectation setting in advance of development of parcels within the district. The Water Board supports the use of specific plans and related plans to facilitate green infrastructure implementation, and as part of a range of green infrastructure implementation tools that should be applied throughout Permittee jurisdictions.

The expectation of this Provision is that Permittees continue to update existing plans to include, as appropriate, and to incorporate into new plans, low impact development and green infrastructure expectations, including implementation. Similar to El Cerrito's and Berkeley's approaches, Permittees' updated and new specific plans and similar documents should incorporate green infrastructure requirements for the plan areas. For example, the City of Campbell's GI Plan noted several neighborhood and street master plans that could be updated to incorporate and coordinate green infrastructure expectations, and referenced development by this year of a schedule to complete those updates. That was similar to other municipality plans in western Santa Clara County, and is a reasonable model for addressing updates during the Permit term.

(3) Developing funding and funding mechanisms identified in the GI Plans, such as by working with the relevant agencies to expand the scope of transportation grants to include allocation for green infrastructure; establishing green infrastructure-based or green infrastructure-incorporating stormwater fees, including work that sets the foundation for additional future stormwater fees; establishing or increasing application review fees, and evaluating other opportunities to leverage municipal approval of private development to fund green infrastructure implementation.

The most common existing funding sources identified in the GI Plans are State grants and internal revenues. Many GI Plans commit to incorporating consideration of green infrastructure into the Permittees' Capital Improvement Plans (CIP) so that green infrastructure funding may be tied to CIP projects where incorporation of green infrastructure has been identified as otherwise feasible. Given existing funding constraints, most Permittees are prioritizing maintenance of existing infrastructure over addressing pollutant discharges (from yet-untreated impervious surfaces) with clean water controls.

To overcome this challenge, the GI Plans describe widespread interest in establishing new long-term funding sources, such as alternative compliance

programs, Prop. 218- and SB 231-compliant stormwater utility fees, and permit fees. A few GI Plans describe existing stormwater utility fees enacted prior to Prop. 218, and others note how these fees are currently being pursued. Oakland's GI Plan includes a useful summary letter (App. F, Oakland 100RC Stormwater Program Financing Memo) that describes a range of available funding opportunities, in addition to citing BASMAA's 2018 Roadmap of Funding Solutions for Sustainable Streets.[186] Nearly every GI Plan that expressed hesitance in pursuing such fees now stresses 1) the risk associated with legal challenges, and 2) the need to wait for another Permittee to be the legal test subject for this approach.

Permittees such as the Cities of San Mateo and Redwood City are leading the way by more fully recognizing the extent of development project urban runoff impacts and requiring developers to fund green infrastructure that is either beyond the Permit's minimum requirements or based on a reinterpretation of the Permit's requirements as a condition of approval.

During the Permit term, Permittees with regulated projects should evaluate opportunities to pursue approaches similar to those being implemented by the Cities of San Mateo and Redwood City.

Funding approaches that the Water Board did not see broadly considered in the GI Plans include: impervious surface fees targeting all impervious surface, including single- and multi-family residential parcels, tied to the operation and maintenance of the storm drain system; and maintaining or increasing development application review and post-construction green infrastructure operation and maintenance inspection fees to a level sufficient to allow for a self-sustaining program. The Water Board welcomes opportunities to discuss and support Permittees' funding approaches.

There are some interesting countywide proposals unique to certain counties. For example, the GI Plans for Permittees within Contra Costa County include a discussion of legislative constraints to the use of Contra Costa Transportation Authority Sales Tax Revenue for green infrastructure implementation, and of pursuing a ruling from MTC on the Highway User Gas Tax Account. The GI Plans for Permittees within San Mateo County include a discussion of the planned Flood and Sea Level Rise Resiliency Agency, which would help fund regional green infrastructure projects. The Water Board looks forward to working with the Permittees to support these and any other new or similar countywide efforts. Most GI Plans also, appropriately, reference BASMAA's 2018 Roadmap of Funding Solutions for Sustainable Streets.[186]

[186] https://basmaa.org/wp-content/uploads/2021/01/roadmap_funding_solutions_sustainable_streets_final.pdf

(4) Reviewing countywide green infrastructure implementation guidance documents and adapting them as necessary to account for local considerations if this has not already been completed during the Previous Permit term, and otherwise reviewing and updating general guidelines and standard specifications as appropriate.

The primary goal of this requirement is to ensure that there are no barriers to green infrastructure implementation based on the availability and status of guidance documents and standard specifications and details during the Permit term. In addition, some Permittees did not demonstrate that they adapted guidance documents to local considerations in the Previous Permit.[185]

(5) Continuing to implement the tools developed during the Previous Permit to track and map completed public and private green infrastructure projects, and making the information publicly available.

Nearly all GI Plans reference tracking tools currently in development by the County stormwater programs, with a statement that the tools include or will include components to make certain information publicly available. However, some GI Plans suggest that green infrastructure implementation information submitted in tabular format in Annual Reports satisfies this subprovision. It does not. The tools in development generally appear appropriate to meet this Provision, but additional information is needed as discussed below. Each GI Plan that references a County stormwater program's tracking tool, many of which are based on ArcGIS online or AGOL, and a few of which utilize GreenPlan-IT, appropriately commits to contributing data to it once the tool is ready, and many GI Plans discuss local tracking tools that will likely be discontinued once the County tracking tools are ready. However, most GI Plans do not say when the respective County tracking tool will be completed, or whether or how the tools will be available to the public, and if yes, what information will be made available. Some GI Plans say only that the tools have or will have mapping capabilities accessible at least by Permittee staff, but not necessarily by the public. Some plans say that "non-regulated project installations of green infrastructure are tracked as feasible in the same manner as regulated projects."

The requirements for the tracking tool during the Current Permit term are further specified in Provision C.3.j.v. (see below).

(6) Continuing to adopt or amend policies, ordinances, and/or other appropriate legal mechanisms to ensure implementation of the Plan in accordance with the requirements of this Provision, as necessary.

This requirement ensures implementation of green infrastructure and is based on the need to reduce the discharge of pollutants in storm water in a more resilient, sustainable way as described above.

(7) Continuing to conduct outreach and education.

Education and outreach, both internally and externally, are important to realizing green infrastructure projects to reduce the discharge of pollutants in storm water.

Provision C.3.j.ii.(2) describes the Numeric Implementation requirements, which are summarized below followed by a rationale for the requirements:

(1) By June 30, 2027, the Permittees are required to implement, or cause to be implemented, green infrastructure retrofit projects within their jurisdictions in the acreages set forth in Table H-1 of Attachment H. The retrofit acreages cannot encompass Regulated Projects under Provision C.3.b.

For Table H-1 of Attachment H, Permittees were assigned three acres of non-Regulated Project impervious surface retrofit per 50,000 population using the 2019 U.S. Census Bureau Population Estimate, prorated, with a minimum requirement of 0.2 acres and a maximum requirement of five acres. That retrofit expectation, to be accomplished during the Permit term as described in Provision C.3.j.ii, is far below the ultimate need for retrofit in the Permittees' jurisdictions, considering drivers such as the need to accomplish TMDL wasteload allocations and to reduce the discharge generally of urban runoff pollutants through the MS4. However, the retrofit requirement ensures each Permittee builds capacity by completing or meaningfully participating in at least one project. Permittees are expected to use their GI Plans to help inform the selection of retrofit projects. In addition, the retrofit requirement uses population as a rough proxy for Permittee capacity to complete retrofit work. In combination with the acreage maximum of five acres, the retrofit requirement is intended to be a flexible and doable goal during this Permit term. The minimum retrofit requirement ensures that each Permittee uses that experience to build its institutional capacity for implementing green infrastructure within its jurisdiction. The maximum retrofit requirement reduces the retrofit requirements only for a handful of the larger Permittees, one of which (the City of San Jose) will likely exceed five acres of non-Regulated Project retrofit in any case because of its consent decree with San Francisco Baykeeper, as discussed in the subsequent paragraph. These retrofit assignments, when summed regionally for the Permittees will result in about 217 acres of non-Regulated Project impervious surface retrofitted by the expiration date of the Permit, which will make a significant incremental step towards addressing the otherwise unaddressed adverse stormwater quality impacts of Permittee's rights of way, particularly those smaller public streets projects that are not otherwise subject to the same clean water controls as Provision C.3.b. Regulated Projects.

(2) The retrofit acreages are required to address pollutants discharges from MS4s because the Permittees have substantial areas of impervious surface—

comprised in large part of their existing public roads and parking areas—that discharge urban runoff pollutants to the MS4, but on which projects are not being completed that fall into Regulated Project categories. As such, they are unlikely to be retrofitted with clean water controls and will continue to discharge urban runoff pollutants in the absence of a retrofit requirement. Regulated Projects addressed in Provision C.3.b are only a fraction of the thousands of acres of impervious surfaces in the area covered by this Order. All impervious surfaces contribute pollutants to stormwater runoff, with those in higher density land uses contributing more pollutants. Accordingly, in order to reduce the discharge of storm water pollutants from MS4s to the maximum extent practicable and help attain TMDL wasteload allocations, additional impervious surface areas must be addressed beyond the Regulated Projects. As explained below, other jurisdictions in the State of California and elsewhere in the United States have MS4 NPDES Permits with similar non-Regulated Project numeric retrofits requirements that supplement their retrofit requirements for Regulated Projects.

(3) Pursuant to its consent decree with San Francisco Baykeeper (effective August 11, 2016),[187] and through projected rates of public and private development and redevelopment, as reported in its GI Plan,[188] the City of San Jose is required to appropriate $100 million over the next ten years, subject to meet and confer and other terms of the consent decree, to implement the projects in its Green Stormwater Infrastructure Plan. The Green Stormwater Infrastructure Plan forecasts retrofit of roughly 1750 acres of impervious surface between 2020 and 2030, and roughly an additional 8,500 acres of impervious surface between 2030 and 2040, much of which will necessarily be comprised of non-Regulated Projects. Therefore, San Jose alone is likely to satisfy 100 percent of the Santa Clara County Permittees' Provision C.3.j.ii.(2) Numeric Implementation retrofit requirement (other than the minimum 0.2 acres required for each Permittee).

(4) The San Mateo County Permittees' Orange Memorial Park Regional Project is located in the City of South San Francisco, and will address runoff from over 6,500 acres of land from six neighboring jurisdictions: portions of the City of Colma, the City of Daly City, the City of Pacifica, South San Francisco, Caltrans ROW, and Unincorporated San Mateo County.[189] This regional project may satisfy a portion of the San Mateo County Permittees' Provision C.3.j.ii.(2) Numeric Implementation retrofit requirements, depending on the outcome of

[187] https://baykeeper.org/sites/default/files/press_release/Baykeeper-San%20Jose%20Stormwater%20suit%20settlement%20agreement.pdf

[188] https://www.sanjoseca.gov/your-government/environment/our-creeks-rivers-bay/green-infrastructure

[189] https://www.ssf.net/departments/public-works/engineering-division/capital-improvement-program/orange-memorial-park-regional-storm-water-capture-project

Provision C.3.c.i.(2)(c)(ii).a. (e.g., if it results in a Permit amendment allowing the crediting of certain alternative treatment systems).

(5) A study in Washington State found that imperviousness could serve as a proxy for aquatic system health.[190] It found that ten percent impervious area was a threshold at or above which there was demonstrable, and probably irreversible, loss of aquatic system function, reflected by measured changes in channel morphology, fish and amphibian populations, vegetation succession, and water chemistry. Even lower levels of urban development were observed to cause significant degradation in sensitive waterbodies and a reduced, but less well quantified, degree of loss throughout the system as a whole. This suggests that successful corrective measures must not simply protect or restore the structure of individual stream or wetland elements; buffers around waterbodies must be combined with watershed-level restrictions on the rate and duration of stormwater discharge, as loss of instream fish habitat cannot be repaired by in-stream engineered structures alone. The study did not establish an imperviousness threshold for degradation of San Francisco Bay Area streams. However, in finding significant degradation of waters in Washington State at levels of imperviousness that are well below those of many Bay Area watersheds, the study suggested that there is a need for substantial reductions over time from current levels of directly connected impervious surface. This adds support for the Permit's requirements to implement measures to control discharges from both existing and new impervious surfaces, including public roads.

Many Permittees' jurisdictions have untreated impervious area cover that is substantially larger than ten percent. The Permittees' GI Plans' projected retrofit by Regulated Projects and non-Regulated Projects by 2020 (the existing condition), 2030, and 2040, demonstrate that this amount is expected to continue during this and future Permit terms. Therefore, the requirements included in Provision C.3.j.ii.(2) are intended to increase the pace at which Permittees address the pollutant loading and hydromodification impacts from their impervious surfaces.

(6) The Permittees' existing commitments for green infrastructure implementation in GI Plans are insufficient to address the problem associated with impervious surfaces. With few exceptions, the GI Plans do not commit to accelerate the existing rate of green infrastructure implementation, or to retrofit existing impervious surfaces (particularly, in the public right of way), with clean water controls to address urban runoff discharges, beyond what MRP 2 already required for Regulated Projects using an LID approach. Consequently, the GI

[190] Consequences of Urbanization on Aquatic Systems – Measured Effects, Degradation Thresholds, and Corrective Strategies. Derek B. Booth and Lorin E. Reinelt. King County Surface Water Management Division, Seattle, WA. 1993.

Plans are limited in the extent to which they would reduce the adverse water quality impacts of urban runoff on receiving waters over time.

For example, one Permittee's Capital Improvement Plan indicates consideration of numerous projects with potential for green infrastructure implementation, including miles of street projects, but its GI Plan sets a retrofit target of only 0.8 acres of public impervious surface by 2040, for both Regulated and non-Regulated public projects. Another Permittee's GI Plan sets a retrofit target of only one acre of public impervious surface by 2040.

These outcomes represent a missed opportunity, in that the Previous Permit's green infrastructure planning requirement was included as an alternative to expanding the Regulated Project definitions to include all new and redevelopment projects that create or replace 5,000 square feet of impervious surface, and road projects that just replace existing impervious surface area. That is, in the Previous Permit, green infrastructure planning was included in part to provide municipalities the opportunity to evaluate and account for smaller area regulated projects and road replacement projects as part of their GI Plans, and develop commitments to implementation that would be more efficient and effective for them than a Permit requirement to include all such projects.

(7) Many GI Plans do include some public projects in their green infrastructure retrofit targets, but among those public projects, most are Regulated Projects. One GI Plan, the City of San Jose's, includes substantial public non-Regulated Project green infrastructure implementation, but as described previously, that is largely an outcome of San Jose's 2016 consent decree with the San Francisco Baykeeper, demonstrating that municipal commitment of funding to green infrastructure retrofit has the potential to result in substantial implementation. Overall, the contribution to the retrofits targets presented in the GI Plans by non-Regulated (public) Projects is small relative to the contribution by Regulated (private) Projects.

(8) When the green infrastructure retrofit targets as presented in the GI Plans are summed and considered against estimates of county and regional impervious surface cover, the resulting data describes the relative retrofit that is projected to take place through 2040 at the regional scale. According to the GI Plans, based on the Regulated Project definitions from the Previous Permit and without the numeric implementation requirements included in this Provision in the Permit, for private and public, Regulated and non-Regulated, parcel based, green streets and regional projects, the projected retrofits by 2020, 2030, and 2040 by county stormwater programs are summarized in Table A-4:

Table A-4. GI Plan-estimated retrofit

Permittees	2020	2030	2040
Alameda	2%	3%	3%
Contra Costa	1%	2%	3%
San Mateo	1%	2%	4%
Santa Clara	2%	5%	12%
Solano	6%	8%	10%
Total	2%	4%	6%

GI Plan Long-Term Retrofit. The numbers in each County's row in this table have the respective County's total impervious surface as a denominator, based on the NLCD 2016 Developed Imperviousness Descriptor (CONUS).[191] The numbers in the final row of this table, Total, has the five Counties' total impervious surface as a denominator; since these numbers are percentages of the total five-County impervious surface, they do not sum the above columns.

This shows that despite the opportunity given to flexibly capture smaller projects in GI Plans in lieu of a numeric permit requirement in MRP 2, the Permittees have not committed to accelerating the existing rate of green stormwater infrastructure implementation, or to retrofit existing impervious surfaces with clean water controls to address urban runoff pollutant discharges from existing impervious surfaces, beyond what MRP 2 already required for Regulated Projects.

(9) The inclusion of numeric retrofit acreages is consistent with other relevant NPDES Stormwater Permits, which include similar non-Regulated Project numeric retrofits requirements that supplement their retrofit requirements for Regulated Projects.

The City of Portland's MS4 NPDES Discharge Permit (effective January 31, 2011)[132] requires each co-permittee to implement one non-regulated public right-of-way project before the end of the permit term. Analogous requirements for the completion of at least one public retrofit project are included in the City of Salem's NPDES MS4 Discharge Permit (effective December 30, 2010)[137] and the City of Eugene's NPDES MS4 Discharge Permit (effective December 30, 2010).[141]

The State of Washington's NPDES and State Waste Discharge General Permit for Discharges from Large and Medium MS4s (effective August 1, 2019)[134] requires Permittees to achieve 300 Structural Stormwater Control (SSC)

[191] https://www.mrlc.gov/data

Program Points (225 points from projects in the design stage and 75 points from completed projects) by the third year of the permit term. Appendix 12[192] of that permit provides instructions regarding which types of projects are qualifying, and regarding how to calculate the SSC Program Points that those projects are worth (starting with Table 3 of Appendix 12).

The points system offers a flexible approach to retrofit. It requires implementation of retrofit actions that are beyond work that would otherwise be required under that permit. However, it allows implementation of a range of actions to protect and improve water quality, such as new LID BMPs, retrofit of existing controls to expand capacity, permanent removal of impervious surfaces, and landscape restoration to reduce hydromodification impacts.

Similar to the State of Washington's NPDES and State Waste Discharge General Permit for Discharges from Large and Medium MS4s,[134] in U.S. EPA's Draft NPDES Stormwater Permit for the City of Tacoma's MS4,[193] the permittee is required to implement a Structural Stormwater Controls Program to prevent or reduce impacts to receiving waters caused by discharges from the MS4 that are not adequately controlled by other existing actions required by the permittee's Stormwater Management Program (SWMP) Plan;[194] towards that end the permittee's SWMP Plan requires it to achieve 300 SSC Program Points by December 31, 2022, to address impacts that are not adequately controlled by the other required actions of the SWMP Plan. Structural stormwater control program points are calculated per Appendix 12[192] of the State of Washington's NPDES and State Waste Discharge General Permit for Discharges from Large and Medium MS4s.[134]

Likewise, in U.S. EPA's Draft NPDES Stormwater Permit for Pierce County's MS4,[195] the permittee is required to implement a Structural Stormwater Controls Program to prevent or reduce impacts to receiving waters caused by discharges from the MS4 that are not adequately controlled by other existing actions required by the permittee's Stormwater Management Program (SWMP) Plan;[196] towards that end the permittee's SWMP Plan requires it to achieve 300 SSC Program Points by December 31, 2022 (225 design-stage retrofit incentive

[192] Accessed on July 30, 2021, from: https://apps.ecology.wa.gov/paris/DownloadDocument.aspx?id=279051

[193] U.S. EPA NPDES Permit No. WAS026689, accessed on July 30, 2021, from: https://www.epa.gov/npdes-permits/draft-npdes-stormwater-permit-city-tacoma-ms4-washington

[194] City of Tacoma, Stormwater Management Program (SWMP) Plan, March 2021. Accessed on July 30, 2021, from: https://www.cityoftacoma.org/UserFiles/Servers/Server_6/File/cms/Surfacewater/SWMPUpdates/Final%20Draft%20SWMP%20Update_2021.pdf

[195] https://www.epa.gov/npdes-permits/proposed-stormwater-permit-pierce-county-ms4

[196] Pierce County, Stormwater Management Program Plan, 2020. Accessed on July 30, 2021, from: https://www.piercecountywa.gov/DocumentCenter/View/92121/2020-SWMP?bidId=

points; 75 complete or maintenance stage incentive points), to address impacts that are not adequately controlled by the other required actions of the SWMP Plan. Structural stormwater control program points are calculated per Appendix 12[192] of the State of Washington's NPDES and State Waste Discharge General Permit for Discharges from Large and Medium MS4s.[134]

The State of Maryland's NPDES General Permit for Discharges from Small MS4s (effective October 31, 2018)[143] makes progress towards the nutrient and sediment load reductions required to address the Chesapeake Bay TMDL, as specified in Maryland's Watershed Implementation Plan, by requiring its permittees to commence restoration efforts for twenty percent of existing developed lands that have little or no stormwater management by 2025, such as by requiring its permittees to perform watershed assessments, identify water quality improvement opportunities, secure appropriate funding, and develop an implementation schedule to show the twenty percent impervious area restoration requirement will be achieved by 2025. Such restoration efforts may include the use of environmental site design practices, structural stormwater BMPs, retrofitting, stream restoration, or other alternative restoration practices. The actions taken by those Maryland permittees to address the Chesapeake Bay TMDL are similar in nature to actions the Permittees could take to achieve wasteload allocations for pollutants including mercury and PCBs. Though it is likely that the Permittees will implement actions similar to those in Maryland because they are reasonable and cost effective given the suite of available options, they have alternative options, such as diversion to the sanitary sewer.

Driven by Chesapeake Bay and Anacostia River TMDLs, the 2010 MS4 permit issued to Montgomery County by the State of Maryland required the County to retrofit 20 percent (4,292 acres) of its "older, untreated, or poorly-treated impervious surfaces by 2015."[197,198] Those retrofits may consist of the use of environmental site design and other nonstructural techniques, structural stormwater practice retrofitting, and stream channel restoration. The permit's retrofit requirement was primarily a TMDL-driven goal. Provision C.3.j.ii.(2)'s retrofit requirement is based both on reducing pollutants to the MEP and achieving the Hg and PCBs TMDL WLAs (see, e.g., Provisions C.11.e and C.12.f). Montgomery County's permit indicates a level of retrofit effort that exists elsewhere, which is far above what Provision C.3.j cumulatively requires (216.92 acres) for multiple jurisdictions.

U.S. EPA's NPDES Permit for Washington, D.C. (effective June 22, 2018)[142] requires the permittee – in order to achieve pollutant reductions, demonstrate progress toward achieving applicable TMDL WLAs by achieving a collective

[197] https://www.montgomerycountymd.gov/water/stormwater/ms4.html

[198] Cameron, et al., 2011. *Green Stormwater Retrofits: Objectives and Costing.* In Low Impact Development Technology: Design Methods and Case Studies, ASCE, Clar et al., eds.

reduction in all TMDL pollutants of concern in stormwater other than trash per the permit's retention requirements, and meeting other water quality objectives – to implement a total of 1,038 new Acres Managed by the end of the Permit term beyond the existing Acres Managed at the time of the Permit effective date, divided between three major basins, of which at least 62 acres must be located in public rights of way. One "Acre Managed" is one acre of land treated by stormwater control measures to the applicable standard established in the permittee's stormwater regulations or consistent with the relevant voluntary program. Further explanation of this concept is provided in the Washington, D.C., NPDES MS4 Permit. For example, a development project required to meet the 1.2 inch retention standard for development and redevelopment greater than or equal to 5,000 square feet, which will implement 1.2 inches of retention across five acres through any combination of onsite and/or offsite retention controls, is equivalent to five "Acres Managed." The permittee is also required to install 350,000 square feet of new green roofs by the end of the permit term, and plant 6,705 trees annually during the permit term. Like the Montgomery County permit, the Washington D.C. permit also indicates a level of retrofit effort that exists elsewhere, which is far above what Provision C.3.j cumulatively requires (216.92 acres) for multiple jurisdictions.

Provision C.3.j.ii.(2)(b)-(c) allows Permittees to meet the retrofit requirements in Table H-1 of Attachment H on a countywide basis or outside their jurisdictions, but requires them provide no less than 0.20 acres of green infrastructure within their jurisdictions, or contribute substantially to such a green infrastructure project outside of their jurisdictions (but within their County). A substantial contribution could mean that Permittees are providing a significant portion of project funding, including in-kind funding or staff services such as development of designs, provision of land, or contracting for project implementation.

- This affords Permittees flexibility in meeting the retrofit acreages, and ensures that a minimum amount of green infrastructure is implemented in the Permittees' jurisdictions to address storm water pollutants. It also ensures that Permittees build the institutional capacity necessary to implement green infrastructure projects within their jurisdictions. There is also a requirement to ensure that countywide total retrofit acreages are met.

Provision C.3.j.ii.(2)(d) allows non-Regulated Projects and green infrastructure beyond the minimum required by Provision C.3.d for a Regulated Project to be counted towards the numeric requirements in Table H-1 of Attachment H. If any portion of such projects is later used as a part of an Alternative Compliance exchange to offset the treatment required by a Regulated Project pursuant to Provision C.3.e.i, then that portion may no longer be counted towards the retrofit acreage requirements in Table H-1 of Attachment H. This allows Permittees to benefit from requiring more than the minimum requirements to achieve cleaner storm water.

Provision C.3.j.ii.(2)(e)-(f) provides the timeframe for counting projects for the acreage requirements in Table H-1. Including projects completed after January 1, 2021, accounts for and encourages early green infrastructure projects completed by Permittees. June 30, 2027, is used as the end of the timeframe because that is when the Permit expires. For project not yet completed by this date, funding them by this date provides the necessary assurance of their completion; in the subsequent permit term, the Water Board may consider requiring such projects to be completed by the end of that permit term.

Provision C.3.j.ii.(2)(g) explains that Numeric Implementation pursuant to Provision C.3.j.ii.(2) can be counted towards analogous Provision C.12 numeric implementation retrofit requirements for old industrial areas, as long as they satisfy other aspects of the Provision C.12 requirement. This ensures that the Permittees get credit for work done under Provision C.3.j.

Provision C.3.j.ii.(2)(h) allows Permittees to credit the acreage of impervious surface created or replaced as part of Provision C.3.b.ii.(5) Road Reconstruction Projects to count towards the Provision C.3.j.ii.(2) Numeric Implementation retrofit requirements.

- This allowance is temporary, for this Permit term, as by the end of the Permit term, the Permittees will have further developed the institutional capacity necessary for continued green infrastructure implementation and, as such, may have a future-looking plan that will incorporate regulated road projects into the Permittees' broader retrofit expectations.

Provision C.3.j.ii.(2)(i) recognizes the unique challenges inherent in the implementation of green infrastructure in small rural Permittee jurisdictions by allowing those Permittees to collectively submit an optional proposal for pilot projects investigating alternative green infrastructure techniques. If approved (or conditionally approved) by the Executive Officer, this proposal will allow (or conditionally allow) Permittees with small rural jurisdictions to meet part or all of their Provision C.3.j.ii.(2) Numeric Implementation retrofit requirements via alternative green infrastructure techniques.

Provision C.3.j.ii.(2)(j) allows Permittees to submit reports pursuant to Provision C.3.j.v.(5) estimating the benefit provided by new or existing ordinances that require Regulated Projects to treat significantly more impervious surface than the minimum required by Provision C.3, where such additional treatment may count towards the Provision C.3.j.ii.(2) Numeric Implementation retrofit requirements. Permittees whose reports are approved by the Executive Officer may use the benefit estimated for the current Permit term in the reports to offset up to 25 percent – but by no more than 1 acre – of their individual Provision C.3.j.ii.(2) Numeric Implementation retrofit requirements.

- The offset is a one-time credit and its purpose is to help Permittees complete the planning and policy work sufficient to leverage private development and redevelopment projects within their jurisdictions to assist Permittees with achieving

compliance with the Provision C.3.j.ii.(2) Numeric Implementation retrofit requirements. The Provision C.3.j.ii.(2)(j) offset is temporary, for this Permit term.

Provision C.3.j.ii.(3) describes the Design and Other Criteria that all green infrastructure projects built pursuant to Provision C.3.j must comply with Provisions C.3.c and C.3.e-h because they represent the Water Board's determination of maximum extent practicable-compliant designs that appropriately address identified water quality impacts.

- All green infrastructure projects built pursuant to Provision C.3.j are also required to comply with Provision C.3.d. However, with cause (e.g., significantly constrained area for a BMP, substantially increased costs for that sizing relative to the C.3.j.i.(2)(g) approach outlined in the Previous Permit, significant amounts of run-on from adjacent areas, or other substantial constraints identified by the Permittees), and with reporting in their Annual Reports, Permittees may use the Guidance for Sizing Green Infrastructure Facilities in Streets Projects with companion analysis Green Infrastructure Facility Sizing for Non-Regulated Street Projects, submitted in June 2019[199] as allowed by Provision C.3.j.i.(2)(g) of the Previous Permit, to size non-Regulated green streets projects (green infrastructure projects sited in the public road right of way). If they do so, the Permit requires Permittees to comply with the Water Board's June 21, 2019, conditional approval of that submittal,[200] which provides qualifiers to, and the conditions under which, the alternative sizing criteria may be used for non-Regulated green streets projects.

Provision C.3.j.ii.(4) describes a Technical Working Group (TWG) that Water Board encourages Permittees to participate in, along with staff and impartial science experts, to discuss and recommend long-term green infrastructure goals, targeting, in particular, Permittees' public streets. The goals will likely inform subsequent Permit terms, with the idea that each subsequent Permit term would make significant progress towards the goals. The purpose of this Provision is therefore to, over the long-term, address pollutant loading and hydrologic impact from areas of Permittees' jurisdictions that are not otherwise addressed by Provision C.3.b Regulated Projects. The goals will likely inform changes to Provision C.3.j.ii.(2) Numeric Implementation retrofit requirements. The long-term goal may include consideration of crediting public and private projects that implement non-bioretention stormwater controls which provide water quality and hydrologic benefit that are reasonably comparable to the Permit's expectations in

[199] *Guidance for Sizing Green Infrastructure Facilities in Street Projects with companion Analysis: Green Infrastructure Facility Sizing for Non-Regulated Street Projects*. BASMAA, June 2019. https://www.ccleanwater.org/userfiles/kcfinder/files/BASMAA_Guidance%20for%20Sizing%20Green%20Infrastructure%20Facilities%20in%20Street%20Projects%20with%20companion%20Analysis%20June%202019.pdf. Accessed on July 27, 2021. Or: https://basmaa.org/wp-content/uploads/2021/08/BASMAA-Guidance-for-Sizing-Green-Infrastructure-Facilities-in-Street-Projects-with-Companion-Analysis.pdf; accessed on August 8, 2021

[200] *Conditional Acceptance of Guidance for Sizing Green Infrastructure Facilities in Street Projects*. June 21, 2019.

Provisions C.3.c-d and C.3.g. The long-term goal may include consideration of other LID practices such as those proposed pursuant to Provision C.3.d.iv.

Provisions C.3.j.iii-iv. (No Missed Opportunities and Participate in Processes to Promote Green Infrastructure) are required to ensure green infrastructure projects remain a critical part of the Permittees' storm water control and outreach efforts.

Provision C.3.j.v. (Tracking and Reporting Progress) is necessary to track the progress of green infrastructure projects and Permit compliance. It requires Permittees to track and map non-Regulated green infrastructure projects built pursuant to Provision C.3.j, in the same manner as Regulated Projects, using the tracking and mapping tools developed during the Previous Permit. This Provision requires that the tools must include a component that is available to the public, which is advertised on individual Permittee websites and on County stormwater program websites and as appropriate is advertised in other locations. This Provision lists the minimum level of detail that must be provided by the tracking and mapping tool for each project built pursuant to Provision C.3.j. If the tools contain additional information which has not been made available to the public such as detailed design information, incurred or planned operation and maintenance costs and operation and maintenance frequency, condition, and pollutant loads treated, that information is required be made available to Water Board staff upon request. The tracking and mapping tools were required to be completed in the Previous Permit, and therefore the Permit requires the Permittees to certify in the 2023 Annual Reports that the tracking and mapping tools have been completed and are being implemented. Reporting by the Permittees on the implementation of non-Regulated Projects may inform modifications to Provision C.3.j in future permits.

C.4. Industrial and Commercial Site Controls

Legal Authority

Broad Legal Authority: CWA sections 402(p)(3)(B)(ii-iii), CWC sections 13377 and 13263, and Federal NPDES regulations 40 CFR 122.26(d)(2)(i)(B, C, D, E, and F) and 40 CFR 122.26(d)(2)(iv).

Specific Legal Authority: Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(C) requires "[a] description of a program to monitor and control pollutants in storm water discharges to municipal systems from municipal landfills, hazardous waste treatment, disposal and recovery facilities, industrial facilities that are subject to section 313 of title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), and industrial facilities that the municipal permit applicant determines are contributing a substantial pollutant loading to the municipal storm sewer system." Other specific legal authority is cited below.

Specific Provision C.4. Requirements

Provision C.4.a (Legal Authority) Federal NPDES regulation 40 CFR 122.26(d)(2)(i)(A) provides that each Permittee must demonstrate that it can control "through ordinance, permit, contract, order or similar means, the contribution of pollutants to the municipal storm sewer by storm water discharges associated with industrial activity and the quality of storm water discharged from site of industrial activity."

Provision C.4.b (Inspection Plan) Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(C)(1) provides that Permittees must "identify priorities and procedures for inspections and establishing and implementing control measures for such discharges." The Permit continues to require Permittees to implement an industrial and commercial site controls program to reduce pollutants in runoff from all industrial and commercial sites/sources.

Federal NPDES regulation 40 CFR 122.26(d)(2)(ii) provides that Permittees "[p]rovide an inventory, organized by watershed of the name and address, and a description (such as SIC codes) which best reflects the principal products or services provided by each facility which may discharge, to the municipal separate storm sewer, storm water associated with industrial activity."

The Water Board has added to this Permit additional types of businesses for Permittees to include in their Industrial and Commercial Business Inspection Plan (Inspection Plan). These are restaurants and other food service businesses, as well as supermarkets or large grocery stores with outdoor waste storage or cardboard compacting areas. Waste from these types of businesses is reasonably likely to contribute stormwater runoff pollution, and they are a common focus area of other stormwater program inspection requirements. Restaurants and other food service businesses have the potential to discharge pollutants associated with their activities such as food debris, trash, and other

wastes, including those from disposable food packaging and utensils. Similarly, supermarkets and large grocery stores have an elevated threat of potential discharges of trash, fluid milk products, food debris, and other wastes.

Vehicle fueling facilities were previously included in MRP 2 due to the reasonable likelihood to contribute to stormwater discharges of hydrocarbons, heavy metals and other chemicals used as fuel additives. The Water Board has now specified sites with "fueling activities" as a type of business to include in Permittees' Inspection Plans. This is to clarify that sites with those activities are still considered a fueling facility, even if found in business types that perform other activities, and they have the same associated pollutants with the potential to discharge in stormwater.

These additional business types and similar activities are also components of business inspection requirements in other Phase I MS4 permits, including Los Angeles, Salinas, the City of South Lake Tahoe, El Dorado County, Placer County, and Seattle, WA.

The Permit continues to require Permittees to identify industrial sites and sources subject to the Industrial General Permit or other individual NPDES permit. U.S. EPA recognized that stormwater from industrial facilities would be regulated by both municipal and industrial stormwater programs, finding that:

> 1. *Municipal operators of large and medium municipal separate storm sewer systems are responsible for obtaining system-wide or area permits for their system's discharges. These permits are expected to require that controls be placed on storm water discharges associated with industrial activity which discharge through the municipal system. It is anticipated that general or individual permits covering industrial storm water discharges to these municipal separate storm sewer systems will require industries to comply with the terms of the permit issued to the municipality, as well as other terms specific to the Permittee.*[201]

and:

> 2. *Although today's rule will require industrial discharges through municipal storm sewers to be covered by separate permit, U.S. EPA still believes that municipal operators of large and medium municipal systems have an important role in source identification and the development of pollutant controls for industries that discharge storm water through municipal separate storm sewer systems is appropriate. Under the CWA, large and medium municipalities are*

[201] *Federal Register*. Vol. 55, No. 222, Friday, November 16, 1990, Rules and Regulations. P. 48056

> *responsible for reducing pollutants in discharges from municipal separate storm sewers to the maximum extent practicable. Because storm water from industrial facilities may be a major contributor of pollutants to municipal separate storm sewer systems, municipalities are obligated to develop controls for storm water discharges associated with industrial activity through their system in their storm water management program.*[202]

This Permit does not require the Permittees to submit the list of facilities scheduled for inspection each year with annual reports. Instead, Permittees are to add each year's inspection list to the Inspection Plan as part of the annual update to the Inspection Plan. Permittees may choose to keep their annual lists in their databases or in electronic form. The annual lists must be made readily available to Water Board staff or its representatives upon request.

Water Board staff reviewed about 20 percent of the Permittees' Inspection Plans during the MRP 1 term. A few of those Inspection Plans also provide detailed flow charts or instructions on how to conduct inspections, fill out the inspect forms, execute enforcement actions, conduct follow-up, and fulfill tracking and reporting for the MRP. These comprehensive Inspection Plans help ensure inspection consistency and serve as excellent training documents for new inspection staff.

Provision C.4.c (Enforcement Response Plan) requires the Permittees to implement and update, as needed, their Enforcement Response Plan (ERP) that serves as a reference for inspection staff to take consistent and timely responses to actual or potential stormwater pollution problems discovered in the course of industrial/commercial stormwater inspections. The ERP provides guidance on (1) progressively stricter enforcement to achieve timely compliance, (2) enforcement scenarios, (3) follow-up inspections, (4) referral to another agency, (5) appropriate time periods for implementation of corrective actions, and (6) the roles and responsibilities of staff responsible for implementing the ERP.

Because ERPs are unique to each Permittee, this Permit continues to allow each Permittee flexibility to customize the ERP to fit its legal authority and its regulatory program. However, all ERPs must require corrective actions to be implemented before the next rain event, but no longer than 10 business days after the potential and/or actual discharges are discovered; and short timeframes for implementing corrective actions encourage businesses to prevent potential discharges from becoming actual discharges. Permittees must also require active non-stormwater discharges to cease immediately, timely implementation of corrective actions to clean up the discharge, and timely implementation of measures to prevent future active discharges.

[202] Ibid

This Permit standardizes and clarifies the ERP requirements in provisions C.4, C.5, and C.6. to eliminate ambiguity in the requirements.

Provision C.4.d (Inspections) continues MRP 2's consolidation of the inspection requirements from MRP 1's Provision C.4.b. Inspection Plan and C.4.c. ERP together into this Provision. Inspection frequencies are determined by each Permittee in its Inspection and Enforcement Response Plans.

U.S. EPA guidance states "management programs should address minimum frequency for routine inspections." The U.S. EPA Fact Sheet—Visual Inspection says "[t]o be effective, [visual] inspections must be carried out routinely." [203]

The Water Board has declined to reduce the record keeping and reporting requirements of this permit. The Permit requires that only basic information be recorded for each inspection. This information is necessary to document each inspection to develop a history for the facility.

This information is also needed for Water Board staff to evaluate MS4 programs. Annual reports need to provide enough detail to show compliance with the Permit terms. For instance, during the MRP 1 term, annual reports showed few violations relative to the number of inspections completed. This did not match with the field inspection experience of Water Board staff. Further investigation showed that some Permittees did not consider potential discharges to be violations. Such investigation by Water Board staff would be made more difficult without the required information about inspections.

MRP 1 exempted verbal warnings from being reported in the annual reports. Water Board staff expected verbal warnings to have very limited use and only given for very minor issues that do not warrant anything in writing. However, from Water Board inspections, and annual report and ERP reviews, we concluded that many Permittees issue warnings in response to potential discharges, such as housekeeping issues, evidence of actual non-stormwater discharges that are not ongoing during an inspection, lack of BMPs, inadequate BMPs, and inappropriate BMPs. Even though potential discharges need timely corrective actions, it was unclear if these potential discharges were corrected in a timely manner because there was no written documentation on the potential discharges or verbal warnings issued. Only observed non-stormwater discharges were considered violations and issued some type of written enforcement action. Examples of potential discharges.

MRP 2 required, and this Permit continues to require, reporting of all potential and actual non-stormwater discharges based on the enforcement levels in each Permittee's ERP, so that Water Board staff can evaluate whether Permittees are conducting appropriate follow-up.

[203] U.S. EPA. 1999. 832-F-99-046, "Storm Water Management Fact Sheet – Visual Inspection."

Some Permittees feel that a 10-business day window to implement corrective action is not necessary and even unreasonable during the dry months for potential discharges and especially for minor potential discharges. Permittees have the discretion to add a rationale for allowing a longer time period, especially for corrective actions that require things such as capital improvements, revisions to standard operating procedures, and staff training. However, prompt implementation of corrective actions for most potential discharges minimizes the risk of potential discharges becoming actual discharges. A number of Permittees communicated that they prefer shorter corrective action timeframes because sites tend to take care of them right away versus forgetting about the corrective actions when given a longer corrective action timeframe. Throughout the MRP 1 term, Water Board staff asked Permittees for a list of minor potential discharges. The only minor issue listed was open dumpster/garbage can lids. Water Board staff concurred that open dumpster/garbage can lids is minor, can be corrected immediately, and would not require any additional follow-up. Water Board industrial and construction inspectors consider open dumpster/garbage can lids and small amounts of trash/debris on the ground to be minor violations that can quickly be corrected, because staff at the industrial or construction sites can immediately cover the dumpsters and pick up and appropriately dispose of the trash. Water Board inspectors note those issues and corrective actions in their inspection reports.

Provision C.4.f (Staff Training) requires the Permittees to conduct annual staff trainings for inspectors. Trainings are necessary to keep inspectors current on enforcement policies and current MEP BMPs for industrial and commercial stormwater runoff discharges.

C.5. Illicit Discharge Detection and Elimination

Legal Authority

The following legal authority applies to section C.5:

Broad Legal Authority: CWA sections 402(p)(3)(B)(ii-iii), CWC sections 13377 and 13263, and Federal NPDES regulations 40 CFR 122.26(d)(2)(i)(B, C, D, E, and F) and 40 CFR 122.26(d)(2)(iv).

Specific Legal Authority: Federal NPDES regulations 40 CFR 122.26(d)(1)(iii)(B)(1) provides that the Permittee shall include in their application "the location of known municipal storm sewer system outfalls discharging to waters of the United States."

Federal NPDES regulations 40 CFR 122.26(d)(1)(iii)(B)(5) provides that the Permittee shall include in their application "[t]he location of major structural controls for storm water discharge (retention basins, detention basins, major infiltration devices, etc."

Federal NPDES regulations 40 CFR 122.26(d)(2)(i)(B) provides that the Permittee shall have adequate legal authority to "[p]rohibit through ordinance, order or similar means, illicit discharges to the municipal separate storm sewer."

Federal NPDES regulations 40 CFR 122.26(d)(2)(i)(F) provides that the Permittee shall have adequate legal authority to "[c]arry out all inspection, surveillance and monitoring procedures necessary to determine compliance and noncompliance with permit conditions including the prohibition on illicit discharges to the municipal separate storm sewer."

Federal NPDES regulations 40 CFR 122.26(d)(2)(iv)(B) requires that the Permittee have a " description of a program, including a schedule, to detect and remove (or require the discharger to the municipal storm sewer to obtain a separate NPDES permit for) illicit discharges and improper disposal into the storm sewer."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(B)(1) requires a "program, including inspections, to implement and enforce an ordinance, orders or similar means to prevent illicit discharges to the municipal storm sewer system."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(B)(2) requires a "description of procedures to conduct on-going field screening activities during the life of the permit, including areas or locations that will be evaluated by such field screens."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(B)(3) requires a "description of procedures to be followed to investigate portions of the separate storm sewer system that, based on the results of the field screen, or other appropriate information, indicate a reasonable potential of containing illicit discharges or other sources of non-storm water."

Federal NPDES regulations 40 CFR 122.26(d)(2)(iv)(B)(4) requires a "description of procedures to prevent, contain, and respond to spills that may discharge into the municipal separate storm sewer."

Federal NPDES regulations 40 CFR 122.26(d)(2)(iv)(B)(5) requires a "description of a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges or water quality impacts associated with discharges from municipal separate storm sewers."

Federal NPDES regulations 40 CFR 122.26(d)(2)(iv)(B)(7) requires a "description of controls to limit infiltration of seepage from municipal sanitary sewers to municipal separate storm sewer systems where necessary."

Fact Sheet Findings in Support of Provision C.5

C.5-1 Discharges not comprised entirely of stormwater, not authorized by another NPDES permit, and neither exempted nor conditionally exempted in Provision C.15 are not authorized to enter the MS4 and are considered to be illicit discharges

C.5-2 Every Permittee must have the ability to effectively prohibit non-stormwater discharges to its MS4 by detecting and eliminating illicit discharges and disposal into its MS4.

C.5-3 Illicit discharges to the storm drain system may be detected in several ways. Permittee staff may detect discharges incidentally, and members of the public may report suspected discharges. The Permittee must have a direct means to receive, investigate, respond to, and track these reports.

Removal of Routine Collection System Screening Requirement

MRP 1 required the Permittees to perform routine surveys for illicit discharges and illegal dumping in above ground check points in the collection system including elements that are typically inspected for maintenance purposes, such as end of pipes, creeks, flood conveyances, storm drain inlets, and catch basins, to seek and eliminate illicit connections and discharges. The results of the screenings were reported in annual reports. No illicit connections were reported. However, Permittees have found illicit discharges during the screenings and they were cleaned up. It is unclear if personnel conducting the screenings reported these illicit discharges to the illicit discharge staff for investigation and tracking. In MRP 2, we added language to C.5.c. – Spill, Dumping, and Complaint Response Program to ensure that illicit discharges found by municipal staff conducting routine maintenance and inspection activities on the collection system are reported to the illicit discharge staff for investigation and tracking. This is based on the federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(B)(3), which requires "procedures to be followed to investigate portions of the separate storm sewer system that, based on the results of the field screen, or other appropriate information, indicate a reasonable potential of containing illicit discharges or other sources of non-storm water."

Specific Provision C.5 Requirements

Provision C.5.a (Legal Authority) requires each Permittee have adequate legal authority to prohibit illicit discharges to storm sewers as required by federal regulations at 40 CFR 122.26(d)(2)(i)(B). Illicit and inadvertent connections to MS4 systems result in a discharge into the MS4 that is not comprised entirely of stormwater. Every Permittee must have the ability to discover, inspect, enforce its ordinance, track, and clean up stormwater pollution discharges by illicit connections and other illegal discharges to the MS4 system.

Provision C.5.b (Enforcement Response Plan) continues to require Permittees to implement and update, as needed, their Enforcement Response Plans (ERPs) to ensure consistent and timely responses to illicit discharges and connections to the MS4. The ERP provides guidance on (1) progressively strict enforcement to achieve timely compliance, (2) follow-up inspection, (3) referral to another agency, (3) appropriate time periods for implementation of corrective actions, and (4) the roles and responsibilities of staff responsible for implementing the ERP. Corrective actions must be implemented before the next rain event, but no longer than 10 business days after the potential and/or actual discharges are discovered. Permittees must also require immediate cessation of active discharges, and timely implementation of corrective actions to clean up the discharge and implementation of measures to prevent future active discharges.

Water Board staff reviewed more than half of the Permittees' ERPs during MRP 1. Almost all of those Permittees have one ERP to satisfy the ERP requirements in provisions C.4, C.5, and C.6. While a couple of Permittees have detailed, comprehensive plans, more than half of the ERPs reviewed did not comply with the ERP requirements in MRP 1. Therefore, the ERP requirements in this Permit are standardized in provisions C.4, C.5, and C.6.

Provision C.5.c (Spill, Dumping, and Complaint Response Program) Federal NPDES regulations 40 CFR 122.26(d)(2)(iv)(B)(4) requires "a description of procedures to prevent, contain, and respond to spills that may discharge into the municipal separate storm sewer." This Provision of the Permit requires the Permittees to establish and maintain a central point of contact including phone numbers for spills, dumping, and complaints reporting. Reports from the public and other Permittee staff are an essential tool in discovering and investigating illicit discharge activities into the MS4. Maintaining contact points helps ensure that there is effective reporting to assist with the discovery of prohibited discharges. Each Permittee must have a means to adequately track suspected polluted discharges from the time they are reported until they are resolved.

Provision C.5.d (Tracking and Case Follow-up) implements the requirement in 40 CFR 122.26(d)(2)(iv)(B)(4) for permittees to have procedures to "respond to spills" by requiring Permittees to substantiate, track, and monitor illicit discharges reported to the spills, dumping, and complaint response system (Provision C.5.c). This requirement is included so Permittees can demonstrate compliance with the ERP requirements in

Provision C.5.b and to ensure that illicit discharge reports receive adequate follow-up and resolution.

All municipalities, counties, district, and other public entities that own or operate sanitary sewer systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility in California are required to report sanitary sewer overflows to the California Integrated Water Quality System Project pursuant to the State Water Board's Order No. 2006-003-DWQ (Statewide General Waste Discharge Requirements for Sanitary Sewer Systems) and Order WQ 2013-0058-EXEC (Adopting Amended Monitoring Requirements for Statewide General Waste Discharge Requirements for Sanitary Sewer Systems order. Sewage discharges that are reported to the California Integrated Water Quality System Project do not need to be tracked and reported in Provision C.5.

Provision C.5.e (Control of Mobile Sources) requires each Permittee to implement a program to reduce the discharge of pollutants from mobile businesses. Examples of mobile businesses include mobile cleaners that wash vehicles, building exteriors, sidewalks, and plazas, cleaners that wash restaurant smoke hood filters, mats, and other equipment, and mobile fueling businesses that fill up gas tanks for vehicles owned by carshare companies or certain technology company employees. The purpose of this section is to implement oversight and control of pollutants associated with mobile business sources to the MEP.

MRP 2 required Permittees to develop and implement a program to reduce the discharge of pollutants from mobile businesses and to develop an inventory of mobile businesses. Permittee experience during the previous permit term showed that it is difficult to track and register mobile businesses. Mobile businesses may have a business license from another municipality, another county, or have no business license. They often work outside of normal business hours (e.g., restaurant cleaners may work late at night when restaurants are closed), and so are difficult to observe and inspect. This Permit shifts the enforcement approach focus from developing an inventory of mobile businesses and direct observation of mobile business activities to reiterating that the entity hiring the mobile business and the mobile business themselves are responsible for any polluted discharge from the business or property.

This Permit keeps the outreach requirement to develop and distribute educational materials about stormwater pollution prevention to mobile businesses. Permittees may develop their own education and outreach materials, or may participate in a countywide or regional program. In order to understand what Permittees are doing to control pollutants from mobile sources, this Permit continues most requirements of MRP 2 and collects data on each Permittee's implementation of the provision.

Provision C.5.f (Municipal Separate Storm Sewer System (MS4) Map) As part of the permit application process, federal NPDES regulations 40 CFR 122.26(d)(1)(iii)(B)(1) and 40 CFR 122.26(d)(1)(iii)(B)(5) specify that dischargers must identify the location of

any major outfall that discharges to waters of the United States, as well as the location of major structural controls for stormwater discharges. A major outfall is any outfall that discharges from a single pipe with an inside diameter of 36 inches or more or its equivalent (discharge from a single conveyance other than a circular pipe which is associated with a drainage area of more than 50 acres) or; for areas zoned for industrial activities, any pipe with a diameter of 12 inches or more or its equivalent (discharge from other than a circular pipe associated with a drainage area of 2 acres or more). The permitting agency may not process a permit until the applicant has fully complied with the application requirements.[204] If, at the time of application, the information is unavailable, the Permit must require implementation of a program to meet the application requirements.[205] All Permittees have complied with this requirement. This Permit continues to require the Permittees to advertise the availability of the maps of their MS4 system and to make available these maps to the public upon request.

In addition to the mapping information previously submitted, this Permit also requires Permittees to identify information missing from the current MS4 maps and develop a plan and schedule to compile additional storm sewer system information. Previous permits did not require Permittees to submit regular updates to their MS4 system maps, so the current status of the overall MS4 systems as compared to previous maps is unknown. To effectively manage and respond to illicit discharges, as well as potential impacts from conditionally exempted discharges like emergency firefighting discharges, it is essential for Permittees to understand their current MS4 system layout and conditions, as well as how discharge sources are connected to outfalls that discharge to their system.

The proposed updates that this Permit requires are consistent with the requirements of other stormwater permits in the state. For instance, the California Permit for Small MS4s,[206] the City of Long Beach MS4 Permit,[207] and the City of Salinas MS4 Permit[208] also require Permittees to keep their MS4 system maps up to date by submitting annual revisions or verifying that no modifications to the system occurred during the annual reporting period.

The City of Salinas MS4 Permit requires the city to maintain a Stormwater Information Management System that includes a map of MS4 system components with information

[204] 40 CFR 124.3 (applicable to state programs, see section 123.25).

[205] 40 CFR 122.26(d)(1)(iv)(E).

[206] California State Water Board, NPDES Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s), NPDES Permit No. CAS000004, Order No. 2013-0001-DWQ, as amended.

[207] Los Angeles Regional Water Board, Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges from the City of Long Beach, NPDES Permit No. CAS004003, Order No. R4-2014-0024.

[208] Central Coast Regional Water Board, NPDES Permit and WDR for the City of Salinas Municipal Stormwater Discharges, NPDES Permit No. CA0049981, Order No. R3-2019-0073, adoption date: September 20, 2019, effective date: October 1, 2019.

such as the name, type, location, and discharge information. The map must identify open channels and other conveyance features, inlets to the MS4, and connections over 8 inches in diameter to MS4 conveyances. The map must also include components that influence maintenance capacity and conveyance, such as cleanouts, pump stations, diversion structures, and trash capture devices.

The City of Long Beach MS4 Permit requires an electronic map that includes the location and length of all open channel and underground pipes 18 inches in diameter or greater, as well as storm drain outfall catchment areas for each major outfall. The Los Angeles County MS4 Permit also requires an up-to-date and accurate electronic map of the county's MS4.[209] In addition to outfalls, the required map components include the location and length of open channels and underground storm drain pipes with a diameter of 36 inches or greater.

[209] Los Angeles Regional Water Board, NPDES Permit for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except those Discharges Originating from the City of Long Beach, NPDES Permit No. CAS004001, Order No. R4-2012-0175, as amended.

C.6. Construction Site Control

Legal Authority

The following legal authority applies to section C.6:

Broad Legal Authority: CWA sections 402(p)(3)(B)(ii-iii), CWC sections 13377 and 13263, and Federal NPDES regulations 40 CFR 122.26(d)(2)(i)(B, C, D, E, and F) and 40 CFR 122.26(d)(2)(iv).

Specific Legal Authority: Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(D) requires "[a] description of a program to implement and maintain structural and non-structural best management practices to reduce pollutants in storm water runoff from construction sites to the municipal storm sewer system."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(D)(1) requires "[a] description of procedures for site planning which incorporate consideration of potential water quality impacts."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(D)(2) requires "[a] description of requirements for nonstructural and structural best management practices."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(D)(3) requires "[a] description of procedures for identifying priorities for inspecting sites and enforcing control measures which consider the nature of the construction activity, topography, and the characteristics of soils and receiving water quality."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(D)(4) requires "[a] description of appropriate educational and training measures for construction site operators."

Federal NPDES regulation 40 CFR 122.26(d)(2)(i)(A) provides that each Permittee must demonstrate that it can control, "through ordinance, permit, contract, order or similar means, the contribution of pollutants to the municipal storm sewer by storm water discharges associated with industrial activity and the quality of storm water discharged from site of industrial activity."

Federal NPDES regulation 40 CFR 122.26(b)(14) provides that "[t]he following categories of facilities are considered to be engaging in 'industrial activity' for the purposes of this subsection: […] (x) Construction activity including cleaning, grading and excavation activities […]."

Federal NPDES regulation 40 CFR 122.44(d)(1)(i) requires NPDES permits to include limitations to "control all pollutants or pollutant parameters (either conventional, non-conventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality."

Fact Sheet Findings in Support of Provision C.6.

C.6-1 Vegetation clearing, mass grading, lot leveling, and excavation expose soil to erosion processes and increase the potential for sediment mobilization, runoff and deposition in receiving waters. Construction sites without adequate BMP implementation result in sediment runoff rates that greatly exceed the natural erosion rates of undisturbed lands, causing siltation and impairment of receiving waters.

C.6-2 Excess sediment can cloud the water, reducing the amount of sunlight reaching aquatic plants, clog fish gills, smother aquatic habitat and spawning areas, and impede navigation in our waterways. Sediment also transports other pollutants, such as nutrients, metals, and oils and grease. Permittees are on-site at local construction sites for grading and building permit inspections, and also have in many cases dedicated construction stormwater inspectors with training in verifying that effective BMPs are in place and maintained. Permittees also have effective tools available to achieve compliance with adequate erosion control, such as stop work orders and citations.

C.6-3 Mobilized sediment from construction sites can flow into the MS4 and then into receiving waters. According to the 2004 National Water Quality Inventory,[210] States and tribes report that sediment is a major cause of impairment of assessed rivers and streams. The Inventory found that sediment impairs 35,177 river and stream miles (14 percent of the impaired river and stream miles). Sediment runoff rates from construction sites are typically 10 to 20 times greater than runoff rates from agricultural lands, and 1,000 to 2,000 times greater than runoff rates from forest lands. During a short period of time, construction sites can contribute more sediment to streams than can be deposited naturally during several decades.[211]

Specific Provision C.6 Requirements

Provision C.6.a. Legal Authority for Effective Site Management. Federal NPDES regulation 40 CFR 122.26(d)(2)(i)(A) requires that each Permittee demonstrate that it can control "through ordinance, permit, contract, order or similar means, the contribution of pollutants to the municipal storm sewer by storm water discharges associated with industrial activity and the quality of storm water discharged from site of industrial activity." This section of the Permit requires each Permittee to have the authority to require year-round, seasonally and phase appropriate effective erosion control, run-on and runoff control, sediment control, active treatment systems, good site management,

[210] http://www.epa.gov/owow/305b/2004report/2004_305Breport.pdf

[211] U.S. EPA. December 2005. *Stormwater Phase II Final Rule Fact Sheet Series – Construction Site Runoff Control Minimum Control Measure*. EPA 833-F-00-008. Fact Sheet 2.6.

and non-stormwater management through all phases of site grading, building, and finishing of lots. All Permittees should already have this authority.

In its Phase II Compliance Assistance Guidance, U.S. EPA says that "[i]nspections give the MS4 operator an opportunity to provide additional guidance and education, issue warnings, or assess penalties."[212] To issue warnings and assess penalties during inspections to achieve timely corrective actions from sites, inspectors must have the legal authority to conduct enforcement.

Provision C.6.b. Enforcement Response Plan (ERP). This section requires each Permittee to implement and update, as needed, its Enforcement Response Plan (ERP), which serves as a reference for inspection staff to take consistent actions and timely response to achieve effective, timely corrective compliance from all public and private construction site owners/operators.

U.S. EPA supports enforcement of ordinances and permits at construction sites, stating "[e]ffective inspection and enforcement requires […] penalties to deter infractions and intervention by the municipal authority to correct violations."[213] In addition, U.S. EPA expects permits issued to municipalities to address "weak inspection and enforcement."[214] For these reasons, the enforcement requirements in this section have been established, while providing sufficient flexibility for each Permittee's unique stormwater program. Prior to the issuance of MRP 1, Water Board staff had noted deficiencies in the Permittees' enforcement procedures and implementation during inspections. The most common issues found were that enforcement was not firm and appropriate to correct the violation, and that repeat violations did not result in escalated enforcement procedures. Therefore, MRP 1 required Permittees to develop ERPs. MRP 2 required Permittees to implement the ERPs, and the Permit continues to require Permittees to implement the ERPs.

ERPs are unique to each Permittee. As such, this Permit continues to frame ERP requirements broadly. For instance, at minimum, an ERP must include: (1) progressively strict enforcement to achieve timely compliance, (2) enforcement scenarios, (3) follow-up inspections, (4) referral to another agency, (5) appropriate time periods for implementation of corrective actions, and (6) the roles and responsibilities of staff responsible for implementing the ERP. The broad framework allows each Permittee flexibility to customize the ERP to fit its legal authority and ordinary business practices. However, for an ERP to be effective, Permittees must require immediate cessation of active non-stormwater discharges, timely implementation of corrective actions to clean up the discharge, and implementation of measures to prevent future active discharges. Corrective actions must be implemented before the next rain event, but no longer than 10 business days after the potential and/or actual discharges are

[212] U.S. EPA. 2000. 833-R-00-002, Storm Water Phase II Compliance Assistance Guide, pp.4-31

[213] U.S. EPA. 1992. Guidance 833-8-92-002. Section 6.3.2.3.

[214] *Federal Register*. Vol. 55, No. 222, Friday, November 16, 1990. Rules and Regulations. p.48058.

discovered. Construction sites are required by the statewide NPDES General Permit for Stormwater Discharges Associated with Construction Activities (Construction General Permit) to keep supplies on hand to address BMP issues rapidly. In a few cases, such as slope inaccessibility, it may require longer than 10 days before crews can safely access an eroded area. Corrective actions can be temporary and more time can be allowed for permanent corrective actions. The Permittees' tracking data needs to provide a rationale for the longer compliance timeframe.

Water Board staff reviewed more than half of the Permittees' ERPs during the MRP 1 term. While a couple of Permittees have detailed, comprehensive plans, more than half of the ERPs reviewed did not comply with the ERP requirements in MRP 1. Therefore, this Permit standardizes and clarifies the ERP requirements in provisions C.4, C.5, and C.6 to eliminate any ambiguity in the requirements.

Provision C.6.c. Best Management Practices Categories. This section requires all Permittees to require all construction sites to have year-round and seasonally appropriate and effective BMPs in the following six categories: (1) erosion control, (2) run-on and runoff control, (3) sediment control, (4) active treatment systems, (5) good site management, and (6) non stormwater management. These BMP categories match those listed in the Construction General Permit and reflect the nature of the potential water quality threats posed by construction sites, as well as the means of addressing those potential threats. Because sites' terrain, soil type, soil disturbance, and proximity to waterbodies differ, it would be unduly prescriptive and inappropriate to require all sites to implement a specific set of BMPs. This Permit, like the Construction General Permit, allows Permittees the flexibility to determine if the BMPs for each construction site are effective and appropriate and to change BMPs quickly to prevent discharges into storm drains, waterways, and rights-of-way. Appropriate BMPs for the different site conditions can be found in different handbooks and manuals, such as CASQA's Construction BMP Handbook.[215]

Sediment runoff at construction sites without adequate BMP implementation greatly exceeds natural erosion rates of undisturbed lands, causing siltation and impairment of receiving waters. This is because the vegetation clearing, mass grading, lot leveling, and excavation at construction sites expose soil to wind and water, increasing sediment mobilization, runoff into the MS4, and deposition in receiving waters. This occurs in both the wet season and in unexpected rain events during the dry season (defined as May 1 through September 30), which can be significant. Therefore, Permittees should ensure that construction sites have materials on hand for rapid rain response during the whole year, including during the dry season.

Provision C.6.c.ii.(1).d requires "project proponents to minimize grading during the wet season and scheduling of grading with seasonal dry weather periods to the extent

[215] CASQA, 2019. *Construction BMP Online Handbook. https://www.casqa.org/resources/bmp-handbooks/construction*

feasible." If grading does occur during the wet season, Permittees must require project proponents to (1) implement additional BMPs as necessary, (2) keep supplies available for rapid response to storm events, and (3) minimize wet-season, exposed, and graded areas to the absolute minimum necessary.

"Steep slopes are the most highly erodible surface of a construction site,"[216] and unstabilized slopes at construction sites are significant sources of erosion and sediment discharges during rainstorms. Therefore, this Permit requires slope stabilization on all active and inactive slopes during rain events regardless of the season, except in areas implementing advanced treatment. Slope stabilization is also required on inactive slopes throughout the rainy season. As noted by U.S. EPA, "slope length and steepness are key influences on both the volume and velocity of surface runoff. Long slopes deliver more runoff to the base of slopes and steep slopes increase runoff velocity; both conditions enhance the potential for erosion to occur."[217] Where vegetation preservation or replanting is not possible, soil stabilization is the most effective measure in preventing erosion on slopes. Research has shown that effective soil stabilization can reduce sediment discharge concentrations up to six times, as compared to soils without stabilization.[218] Slope stabilization at construction sites for erosion control is already the consensus among the regulatory community and is found throughout construction BMP manuals and permits. For these reasons, this Permit requires Permittees to ensure that sites implement slope stabilization techniques that are appropriate for the grade and height of the affected slopes.

This Permit also requires Permittees to ensure that construction sites permanently stabilize disturbed soils, e.g., by revegetation, at the conclusion of each phase of construction.[219] To maximize the degree to which vegetation can effectively stabilize soils, Permittees must ensure that construction sites are revegetated as early as feasible. Revegetation reduces the threat of polluted stormwater discharges from construction sites. A survey of grading and clearing programs found one-third of the programs without a time limit for permanent revegetation, "thereby increasing the chances for soil erosion to occur."[220] U.S. EPA states "the establishment and maintenance of vegetation are the most important factors to minimizing erosion during development."[221]

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[216] Schueler, T., and H. Holland. 2000. *Muddy Water In—Muddy Water Out*? The Practice of Watershed Protection. p. 6.

[217] U.S. EPA. 1990. *Sediment and Erosion Control: An Inventory of Current Practices*. p. II-1.

[218] Schueler, T., and H. Holland. 2000. "Muddy Water In—Muddy Water Out?" *The Practice of Watershed Protection*. p. 5.

[219] Ibid.

[220] Ibid. p. 11.

[221] U.S. EPA. 1990. *Sediment and Erosion Control: An Inventory of Current Practices*. p. II-1.

To ensure the MEP standard and water quality standards are met, active treatment systems may be necessary at some construction sites. Requirements for active system requirements are located in the Construction General Permit, Attachment F.

Provision C.6.d. Plan Approval Process. U.S. EPA guidance emphasizes the importance of good site planning,[222] early incorporation of stormwater controls into a construction project, and implementation of a comprehensive stormwater management system—that is, an effective combination of controls appropriate to the project and site.[223] This section of the Permit requires the Permittees to review project proponents' stormwater management plans for compliance with local regulations, policies, and procedures before ground is broken on a construction project, and during the site plan review process or earlier, as recommended by U.S. EPA.[224] Site plan review aids in compliance and enforcement efforts since it alerts the "MS4 operator early in the process to the planned use or non-use of proper BMPs and provides a way to track new construction activities."[225]

Provision C.6.e. Inspections. This Provision requires permittees to ensure accountability of construction site managers through a program of regular inspections, consistent enforcement, and meaningful tracking. These three elements will help ensure that effective construction pollutant controls are in place in order to minimize construction polluted runoff to the storm drain and waterbodies.

The level of effort required by this section remains unchanged from the previous permit. The monthly or more frequent inspections during the wet season of all construction sites disturbing one or more acre of land, all hillside projects, and all high priority sites reflects the need to ensure that potentially changing conditions on sites are appropriately being addressed during the part of the year when there is a greater threat associated with a greater probability of precipitation, and has been shown during previous permit terms to adequately identify problem sites. Inspections must focus on the adequacy and effectiveness of the site-specific BMPs implemented for the six BMP categories. Each Permittee must implement its ERP and require timely corrections of all actual and potential problems observed. All corrective actions must be implemented before the next rain event, but no longer than 10 business days after the violations are discovered. A longer time period to implement corrective actions is allowed with a reasonable rationale. All inspections must be recorded on a written or electronic inspection form, and also tracked in an electronic database or tabular format.

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[222] *Federal Register*. Vol. 55, No. 222, Friday, November 16, 1990. Rules and Regulations. p. 48034.

[223] Ibid.

[224] U.S. EPA. 2000. *Storm Water Phase II Compliance Assistance Guide*. EPA 833-R-00-002. Section 4.6.2.4,
pp. 4–30.

[225] Ibid. pp. 4–31.

MRP 1 required Permittees to have the legal authority to require effective construction stormwater controls at all construction sites, regardless of the amount of soil disturbed. Water Board staff has observed disturbed construction sites where minimal BMPs were being implemented, and has seen stormwater transport construction site pollutants into the storm drain. For these reasons, ideally, all construction sites with a grading permit from a Permittee should have stormwater inspections during the rainy season to ensure adequate BMPs are implemented and construction pollutants are not entering the storm drain. Construction sites with steeper slopes pose a more-significant threat of discharging construction-related pollutants to the storm drain because they are likely to have higher runoff velocities and because their BMPs must be more robust and more-robustly installed and maintained in order to control pollutants, as compared to less-steep sites. Water Board staff has observed stormwater move sediment and other construction-related pollutants into storm drains at sites ranging from those with flat slopes to those with slopes greater than 15 percent. Because of the relatively greater threat posed by steeper sites, MRP 2 added, and this Permit continues a specific requirement to inspect all hillside projects disturbing greater than or equal to 5,000 square feet of soil. For those Permittees that do not have a hillside development map or definition, this Permit defines hillside development as development occurring on land with a slope greater than or equal to 15 percent.

MRP 1 required Permittees to report the number of violations fully corrected prior to the next event, but no longer than 10 business days after the potential and actual discharges are discovered or otherwise considered corrected in a timely, though longer period. This proved challenging for many Permittees because they track enforcement actions and not discreet violations. While information on how many potential and actual discharges are discovered and resolved would be valuable, the Water Board recognizes that such reporting requirements would require significant changes in databases for some Permittees. Therefore, this Permit allows Permittees to either report by enforcement actions or discrete number of potential and actual discharges.

Provision C.6.f. Staff Training. This section of the Permit requires Permittees to conduct staff trainings for municipal staff at least every other year. These trainings have been found to be extremely effective means to educate inspectors and to inform them of any changes to local ordinances and state laws. Trainings provide valuable opportunity for Permittees to network and share strategies used for effective enforcement and management of erosion control practices.

C.7. Public Information and Outreach

Legal Authority

The following legal authority applies to section C.7:

Broad Legal Authority: CWA sections 402(p)(3)(B)(ii-iii), CWC sections 13377 and 13263, and Federal NPDES regulations 40 CFR 122.26(d)(2)(i)(B, C, E, and F) and 40 CFR 122.26(d)(2)(iv).

Specific Legal Authority: Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(A)(6) requires "[a] description of a program to reduce to the maximum extent practicable, pollutants in discharges from municipal separate storm sewers associated with the application of pesticides, herbicides, and fertilizer which will include, as appropriate, controls such as educational activities, permits, certifications, and other measures for commercial applicators and distributors, and controls for application in public right-of-ways [sic] and at municipal facilities."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(B)(5) requires "a description of a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges or water quality impacts associated with discharges from municipal separate storm sewers."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(B)(6) requires "[a] description of educational activities, public information activities, and other appropriate activities to facilitate the proper management and disposal of used oil and toxic materials."

Fact Sheet Findings in Support of Provision C.7.

C.7-1 An informed and knowledgeable community is critical to the success of a stormwater program since it helps ensure greater support for the program as the public gains a greater understanding of stormwater pollution issues.

C.7-2 An informed community also ensures greater compliance with the program as the public becomes aware of the personal responsibilities expected of them and others in the community, including the individual actions they can take to protect or improve the quality of area waters.

C.7-3 The public education programs should use a mix of strategies to address the viewpoints and concerns of a variety of audiences and communities, including minority and disadvantaged communities, as well as children.[226]

C.7-4 Target audiences should include (1) government agencies and official to achieve better communication, consistency, collaboration, and coordination at the federal, state, and local levels and (2) K-12/Youth Groups.

[226] U.S. EPA. 2000. Storm Water Phase II Compliance Assistance Guide. EPA 833-R-00-002.

C.7-5 Citizen involvement events should make every effort to reach out and engage all economic and ethnic groups.[227]

Specific Provision C.7 Requirements

Provision C.7.a. Outreach Campaigns. Permittees have long implemented outreach campaigns to educate their residents on different stormwater runoff pollution prevention messages. The Permit continues to require a minimum of one public outreach campaign. It is anticipated that Permittees will continue cooperatively implementing the *Our Water, Our World* pesticide use reduction outreach campaign developed by BASMAA. Individual Permittees, their respective countywide programs, and cooperative inter-Permittee efforts, will either continue existing public outreach campaigns or start new ones. This Permit removes specificity regarding the expected public outreach campaigns and how they must be conducted, recognizing that the Permittees have decades of public outreach experience and allowing flexibility to determine how best reach their residents. Permittees can utilize various electronic and print media, and paid and free media to target different audiences. This Permit still requires an effectiveness assessment/evaluation after each outreach campaign to enable Permittees to determine whether stormwater messaging has reached residents and resulted in behavior changes.

Provision C.7.b. Stormwater Pollution Prevention Education. The public needs information on how to minimize stormwater pollution. MRP 1 and MRP 2 required Permittees to have and publicize a centralized stormwater point of contact to provide the public with information on watershed characteristics and stormwater pollution prevention alternatives. The Permittees list this point of contact on the brochures, pamphlets, and fact sheets they circulate on stormwater pollution prevention issues. Some Permittees provide these materials in languages other than English. Many Permittees have also placed these pollution prevention materials on their websites. Since citizens increasingly use the internet to search for information, this Permit continues to require all Permittees to place information on watershed characteristics and stormwater pollution prevention on their websites.

Provision C.7.c. Public Outreach and Citizen Involvement Events. This Permit continues to require Permittees to host citizen involvement events to ensure that pollution prevention messaging reaches a broad spectrum of citizens. Long-established outreach mechanisms, such as staffing tables or booths at fairs, street fairs, and other community events, help to ensure that citizens who do not actively search for information on Permittees' website may still have access to information. Permittees shall continue utilizing appropriate outreach materials, such as printed materials, newsletter/journal articles, and videos. Permittees shall also utilize existing community outreach events, such as the Bringing Back the Natives Garden Tour. It is important to provide opportunities for citizens to actively practice being good stewards of our

[227] Ibid.

environment. The combined specified numbers of events for Public Outreach and Citizen Involvement in this Permit are, for the most part, slightly less than the combined specified numbers in MRP 1. However, many Permittees claimed credit for both public outreach and citizen involvement for a number of events each year.

Provision C.7.d. Watershed Stewardship Collaboration. Community watershed groups are comprised of active citizens, but they function best when they receive support from and can coordinate actions with Permittees.

Provision C.7.e. School-Age Children Outreach. Outreach to school children has proven to be a particularly successful program with an enthusiastic audience who are efficient to reach. School children also take the message home to their parents, neighbors, and friends. In addition, they are the next generation of decision-makers and consumers.

Provision C.7.f. Outreach to Municipal Officials. It is important for Permittee staff to periodically inform municipal officials of the permit requirements and also future planning and resource needs driven by the permit and stormwater regulations.

C.8. Water Quality Monitoring

Legal Authority

Broad Legal Authority: CWA §§ 308(a), 402(a)(2); Federal NPDES regulations 40 CFR §§122.26(d)(2)(i)(F), 122.41(h), (j), (l), 122.42(c), 122.44(i), and 122.48.

Specific Legal Authority: Permittees must conduct a comprehensive monitoring program and submit reports as required under the laws cited above. CWC Section 13383 further authorizes the Regional Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements.

Fact Sheet Findings in Support of Provision C.8

C.8-1 In response to questions regarding the type of WQBELs that are most appropriate for NPDES stormwater permits, and because of the nature of stormwater discharges, U.S. EPA established the following approach to stormwater monitoring:

Each storm water permit should include a coordinated and cost-effective monitoring program to gather necessary information to determine the extent to which the permit provides for attainment of applicable water quality standards and to determine the appropriate conditions or limitations for subsequent permits. Such a monitoring program may include ambient monitoring, receiving water assessment, discharge monitoring (as needed), or a combination of monitoring procedures designed to gather necessary information.[228]

According to U.S. EPA, the benefits of stormwater runoff monitoring include, but are not limited to, the following:

(1) Providing a means for evaluating the environmental risk of stormwater discharges by identifying types and amounts of pollutants present;

(2) Determining the relative potential for stormwater discharges to contribute to water quality impacts or water quality standard violations;

(3) Identifying potential sources of pollutants; and

(4) Eliminating or controlling identified sources more specifically through permit conditions.[229]

[228] U.S. EPA. 1996. Interim Permitting Approach for Water Quality-Based Effluent Limitations in Stormwater Permits. Sept. 1, 1996. In it, U.S. EPA recognizes that storm water discharges are highly variable both in terms of flow and pollutant concentrations and the relationships between discharges and water quality can be complex.

[229] U.S. EPA. 1992. NPDES Storm Water Sampling Guidance Document. EPA/833-B-92-001.

C.8-2 A workshop held by U.S. EPA Region 9[230] identified key attributes of a more effective approach to monitoring, and how that monitoring may intersect with other evaluation, tracking, and reporting efforts:

(1) Clear management questions related to water quality outcomes and activity implementation.

(2) A process for conducting effectiveness assessment that is tailored to the program element and the management questions being asked.

(3) Use of improved monitoring designs (location, scale, frequency, methods) to detect a "signal" or change in pollutant loading in stormwater or receiving waters for POCs.

(4) Monitoring efforts that complement activity tracking and assessment to better evaluate effectiveness of treatment or source controls (e.g., are they implemented correctly, receiving proper maintenance, and operating as expected?) and improve the basis for assessing cause and effect.

(5) Documented monitoring and evaluation designs coupled with identification of program modifications envisioned to improve effectiveness, inform program adjustment and new stormwater management initiatives, and achieve intended outcomes.

The workshop recommended elements to be included in a national-level guide on monitoring and assessing program effectiveness; in the meantime, those elements on their own are a useful guide for monitoring and evaluation programs:

(1) Framing key monitoring/evaluation questions and designing approaches to fit the questions. This could include alternative program designs with advice on assembling the components (e.g., receiving water, outfall, and in-system water monitoring; BMP effectiveness evaluation; activity tracking of treatment and source controls; modeling) to inform assessment of the overall program and demonstrate effectiveness. This should show how to build a sound analytical framework up front to demonstrate why a set of approaches will likely succeed in assisting program management and defining or tracking compliance and effectiveness.

(2) Considerations for adapting monitoring/evaluation questions over time, with a reasonable limit on the creation of new questions.

[230] Improving Stormwater Program Monitoring, Evaluation, Tracking, and Reporting: Workshop Report and Recommendations. U.S. EPA Region 9, October 12, 2018. https://www.epa.gov/sites/production/files/2018-10/documents/improving_stormwater_program_monitoring-10-12-2018.pdf

(3) Examples of successful local approaches that better associate monitoring/evaluation design with program effectiveness, compliance assessment, and the ability for program managers to make management decisions.

(4) Suggested evaluation methods to assess BMP effectiveness over time.

(5) Available monitoring technologies and best practices that clearly link the monitoring objectives with the experimental design, including all aspects of data collection, data management, data analysis, and reporting formats.

(6) Compiling monitoring program costs to help show the wide range of program expenditures, how monitoring data are used to inform program decisions, and how to better articulate the value of the data.

(7) Explanations of modeling approaches and how they can relate to monitoring and adaptive management.

The workshop identified the following performance metrics to establish more meaningful MS4 program evaluation and monitoring:

(1) Percent of impervious areas addressed for stormwater management.

(2) Condition or “cleanliness” of streets as an indicator of potential pollution from runoff.

(3) Percent of impervious surface areas directly connected to the storm drain system.

(4) Modeled volume of flow to the storm drain system used as a surrogate for pollutant contributions.

(5) Percent of waterbodies in a community that are fishable and swimmable.

(6) Loss of beneficial use of a waterbody (e.g., beach closure downtimes).

(7) Measured level of awareness of citizens regarding stormwater pollution and the community’s program.

(8) Increasing number of illicit discharges reported annually; indicating heightened awareness.

(9) Budget for stormwater infrastructure improvements.

The workshop identified an overall need for permitting authorities to improve the clarity of monitoring and evaluation permit requirements and to use thoughtful methods/designs that will yield actionable data. Further, some participants noted that permits may be able to provide choices or flexibility for monitoring approaches and help incentivize better designs. Flexible permit requirements can support adaptation of monitoring to evolve with program

needs, with the potential questions to be addressed changing over time. Critically, for such an approach to succeed, it may be necessary to discontinue some monitoring efforts to redirect resources to more pertinent or valuable monitoring. The Water Board intends to pursue that recommended approach, as this Permit has replaced the Creek Status Monitoring and Stressor/Source Identification Projects Subprovisions with LID Monitoring which has been identified as a more useful program at this point in time, and the Water Board will consider changes to LID Monitoring in the subsequent permit to further increase its utility.

C.8-3 Provision C.8 requires Permittees to conduct water quality monitoring, including ambient monitoring, MS4 outfall monitoring and monitoring of receiving waters, in accordance with 40 CFR 122.44(i) and 122.48. One purpose of water quality monitoring is to demonstrate the effectiveness of the Permittees' stormwater management actions pursuant to this Permit and, accordingly, demonstrate compliance with the conditions of the Permit. Other water quality monitoring objectives under this Permit include:

(1) Assess the chemical, physical, and biological impacts of urban runoff on receiving waters;

(2) Characterize stormwater discharges;

(3) Assess compliance with Total Maximum Daily Loads (TMDLs) and Wasteload Allocations (WLAs) in impaired waterbodies;

(4) Assess progress toward reducing receiving water concentrations of impairing pollutants;

(5) Assess compliance with numeric and narrative water quality objectives and standards;

(6) Identify sources of pollutants;

(7) Assess stream channel function and condition, as related to urban stormwater discharges;

(8) Assess the overall health and evaluate long-term trends in receiving water quality; and

(9) Measure and improve the effectiveness of the Permittees' urban runoff control programs and the Permittees' implemented BMPs.

C.8-4 Monitoring programs are an essential element in the improvement of urban runoff management efforts. Data collected from monitoring programs can be assessed to determine the effectiveness of management programs and practices, which is vital for the success of the iterative approach, also called the "continuous improvement" approach, used to meet the Maximum Extent

Practicable (MEP) standard where applicable. When water quality data indicate that water quality standards or objectives are not being met, particular pollutants, sources, and drainage areas can be identified and targeted for urban runoff management efforts. The iterative process in Provision C.1 related to water quality standards exceedances could potentially be triggered by monitoring results. Ultimately, the results of the monitoring program must be used to focus actions to reduce pollutant loadings to comply with applicable WLAs and protect and enhance the beneficial uses of the receiving waters in the Permittees' jurisdictions and the San Francisco Bay.

C.8-5 Under the CWA, NPDES permits must contain conditions that require both monitoring and reporting of monitoring results to ensure compliance (see 33 U.S.C. § 1342(a)(2); 40 C.F.R. § 122.44(i).). The regulations provide, in pertinent part:

> *In addition to the conditions established under §122.43(a), each NPDES permit shall include conditions meeting the following requirements when applicable.* . . .
>
> *(i) Monitoring requirements. In addition to § 122.*48, the following monitoring requirements:
>
> *(1) To assure compliance with permit limitations, requirements to monitor:*
>
> *(i) The mass (or other measurement specified in the permit) for each pollutant* limited in the permit;
>
> *(ii) The volume of effluent discharged from each outfall;*
>
> *(iii) Other measurements as appropriate including pollutants in internal waste streams under § 122.45(i); pollutants in intake water for net limitations under § 122.45(f);* frequency, rate of discharge, etc., for noncontinuous discharges under § 122.45(e); pollutants subject to notification requirements under § 122.42(a); and pollutants in sewage sludge or other monitoring as specified in 40 CFR part 503; or as determined to be necessary on a case-by-case basis pursuant to section 405(d)(4) of the CWA.
>
> *(iv) According to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR part 136 for the analysis of pollutants or pollutant parameters or required under* 40 CFR chapter 1, subchapter N or O. . . .

> *(2) Except as provided in paragraphs (i)(4) and (i*)(5) of this section, requirements to report monitoring results shall be established on a case-by-case basis with a frequency dependent on the nature and effect of the discharge, but in no case less than once a year. . . .

40 C.F.R. § 122.44(i)(1)-(2). This section allows "for monitoring other than mass or volume, namely some 'other measurement specified in the permit [ ] for each pollutant limited in the permit'" (*NRDC v. U.S.EPA*, (2nd Cir. 2015) 808 F3d 556, 582.). The regulations at 40 C.F.R. § 122.48 state that all permits specify the "[r]equired monitoring including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including, when appropriate, continuous monitoring."

Consistent with the federal regulations, water quality monitoring requirements in Provision C.8 require specific monitoring that will yield data that is both representative of the monitored activity and necessary to assure compliance with the requirements of the Permit, as described below.

C.8 includes monitoring[231]:

(1) At or near outfalls during storm events to determine the concentrations (mass) of pollutants of concern and to obtain information to identify source areas or contaminated watersheds. These concentration data, in combination with other information, are used to provide modeled loading estimates to assess progress on attaining TMDLs, including assuring compliance with the required load reductions in the permit (C.8.f. Pollutants of Concern Monitoring). This monitoring supports estimates of MS4 pollutant loads to receiving waters and requires data collection to support planning for control actions (e.g., identification of source areas or contaminated watersheds). The latter includes monitoring effectiveness of control measures and identifying pollutant source areas; and

(2) In receiving waters, during wet and dry weather, to assess the extent to which LID controls and trash controls mitigate the physical, chemical and biological impacts of MS4 discharges to those receiving waters, and to therefore guide the management and implementation of existing and future LID controls and trash controls (C.8.d. LID Monitoring and C.8.e Trash Receiving Water Monitoring).

Provision C.8.d LID Monitoring requires monitoring of LID facilities, systems, components, including different LID design variations, in order to measure compliance and determine the effectiveness of LID controls, including the

[231] Provisions C.14, C.16, C.18, and C.19 contain additional monitoring and reporting requirements to assure compliance with the requirements therein.

extent to which LID controls address the physical, chemical and biological impacts to receiving waters caused by MS4 discharges. Provision C.8.d outlines the minimum requirements that Permittees' LID Monitoring programs must comply with and what must be included in LID Monitoring Plans. A Technical Advisory Group (TAG) consisting of Permittee representatives will guide the development and implementation of the LID Monitoring Plans.

Provision C.8.e Trash Monitoring requires monitoring of MS4 outfalls, direct monitoring of receiving waters, and indirect monitoring of receiving waters (adjacent on-land areas, when direct in-stream monitoring is not practicable). The types, frequencies, and intervals of monitoring are expected to yield information that will verify whether implemented full trash capture systems or equivalent trash controls result in no or low levels of trash discharges from MS4s.

Receiving water monitoring is specified here in addition to, and in some cases as a substitute for, outfall monitoring, for the following reasons. First, there are no end-of-pipe limits in the Permit to measure. Instead, the Permit requires, for example, PCB load reductions; outfall monitoring would not allow the Water Board to assess whether the PCB limits are met. Second, there are hundreds if not thousands of outfalls in the Permittees' jurisdictions and it is impractical to monitor every single outfall due to both cost and safety concerns. Monitoring a subset of outfalls would provide information about MS4 discharges at those specific locations at only one limited point in time, which leads to the third point that outfall monitoring is time- and spatially limited. In contrast, the required receiving water monitoring integrates the physical, biological and chemical effects to the water body of all MS4 discharges from multiple outfalls over multiple storms (i.e., time and space), yielding more useful data than outfall monitoring to determine compliance with the Permit. Receiving water monitoring is done in a probabilistic or rotating basis, depending on the parameter, again yielding more useful data than fixed-location monitoring. Also, both dry weather and storm flows are addressed in receiving water monitoring, whereas outfall monitoring is normally conducted only during storm events. Dry weather discharges can constitute a significant portion of annual pollutant loadings from storm systems in urban areas (NRC 2008).

To provide an example of how receiving water monitoring better captures permit compliance, consider an illicit discharge of chloramine from a swimming pool to an MS4. Both outfall and receiving water monitoring could detect the discharge. However, outfall monitoring would need to be done at the exact location and time of an illicit discharge; otherwise it would go undetected, because the discharge would have moved through the outfall and into receiving waters.

Receiving water monitoring as a means to evaluate compliance with permit conditions is supported by the National Research Council (NRC). In *Urban Stormwater Management in the United States*, NRC states that the quality of stormwater from urbanized areas has been well-characterized.[232] Continuing MS4 end-of-pipe monitoring produces data of limited usefulness because of a variety of shortcomings (as detailed in the report). The NRC strongly recommends[233] that MS4 programs modify their evaluation metrics and methods to include biological and physical monitoring and an increased emphasis on watershed scale analyses to ascertain what is actually going on in receiving waters, much like what is required in the permit. Further, NRC finds that biological assessments respond to the range of non-chemical stressors identified as being important in urban waterways including habitat degradation, hydrological alterations, and sediment and siltation impacts, as well as to the influence of nutrients and other chemical stressors where chemical criteria do not exist or where their effects are difficult to measure directly (e.g., episodic stressors).

Prior to the current Permit, Permittees completed substantial biological and physical creek status monitoring to evaluate MS4 impacts on streams. Continuing creek status monitoring will not generate substantial new actionable information. Baseline monitoring of all creeks has been completed and there is no near-term expectation for change. Consideration of additional or updated biological and physical monitoring will be relevant in future permit terms to evaluate long-term management actions that would cause a measurable change in creek conditions. Creek status monitoring and the associated stressor source Identification monitoring have been replaced in the current Permit with LID systems and trash control effectiveness monitoring, which are high priorities due to the high benefit costs of those actions, and more specific and near-term relevant pollutants of concern receiving water monitoring requirements.

U.S. EPA Interim Permitting Approach for Water Quality-Based Effluent Limitations in Storm Water Permits notes that:

> *…storm water monitoring can be conducted for two basic reasons: 1) to identify if problems are present, either in the receiving water or in the discharge, and to characterize the cause(s) of such problems; and 2) to assess the effectiveness of storm water controls in*

[232] National Research Council. 2008. Urban Stormwater Management in the United States.

[233] U.S. EPA has endorsed the NRC's recommendation (See, e.g., EPA's District of Columbia MS4 Permit No. DC0000221 Fact Sheet, 2011.).

reducing contaminants and making improvements in water quality.

Permit Provision C.8 satisfies these two objectives by requiring monitoring that will provide Permittees with sufficient data to pinpoint sources of pollutants and assess the effectiveness of efforts to reduce pollutants, both at the source and in receiving waters.

C.8-6 The Water Quality Monitoring Provision is intended to provide answers to fundamental management questions, outlined below. Monitoring is intended to progress as iterative steps toward ensuring that the Permittees' can fully answer, through progressive monitoring actions, management questions that include the following:

(1) Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

(2) What is the extent and magnitude of the current or potential receiving water problems?

(3) What is the relative urban runoff contribution to the receiving water problem(s)?

(4) What are the sources of urban runoff that contribute to receiving water problem(s)?

(5) Are conditions in receiving waters getting better or worse?

(6) What are the pollutant removal and hydrologic benefits, such as addressing impacts associated with hydromodification, of different types of LID facilities, systems, components, and design variations, and how do they change over time?

(7) What are the minimum levels of O&M necessary to avoid deteriorated LID facilities, systems, and components that reduce pollutant removal and hydrologic benefit performance?

C.8-7 On April 15, 1992, the Water Board adopted Resolution No. 92-043 directing the Executive Officer to implement the Regional Monitoring Program for San Francisco Bay. Subsequent to a public hearing and various meetings, Water Board staff requested major permit holders in the region, under authority of CWC section 13267, to report on the water quality of the Estuary. These permit holders, including the Permittees, responded to this request by participating in a collaborative effort through the San Francisco Estuary Institute. This effort has come to be known as the San Francisco Estuary Regional Monitoring Program (RMP), which produces world-class datasets on estuarine

contaminants.[234] The RMP involves collection and analysis of data on pollutants and toxicity in water, sediment and biota of the Estuary. Because the RMP monitors waters in each Permittee's jurisdiction and gathers data on the pollutants controlled in this Permit, the Permittees are required to continue to report on the water quality of the Estuary, as presently required. Compliance with the requirement through participation in the RMP is considered to be adequate compliance.

C.8-8 The Surface Water Ambient Monitoring Program (SWAMP) is a statewide monitoring effort, administered by the State Water Board, designed to assess the conditions of surface waters throughout California. One purpose of SWAMP is to integrate existing water quality monitoring activities of the State Water Board and the Regional Water Boards, and to coordinate with other monitoring programs. Provision C.8 contains a framework, referred to as a regional monitoring collaborative, within which Permittees can elect to work cooperatively with SWAMP to maximize the value and utility of both the Permittees' and SWAMP's monitoring resources. In working cooperatively with SWAMP, Permittees can develop a monitoring program that evaluates waters in its jurisdiction and gathers data on each of the pollutants of concern discussed in this Permit.

C.8-9 In 1998, BASMAA published *Support Document for Development of the Regional Stormwater Monitoring Strategy*,[235] a document describing a possible strategy for coordinating the monitoring activities of BASMAA member agencies. The document states:

> *BASMAA's member agencies are connected not only by geography but also by an overlapping set of environmental issues and processes and a common regulatory structure. It is only natural that the evolution of their individual stormwater management programs has led toward increasing amounts of information sharing, cooperation, and coordination.*

In a prior permit, Permittees were given the option to implement this same concept by forming a regional monitoring collaborative, which they did. In conducting some of the monitoring required in this Provision, the Regional Monitoring Collaborative (RMC) provides efficiencies and economies of scale by performing certain tasks (e.g., planning, contracting, data quality assurance, data management and analysis, and reporting) at the regional level on behalf

[234] https://www.sfei.org/programs/sf-bay-regional-monitoring-program

[235] EcoAnalysis, Inc. & Michael Drennan Assoc., Inc., *Support Document for Development of the Regional Stormwater Monitoring Strategy*, prepared for Bay Area Stormwater Management Agencies Association, March 2, 1998.

of all Permittees. Further benefits are expected as more monitoring requirements are fulfilled through the RMC.

C.8-10 This Permit includes monitoring requirements to ensure compliance with adopted TMDL WLAs and to provide data needed for TMDL implementation. This Permit incorporates the TMDLs' WLAs adopted by the Water Board as required under CWA section 303(d).

C.8-11 SB1070 (California Legislative year 2005/2006) found that there is no single place where the public can go to get a look at the health of local water bodies. SB1070 also states that all information available to agencies shall be made readily available to the public via the Internet. This Permit requires water quality data to be submitted in a specified format and uploaded to a centralized Internet site so that the public has ready access to the data.

Specific Provision C.8 Requirements

Each of the components of the monitoring provision is necessary to meet the objectives and answer the questions listed in the findings above. Justifications for each monitoring component are discussed below.

C.8.a. Compliance Options. Provision C.8.a. provides Permittees options for obtaining monitoring data through various organizational structures, including use of data obtained by other parties. This is intended to achieve the following:

- Promote cost savings through economies of scale and eliminate redundant monitoring by various entities;
- Promote consistency in monitoring methods and data quality; and
- Simplify reporting.

In this Permit, all the Stormwater Countywide Programs are encouraged to work collaboratively to conduct all or most of the required monitoring and reporting on a region-wide basis. For each monitoring component that is conducted collaboratively, one report would be prepared on behalf of all contributing Permittees; separate reports would not be required from each Program. Cost savings could result also from reduced contract and oversight hours, fewer quality assurance/quality control samples, shared sampling labor costs, and laboratory efficiencies.

C.8.b. Monitoring Protocols and Data Quality. CWA regulations (40 CFR 122.41(j)(1)) require that data submitted pursuant to a NPDES permit meet certain quality standards. To achieve this, and to obtain data of known quality that can be compared to data collected in other California urban creeks, the permit requires monitoring data be collected and analyzed in accordance with the SWAMP Quality Assurance Project Plan and Standard Operating Procedures or U.S. EPA methods. The BASMAA Regional Monitoring Coalition's Creek Status Monitoring Program Quality Assurance Project Plan (January 2014) and Standard Operating Procedures (January

2014) have been deemed to be SWAMP comparable. These two BASMAA documents may be updated to reflect the changing state-of-the-science with Executive Officer's approval.

C.8.c. San Francisco Estuary Receiving Water Monitoring. The San Francisco Estuary is the ultimate receiving water for most of the urban runoff in this region. For this reason and because of the high value of its beneficial uses, Provision C.8.c requires focused monitoring on the Estuary to continue. Since the mid-1990s, Permittees have caused this monitoring to be conducted by contributing financially and with technical expertise, to the RMP. Provision C.8.c requires such monitoring to continue. The monitoring conducted through the RMP is an important component of determining compliance with receiving water limit (RWLs) in the MRP, and this monitoring complements the tributary-focused RWL and other monitoring required in Provision C.8 along with the tracking and accounting of required Permittee control actions.

RMP monitoring includes both wet season and dry season data collection in San Francisco Bay water, sediment, fish, shellfish, and birds. The analytes monitored in these media provide a comprehensive assessment of water quality in the estuary. Data are collected both in the sub-tidal (deeper) region as well as the shallow areas of the Bay where tributaries (many influenced by urban runoff) enter the Bay. The contaminant concentrations in Bay water, sediment and biota integrate all sources of contaminants (e.g., urban runoff, atmospheric deposition, wastewater treatment). Comparison of RMP data to water quality objectives allows water quality managers to determine if RWLs are achieved in the ultimate receiving water, San Francisco Bay.

C.8.d. Low Impact Development (LID) Monitoring. LID Monitoring is intended to measure compliance and effectiveness of LID implementation. It will improve the understanding of the following two management questions (which are repeated in Finding C.8-6 above) related to the implementation of LID controls:

(1) What are the pollutant removal and hydrologic benefits, such as addressing impacts associated with hydromodification, of different types of LID facilities, systems, components, and design variations, and how do they change over time?

(2) What are the minimum levels of O&M necessary to avoid deteriorated LID facilities, systems, and components that reduce pollutant removal and hydrologic benefit performance?

The purpose of the first management question is to confirm that Permittees' LID controls are functioning as expected over time. Perhaps some design variations provide greater performance than others. The purpose is not only to compare relative performance between different types of MRP Permittee controls but also to compare their performance against the publicly-available databases of LID performance data, such as

those of the International Stormwater BMP Database[236] and SCCWRP's California BMP Effectiveness Calculator.[237]

The purpose of the second management question is straightforward: to assess whether LID controls that receive relatively insufficient O&M perform relatively poorly compared to LID controls that receive relatively sufficient O&M, which will directly inform management actions (such as, what O&M activities to perform, and how much of it to perform how frequently).

The Permittees are required to submit LID Monitoring Plans subject to review by a Technical Advisory Group and Executive Officer approval during the first year of the Permit term, detailing how exactly they will answer these two management questions, guided by the confines and structure of Provision C.8.d.i which describes what must be included in the LID Monitoring Plans, Provision C.8.d.ii which outlines a process for ongoing Regional Collaboration, Provision C.8.d.iii which outlines the Methods to be used to answer the Management Questions, and Provision C.8.d.iv which prescribes the Parameters that must be sampled and analyzed as well as the sampling Intensities. Once their LID Monitoring Plans have been approved or conditionally approved, the Permittees will begin implementing them by no later than the beginning of the second Water Year to occur during the Permit term, which is October 1, 2023. LID Monitoring during the first Water Year of the Permit term is not required because Permittees will need that time to develop their LID Monitoring Plans.

C.8.d.i. This Provision sets forth the minimum contents of the LID Monitoring Plans to ensure that they are properly designed to address the two management questions and to implement the requirements in Provisions C.8.d.iii-v. Executive Officer approval will ensure the LID Monitoring Plans conform to Provision C.8.d's requirements.

C.8.d.ii. Regional Collaboration requires the Permittees to form a Technical Advisory Group (TAG) to review and make recommendations on the drafting of the LID Monitoring Plans so that they are scientifically sound, and to ensure that the Permittees' sampling and analytical methodologies are regionally consistent. To further this, Water Board staff and impartial science advisors (e.g., SFEI, SCCWRP) may participate in the TAG. As the approved or conditionally approved LID Monitoring Plans are implemented, it is necessary for the TAG to provide ongoing feedback because LID Monitoring is new and therefore may need adjustments and ongoing improvements to (and adaptive management of) study design and methodology in real time during the Permit term. Impartial science advisors participating in the TAG will support these needs and will also provide feedback on lessons learned from LID Monitoring as it occurs, which will culminate in recommendations for changes to the LID Monitoring in the subsequent Permit. This Provision requires that the Permittees submit the draft LID Monitoring Plans to the TAG by March 1, 2023, so that the TAG can provide feedback, and so that

[236] https://bmpdatabase.org/get-data

[237] https://sccwrp.shinyapps.io/bmp_eval/

the Permittees can incorporate that feedback, before the final LID Monitoring Plans are required to be submitted to the Water Board for Executive Officer approval (or conditional approval) by May 1, 2023, pursuant to Provision C.8.d.vi.

C.8.d.iii. Methods describes the methods that, when implemented by the Permittees, will address the LID Monitoring Management Questions. Permittees are required to use automated samplers to collect flow-weighted composite EMCs (time-weighted composites are allowed if they have many subsamples and can be closely approximated as flow-weighted composites), simultaneously at both the inlet and outlet of each control/site (this is needed to calculate both geomean and percent reduction), because this will generate the highest quality data, and because this is the same data type as the data in the databases used to perform the power analysis (see below). Flow- or time-weighted composite EMCs involve the collection of a sample aliquot at a certain increment of flow passing through the monitored orifice, or at a certain increment of time, which is then added to a storage container to form a single composite sample. These are explained in greater detail, including different types of flow-weighted composite EMC methodologies (e.g., volume proportional to flow rate, volume proportional to flow volume increment, and time proportional to flow volume increment), in the International Stormwater BMP Database's 2009 monitoring guidance document.[241] Because this method is required, flow data can be collected using the same automated samplers.

C.8.d.iv. Parameters and Intensities defines the parameters that are fundamental to characterizing the pollutant and hydrologic mitigation that LID facilities, systems, components and design variations provide. There are two types of parameters, those that are required and those that are optional. The required parameters are: Total Hg, Total PCBs, TSS, PFAS, TPH, Total and Dissolved Copper, Flow, Total Hardness, and pH. The optional parameters are: Other Emerging Contaminants (e.g., microplastics and 6PPD-quinone) and Other Ancillary Parameters. Other Ancillary Parameters may include, but are not limited to: zinc (and other metals), temperature, conductivity, polycyclic aromatic hydrocarbons (PAHs), turbidity, pathogens (FIB), total organic carbon (TOC), dissolved organic carbon (DOC), pesticides of concern to water quality (e.g., pyrethroids, fipronil and its degradants, and neonicotinoids such as imidacloprid),[238] major cations (Ca, Mg, Na, K), and major anions (SO_4, Cl). These parameters are typically found in and are of particular concern for urban stormwater discharges within the Permittees' jurisdictions. The LID Monitoring Plans must implement monitoring for the required parameters.

The LID Monitoring Plans may or may not implement monitoring for the optional parameters at each site, for example, depending on whether they will inform the relevant LID Monitoring Management Questions, and whether they are appropriate for a given site due to the characteristics of the tributary drainage area. Characteristics that

[238] And other pesticides of concern to water quality, listed in Provision C.9, Pesticides Toxicity.

Permittees may consider include soil type, land use, types and loading from actual and potential sources of stormwater pollution (e.g., IGP sites and traffic loading), existing management actions and stormwater controls (both natural and engineered), and imperviousness.

Provision C.8.d.iv also specifies the minimum total number of sample events that must be collected during the Permit term as well as the minimum number of sample events that must be collected annually. The minimum annual samples are set at a level that ensures satisfactory annual progress towards the total number of required sample events, that ensures a certain minimum frequency of data collection which is important for the quality of the dataset, but that also allows for additional flexibility and cost savings by Permittees in their planning of sample events.

The total number of samples events are based on power analysis. Water Board staff utilized a method from Helsel (2020)[239] to compute the power of a nonparametric test of differences between geometric means of two distributions. Water Board staff adapted an R script (power.WMW from Chapter 13) provided on a website[240] providing supporting material for Helsel (2020). For more information on the method, please see Chapter 13 of Helsel (2020). The existing data were for total copper (combined data from SCCWRP California BMP Effectiveness Tracker and the International Stormwater BMP Database), TSS (International Stormwater BMP Database), TSS (SCCWRP California BMP Effectiveness Calculator) and Dissolved Zinc (SCCWRP California BMP Effectiveness Calculator). No data filtering was performed on these data (which possibly include outliers and instances where input:output is < 1). No transformations of the data were required because the nonparametric method does not require the data to be normally distributed.

The power analysis runs a series of t-tests to estimate how many sample events of the Permittees' LID BMPs during MRP 3 would need to be collected to determine whether such BMPs – and to the extent that those BMPs are a representative sample of the population of LID BMPs in the region, then this may be extrapolated to that regional population – belong (statistically) to the data population represented by the existing data in the databases of the International Stormwater BMP Database and the SCCWRP California BMP Effectiveness calculator.

The null hypothesis is that the geomean of the Permittees' sample data is the same as the geomean of the population of the databases, and the alternative hypothesis is the converse. A significance level and power level are specified, which are recommended as 5% and 80%, respectively, by the International Stormwater BMP Database's 2009

[239] Helsel, D.R., Hirsch, R.M., Ryberg, K.R., Archfield, S.A., and Gilroy, E.J., 2020, Statistical methods in water resources: U.S. Geological Survey Techniques and Methods, book 4, chap. A3, 458 p., https://doi.org/10.3133/tm4a3.

[240] https://www.sciencebase.gov/catalog/item/5bf30260e4b045bfcae0c205

monitoring guidance document.[241] The significance level is the probability (5%) of incorrectly rejecting the null hypothesis, and 100% percent minus the power level of 80% is the probability that a significant change will be overlooked (i.e., 20% chance that the null hypothesis will not be rejected when it should have been).

Next, the power analysis explores how many sample events are needed to reject the null hypothesis for a given magnitude of difference in the geomeans, for a given power level, using different combinations of a sample event size and the difference to detect.

For each dataset that is tested, the geomean of the performance ratios (input:output) of each sample event is calculated, which consists of a flow-weighted (or time-weighted) composite event mean concentration (EMC) taken simultaneously at an inlet and outlet of a particular bioretention cell, for a particular storm event.

Flow- or time-weighted composite EMCs involve the collection of a sample aliquot at a certain increment of flow passing through the monitored orifice, or at a certain increment of time, which is then added to a storage container to form a single composite sample. These are explained in greater detail, including different types of flow-weighted composite EMC methodologies (e.g., volume proportional to flow rate, volume proportional to flow volume increment, and time proportional to flow volume increment), in the International Stormwater BMP Database's 2009 monitoring guidance document.[241] These are the sample collection methodologies used for the data in the two aforementioned databases, and they are as well what the Permittees are required to use pursuant to Provision C.3.d.iii.

After the distributions (principally, the geomean) of the performance ratios of each sample event in a dataset are calculated, the power analysis tests for the differences between that ratio of the geometric mean of the database data to the geometric mean of the future to-be-collected data, where each such geometric mean is the geometric mean of the ratios of input:output ratios for each sample event.

For each number of total sample events to be collected over the five-year permit term (e.g., 10, 15, 20, 25…), this produces a range at 80% power, which if the geomean of future sample events falls within that range, would confirm the null hypothesis. The upper and lower bounds of the range are the ratios of the future geomean (of input:output ratios) to the database geomean (of input:output ratios); geomeans closer to the upper bound represent overperformance relative to the distribution of the database, while geomeans closer to the lower bound represent underperformance relative to the distribution of the database. In the center of the range, where the ratio of future geomean to database geomean = 1, their performance is identical. Each range represents a given number of sample events, and the range constricts incrementally as the number of sample events increases. What that translates to is that, as the number

[241] https://bmpdatabase.org/monitoring

of sample events increases, it is less likely to incorrectly affirm the null hypothesis, though there are diminishing returns, which is discussed next.

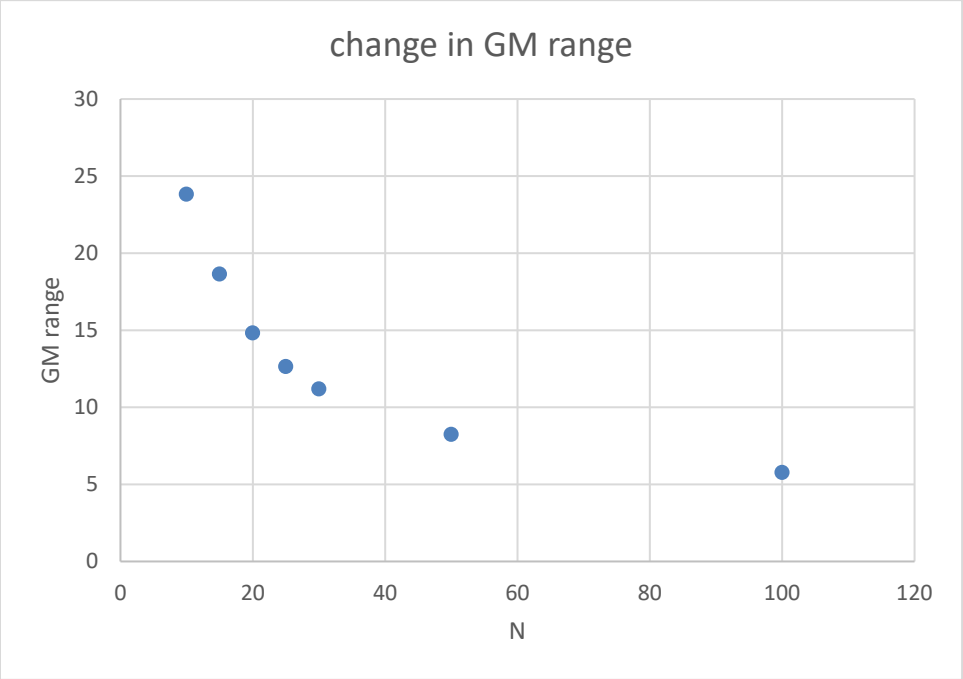
The next step in power analysis involves assessing diminishing returns in the constriction of the geomean ranges with increasing numbers of sample events. For example, whereas an increase in sample events from N=10 to N=100 would correspond with a very large constriction in the lower and upper bounds of the geomean ratio (performance) range, an increase in sample events from N=100 to N=110 would correspond with a dramatically lesser constriction.

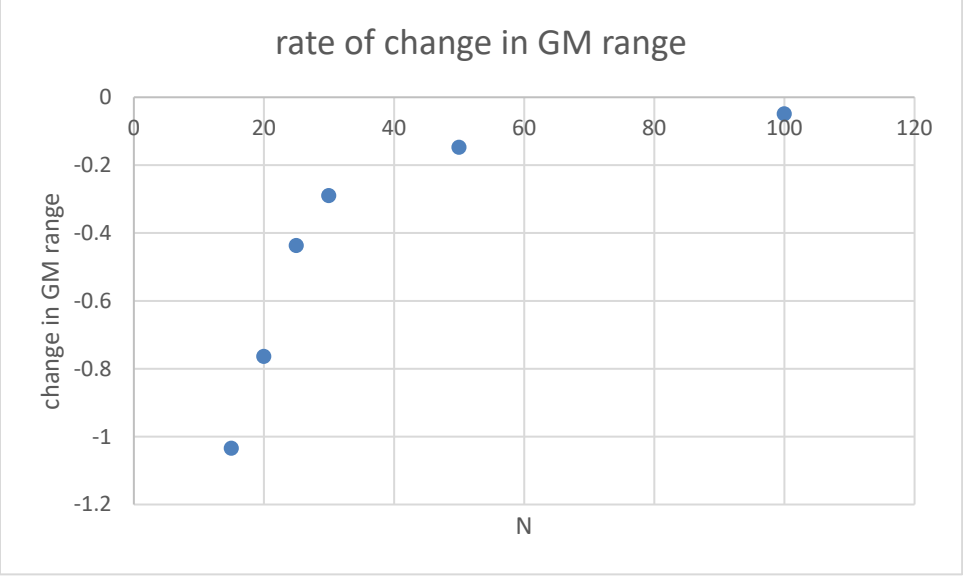
For the TSS, Copper and Zinc data that were tested, the sweet spot for the number of water quality sample events to be collected during the upcoming Permit term is N=30. However, N=25 has a significant but relatively acceptable consequence with respect to the size of the geomean range (particularly for the TSS data from the International Stormwater BMP Database) relative to N=30, and therefore it has been used as a modest reduction in effort (from N=30 down to N=25) for the ACCWP, CCCWP, SCVURPPP, and SMCWPPP Permittees. Above N=30, successive constrictions in the geomean range suffer increasingly dramatic diminishing returns. Below N=25, the opposite is true because the geomean range becomes much larger, and therefore the efficacy and utility of the monitoring program drops off dramatically.

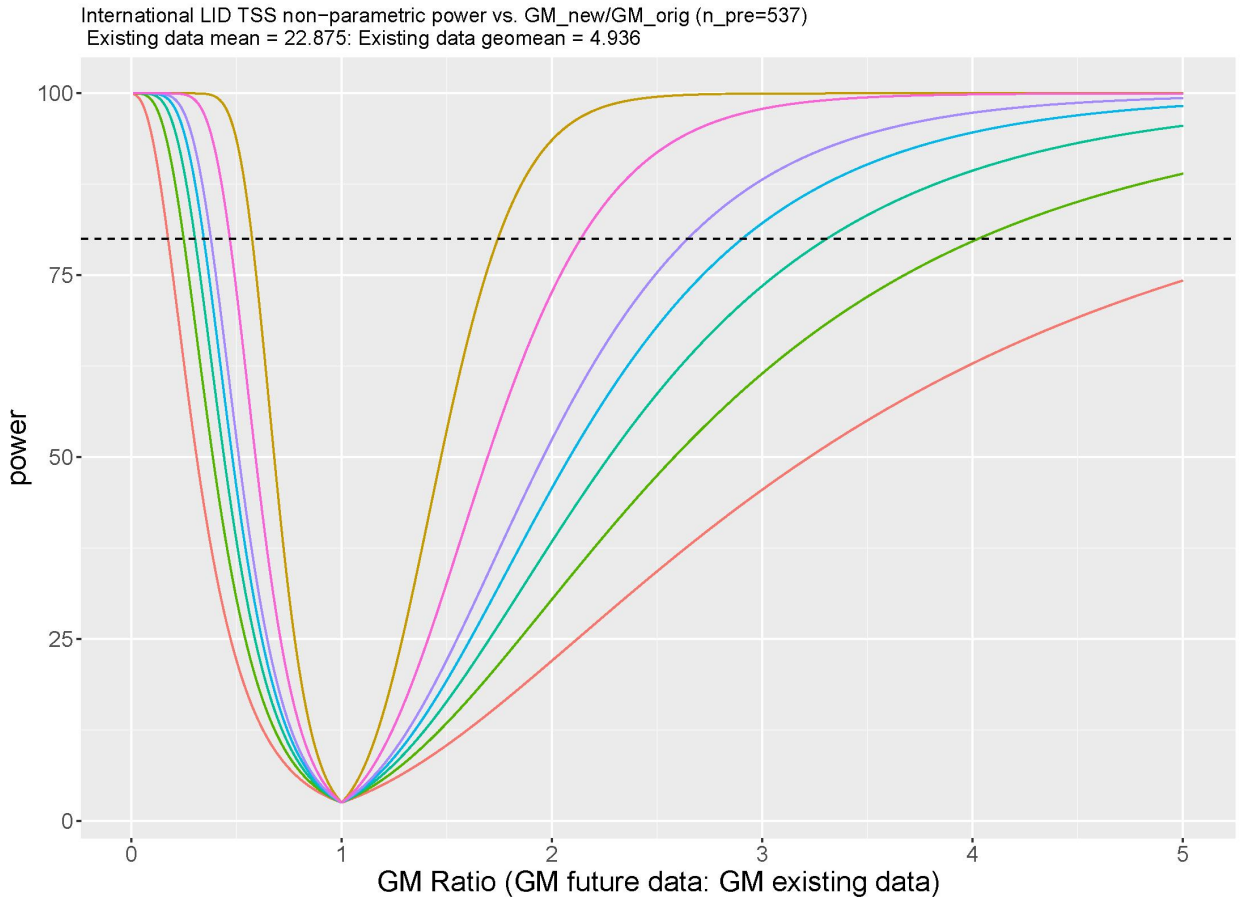
Following are the tabular data and visualizations for each of the four datasets that were produced by the power analysis. Diminishing returns can be visualized as the point at which the slope of the rate of change in geomean range (x-axis = number of sample events; y-axis = change in geomean range), starts to flatten out as it approaches a horizontal asymptote.

International Stormwater BMP Database, TSS

N	GM ratio		Future GM	
	low	high	low	high
10	0.174	5	0.858864	24.68
15	0.248	4.026	1.224128	19.87234
20	0.302	3.306	1.490672	16.31842
25	0.344	2.905	1.697984	14.33908
30	0.378	2.645	1.865808	13.05572
50	0.468	2.137	2.310048	10.54823
100	0.573	1.743	2.828328	8.603448

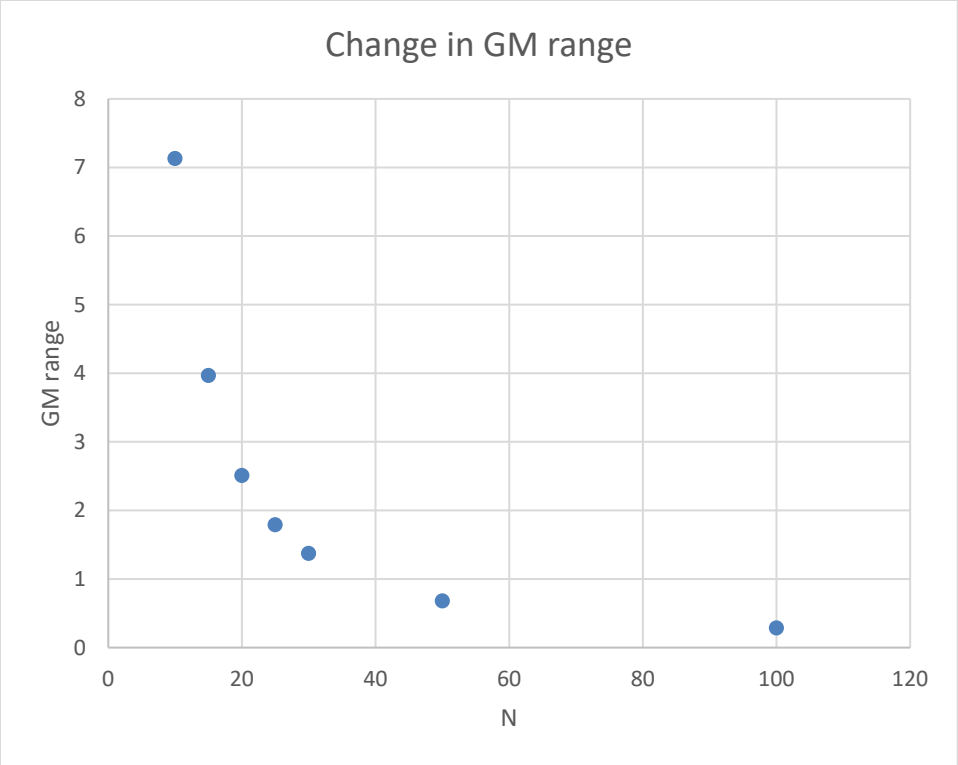


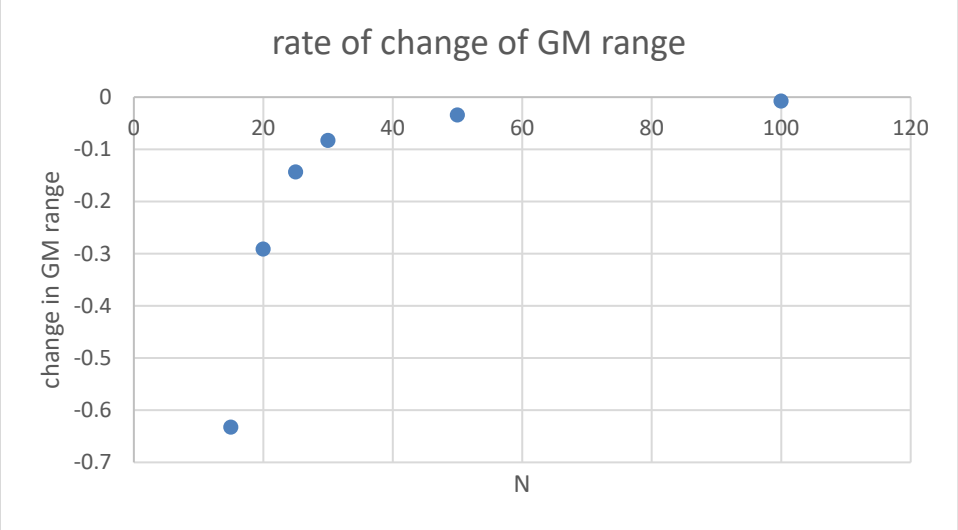


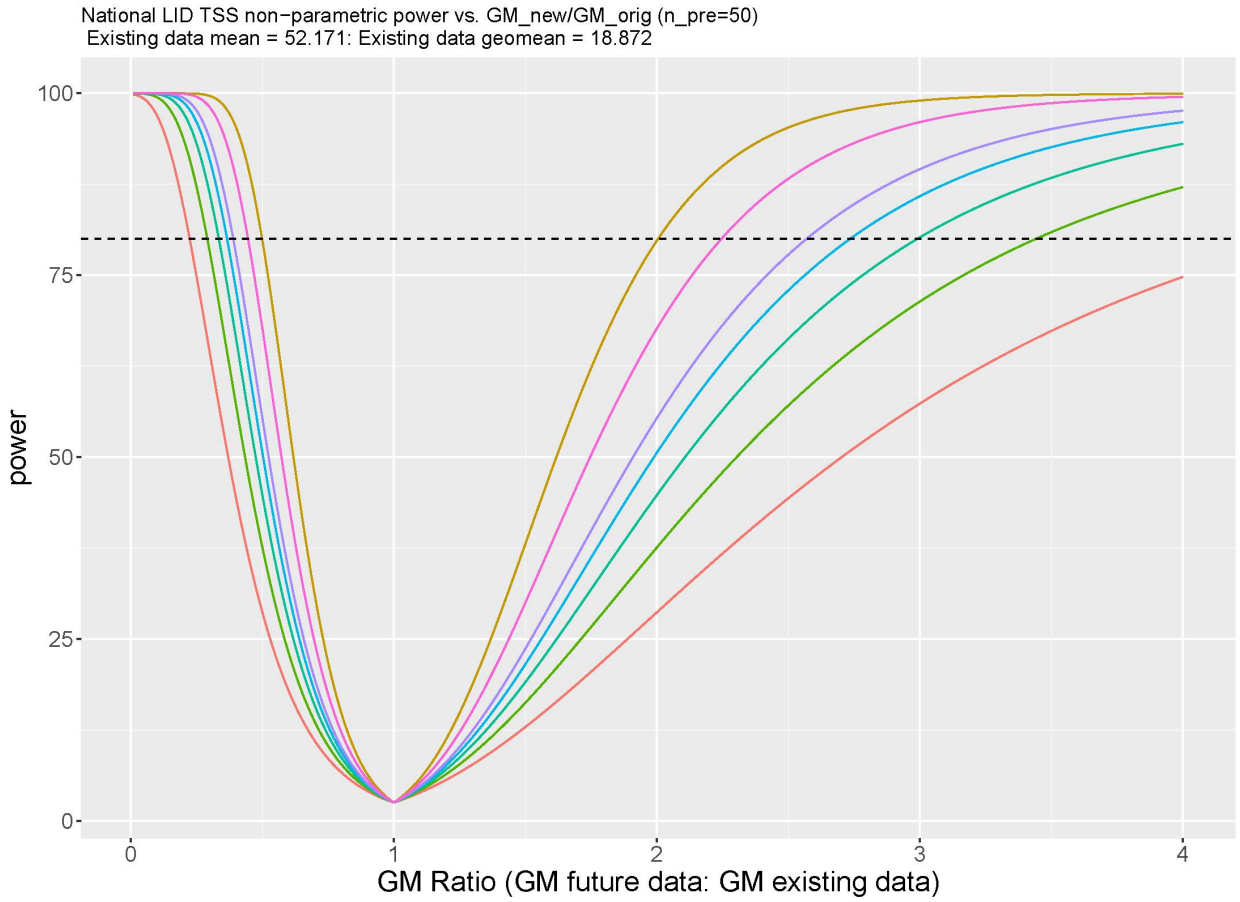


SCCWRP California BMP Effectiveness Calculator, TSS

N	GM ratio		Future GM	
	low	high	low	high
10	0.222	4	4.189584	75.488
15	0.29	3.442	5.47288	64.95742
20	0.334	2.991	6.303248	56.44615
25	0.365	2.735	6.88828	51.61492
30	0.389	2.57	7.341208	48.50104
50	0.445	2.246	8.39804	42.38651
100	0.498	2.005	9.398256	37.83836

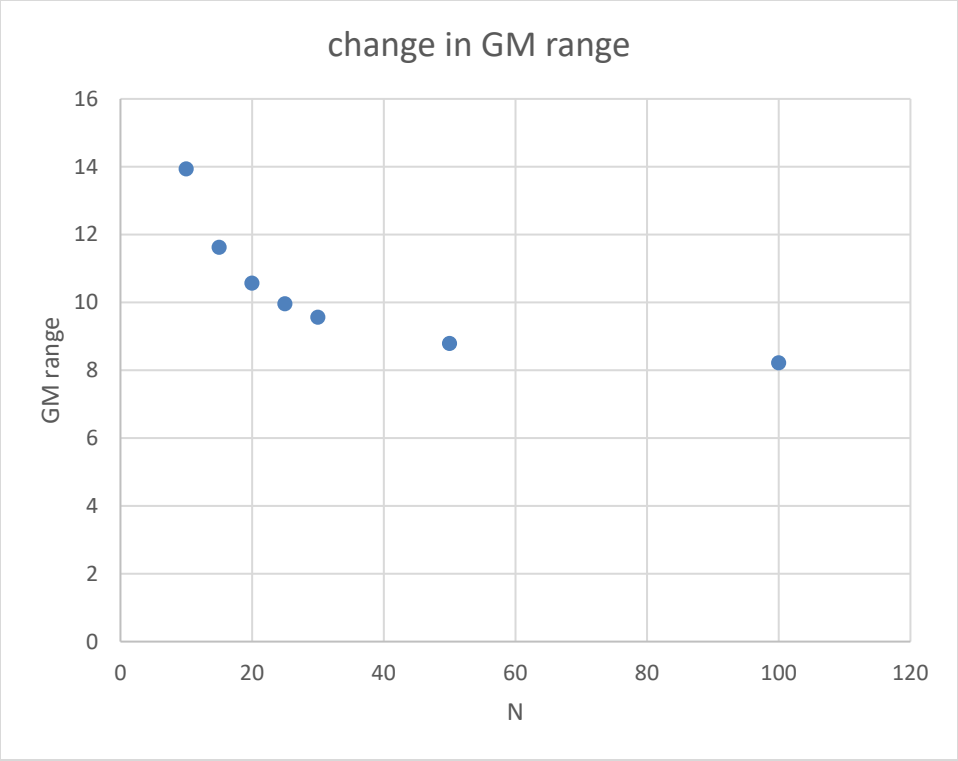

Change in GM range
GM range
N
0
1
2
3
4
5
6
7
8
0
20
40
60
80
100
120

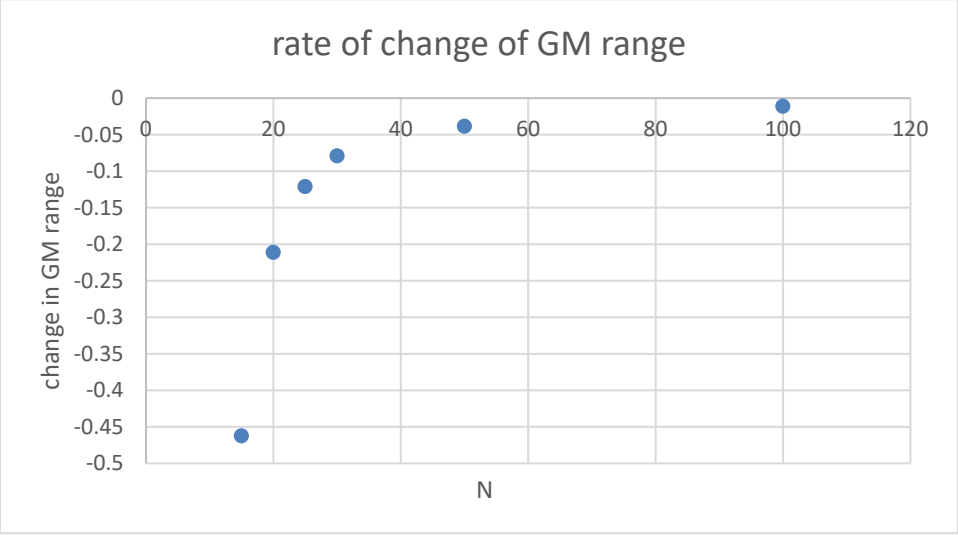

rate of change of GM range
change in GM range
N
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
0
20
40
60
80
100
120

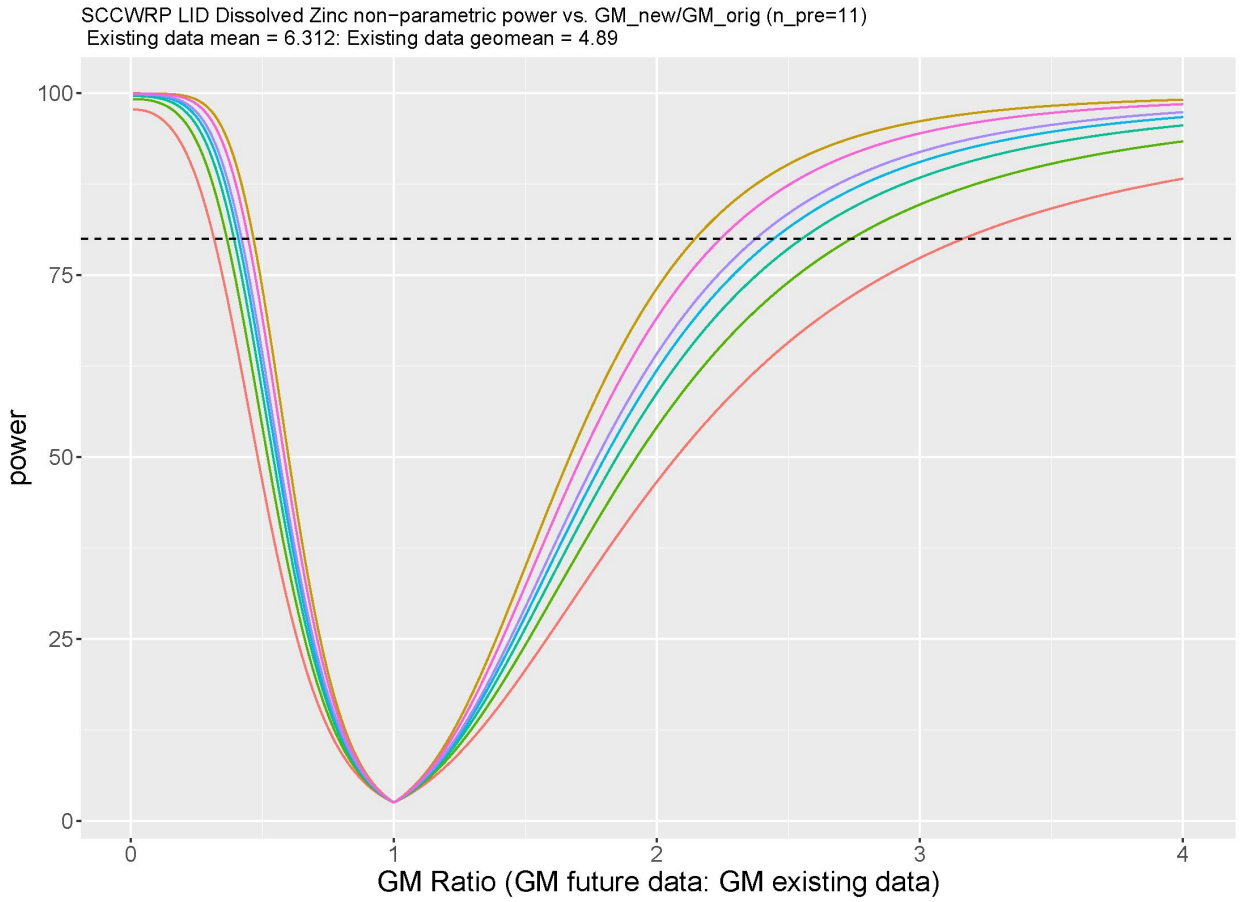


SCCWRP California BMP Effectiveness Calculator, Dissolved Zn

N	GM ratio		Future GM	
	low	high	low	high
10	0.316	3.165	1.54524	15.47685
15	0.365	2.741	1.78485	13.40349
20	0.392	2.552	1.91688	12.47928
25	0.409	2.445	2.00001	11.95605
30	0.421	2.376	2.05869	11.61864
50	0.446	2.243	2.18094	10.96827
100	0.466	2.146	2.27874	10.49394

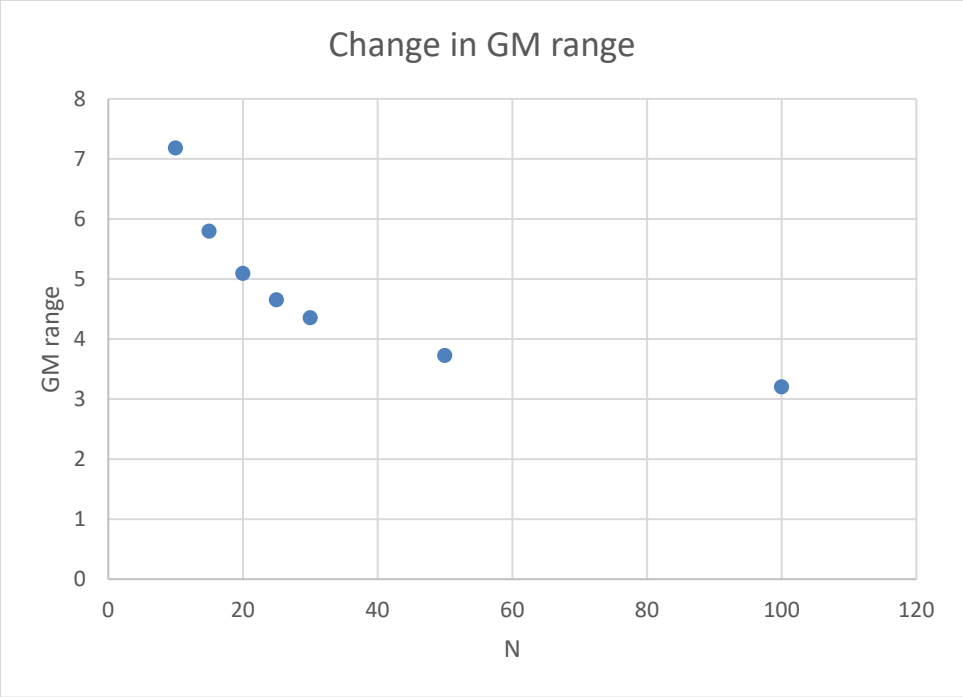

change in GM range
GM range
N
0
2
4
6
8
10
12
14
16
0
20
40
60
80
100
120

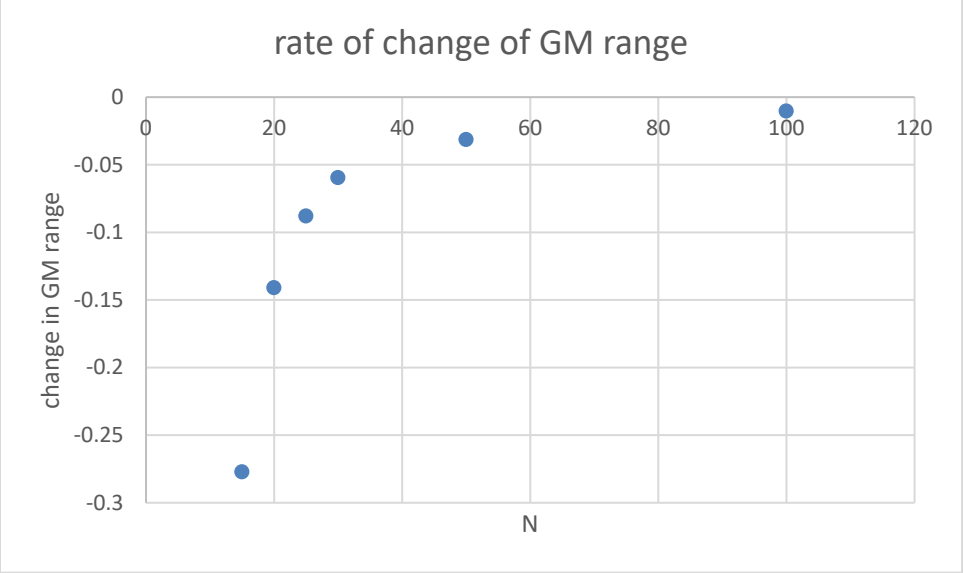

rate of change of GM range
change in GM range
N
0
-0.05
-0.1
-0.15
-0.2
-0.25
-0.3
-0.35
-0.4
-0.45
-0.5
0
20
40
60
80
100
120

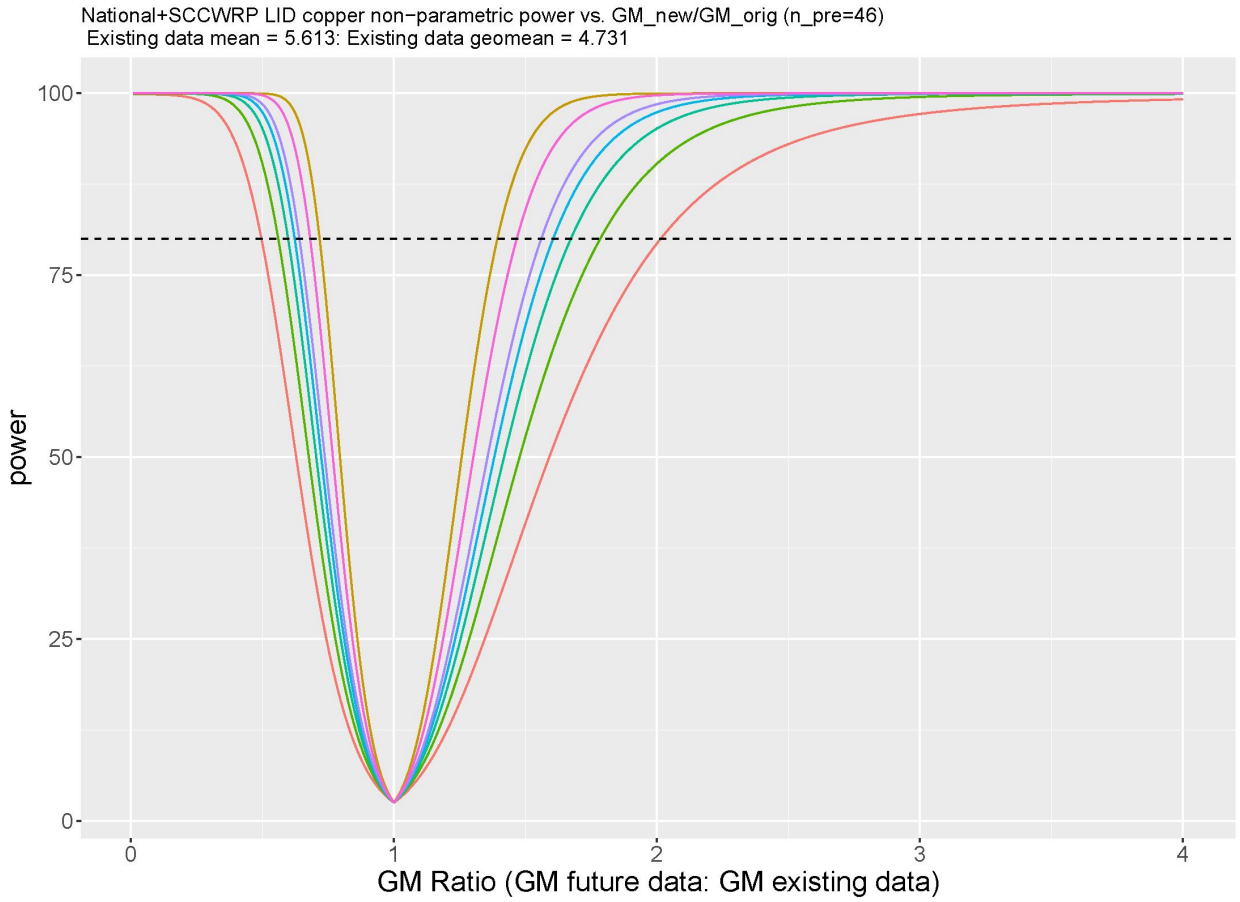


International Stormwater BMP Database & SCCWRP California BMP Effectiveness Calculator, Total Copper

N	GM ratio		Future GM	
	low	high	low	high
10	0.496	2.014	2.346576	9.528234
15	0.56	1.785	2.64936	8.444835
20	0.597	1.673	2.824407	7.914963
25	0.623	1.606	2.947413	7.597986
30	0.641	1.561	3.032571	7.385091
50	0.681	1.468	3.221811	6.945108
100	0.717	1.394	3.392127	6.595014


Change in GM range
GM range
N
0
1
2
3
4
5
6
7
8
0
20
40
60
80
100
120


rate of change of GM range
change in GM range
N
0
-0.05
-0.1
-0.15
-0.2
-0.25
-0.3
0
20
40
60
80
100
120



C.8.d.v. Implementation Level requires the Permittees to begin implementing their LID Monitoring Plans by no later than October 1, 2023, which is the beginning of the 2024 Water Year, the second Water Year of the Permit term. This start date provides five months from the submittal date of the final LID Monitoring Plans (May 1, 2023) for the Water Board to approve or conditionally approve the final LID Monitoring Plans, and will allow the Permittees sufficient time after that approval or conditional approval to prepare to monitor storm events starting in the 2024 Water Year, including the first storm event of that wet season.

C.8.d.vi. Reporting requires the Permittees to submit their LID Monitoring Plans to the Water Board, subject to Executive Officer approval, by no later than May 1, 2023. This is two months after the March 1, 2023, required submittal date of the LID Monitoring Plans to the TAG, which will provide the Permittees sufficient time to make changes to their LID Monitoring Plans based on feedback from the TAG, prior to the submittal date to the Water Board. As explained for Provision C.8.d.v above, it will also provide five months for the Water Board to approve or conditionally approve the LID Monitoring Plans, and subsequently for the Permittees to incorporate any changes including in any conditional approvals, and to prepare to begin implementing their LID Monitoring Plans, prior to the October 1, 2023, LID Monitoring start date.

C.8.e. Trash Monitoring. Trash monitoring at MS4 outfalls or adjacent receiving waters provides a viable method to determine whether control actions implemented by Permittees (full trash capture systems or the implementation of other management actions equivalent to full trash capture) have been effective in preventing trash from discharging to receiving waters. Additionally, trash monitoring can be used to determine whether additional actions may be necessary and associated with sources within a Permittee's jurisdiction. Trash monitoring can also inform whether direct (non-MS4) discharges of trash are causing and/or contributing to adverse trash impacts in the receiving water(s).

The purpose of this trash monitoring is to answer the following management questions and monitoring questions:

Management Questions

- Have Permittees' trash control actions effectively prevented trash within Permittees' jurisdiction from discharging into receiving waters?
- Are discharges of trash from areas within Trash Management Areas controlled to a low trash generation level causing and/or contributing to adverse trash impacts in receiving waters?

Monitoring Questions

- What is the trash condition and approximate level of trash (volume, type, and size) within and discharging into receiving waters in areas that receive MS4 runoff controlled to a low trash generation via the installation of full trash capture devices, or the implementation of other trash management actions equivalent to full trash capture systems?
- Does the level of trash in the receiving water correlate strongly with the conditions of the tributary drainage area of the MS4?

There are currently no regulatory standard methods and protocols for monitoring trash exiting (or traveling through) MS4 outfalls/pipes or in receiving waters. However, there are numerous examples of trash capture devices attached to the end of MS4 outfall pipes, and "in-line" trash capture devices which are within the MS4 prior to discharge into a receiving water (e.g., hydrodynamic separators), and if such monitoring sites satisfy all other criteria included in Provision C.8.e (namely, that the tributary drainage areas are already controlled to the Low trash generation level), then it is reasonable that such devices can be used to monitor trash loading, simply by cleaning them out prior to the sample event, then performing a maintenance event after the sample event. For example, the vendor Stormwater Systems cites uses of such trash capture (monitoring) systems in Carrolton, Texas at Josey Ranch Lake, St. Louis, Missouri, and the Anacostia River Watershed in Maryland.[242] There are many other examples of

[242] https://stormwatersystems.com/stormx-netting-trash-trap/

implementation of end-of-pipe and in-line systems, such as The Sock in the City of Kwinana, south of Perth, Australia,[243] the TrashTrap in Oxnard, CA, and in Narragansett Bay, RI,[244] Los Angeles County,[245] a large device controlling flows from a pump station prior to discharge into San Francisquito Creek and the Bay in the City of East Palo Alto,[246] HDS units in the Cities of Livermore and Vallejo, and others. The San Francisco Estuary Partnership implemented, tested, and monitored 42 high-capacity trash control devices (both end-of-pipe and in-line) in more than 60 Bay Area municipalities, in a project that concluded in November 2013, many of which could be adapted as trash monitoring systems if they satisfy the other criteria included in Provision C.8.e.[247] Here is a presentation that includes lessons learned for implementation in Philadelphia, PA (knowing the stormwater outfalls was an important consideration): https://delawareestuary.s3.amazonaws.com/pdf/Summit15/BallA/W-O'DayDel_Summit_Monit_Stormwater_Trash.pdf. Regarding in-stream monitoring, as discussed below, methods have been successfully piloted by 5 Gyres.[248] Caltrans installed trash capture devices at four trash capture pilot site locations in 2018,[249] which are examples of devices that could readily be modified and used as monitoring devices for Provision C.8.e Trash Monitoring.

In March 2017, BASMAA published a final version of a report titled “Tracking CA’s Trash: On-land Visual Assessments[17]” that was funded in part via a California Proposition 84 grant funded project (Agreement # 12-420-550). The primary objectives of this project were to: test trash trends monitoring methods for a) trash in lowing receiving waters and b) on-land visual trash assessments; evaluate the effectiveness and costs of trash control measures; and develop a web-based portal to disseminate related information. More recently, in December 2020, the San Francisco Estuary Institute published the “California Trash Monitoring Methods and Assessments

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[243] https://www.abc.net.au/news/2019-06-09/drain-sock-kwinana-pollution-solution-takes-world-by-storm/11190266?nw=0&r=HtmlFragment

[244] https://stormtrap.com/products/trashtrap/#trashtrap-Projects

[245] https://www.pw.lacounty.gov/wmd/irwmp/docs/Prop%2084%20Round%202%20Implementation%20Grant%20Application/Attachment%207%20Technical%20Justification%202%20of%2015.pdf#page=97

[246] https://www.waterboards.ca.gov/sanfranciscobay/board_info/agendas/2019/February/7b_ssr.pdf

[247] https://www.sfestuary.org/trashcapture/

[248] https://static1.squarespace.com/static/5522e85be4b0b65a7c78ac96/t/58dd932f414fb5663b5a4f79/1490916184178/TCT+Creek+Monitoring+Report_FINAL.pdf

[249] Caltrans Site Identification Number: 4-430, Post Mile: 04-Ala-880-PM 23.73, Interchange: Davis Street, Device Type: StormTrap (FreshCreek), Construction Completion Date: 07/05/2018; Caltrans Site Identification Number: 4-431, Post Mile: 04-Ala-880-PM 16.58, Interchange: Highway 880/State Route 92, Device Type: Old Castle (KriStar), Construction Completion Date: 07/05/2018; Caltrans Site Identification Number: 4-432, Post Mile: 04-Ala-880-PM 7.37, Interchange: Mowry Avenue, Device Type: Modified Old Castle (KriStar), Construction Completion Date: 12/20/2018; Caltrans Site Identification Number: 4-433, Post Mile: 04-Ala-880-PM 6.29, Interchange: Stevenson Boulevard, Device Type: StormTrap (FreshCreek), Construction Completion Date: 12/04/2018.

Playbook."[250] The objective of this report was to create a foundation for developing a consistent, standardized approach to trash monitoring statewide. The project team identified four trash monitoring methods and then performed a method comparison analysis based on two seasons of fieldwork, culminating in numerous conclusions, including the following: some methods are more accurate than others, some methods are more subjective than others, some methods are more labor-intensive than others, and some methods are more expensive than others. Water Board staff have reviewed both of these reports and the information presented within them has been used towards developing the trash monitoring requirements of this Order.

Though we do not yet have evidence that those on-land methods are reliable indirect indicators of trash loading through MS4s and receiving waters, we think many of those methods are well-suited for characterizing on-land trash conditions, including on-land areas adjacent to MS4 outfalls and receiving waters. When combined with direct measurements of trash loading in MS4s and receiving waters, these on-land methods may help provide a synoptic view of trash loading within Permittees' jurisdictions.

Factors such as feasibility, location logistics, types of trash, complexity, and costs, provide a means for Permittees to focus and limit the number of monitoring locations while still providing spatial and temporal representativeness of the impact of implemented trash controls on the receiving water.

The Trash Monitoring program to be implemented by the Permittees during this Permit term essentially constitutes a pilot project, and the Water Board may consider expanding the scope of the program in a future Permit term by increasing the number of sites and/or events.

- **C.8.e.i. Monitoring Components** calls for the Trash Monitoring program to address the specified management and monitoring questions, and to the extent possible, requests for regional consistency in methods employed to answer those management and monitoring questions. trash monitoring method components demonstrated and implemented in the Statewide Trash Monitoring Methods Project (Trash Monitoring Playbook[250]) ensure the use of comparable data for each monitoring site. These components entail six steps which include 1) event preparation; 2) gathering standard equipment; 3) setup of the assessment area; 4) recording of site information and assessment area dimensions; 5) recording assessment areas photos; and 6) determining the location of storm drain outfalls, homeless encampments, and illegal dumping hotspots that can impact the assessment area.

  The establishment of a technical advisory group (TAG) that includes Water Board staff, Permittees, and impartial science advisors (e.g. SFEI, SCCWRP, etc.) is crucial in order to provide the necessary guidance needed to answer the

[250] https://sites.google.com/sfei.org/trash/

management questions and to provide peer review sufficient to ensure that work is appropriately science-based.

- **C.8.e.ii. Monitoring Methods** describes the monitoring methods that may be used to address the management and monitoring questions. The methods described provide flexibility with respect to siting and methodology.
- **C.8.e.ii.(1)** calls for the direct monitoring of MS4 outfalls that drain tributary drainage areas that are controlled to the Low level, via full trash capture devices, other actions verified by on-land visual trash assessments, and any combination thereof. Several possible methods are listed.
- **C.8.e.ii.(2)** calls for direct (in-stream) monitoring of receiving waters. Several possible methods are listed. It also requests (but does not require) that such monitoring be co-located with MS4 outfall sites, which (to the extent possible and realized) would help to distinguish between background levels of trash in the receiving water and the relative contribution of trash discharging through the respective MS4 outfall. This could help answer questions such as:
    - Are discharges from MS4 service areas controlled to the Low trash generation level, nevertheless, causing or contributing to adverse impacts in receiving waters?
    - Failing an adverse impact definition, how does the loading from the MS4 outfall compare to loading present in the receiving water? Is it greater or lesser by an order of magnitude?
    - How does trash loading from the sampled MS4 outfall compare to the estimated contribution of other nearby sources of trash loading to the receiving water, such as other upstream/downstream MS4 outfalls, homeless encampments, and illegal dumping sites, relative to the background level present in the receiving water?

  The answers to these questions could help inform/prioritize/trigger management actions. For example, given the loading measured in a given receiving stream, perhaps an upstream MS4 outfall is a greater priority than the sampled MS4 outfall, or vice-versa.

  However, recognizing that such questions are not easily answered, that the end-of-pipe/in-line and in-stream trash monitoring methods are relatively new to the Permittees, and that it is difficult to site both MS4 outfall sites and receiving water sites (not to mention the difficulty in siting them close together), co-location is not required in this Permit term.

  Permittees may use methods which only partially screen and capture the cross section of a receiving water, such as the methods piloted by 5 Gyres.[248] This means they will need to extrapolate the sample to the remainder of the cross section.

Extrapolation may be more appropriate (/accurate) for channels experiencing supercritical flow (which are likely to have good mixing of trash because of the higher turbulence), which is more likely for a hardened channel. Conversely, the opposite is likely the case for natural channels. Natural channels are more likely to have subcritical flows (less turbulence) which means there will be less mixing of trash, more concentration of trash in the thalweg, and samples will be less easily extrapolated to the rest of the cross section.

- **C.8.e.ii.(3)** recommends, but does not require, the implementation of on-land methods coincident with MS4 outfall and receiving water sites. The purpose of this is to gain a synoptic view of on-land trash conditions adjacent to outfall and/or in-stream monitoring sites. However, recognizing the cost and level of effort associated with MS4 outfall and receiving water monitoring, this monitoring element is optional, as it is not as high of a priority as MS4 outfall and receiving water monitoring.
- **C.8.e.ii.(4)** requires that all trash monitoring sites additionally characterize flow rates and recommends methods that can be used.
- **C.8.e.ii.(5)** explains that all methods must include collection of data on material type collected, which is important for assessing the water quality impact caused by different types of trash because different kinds of trash may cause different types of impacts to aquatic life and may create different types of pollution.[250,251] This may additionally inform the eventual definition of no adverse impact to receiving waters, as different types of trash are likely to cause different levels of impact. Data collected on material type will also inform the Permittees' implementation of source controls and other management actions for controlling trash.
- **C.8.e.iii**. describes the minimum number of sites and monitoring events that Permittees are required to sample (and analyze) on an annual basis, which will be revised based on review by the Technical Advisory Group. Although these trash monitoring methods are not new to the world, they are relatively new to the Permittees, and therefore we do not want to overtask the Permittees while they are learning and piloting these methods. However, it is reasonable that in a future Permit term, the Water Board may consider increasing the Trash Monitoring level of effort, with cause. For example, if statistical analysis (i.e. power analysis) suggests that more sites and samples are needed to be able to assess whether data from a future monitoring program (e.g., a revised Trash Monitoring Provision in MRP 4) belongs to the same distribution as the data collected during MRP 3, MRP 2, or some other dataset, then Water Board staff will make that recommendation. Towards that end,

[251] *A Rapid Trash Assessment Method Applied to Waters of the San Francisco Bay Region: Trash Measurement in Streams*. San Francisco Bay Regional Water Quality Control Board, April 2007. Accessed on September 2, 2021, from: https://www.waterboards.ca.gov/sanfranciscobay/docs/swampthrashreport.pdf

Water Board staff may perform power analysis during MRP 3 on the data collected by that time, to inform, support, and justify changes to Provision C.8.e for MRP 4.

- There are two required components of monitoring, MS4 outfall monitoring and (direct) in-stream monitoring. Permittees are allotted one year of planning before they must begin MS4 outfall monitoring, and two years before they must begin in-stream monitoring, to choose monitoring sites, secure permits, and practice/refine sample methodologies. It is appropriate that they are given an additional year for in-stream monitoring (relative to MS4 outfall monitoring) because that may take more time to find sites and secure permits. The number of sites is also reduced for in-stream monitoring, because it is a pilot project, and to reduce the overall level of effort for Permittees.
- There is no minimum requirement for number of sites or events for on-land monitoring, as that monitoring component is optional (though recommended).
- Pursuant to Provision C.8.e.iii.(8), Permittees are required to use the results of Trash Monitoring to inform and investigate their trash management actions. If Trash Monitoring results indicate that discharges are causing or contributing to adverse trash impacts in receiving waters, Permittees shall implement new or enhanced actions to comply with the trash discharge prohibition and receiving water limitations. For example, if the amount of trash discharged from an MS4 outfall exceeds 5 gallons/acre/year, then that should trigger an investigation into why trash loading from that MS4 outfall is greater than expected (based on trash generation rates and controls present in the tributary drainage area), be it inadequate/poor O&M, design, and/or construction of FTCDs, short-circuiting of trash controls, or a number of other potential causes/contributors. Other examples of what might trigger Permittee investigations include the discharge of trash items that should be prohibited by credited source control ordinances, and the discharge of trash items greater than 5mm (e.g., cigarette butts) during storm events which are less than or equal to the design storm (i.e., when bypass should not be occurring). Provision C.8.e.iv.(2)(f) requires the Permittees to solicit feedback from the TAG on the implementation of Provision C.8.e.iii.(8), Provision C.8.e.v.(6) requires the Permittees to discuss in the Trash Monitoring Plan their plans for implementation of Provision C.8.e.iii.(8), and Provision C.8.h.iii.(2)(h) requires the Permittees to report on implementation of Provision C.8.e.iii.(8).
- **C.8.e.iv.** calls for formation of a Technical Advisory Group (TAG), which includes impartial science advisors (e.g., SFEI, SCCWRP, etc.) and Water Board staff, to review and provide input, feedback, and recommendations on Trash Monitoring, including site selection, methods and analyses, results, and conclusions. The TAG is also critical to determining the adequacy of the methods and minimum storm size, number of sites, events, frequencies, and intervals, and recommendations for alternatives, to answer the management and monitoring questions.

The TAG is required to meet biannually during the development of the Trash Monitoring Plan, to aid in its development. Subsequently, the TAG is required to meet at a minimum annually, which is sufficient for the TAG to – on an ongoing basis – review and provide feedback on the Permittees' implementation of Provision C.8.e. However, the TAG should meet more frequently as needed, especially during the beginning of the Permit term when the Permittees' implementation of the Trash Monitoring program is being carried out for the first time.

Among the tasks assigned to the TAG is to discuss the timing of sampling during storm events; a recent publication by the 5 Gyres Institute recommends that sampling is prioritized during the rising limb of the hydrograph, as that is when most of the trash load is mobilized through the MS4 system.[248] Another task is discussion of permitting, which is intended to help the Permittees secure permits; the TAG can strategize how best to secure permits, and can even invite participation and input from permitting agencies such as CDFW and the Corps.

- **C.8.e.v.** calls for the development and submittal of a Trash Monitoring Plan prior to the inception of trash monitoring.

  The Trash Monitoring Plan includes a requirement that the Permittees submit a monitoring schedule that includes the timing, number, and type of monitoring events at each site. Timing encompasses, but is not limited to, decisions such as at which point in the water year that storms are sampled (e.g., whether near in the beginning, middle, or end of a given water year), the time during individual storms that samples are taken (e.g., during the rising limb of the hydrograph, the peak of the hydrograph, or the falling limb of the hydrograph, which decision is influenced by factors such as the delineation of the tributary drainage area to the MS4 outfall and the time of concentration), and consideration of antecedent dry periods (trash accumulation) and timing of sampling relative to cleanup activities in the assessment area and/or in the tributary drainage area to the MS4 outfall.

C.8.f. Pollutants of Concern[252] Monitoring. Provision C.8.f. requires monitoring for the following select pollutants of concern (POC): PCBs, mercury, copper, zinc, fecal indicator bacteria and certain emerging contaminants. The emerging contaminants to be monitored have been characterized as moderate concern for the Bay (SF Bay occurrence data suggest a high probability of a low-level effect on wildlife) and are likely transported in stormwater. The monitoring requirements for these emerging contaminants will support RMP efforts to better characterize concentrations in stormwater. The PCBs and mercury TMDLs require monitoring to measure loads reduced and the progress the water body is making toward attaining water quality objectives. The Basin Plan requires Permittees to monitor copper loading to the Bay to track loading. Provision C.8.f. monitoring is intended to assess inputs of select POCs to the Bay from local tributaries and urban runoff; provide information to support

[252] See sections C.11, C.12, and C.13 of this Fact Sheet for more information on Pollutants of Concern.

implementation of TMDLs and other pollutant control strategies; assess progress toward achieving wasteload allocations (WLAs) for TMDLs; assess compliance with receiving water limitations (RWLs), and help resolve uncertainties in loading estimates and impairments associated with these pollutants.

In particular, POC monitoring addresses six priority POC management information needs:

(1) Source Identification - identifying which sources or watershed source areas provide the greatest opportunities for reductions of POCs in urban stormwater runoff;

(2) Contributions to Bay Impairment - identifying which watershed source areas contribute most to the impairment of San Francisco Bay beneficial uses (due to source intensity and sensitivity of discharge location);

(3) Management Action Effectiveness - providing support for planning future management actions or evaluating the effectiveness or impacts of existing management actions;

(4) Loads and Status/Trends - providing information on POC loads, concentrations, and presence in local tributaries or urban stormwater discharges; and

(5) Status/Trends - evaluating trends in POC loading to the Bay and POC concentrations in urban stormwater discharges or local tributaries over time.

(6) Compliance with Receiving Water Limitations **–** providing information to assess whether receiving water limitations (RWLs) are achieved.

The Permit specifies monitoring methods that can be used to address these information needs and which information needs apply to each pollutant of concern. The Permit provides flexibility in the number of samples, or level of effort, but requires minimums to be met annually and over the Permit term. The level of effort (expressed as required number of samples collected and analyzed) is identical to the manner in which the level of sampling and analysis effort for pollutants of concern monitoring was specified in the Previous Permit.

The approach for POC monitoring does not pre-determine specific monitoring locations. Rather, the Permit requires that monitoring be intelligently and flexibly directed toward answering the management information needs (that apply to a given pollutant), and this flexibility allows the monitoring strategy to be adapted and improved based on information obtained from monitoring conducted early in the Permit term. The flexibility also allows the Permittees to continue collecting useful information even during drought years in which conditions limit some types of data collection (e.g., storm event sampling) but not others (e.g., collection of bed sediment). In fact, bed sediment data collected at all times of the year offers a valuable and efficient means of locating source areas and characterizing contamination in watersheds. During storm events of sufficient

intensity, the pollutants attached to sediment are mobilized and transported from source areas, but some of this contaminated sediment is often deposited near the source area so there is a “fingerprint” of the source that can be detected through sampling this bed sediment.

It is impractical to sample all of the urban runoff outfalls in the region. Monitoring at outfalls can provide valuable information and be an important component of an overall pollutants of concern monitoring strategy. For example, strategic outfall sampling for pollutants of concern is necessary to identify source areas and contaminated portions of watersheds near the outfalls (to support control measure implementation). However, these outfall data (obtained at great expense) cannot address all management information needs for pollutants of concern. By strategically sampling the sediment and water column, the Permittees can better address the six information needs stated above.

There are two components that address assessing compliance with RWLs (sixth management information need). First, Provision C.8.e requires receiving water monitoring in the San Francisco Estuary, which is conducted through the RMP. The RMP monitoring provides a comprehensive assessment of water quality in the estuary. San Francisco Bay is the ultimate receiving water for the tributaries in the region. The contaminant concentrations in Bay water, sediment and biota thus represent an integration of all the sources of contaminants (e.g., urban runoff, atmospheric deposition, wastewater treatment). Comparison of RMP data to water quality objectives allows water quality managers to determine if RWLs are achieved in the ultimate receiving water, San Francisco Bay. The RMP monitoring in San Francisco Bay includes both wet season and dry season data collection in water, sediment, fish, shellfish, and birds. The suite of analytes monitored in these media adaptively change over time in response to available information about evolving water quality threats. For example, initial RMP efforts in the early 1990s focused on metals contamination. Improvements in wastewater treatment and banning lead from gasoline led to sharp declines in Bay metals concentrations. Accordingly, the RMP adapted to focus more attention on mercury, PCBs, organic contaminants and, today, a wide range of emerging contaminants. However, the program continues to monitor for many metals to maintain appropriate surveillance and monitor for trends. Thus, the RMP provides valuable information on a large number of pollutants that can be used to assess compliance with RWLs at the level of San Francisco Bay.

The second component of RWL monitoring is required through Provision C.8.f and C.8.h.iv and is focused on tributaries to the Bay, which are directly influenced by discharges from MS4s.This monitoring will consist of sampling during the wet season (primarily) and dry season to generate water quality data to assess compliance with RWLs. Because it is not possible to sample all waterbodies in the region, waterbodies will be selected to be representative of the range of waterbody types in the region. It is also not possible to collect data at all times and locations in a waterbody so sampling

locations in this subset of waterbodies will be selected to obtain water quality data spatially and temporally representative of the water bodies being sampled.

It is also not possible to sample for every one of the thousands of possible analytes. It would be an expensive and even impossible undertaking to monitor for all possible analytes, and not a good use of resources. Monitoring should be focused on those pollutants for which there is a reasonable risk of an exceedance of applicable water quality objectives and for which stormwater discharges cause or contribute to such exceedances. Table 8.2 in Provision C.8.f contains a list of candidate pollutants to monitor, but the Water Board, at present, lacks reliable and comprehensive information to determine the suite of analytes for tributary-focused monitoring to assess RWLs. Accordingly, the waterbodies to sample, the locations in those waterbodies, and the full list of analytes to quantify will be specifically determined, based on criteria set forth in the permit, through a report required by Provision C.8.h.iv(2).a due no later than March 31, 2023. Requiring focused pollutant monitoring based on water quality impacts is consistent with the monitoring approach used in NPDES permits for wastewater. The report required under Provision C.8.h.iv(2).a requires Permittees to use existing information to identify the suite of analytes that have the potential to exceed water quality objectives. Sources of information relevant for identifying candidate analytes include RMP data, monitoring data collected in Bay Area tributaries through the MRP and other programs. If local RMP or tributary monitoring data are not available, Permittees should review monitoring data collected in tributaries in other urban areas as well as relevant information from the literature. Once the report is approved by the Executive Officer for compliance with the requirement and technical adequacy, Permittees will then execute the monitoring specified in the report for the representative waterbodies in a manner to collect temporally and spatially representative data and report these data under Provision C.8.h(ii) (Electronic Reporting) and in the Integrated Monitoring Report required by Provision C.8.h.v.

Pollutants of concern broadly, and PCBs and mercury in particular, present special challenges for the design of an effective management strategy because they are widely distributed in the urban landscape, and they are transported to receiving waters on sediment particles mobilized from watersheds during intermittent precipitation events. These challenges led to the identification of the first five of six broad management information needs mentioned above that could be addressed through monitoring, and monitoring data can certainly provide useful information to address these questions. However, it is also important to be aware of the limitations of monitoring data in addressing all management information needs, especially with respect to pollutants like PCBs and mercury. Mercury is distributed widely throughout the urban landscape through a combination of presence in consumer products (lightbulbs and thermometers) and also because it can be deposited from the atmosphere. Therefore, although one does occasionally find elevated concentrations in some locations, one generally finds moderately elevated concentrations spread over a wide geographic area. PCBs are distributed somewhat differently because they were used in industrial activity so one

finds high concentrations associated with historical land uses (generally old industrial) where PCBs were used intensively.[284]

Despite the differences in their distribution and chemical properties, both PCBs and mercury tend to be associated with sediment particles (slightly more so for PCBs).[253] This means that these contaminants are transported through watersheds to receiving waters attached to sediment particles during precipitation events. However, contaminant transport is a very complicated and highly variable process that depends on the features of the source area, the slope of the watershed where the contamination exists, the soil and other land use features, the intensity of the rainfall event, antecedent soil moisture conditions, and other factors.[253]

For pollutants like methyl mercury that are transported in the aqueous phase (not attached to particles) and whose aqueous concentrations do not vary substantially across monitoring events during a monitoring season, one can generate reasonable load estimates using a simple method of multiplying runoff volume by the average of the measured aqueous pollutant concentrations. This method requires the average of the concentrations to represent reasonably well the typical pollutant concentration in the flowing stormwater. However, for particle-bound pollutants that have more complex source release and transport processes, more intensive monitoring strategies making use of continuous monitoring of turbidity in conjunction with grab samples (during storm events of sufficient size to mobilize sediment particles containing PCBs and mercury) of suspended sediment along with contaminant concentrations must be employed to accurately measure the amount of PCBs or mercury moving past some monitoring location in a receiving water during a particular time period (e.g., during the months of a single wet season).[254] This intensive method of generating load estimates from continuous turbidity and grab sampled concentrations is called the turbidity surrogate method because the continuously-measured turbidity serves as a surrogate for suspended sediment concentrations established through regression relationships with measured suspended sediment collected via grab samples during storms.[254] The Bay Area climate is among the most variable of any in the world so the pattern and amounts of rainfall vary substantially from year-to-year because of this variability. Therefore, in order to obtain an estimate of the typical load through monitoring, this intensive continuous monitoring activity would need to be employed over several years.

This measurement difficulty also applies to the scale of an individual control measure or a single watershed where control measures are implemented. For example, if a control measure were put in place to address PCBs or mercury loads in a single watershed,

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[253] McKee, Lester; Leatherbarrow, Jon; Pearce, Sarah; Davis, Jay (2003) *A Review of Urban Runoff Processes in the Bay Area – Existing Knowledge, Conceptual Models, and Monitoring Recommendations*. San Francisco Estuary Institute Contribution 66.

[254] McKee, Lester et al. (2017). *Long-term variation in concentrations and mass loads in a semi-arid watershed influenced by historic mercury mining and urban pollutant sources.* Science of the Total Environment Volumes 605-606, pages 482-497.

some portion of the PCBs or mercury load from that site may be reduced. However, there could be other pollutant sources in the watershed and the pollutants from the controlled source may already be distributed somewhat through the watershed awaiting transport to the receiving water. In any case, the actual load reduction effect from any one or group of control measures is likely to be small and the impact on downstream loads would take time to manifest as the residual contamination was transported through the watershed. Individual control measures likely result in small incremental changes in loads.

In order to detect (through monitoring) these small load reductions in a watershed where control measures are implemented, one should attempt to measure all of the pollutant load flowing out of the watershed. This is practically impossible. Instead, the same intensive monitoring procedure (turbidity surrogate method) described above should be employed for several years after implementation in order to attempt to capture enough storm events over several years to account for the climatic variability. This intensive monitoring procedure can provide a reasonable estimate (with moderate uncertainty) for the amount of sediment moving past the monitoring location through use of continuous turbidity monitoring and establishing the relationship with suspended sediment.[254] The PCBs and mercury concentrations, by contrast, are measured through grab samples during storms for which field crews can be mobilized. It is impossible to mobilize field crews for *all* storms in a single watershed, much less for every storm in every watershed (there are potentially hundreds) where control measures may be implemented. These pollutant concentrations from individual storms are used to develop estimates for the pollutant concentrations (attached to sediment particles since these pollutants move with sediment) for the storms that are not measured. Finally, the estimated PCBs or mercury sediment concentrations (from the grab sample data) are multiplied by the estimate of the suspended sediment (from continuous turbidity versus suspended sediment regressions) to arrive at an estimate for the total mass load of mercury or PCBs that flowed past the site during the storm season.

Because of the way the pollutant concentrations are estimated based on the data collected from a few storms, the calculated mass load has moderate to considerable uncertainty for that storm season. The scale of the uncertainty is likely greater than the scale of the load reduction resulting from any single control action, even if the load reduction occurred immediately upon implementation (which is unlikely because of how pollutants are distributed and transported in watersheds). What is worse, the actual loads can vary from year to year by at least a factor of ten and often more. Therefore, if one wanted to be sure to assess the load reduction effects of control measures through monitoring, one would need to carry out this turbidity surrogate method over several years to arrive at a long-term average mass load. This amount of effort would be needed just to measure the impacts of control measures in a single watershed. There are hundreds of watersheds in the Bay Area where control measures may be implemented. Implementing the turbidity surrogate method on even a single watershed is not a practical means of assessing the impact of control measures on loads. An

intensive program of continuous monitoring at hundreds of locations upstream and downstream of control measure implementation over several years would be required to correctly measure PCBs and mercury loads. The effort and expense to undertake such a monitoring program would consume all or nearly all available resources that would be better spent on control measure implementation.

Using watershed models to estimate loads and changes in loads offers an alternative, practical approach instead of trying to assess loads through monitoring alone. The general idea is that the watershed model simulates sediment and water movement through watersheds in order to estimate sediment and pollutant mass loading at times and places where data are not available because the model is calibrated against available monitoring data from the turbidity surrogate method and also pollutant concentrations measured from grab samples in multiple watersheds during storm events. The models can therefore predict water, sediment, and contaminant transport to estimate PCBs and mercury loads and changes in loads due to management intervention and land use changes over time. The modeled estimates have uncertainty associated with them so they would also not be able to reliably demonstrate small changes in loading. Because the models are using data collected over several watersheds (over the entire Bay Area) collected over several years, they generally perform better in predicting loads at larger spatial scales. In order to understand why, consider the case of modeling the load for a single watershed. The modeled load estimate for a small watershed area would be highly uncertain because the monitoring data used to calibrate the model may not be available for that watershed. In other words, monitoring data from the entire Bay Area is being used for model calibration, and these data may not be applicable for any single watershed. At the aggregated level of multiple watersheds or the entire Bay Area, these uncertainties (a set of over predictions and under predictions of watershed loads compared to monitoring data) tend to cancel out so the aggregated load estimate from the model at the regional scale is usually more certain than the estimate for any single watershed.

The problems associated with climate variability impacting load variability cannot be entirely avoided by using models, but the models can be used to simulate loading over multiple years to generate an average load over several years where rainfall amounts (and hence loads) may have varied. In this way, the models can smooth out climate variability and generate something like an average loading. The models ultimately rely on monitoring data for their calibration and validation, however. If actual loading changes have not manifested in monitoring data, then the models will not show loading changes either. Because control measures for PCBs and mercury, even if effective, result in relatively small loading changes during any particular year or even five-year period (e.g., about 1.6 kg/yr estimated PCBs load reduction during this permit term), the monitoring data on which the models rely are highly unlikely to detect the impact of these load reduction changes in measured concentrations. Therefore, modeled loading estimates are not likely to be sensitive enough to confirm this level of change. The models will be more useful with longer time scales such that enough land use change

and concentration change has occurred such that model can detect the change. In other words, the model works best at large spatial and temporal scales.

Both the mercury and PCBs TMDLs anticipated the challenges associated with using either monitoring alone or a combination of modeling and monitoring to assess how loading responds to control measure implementation. The mercury TMDL requires that Permittees "*develop and implement a monitoring system to quantify either mercury loads or loads reduced through treatment, source control, and other management efforts",* and the PCBs TMDL requires stormwater Permittees *"to develop and implement a monitoring system to quantify PCBs urban stormwater runoff loads and the load reductions achieved through treatment, source control and other actions."* Consistent with these TMDL requirements and in recognition of the difficulty of assessing control measure loading changes through monitoring or modeling, the Permit employs an accountability strategy known as the programmatic approach to confirm the sufficiency of control measure implementation and provide estimates of the load reductions likely occurring as a result of these control measures. This accountability strategy is described later in this Fact Sheet.

Provisions C.8.g. Pesticides and Toxicity Monitoring. Toxicity testing provides a tool for assessing toxic effects (acute and chronic) of all the chemicals in samples of stormwater, receiving waters or sediments and allows the cumulative effect of the pollutants present in the sample to be evaluated, rather than the toxic responses to individual chemicals. Toxicity in water and on sediment also are monitored in order to determine whether the numeric targets of the Diazinon and Pesticide-Related Toxicity in Urban Creeks TMDL are being achieved, and to help provide evidence on whether pesticide-related toxicity is decreasing in urban creek waters.

This subprovision combines all the pesticide and toxicity into one place. This format is intended to provide for more thoughtful dry weather and wet weather sampling designs that may provide more meaningful data for the region and potentially for statewide studies. Since the Urban Creeks TMDL was adopted by the Water Board in 2005, it has become more apparent that pesticide related toxicity water quality problems are similar in urban waterways across the State. At this time, efforts have begun to develop a statewide coordinated pesticides and pesticide-related toxicity monitoring program. In addition, pesticide-related water quality issues are subject to change as different pesticide products gain market share and increase in urban usage. For these reasons, Permittees may request the Water Board modify, reduce or eliminate the requirements of this subprovision during the Permit term, provided the resultant change, viewed in context of the statewide program, would result in overall improvement of pesticide monitoring data collection.

This Permit describes type, interval and frequency of pesticides and toxicity monitoring sufficient to yield data which are representative of both dry weather and wet weather urban runoff. Required analytes include toxicity and pesticides that are being found at or near concentrations that cause chronic or acute effects to aquatic organisms. Required

test methods include the relatively recent Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA/821/R-02/013, 2002; Table IA, 40 CFR Part 136) for chronic toxicity. The test species are selected as the most sensitive species to pollutants currently known or suspected to be present in stormwater discharges. All required methods and test species are consistent with those used by SWAMP as well as those required in other California MS4 permits, including the statewide Caltrans permit.

The non-pesticide pollutants arsenic, cadmium, chromium, copper, lead, nickel, and zinc are included in this subprovision in order to facilitate the synoptic collection of these pollutants in sediment with toxicity in sediment during the dry season.

C.8.h. Reporting. Provision C.8.h. requires Permittees to submit electronic and comprehensive reports on their water quality monitoring activities to (1) determine compliance with monitoring requirements; (2) provide information useful in evaluating compliance with all Permit requirements; (3) enhance public awareness of the water quality in local streams and the Bay; and (4) standardize reporting to better facilitate analyses of the data, including for the CWA section 303(d) listing process.

C.9. – C.14, C.18, C.19. Pollutants of Concern including Total Maximum Daily Loads

Provisions C.9 through C.14, C.18, and C.19.c-f pertain to pollutants of concern, including those for which TMDLs have been adopted.

Legal Authority

The following legal authority applies to provisions C.9 through C.14, C.18, and C.19.c-f:

Broad Legal Authority: CWA sections 402(p)(3)(B)(ii-iii), CWC sections 13377 and 13383, and Federal NPDES regulations 40 CFR § 122.26(d)(2)(i)(A, B, C, E, and F) and 40 CFR § 122.26(d)(2)(iv).

Specific Legal Authority: The TMDL-based requirements for pesticides, mercury, methylmercury, PCBs, bacteria, and sediment (in the Pescadero-Butano watershed only) have been imposed in accordance with 40 CFR 122.44(d)(1)(vii)(B), which requires the effluent limitations in NPDES permits to be consistent with the assumptions and requirements of any available waste load allocation (WLA) for the discharge. Water Code section 13263, subdivision (a), requires that waste discharge requirements implement any relevant water quality control plans (basin plans), including TMDL requirements that have been incorporated into the basin plans. In addition, under CWA section 402(p)(3)(B)(iii), MS4 discharges "shall require controls to reduce the discharge of pollutants to the maximum extent practicable . . . and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants" (33 U.S.C. § 1342(p)(3)(B)(iii).). Under this provision, the Water Board may include requirements for reducing pollutants in stormwater discharges as necessary for compliance with water quality standards (*See Defenders of Wildlife v. Browner* (9th Cir. 1999) 191 F.3d 1159, 1166.). This includes requirements to meet TMDLs since TMDL targets are an interpretation of water quality standards.

The Water Board may impose WQBELs that are BMPs or numeric effluent limitations (see, e.g., 40 CFR. §122.44(k)(2) and (3)). This is consistent with U.S. EPA's November 26, 2014, "Revision to the November 22, 2002, Memorandum 'Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs'" (2014 U.S. EPA Memo.). This memorandum, while not binding authority, states "[w]here the TMDL includes WLAs for stormwater sources that provide numeric pollutant loads, the WLA should, where feasible, be translated into effective, measurable WQBELs that will achieve this objective. This could take the form of a numeric limit, or of a measurable, objective BMP-based limit that is projected to achieve the WLA." The 2014 U.S. EPA Memo further acknowledges that the permitting authority should consider the schedules in the TMDL as it decides whether and how to establish enforceable interim requirement and interim dates in the permit. The interim deadlines in the Provisions are consistent with and in furtherance of the deadlines in the TMDLs.

The Trash Amendments updated the Ocean Plan and the Inland Surface Waters and Enclosed Bays and Estuaries Plan to include a narrative water quality objective for trash, a trash prohibition, and a framework for implementation of the water quality objective and prohibition in municipal stormwater permits. This framework sets up two tracks for permittees to implement the prohibition; the San Francisco Bay Region Permittees are in Track 2, which means that they implement the prohibition through a combination of full-trash capture devices and other control measures deemed equivalent to full-trash capture.

For copper, the Permit requires best management practices and copper control measures to prevent urban runoff discharges from causing or contributing to exceedances of copper site-specific water quality objectives for the Bay, consistent with the Basin Plan. Water Code section 13263 requires that waste discharge requirements implement the Basin Plan.

Basin Plan Requirements:

Section 4.8 of the Region's Water Quality Control Plan (Basin Plan) states that NPDES stormwater permits issued to municipalities will include requirements to prevent or reduce discharges of pollutants that cause or contribute to violations of water quality objectives. The Water Board has been taking a phased approach of first requiring technically and economically feasible controls to reduce pollutant discharges to the maximum extent practicable. Where this does not result in attainment of water quality objectives, the Basin Plan states the Water Board will require implementation of additional control measures to meet water quality objectives. The Basin Plan also contains urban stormwater TMDL implementation requirements at sections 7.1.1, 7.2.2, 7.7.1, 7.2.3, 7.4.1, and 7.4.2 for pesticide-related toxicity, mercury, PCBs, bacteria, and sediment. The Basin Plan also requires urban stormwater requirements for copper in section 7.2.1.The Basin Plan Table 4-1 includes Prohibition 7, which prohibits the discharge of "rubbish, refuse, bark, sawdust, or other solid wastes into surface waters or at any place where they would contact or where they would be eventually transported to surface waters, including flood plain areas." The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins also contain requirements related to pesticides and methylmercury relevant to Permittees in eastern Contra Costa County.

General Strategy for Sediment-Bound Pollutants (Mercury and PCBs):

The control measures for mercury and PCBs are intended to implement the urban runoff requirements stemming from TMDLs for these pollutants. The control measures required for PCBs are intended to implement those that are consistent with control measures in the PCBs TMDL implementation plan. The urban runoff management requirements in the PCBs TMDL implementation plan call for permit-term requirements based on an implementation of controls to reduce PCBs, and that is the intended approach of the required provisions for all pollutants of concern. Control actions addressing PCBs and mercury are expected to reduce loadings of other sediment-

bound pollutants, including legacy pesticides and PBDEs. Permittees can achieve multiple water quality benefits by strategically siting PCB and mercury controls. The POC strategy also includes a phased approach that provides for pilot scale testing (in MRP 1) and for identifying areas with pollutants of concern other than PCBs and mercury. The overall strategy for addressing sediment bound POCs uses the following framework, which is to implement controls more widely as Permittees test measures and gain confidence in their efficacy:

(1) Pilot-testing in a few specific locations.

(2) Focused implementation in areas where benefits are most likely to accrue.

(3) Full-scale implementation throughout the region.

(4) Additional Work. Permittees may also try out experimental control measures and devote resources to research and development, desktop analysis, laboratory studies, and/or literature review.

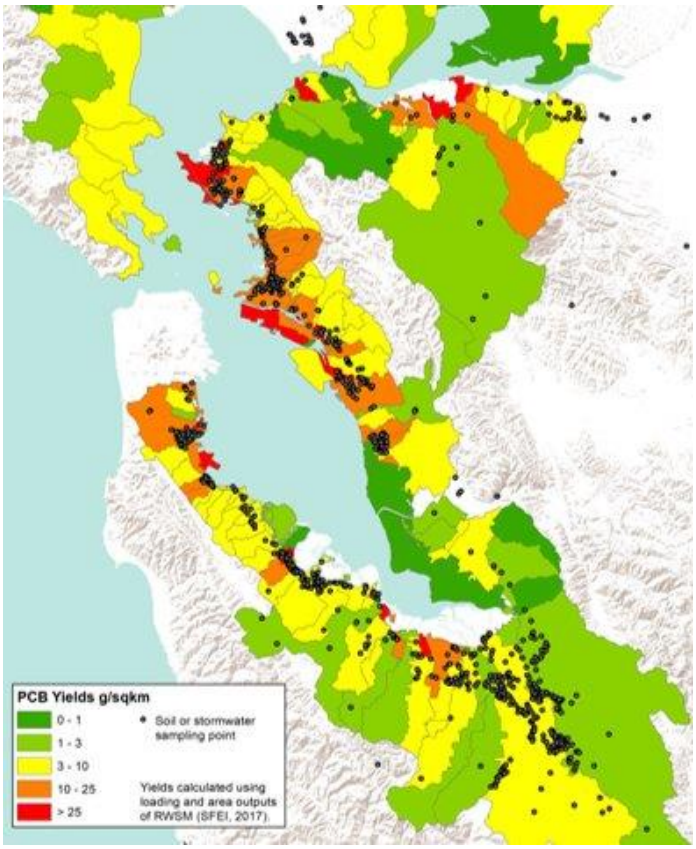
The logic of such categorization is that, as actions are tested and confidence is gained regarding the control measure's effectiveness, the control measure may be implemented with a greater scope. For example, an untested control measure for which the effectiveness is uncertain may be implemented as a pilot project in a few locations during a permit term. If benefits result, and the action is deemed effective, it will be implemented in subsequent permit terms in a focused fashion in more locations or perhaps fully implemented throughout the Region, depending upon the nature of the measure. Conversely, the benefits of other control measures may be well known, and these control measures should be implemented in all applicable locations and/or situations. By conducting actions in this way and gathering additional information about effectiveness and cost, we will advance our understanding and be able to perform an updated assessment of the suite of actions.

During the MRP 1 permit term, Permittees focused on gathering necessary information about control measure effectiveness. In effect, most of the control measures were implemented at the pilot scale. During the MRP 2 term, the emphasis shifted toward focused and some full-scale implementation of the most effective control measures, and progress was measured through accounting for specific load reductions. In this Permit term, the mercury and PCBs provisions require specific programmatic control measures deemed effective based on implementation experience and analyses in previous Permit terms (a "programmatic approach").

Experience implementing PCBs and mercury control measures in the first two versions of the MRP along with monitoring data and other information, including modeling, informs the design of the programmatic approach. Permittees use a load reduction accounting system (see Provisions C.11.a and C.12.a) to estimate mercury and PCBs load reductions for each type of programmatic control measure consistent with an expected level of control measure implementation intensity. Permittees are required to

track and report on their level of implementation through enforceable control measure-specific performance metrics that are associated with the estimated load reductions. In subsequent permit terms, control measures will be implemented based on what is learned in this term, resulting in even more refined, improved, and effective controls.

Fact Sheet section C.8.f, above, describes the challenge of measuring (through monitoring) PCBs and mercury loads and load reductions due to how these pollutants are distributed in watersheds and transported during storm events and the variability of the Bay Area's climate. These challenges in measuring load reductions through monitoring data also necessitate a programmatic approach to control measure implementation. Over the past two decades, however, Water Board staff has compiled and analyzed a large quantity of monitoring data and other information to understand the relationship between control measure implementation and load reductions and thereby establish a solid technical foundation for the programmatic approach.



PCBs and mercury data in bedded sediment (i.e., in storm drains or street sediment) and flowing stormwater have been collected through the RMP and also by the stormwater programs over the last two decades. Through the RMP and Permittee sampling, over 100 Bay Area watersheds have been sampled. In these watersheds, over 1,500 sediment samples have been taken, and samples have been taken at over 140 locations for flowing stormwater (see dots on figure, personal communication Alicia Gilbreath, San Francisco Estuary Institute). These monitoring data provide a clear picture about how PCBs and mercury are distributed in Bay Area watersheds and what type of watersheds contribute more or less pollutant load. Notice in the figure that the highest PCBs-yielding watersheds (mass loading of PCBs per unit area) are concentrated largely along the shore of San Francisco Bay. These high yielding watersheds are generally old industrial areas. These yields were estimated through models calibrated and validated with the monitoring information from those dots on the map along with information about hydrology and sediment transport.

The knowledge gained through monitoring and illustrated in this figure is the foundation for the programmatic control measure approach employed in this permit term to reduce PCBs and mercury loads. Because we now know that old bayside industrial lands are generally where we find higher PCBs concentrations, this helps to refine the control measures in the permit. Thus, we have required Permittees to search for contaminated source properties (see Provisions C.11/12.b) in old industrial areas and to focus implementation of control measures in the moderately contaminated portions of old industrial land use (see Provisions C.11/12.c). Finding contaminated properties and addressing ongoing moderate contamination in these formerly old industrial bayside areas is an important element in reducing PCBs loads to the Bay. Moreover, addressing these areas has an environmental justice dimension as well. These old industrial areas are often near where historically disadvantaged communities have been compelled to live because of the unaffordability of less contaminated upland areas. Removing contamination from these areas helps improve the quality of life for these communities. Additionally, the PCBs and other contaminants from these older industrial areas are transported to the Bay and can cause some popular fish species caught from nearby shoreline fishing locations used by local anglers to be unsafe to consume.

The Water Board also uses the available monitoring data to develop mathematical relationships between a unit of control measure implementation activity (e.g., a referral of a source property or a treatment device installed in old industrial land use) and an estimated load reduction. This accounting program is fully described in work produced and refined by the programs during the MRP 2 permit term.[286] These data were also used to calibrate and validate a variety of watershed loading models to generate estimates of the PCBs and mercury load reductions from green stormwater infrastructure (GSI) implementation as part of the Reasonable Assurance Analyses prepared by the Permittees during the MRP 2 permit term.

In addition to monitoring data, the programmatic approach is also informed by other information related to control measure implementation. For example, Permittees (as part of their 2019-2020 Annual Reports) estimated the PCBs and mercury load reductions that will be realized as GSI is implemented through time. In order to do this, Permittees estimated the pace of GSI implementation and used information about GSI performance, concentrations of PCBs and mercury in watersheds (from monitoring data), combined with information about rainfall, hydrology, soil type, slope, amount of impervious area, and other inputs.

Permittees also gathered information that allowed the Water Board to estimate the magnitude of PCBs load reductions by implementing BMPs when buildings containing PCBs (in caulks and sealants) are demolished. There is information on the typical amount of PCBs in such buildings and the effectiveness of control measures and the number of buildings that are demolished in a typical year.[290, 286] This information is used to establish factors to estimate the load reduction benefit of this program. It is too difficult, impractical, and time-consuming to implement monitoring efforts in the vicinity

of these demolition sites to generate these load reduction estimates, as previously described. A similar approach is used to derive a mathematical relationship between the number of bridges whose roadways are replaced and the amount of PCBs load reduction achieved through removal of the PCBs-containing caulk. Permittees developed the relationship by measuring the amount of PCBs in such caulk and calculating how much caulk is removed during a typical bridge refurbishment project.[286]

The programmatic approach for PCBs and mercury control measures is a practical means of ensuring accountability for control measure implementation. This approach relies on the above-described monitoring data and other information, which are used in a technically sound manner to derive the mathematical relationships between units of control measure implementation activity and load reduction. While it is theoretically possible to assess load reductions through an intensive program of monitoring (see discussion under Provision C.8.f, above) at hundreds of locations upstream and downstream of control measure implementation, the effort and expense to undertake such a monitoring program would consume all or nearly all available resources that would be better spent on control measure implementation, as discussed above in the Fact Sheet for Provision C.8. The Permit's more practical and resource-efficient approach is to use monitoring data to inform control measure design and accountability metrics, as well as to calibrate and validate quantitative models to estimate loads and changes in loads. In this way, we use models to extrapolate from those places and times for which we have monitoring data to those times and places where we do not.

Background on Specific Provisions:

Pursuant to CWA§ 402(p)(3)(B)(ii)-(iii) and 40 CFR § 122.44(d)(1)(vii)(B), Provisions C.9 through C.14, C.18, and C.19 contain technology-based requirements to control pollutants to the MEP, such other provisions the Water Board has determined appropriate for the control of pollutants under CWA, water quality-based requirements consistent with the assumptions and requirements of any WLAs in the applicable TMDLs, and requirements to effectively prohibit non-stormwater discharges into storm sewers. Provision C.9 contains requirements to implement the TMDL for pesticide-related toxicity in urban creeks. Provision C.10 contains requirements to implement narrative water quality objectives related to trash in all receiving water and water quality control plan prohibitions on trash discharges. Provision C.11 contains requirements to implement the San Francisco Bay mercury TMDL WLAs and the TMDL WLAs for mercury in the Guadalupe River Watershed. Provision C.12 contains requirements to implement the San Francisco Bay PCBs TMDL WLAs. Provision C.13 contains requirements to implement the copper site-specific objectives for San Francisco Bay. Provision C.14 contains requirements to implement the TMDL WLAs for bacteria at San Pedro Creek and Pacifica State Beach; San Francisco Bay Beaches (in the City of San Mateo); and Pillar Point Harbor and Venice Beach. It also contains requirements for the cities of Mountain View and Sunnyvale for their discharges that are causing or contributing to exceedances of water quality standards in Stevens Creek (both cities),

Calabazas Creek (Sunnyvale) and Sunnyvale East Channel/Guadalupe Slough (Sunnyvale) for which there are no TMDLs. These requirements are consistent with these bacteria TMDL WLA implementation requirements. Provision C.18 contains requirements to implement the Pescadero-Butano Watershed Sediment TMDL and the Water Quality Improvement Plan for sediment in the San Gregorio Creek watershed. Provision C.19 contains requirements to implement the pesticides and methylmercury TMDLs and other requirements in the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins applicable to Permittees in eastern Contra Costa County.

C.9. Pesticides Toxicity Control

Fact Sheet Findings in Support of Provision C.9

C.9-1 This Permit implements the TMDL and Water Quality Attainment Strategy for diazinon and pesticide-related toxicity for all Bay Area urban creeks, as defined in the Basin Plan Amendment adopted by the Water Board on November 16, 2005, and approved by the State Water Board on November 15, 2006. The Water Quality Attainment Strategy requires urban runoff management agencies to minimize their own pesticide use, conduct outreach to others, lead monitoring efforts, and take actions related to pesticide regulatory programs. Control measures implemented by urban runoff management agencies and other entities (except construction and industrial sites) shall reduce pesticides in urban runoff.

C.9-2 The TMDL is allocated to all urban runoff, including urban runoff associated with MS4s, Caltrans facilities, and industrial, construction, and institutional sites. The allocations are expressed in terms of toxic units and diazinon concentrations.

This provision is consistent with 2014 U.S. EPA Memo [255] providing guidance on implementing TMDL WLAs in NPDES stormwater permits. Specifically, this provision establishes clear actions to achieve pesticide load reductions as well as other requirements (see Provision C.9.f) necessary to achieve receiving water limits. The timeline for achieving the TMDL is not a fixed date for the following reasons. Pesticide-related toxicity continues to occur because state and federal pesticide regulatory programs, as currently implemented, allow pesticides to be used in ways that cause or contribute to aquatic toxicity. The TMDL implementation plan recognizes that (1) Permittees must control their own use of pesticides, but Permittees are not solely responsible for attaining the allocations, because their authority to regulate others' pesticide use is constrained by federal and state law; and (2) because a realistic date for achieving allocations cannot be discerned given the current pesticide regulatory framework. Thus, reviewing the implementation strategy every five years, at permit reissuance, is the appropriate timeline.

Specific Provision C.9 Requirements

Provision C.9 implements the TMDL for Urban Creeks Pesticide Toxicity. All C.9 subprovisions are stated explicitly in the implementation plan for this TMDL. Permittees are encouraged to coordinate activities with other agencies and organizations. The list of urban-use pesticides of concern to water quality includes pesticides for which local

[255] U.S. EPA. November 26, 2014. Revisions to the November 22, 2002 Memorandum "Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs"

area monitoring data exceed or approach benchmarks and pesticides currently linked to toxicity in surface waters.

Pesticides monitoring is specified in Provision C.8.g. Pesticides and Toxicity Monitoring.

C.9.a through C.9.d are designed to ensure that integrated pest management (IPM) is adopted and implemented as policy by all municipalities. IPM is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of complementary techniques such as biological control (e.g., natural predators and parasites), habitat manipulation, modification of cultural practices, use of resistant varieties, various physical techniques, and considers pesticide treatments as a last resort. Pesticides are used only after monitoring indicates they are needed according to established guidelines, and treatments are made with the goal of removing only the target organism. The implementation of IPM will be assured through training of municipal employees and contractor requirements. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and non-target organisms, and the environment. IPM techniques could include biological controls (e.g., ladybugs and other natural enemies or predators); physical or mechanical controls (e.g., hand labor or mowing, caulking entry points to buildings); cultural controls (e.g., mulching, alternative plant type selection, and enhanced cleaning and containment of food sources in buildings); and reduced risk chemical controls (e.g., soaps or oils). IPM is defined broadly by the University of California Agriculture & Natural Resources Statewide IPM Program,[256] and an example IPM plan is provided by UC Davis.[257] University of California Agriculture and Natural Resources provides guidance to public agencies on the development of IPM policies and programs.[258] More resources are provided by the California Department of Pesticide Regulation[259] and by the National Pesticide Information Center.[260] The Glossary attached to this Permit includes expanded IPM definitions adapted from the UP Provisions.

C.9.e directs the municipalities to conduct outreach to consumers at point of purchase, to residents who contract for pest control, and to pest control professionals. Such targeted outreach is intended to make the public and pest control professionals aware of the water quality impacts of current-use pesticides that are impacting or have potential to negatively impact urban creeks.

C.9.f requires that municipalities (through cooperation or participation with BAMSC and CASQA) track and participate in pesticide regulatory processes like the U.S. EPA pesticide evaluation and registration activities related to surface water quality, and the California Department of Pesticide Regulation pesticide evaluation activities. The goal of

[256] https://www2.ipm.ucanr.edu/What-is-IPM/

[257] https://ucdavis.app.box.com/v/UCDavisIPMPlan2014PDF

[258] https://anrcatalog.ucanr.edu/Details.aspx?itemNo=8093

[259] https://www.cdpr.ca.gov/docs/schoolipm/

[260] http://npic.orst.edu/pest/ipm.html

these efforts is to provide pertinent water quality data and encourage both the state and federal pesticide regulatory agencies to fully evaluate aquatic impacts and to mitigate for impacts to urban water bodies within the pesticide regulation or registration process. Accomplishing this goal would represent the most efficient and effective means to prevent pesticide-related water quality problems in the future.

C.9.g requires Permittees to evaluate the effectiveness of their pesticide source control actions and is critical to the success of municipal efforts to control pesticide-related toxicity. Future permits must be based on an updated assessment of what is working and what is not. With every provision comes the responsibility to assess its effectiveness and report on these findings through the Permit. The particulars of assessment will depend on the nature of the control measure.

C.10. Trash Load Reduction

Legal Authority

The following legal authority applies to section C.10:

Clean Water Act: CWA sections 402(p)(3)(B)(ii) and (iii) require municipal stormwater permits to effectively prohibit non-stormwater discharges and to reduce the discharge of pollutants in stormwater to the maximum extent practicable. Trash can be considered both a non-stormwater discharge (see 40 CFR 122.26, subd. (b)(2)) and a pollutant. Accordingly, the Order's requirements to reduce trash loading are required to implement both the non-stormwater discharge prohibition and the reduction of pollutants to the maximum extent practicable.

Basin Plan: Trash load reductions are also required to protect beneficial uses and achieve water quality objectives in the receiving water. Basin Plan Prohibition 7 prohibits the discharge of rubbish, refuse, bark, sawdust, or other solid wastes into surface waters, or at any place where they would contact or where they would be eventually transported to surface waters, including flood plain areas. The Basin Plan also contains narrative water quality objectives applicable to trash: floating material (waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses); settleable material (waters shall not contain substances in concentrations that result in the deposition of material that cause nuisance or adversely affect beneficial uses); and suspended material (waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses).

Trash Amendments: The trash load reduction provisions of this Order are also consistent with the State Water Board's 2015 amendments to the Ocean Plan and Inland Surface Waters and Enclosed Bays to control trash (Trash Amendments). The Trash Amendments establish a narrative water quality objective for trash; prohibit "the discharge of Trash to surface waters of the State or the deposition of Trash where it may be discharged into surface waters of the State;" provide implementation requirements for permitted storm water dischargers; set a time schedule for compliance and provide a framework for monitoring and reporting requirements.

Because trash overwhelmingly reaches receiving waters via stormwater, the Trash Amendments anticipate that NPDES stormwater permits will implement the trash prohibitions. NPDES stormwater Permittees have two "tracks," or alternative pathways, for achieving compliance with this prohibition. Permittees in Track 1 must install, operate, and maintain full capture systems for all storm drains that captures runoff from the priority land uses in their jurisdictions;" while Permittees in Track 2 must install, operate, and maintain any combination of full capture systems, multi-benefit projects, other treatment controls, and/or institutional controls within either the jurisdiction of the MS4 permittee or within the jurisdiction of the MS4 permittee and contiguous MS4 permittees." The State Water Board determined that the Trash Load Reduction

requirements of the previous MRP were “substantially equivalent” to Track 2 (Trash Amendments, p. D-5, fn. 2.).

Permittees in Track 2 are required to demonstrate that the combination of methods achieves full capture system equivalency. The C.10 requirements of this Permit are consistent with the Statewide Trash Amendments and the trash controls Permittees are required to implement are designed to achieve full trash equivalency. Permittees are required to implement a trash control plan using a combination of controls, such as full capture systems, or other controls (e.g., street sweeping, on-land pickups) that are equivalent to trash full capture systems and that can be verified through visual assessment as described in Provision C.10.b.iii, below. The Statewide Trash Amendments require Track 2 Permittees to fully comply with the Trash Amendments (trash water quality objective, trash prohibition, and implementation requirements) within ten years of the effective date of the first implementing NPDES MS4 permit. MRP 2 became effective on January 1, 2016, and is the first permit implementing the Trash Amendments. Therefore, MRP Permittees must fully comply with the Trash Amendments no later than December 31, 2025, except the East Contra Costa County Permittees, which were not subject to MRP 2 when it became effective in 2016.

Specific Legal Authority: Federal NPDES regulations 40 CFR 122.26(d)(2)(i) requires “a demonstration that the [Permittee] can operate pursuant to legal authority established by statute, ordinance or series of contracts which authorizes or enables the [Permittee] at a minimum to . . . (B) Prohibit through ordinance, order or similar means, illicit discharges to the municipal separate storm sewer; (C) Control through ordinance, order or similar means the discharge to a municipal separate storm sewer of spills, dumping or disposal of materials other than storm water . . . .”

Federal NPDES regulations 40 CFR 122.26(d)(2)(iv)(A)(1) requires “a description of maintenance activities and a maintenance schedule for structural controls to reduce pollutants (including floatables) in discharges from municipal separate storm sewers.”

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(B) requires “shall be based on a description of a program, including a schedule, to detect and remove (or require the discharger to the municipal storm sewer to obtain a separate NPDES permit for) illicit discharges and improper disposal into the storm sewer.”

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(B)(2) requires “a description of procedures to conduct on-going field screening activities during the life of the permit, including areas or locations that will be evaluated by such field screens.”

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(B)(3) requires “a description of procedures to be followed to investigate portions of the separate storm sewer system that, based on the results of the field screen, or other appropriate information, indicate a reasonable potential of containing illicit discharges or other sources of non-storm water.”

Federal NPDES regulations 40 CFR 122.26(d)(2)(iv)(B)(4) requires "a description of procedures to prevent, contain, and respond to spills that may discharge into the municipal separate storm sewer."

Federal NPDES regulations 40 CFR § 122.44(d)(1)(i) requires limitations for pollutants which are or may be discharged at a level which has the reasonable potential to cause or contribute to an excursion above any water quality standard, including any narrative criteria for water quality.

Trash is being discharged at levels that have the reasonable potential to cause or contribute to excursions of these narrative water quality objectives. There are currently 27 waterbodies in the Region impaired by trash on the Clean Water Act section 303(d) list; most of these receiving waters receive discharges from Permittees' municipal storm drain systems. Elsewhere, trash is being discharged at levels that have the reasonable potential to cause or contribute to excursions of these narrative water quality objectives. U.S. EPA recommends that for MS4 discharges with reasonable potential to cause or contribute to a water quality excursion, a permitting authority exercises its discretion to include clear, specific, and measurable requirements and, where feasible, numeric effluent limitations as necessary to meet water quality standards.[261] In Water Quality Order Nos. 2015-0075, amended by 2021-0052-EXEC, and 2020-0038, the State Water Board affirmed the obligation of stormwater permittees to comply with receiving water limitations, including the requirement that discharges not cause or contribute to water quality standards exceedances. Where a permit allows alternative, or deemed, compliance with receiving water limitations, the alternative compliance pathway must have "appropriate rigor, transparency, and accountability," and be "designed to ultimately achieve receiving water limitations."[262] More specifically, "any alternative compliance path should 'encourage watershed-based approaches, address multiple contaminants, . . . incorporate TMDL requirements,' 'encourage the use of green infrastructure and the adoption of low impact development principles,' 'have rigor and accountability,' and require Permittees, 'through a transparent process, to show that they have analyzed the water quality issues in the watershed, prioritized those issues, and proposed appropriate solutions.'"[263] The State Water Board also reaffirmed the requirement to require adequate monitoring "to verify assumptions and update the solutions." This permit's alternative compliance measures contain the elements required by Order Nos. 2020-0038 and 2015-0075, amended by 2021-0052-EXEC are designed to meet water quality standards as quickly as possible and to implement the trash discharge prohibition by 2025.

[261] U.S. EPA, November 26, 2014, "Revisions to the November 22, 2002 Memorandum 'Establishing Total Maximum Daily Load Waste Allocations for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs.'"

[262] Order No. 2020-0038, p. 13.

[263] Order No. 2020-0038, p. 14, citing Order No. 2015-0075.

Fact Sheet Findings in Support of Provision C.10

C.10-1 The State Water Board's Trash Amendments define trash to encompass "all improperly discarded solid material from any production, manufacturing, or processing operation including, but not limited to, products, product packaging, or containers constructed of plastic, steel, aluminum, glass, paper, or other synthetic or natural materials."

C.10-2 Trash is a pervasive problem within the San Francisco Bay, as well as in creeks and shoreline areas throughout the Bay Area. Controlling trash from municipalities' jurisdictions continues to be a priority for this Permit reissuance, not only because implementation of the trash discharge prohibition is imminent, but because trash adversely impacts the public's enjoyment of the Bay, Ocean, and their watersheds and poses a serious threat to aquatic life and habitat. Plastic has pernicious effects in the ocean environment, where it can persist for hundreds of years, if not longer; can serve as a substrate for organic toxins; and can entangle or be ingested by aquatic life.

C.10-3 The levels of trash in the waters of the San Francisco Bay Region were and are alarmingly high, considering the Basin Plan prohibits discharge of trash and that littering is illegal with potentially large fines. Even during dry weather conditions, a significant quantity of trash, particularly plastic, is making its way into waters and being transported downstream to San Francisco Bay and the Pacific Ocean. Data collected by Water Board staff using the SWAMP Rapid Trash Assessment (RTA) Protocol,[264] over the 2003–2005 timeframe,[265] suggested that then-existing approaches to managing trash in waterbodies were not reducing the adverse impact on beneficial uses. In 85 surveys conducted at 26 sites throughout the Bay Area, staff found an average of 2.93 pieces of trash for every foot of stream. All the trash was removed when it was surveyed, indicating high return rates of trash over the 2003–2005 study period. There did not appear to be one county within the Region with significantly higher trash in waters relative to other counties—the highest wet weather deposition rates were found in western Contra Costa County, and the highest dry weather deposition was found in Sonoma County. Neighborhoods at the bottom of the watershed, which tend to have lower property values, are subject to trash washing off with urban stormwater runoff cumulatively from the entire watershed.

C.10-4 Trash generation in the United States has increased in the years since the SWAMP RTA trash assessments. For instance, figures from the U.S. EPA indicate that overall and per capita municipal solid waste generation have increased between 2005 and 2018, the last year for which data are

[264] SWAMP Rapid Trash Assessment Protocol, Version 8

[265] SWAMP S.F. Bay Region Trash Report, January 23, 2007

available.[266] Packaging waste generation has increased by 7 percent, while plastic packaging waste generation, specifically, has increased 14 percent, during that same time period.[267] Furthermore, the plastic going into the oceans is on course to rise from 11 million tons now to 29 million by 2040, according to a study published in June by Pew Trusts, an independent public interest group.[268] It is reasonable to assume that trash generation in the Bay Area has increased in parallel with national trends, and that when overall trash generation is higher, more trash ends up in stormwater.

C.10-5 A number of key conclusions can be made on the basis of the trash measurement in streams:

(1) Lower watershed sites have higher densities of trash.

(2) All watersheds studied in the San Francisco Bay Region have high levels of trash.

(3) There are trash source hotspots (usually associated with parks, schools, or poorly kept commercial facilities located near creek channels) that appear to contribute a significant portion of the trash deposition at lower watershed sites.

(4) Homeless encampments and creekside litter from a variety of sources are a significant source of trash directly dumped and placed in the riparian zone where it can be swept into receiving waters by storm flows.

(5) Dry season deposition of trash, associated with wind and dry season runoff, contributes measurable levels of trash to downstream locations.

(6) Most trash is plastic at lower watershed sites where trash accumulates in the wet season. This is likely the result of several factors, including the increase in use of plastic as a packaging material and the material's persistence in the environment. The accumulation of plastic in downstream areas indicates that urban runoff is a major source of floatable plastic found in the ocean and on beaches as marine debris.

(7) Parks that have more evident management of trash by city staff and local volunteers, including cleanup within the creek channel, have measurably less trash pieces and higher RTA scores.

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[266] Advancing Sustainable Materials Management: 2018 Fact Sheet; accessed at: https://www.epa.gov/sites/production/files/2021-01/documents/2018_ff_fact_sheet_dec_2020_fnl_508.pdf

[267] U.S. EPA, 2018. https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/containers-and-packaging-product-specific-data

[268] Verdon, Joan, April 27, 2021. "Global E-Commerce Sales To Hit $4.2 Trillion As Online Surge Continues, Adobe Reports," Fortune.

C.10-6 The ubiquitous, unacceptable levels of trash in waters of the San Francisco Bay Region warrant a comprehensive and progressive program of education, warning, and enforcement, and certain areas warrant consideration of structural controls and treatment.

C.10-7 Trash in urban waterways of coastal areas can become marine debris, known to harm fish and wildlife and cause adverse economic impacts.[269] Trash is a regulated water pollutant that has many characteristics of concern to water quality. It accumulates in streams, rivers, bays, and ocean beaches throughout the San Francisco Bay Region, particularly in urban areas.

C.10-8 Trash adversely affects numerous beneficial uses of waters, particularly recreation, wildlife and estuarine habitats, and rare and endangered species preservation. Besides the obvious negative aesthetic effects, trash can threaten the health and safety of beachgoers or other recreators. Medical waste, pet waste, and discarded diapers can spread disease, while metal and broken glass can cause injury.[270] Entanglement in trash and marine debris is a major hazard to marine wildlife,[271] affecting at least 115 species of animals in the United States alone.[272] Marine species, including turtles and sea birds, are also widely known to ingest marine debris, particularly small pieces of plastic, causing injury, illness, and death,[273] In addition, trash can contaminate water and sediments, as some household and industrial wastes contain toxic batteries, pesticide residues, and mercury and other heavy metals. Large trash items, such as discarded appliances, can present physical barriers to natural stream flow, causing physical impacts such as bank erosion. From a management perspective, the persistent accumulation of trash in a waterbody is of particular concern, and signifies a priority for prevention of trash discharges. Also of concern are trash hotspots where illegal dumping, littering, and/or accumulation of trash occur.

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[269] Moore, S.L., and M.J. Allen. 2000. Distribution of anthropogenic and natural debris on the mainland shelf of the Southern California Bight. Mar. Poll. Bull. 40:83-88.

[270] Sheavly, S.B. 2004. Marine Debris: an Overview of a Critical Issue for our Oceans. 2004 International Coastal Cleanup Conference, San Juan, Puerto Rico. The Ocean Conservancy.

[271] Laist, D. W. and M. Liffmann. 2000. *Impacts of marine debris: research and management needs*. Issue papers of the International Marine Debris Conference, Aug. 6-11, 2000. Honolulu, HI, pp. 16–29.

[272] Entanglement of Marine Species in Marine Debris with and Emphasis on the United States, https://marinedebris.noaa.gov/sites/default/files/mdp_entanglement.pdf; see also Oceana, Choked, Strangled and Drowned (2020) https://usa.oceana.org/sites/default/files/2020/11/25/report_single_pagesdoi_choked_strangled_drowned_final.pdf

[273] McCauley, S.J. and K.A. Bjorndahl. 1998. Conservation implications of dietary dilution from debris ingestion: sublethal effects in post-hatchling loggerhead sea turtles. *Conserv. Biol*. 13(4):925-929; Gilbert, J.M. et al. 2016. Plastic Ingestion in Marine and Coastal Bird Species of Southeastern Australia, *Marine Ornithology*. 44: 21-26. https://sora.unm.edu/sites/default/files/44_1_21-26.pdf

C.10-9 The Water Board, at its February 11, 2009, hearing, adopted a resolution proposing that 26 waterbodies in the region be added to the 303(d) list for the pollutant trash. The adopted Resolution and supporting documents are contained in Attachment E - 303(d) Trash Resolution and Staff Report, February 2009.

C.10-10 The trash control strategies, monitoring requirements, and mandatory deadlines for trash reductions meet the "Maximum Extent Practicable" (MEP) standard contemplated by the CWA and include such other provisions as the Board determines appropriate for control to ultimately meet the narrative water quality objectives for floating material, settleable material, and suspended material (CWA §402(p)(3)(B)(iii)). This Permit builds on the data and information collected in the last permit term and increases expectations of Permittees in this Permit. In particular, this Permit requires that the Permittees make significant progress toward having no trash impact on receiving waters by increasing implementation of full trash capture devices and ensuring that other trash reduction and elimination measures have similar effects to full trash capture. This is consistent with the statewide amendment to the Ocean Plan and the Inland Surface Waters, Bays and Estuaries Plan relating to trash controls. This Permit includes trash generation source identification and control, visual assessment data collection, and development of trash monitoring protocols. These requirements reflect the most current knowledge and data available concerning effectiveness of trash control strategies such as full trash capture, enhanced maintenance methods and current thinking regarding the best methods to assess trash reduction outcomes for the various trash reduction methods.

C.10-11 The COVID-19 pandemic has produced a surge in trash from multiple sources, including discarded personal protective equipment, shipping materials, and takeout containers.[274] Some of this trash has made it into waterways,[275] and the Coastal Commission found that masks were one of the top 15 discarded items at its coastal cleanups.[276]

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[274] See, e.g., 2020 Beach Cleanup Annual Report, Surfrider (July 2021), p. 5; Ford, Don. "COVID In Oakland: Pandemic Sending Additional Trash Into Bay Area Waterways," CBS San Francisco (Nov. 18, 2020); Kramer, Anna. "Eco-conscious Bay Area reckons with flood of plastic waste as coronavirus wears on," *San Francisco Chronicle* (July 20, 2020); Chua, Jasmin Malik. "Online shopping has boomed in the pandemic. But what about all the packaging?" Vox (Jan. 8, 2021). Takeout orders increased 127% from March 2020 through March 2021. NPD, "U.S. Restaurant Carry-Out and Delivery Digital Orders Soar During the Pandemic" (May 11, 2021).

[275] See, e.g., 2020 Beach Cleanup Annual Report, Surfrider, *supra*; "COVID In Oakland: Pandemic Sending Additional Trash Into Bay Area Waterways," CBS San Francisco (Nov. 18, 2020); Alexander, Curtis. "First rain of season unveils a new pollution problem: masks and gloves - pandemic PPE," *San Francisco Chronicle* (Nov. 18, 2020).

[276] Alexander, Curtis. "First rain of season unveils a new pollution problem: masks and gloves - pandemic PPE," *San Francisco Chronicle* (Nov. 18, 2020).

Even before the pandemic, the United States was the largest generator, per capita, of plastic packaging waste.[277] Americans' packaging consumption has only grown during the pandemic, [278] as some plastic bag bans, including California's, were suspended, grocery pickup and delivery soared, and online shopping increased in the United States by approximately 32 percent from 2019 to 2020.[279] Shipping materials waste in particular has ballooned.[280] Of the 465 million pounds of packaging waste that Amazon, alone, was estimated to have generated worldwide pre-pandemic, approximately 4.8 percent, or 22.4 million pounds, went into waterways.[281] In 2020, these figures can be assumed to have grown, as Amazon's profits soared by 84 percent.[282]

C.10-12 While some pandemic-related trash increases may subside during this permit term, other sources of increased trash may not. For instance, online shopping is projected to continue growing,[283] and the concomitant heaps of shipping waste can be expected to keep growing, too. To accommodate this projected increase in waste, successful implementation of trash controls, particularly full-trash capture devices, is critical.

Specific Provision C.10 Requirements

C.10.a. Trash Reduction Requirements

C.10.a.i. Trash Reduction Schedule – This provision includes compliance benchmarks of 90 percent trash load reduction by June 30, 2023, and 100 percent trash load reduction by June 30, 2025. The 100 percent deadline represents a three-year extension of the 100 percent trash load reduction (or no adverse trash impact) target in MRP 2 of July 1, 2022. This extension is appropriate because it recognizes the Permittees' economic challenges associated with the COVID-19 pandemic, as well as

[277] Parker, Laura. "Plastic Bag Bans Are Spreading. But Are They Truly Effective?" *National Geographic* (April 17, 2019).

[278] Flexible Plastic Packaging Global Market Report 2021: COVID-19 Growth And Change (July 2021) (despite plastic bag bans and growing concern about the environmental impacts of packaging waste, the flexible plastic packaging sector grew 5.7% in 2020 due to the e-commerce boom.); Kickham, Victoria. "Strong Demand, Rising Costs Affect Packaging Strategies." DC Velocity (July 9, 2021) (shipments of corrugated cardboard reached a record high in 2020, an increase of 3.5 percent over 2019.)

[279] Palmer, Annie. "Groceries and sporting goods were big gainers in the Covid e-commerce boom of 2020," CNBC (Feb. 19, 2021).

[280] See Chua (2021), supra; see also Corkery, Michael. With 3 Billion Packages to Go, Online Shopping Faces Tough Holiday Test." *New York Times* (Dec. 5, 2020) (estimating that 800 million more holiday packages would be shipped in 2020 versus 2019).

[281] Oceana, Amazon's Plastic Problem Revealed (Dec. 15, 2020), pp.14-15.

[282] Kohan, Shelley, "Amazon's Net Profit Soars 84% With Sales Hitting $386 Billion," Forbes (Feb. 2, 2021); Thomas, Lauren. "As e-commerce sales proliferate, Amazon holds on to top online retail spot." CNBC (June 18, 2021).

[283] Verdon, Joan. "Global E-Commerce Sales To Hit $4.2 Trillion As Online Surge Continues, Adobe Reports," *Fortune* (April 27, 2021).

challenges associated with controlling trash from the Permittees' remaining uncontrolled areas. Permittees have appropriately prioritized controlling trash from the highest trash generation areas in MRP 1 and MRP 2 and must now address a large area of moderate-level significant trash generating areas from which trash must be controlled.

C.10.a.ii. Trash Generation Area Management – The overarching strategy for reducing trash involves mapping trash generation areas within a Permittee's jurisdiction, then applying effective trash reduction actions to the areas of trash generation and assessing the effectiveness of those actions in delineated trash generation areas, until trash generation is reduced to the no impact level over a Permittee's entire jurisdiction. The Permittees reported these trash generation maps with their Long Term Trash Reduction Plans February, 2014, and these maps provide the 2009 trash generation levels, which were required under MRP 1. Permittees that found inaccuracies in their submitted maps had the opportunity to submit corrected 2009 trash generation maps with their 2016 Annual Reports. Permittees developed their maps by dividing their jurisdiction into Very High, High, Moderate, and Low trash generation areas based on the following ranges of trash generation rates:

- Low = less than 5 gal/acre/yr;
- Moderate = 5-10 gal/acre/yr;
- High = 10-50 gal/acre/yr; and
- Very High = greater than 50 gal/acre/yr.

C.10.a.ii.a. Actual trash loading values, particularly in areas of high and very high trash generation areas, may vary significantly, but these delineated ranges provide a frame of reference for tracking and demonstrating trash load reductions and provide relative trash generation weight of these four categories. Permittees will likely need to reduce trash generation to at least Low to attain the ultimate required water quality-based outcome of no trash loads that cause or contribute to adverse trash impacts in receiving waters by June 30, 2025. Whether attainment of Low trash generation rates will be sufficient will be evaluated and considered in the development of requirements in the next permit. Demonstration that trash management actions reduce trash generation from Very High, High, or Moderate to a Low trash generation rate during this permit term provides a practicable means of demonstrating trash load reduction and attainment of the June 30, 2023, and June 30, 2025, 90 and 100 percent trash load reduction requirements, respectively. Permittees are required to implement trash prevention and control measures, including full trash capture systems (as defined in Provision C.10.a.ii.a), or other trash management actions, or a combination of actions equivalent to or better than full trash capture systems, to meet the required load reductions as described above in section C.10.a.i and to achieve the trash reduction outcomes required by the Trash Amendments.

C.10.a.ii.b. Permittees are responsible for trash discharges from their storm drain systems, including trash generated and discharged from private land areas that are either moderate, high, or very high trash generating and plumbed to the Permittees MS4 system. Permittees have direct control over their properties and right of way, but must also exert control over the private lands described above, such as commercial parking lots, that are plumbed to municipal storm sewer systems, since trash washed into such conveyances by stormwater directly impacts receiving waters without encountering trash controls on public rights of way. Permittees may use a variety of means to ensure that either full trash capture devices are installed at storm drain inlets on private land prior to intersection with the public storm drain system, or that other control actions, equivalent to full trash capture, are implemented on those private lands and such actions are verified through assessment, similar to the on-land visual assessment. Also, if there is a full trash capture device downstream of these lands that is designed, operated, and maintained to control trash discharges from that land area, no other trash control would be necessary.

C.10.b Demonstration of Trash Reduction Outcomes

C.10.b.i.(a-b) Full Trash Capture Systems - Full trash capture systems must be appropriately maintained to be effective. If a full trash capture system enters the wet season clogged with leaves or trash, trash will bypass the device, preventing it from functioning appropriately. During device inspections over the course of the previous permit term, Water Board staff observed roughly 20 percent of the inspected full trash capture devices required cleaning and/or repair or replacement. This Permit maintains the MRP 2 requirement for Permittees to inspect and maintain their full trash capture devices at a minimum frequency of once per year and, sufficient to prevent plugging (including plugging of the 5 mm screen) that could otherwise lead to trash overflow and bypass, flooding, or a full condition of the device's trash reservoir causing bypassing of trash. Within High and Very High trash generation areas, Permittees are expected to inspect (and maintain if necessary) their full trash capture devices at a minimum frequency of twice per year, with the inspections spaced at least three months apart. Justification for the higher maintenance frequency within High and Very High trash generation areas is due to the increased speed with which full trash capture devices are expected to get plugged with trash and/or debris if not maintained. Permittees are required to maintain adequate maintenance records and report any full trash capture devices found to be not adequately maintained or improperly functioning. Permittees are also required to certify annually that all their full trash capture devices are adequately operated and maintained.

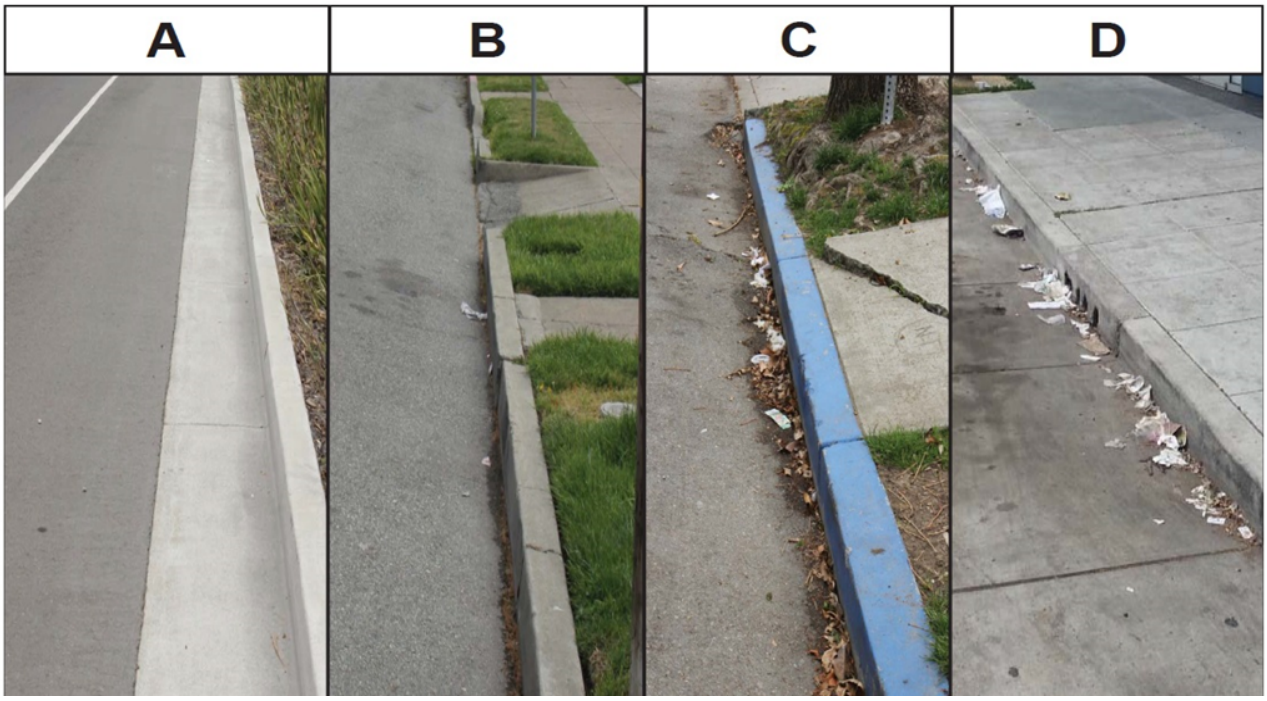
C.10.b.iii. Other Trash Management Actions

C.10.b.iii.a. Implementation Documentation – Documentation of trash management or control actions implemented and areas of implementation is essential to support trash reduction effectiveness and trash condition improvement.

C.10.b.iii.b.((i)-(iv)) Visual Assessment of Outcomes of Other Trash Management Actions – The primary tool currently available for determining trash reduction action success and positive outcomes is visual assessment, with photo documentation of trash generation and conditions in areas that drain to storm drains. Visual assessment involves observing a sufficient portion of each, e.g., sidewalk and curb area, at a frequency that adequately represents the trash management area condition relative to the type(s) of management actions implemented in the area. The frequency of required visual assessments depends on the rate of trash generation, the sources and types of trash, trash management actions deployed, and time of year. During the wet season, October through April, visual assessments in a trash management area must be conducted at a frequency that determines whether there may be trash discharges to the storm drain system from sources or areas of trash accumulations before a trash management action or combination of actions is implemented or between recurring trash management actions. The degree of trash reduction that a Permittee claims may also affect the frequency of visual assessment necessary to make the claim.

Permittees, with justification, may conduct fewer frequent visual assessments for claims that a trash generation area has been reduced from what was a very high trash generation area to a high or moderate trash generation area or from what was a high trash generation area to a moderate trash generation area. Frequency of visual assessments during the dry season, May through September, should be at least once per quarter, including, and preferably, within the month (September) before the wet season begins. Higher frequencies of visual assessments than those illustrated above may be required to demonstrate effectiveness of trash control actions and claimed trash reduction. Lower frequencies than those illustrated above may also be acceptable with justification.

Visual assessment is an effective, simple, and comparatively inexpensive method of monitoring to assure compliance with the Permit’s requirements to implement trash management actions to reduce trash discharges into municipal storm drains (See 40 CFR § 122.44(i).). The required amount, type, interval and frequency of on-land visual trash assessments should yield data that is representative of the monitored activity, as required by 40 CFR § 122.48(b). This graphic demonstrates four trash visual conditions that correspond to the four trash generation categories of Low (A), Moderate (B), High (C), and Very High (D).



It is also possible to assess trash reduction outcome by documenting and verifying that trash management actions in a trash management area are equivalent to trash management actions implemented in an equivalent trash management area, and the actions in the equivalent trash management area have been assessed to be effective in accordance with a specified performance standard and the assessment results are reproducible. In such cases, it may be possible to extrapolate the performance assessment results to the equivalent trash management area with some verification. If this evidence is proposed by Permittees and accepted by the Executive Officer after public review, Permittees may claim a similar trash reduction outcome by demonstrating that they have performed these trash reduction actions within similar trash management areas to the same performance standard.

C.10.b.iv. Percentage Discharge Reduction – Demonstration that trash management actions reduce trash generation from Very High, High, or Moderate to lower trash generation categories and the Low generation status during this permit term provides a practicable means of demonstrating trash load reduction and attainment of the 90 and 100 percent trash load reduction requirements (Provision C.10.a.ii.a)**.** However, trash management actions within Very High and High trash generation areas will result in more trash load reduction than actions within Moderate trash generation areas. Accordingly, a trash reduction demonstration methodology that provides weighted benefit to actions in Very High and High areas is preferable to one that just considers percentage change in Very High, High, and Moderate trash generation areas. The trash generation rates used by Permittees to delineate and map their 2009 trash generation area maps have been used to provide a weighted benefit to the demonstrated

reductions in the areas of Very High and High trash generation, even if they are not reduced all the way to Low trash generation.

The delineation of trash generation areas were based on ranges of trash generation rates (Provision C.10.a.ii). Therefore, the ratios of the approximate midpoints of the categorical trash generation ranges provides a means of weighing relative benefit to actions in Very High and High areas compared to actions in Moderate areas. The Moderate range is 5-10 gal/acre/yr, with a midpoint of 7.5 gal/acre/yr. The High range is 10-50 gal/acre/yr with a midpoint of 30 gal/acre/yr. Therefore, the weighed ratio of High to Moderate is 30/7.5 = 4. The Very High range, greater than 50 gal/acre/yr, does not have a specified upper bound that allows calculation of a midpoint. An alternative that provides reasonable weighing of Very High is 90 gal/acre/yr, which is 40 percent higher than the low end of the Very High range. This results in a weighed ratio of Very High to Moderate of 90/7.5 = 12.

The following formula provides a means of calculating the percent trash load reduction achieved (relative to the 2009 baseline conditions) with assigned weighted benefit factors for Very High and High trash generation areas relative to Moderate trash generation areas:

$$\% \text{ Reduction} = 100\ [(12\ A_{VH(2009)} + 4\ A_{H(2009)} + A_{M(2009)}) - (12\ A_{VH} + 4\ A_{H} + A_{M})] / (12\ A_{VH2009} + 4\ A_{H2009} + A_{M2009})$$

where:

$A_{VH(2009)}$ = total amount of the 2009 very high trash generation category jurisdictional area

$A_{H(2009)}$ = total amount of the 2009 high trash generation category jurisdictional area

$A_{M(2009)}$ = total amount of the 2009 moderate trash generation category jurisdictional area

A_{VH} = total amount of very high trash generation category jurisdictional area in the reporting year

A_{H} = total amount of high trash generation category jurisdictional area in the reporting year

A_{M} = total amount of moderate trash generation category jurisdictional area in the reporting year

12 = Very High to Moderate weighing ratio

4 = High to Moderate weighing ratio

100 = fraction to percentage conversion factor

C.10.b.v. Source Control – Permittee jurisdiction-wide actions to reduce trash at the source, e.g. through ordinances banning or taxing certain waste items, have trash generation and load reduction benefits. beyond what can be accounted for in trash management area specific assessment-based percentage discharge reductions (Provision C.10.b.iii). For example, persistent floating litter and other particularly difficult types of trash that are easily blown by the wind or clog full trash capture devices (such as polystyrene food ware, plastic bags, fragmented plastic, etc.) have been documented to be a significant percentage of the trash collected in full trash capture devices. Permittees that have implemented source control measures have documented a decrease in such items within their trash management area. Permittees will be allowed to claim up to ten percent load reduction for implementing appropriate source control actions to reduce persistent trash items other than those addressed under previous Permits (foam foods are and single-use plastic bags). The 10 percent credit stems from a study done by Santa Clara Valley Urban Runoff Pollution Prevention (SCVURPP) program in 2015 that looked at pre- and post-ordinance characteristics of trash. The study found that approximately 70 percent fewer single use bags were observed in stormwater after the source control ordinance went into effect. Based on these results, the City estimated that an approximate 70 percent reduction in the number of single use bags in stormwater equates to an offset benefit of up to 10 percent in the overall volume

of trash discharged through the City's MS4 system. This is an interim credit (added to the percent Reduction amount calculated by the Provision C.10.b.iv - Percentage Discharge Reduction formula) that will be phased out at the end of the permit term. To claim the ten percent load percentage reduction value, Permittees must provide substantial and credible evidence that the source control actions implemented reduce trash by the claimed value. A Permittee may reference studies in other jurisdictions if it provides credible evidence that the source control actions implemented would achieve comparable trash reduction if implemented in the Permittee's jurisdiction.

Permittees may no longer claim a jurisdiction-wide source control load reduction value after June 30, 2025, because they must comply with the 100 percent reduction after that date through full trash capture or full trash capture equivalent controls. Furthermore, applying a jurisdiction-wide source control load reduction value to areas managed with full trash capture or full trash capture equivalent controls would result in an unrealistic claim of greater than 100 percent trash load reduction in those areas. However, Permittees may demonstrate and claim full trash capture equivalence of a source control in specific trash generation areas or in combination with other controls in an area if the control or combination of controls are documented, assessed, and verified in accordance with Provision C.10.b.iii.

C.10.b.vi. Partial Trash Reduction – Curb Inlet Screens – During MRP 2, Permittees assessed the benefit of curb inlet screens, in combination with street sweeping, in reducing the amount of trash discharged through MS4s. The study showed that curb inlet screens, when paired with a appropriate street sweeping program, can be effective in blocking larger trash items (such as bottles or plastic bags) from discharging through the MS4 system. However, the study also showcased several drawbacks of curb inlet screens. For instance, the effectiveness of curb inlet screens in preventing larger trash items from discharging through the MS4 was dependent on the presence of horizontal surface grates installed to support the device. In the absence of horizontal surface grates, the study concluded that the increase in hydraulic pressure from stormwater flows could potentially force open the retractable screens and thus allow more trash and/or debris to enter the curb inlet and negate the benefit of the installed device. In addition, the study did not evaluate the use of a 5mm screen, within the horizontal surface grate, to prevent trash items greater than 5 mm in diameter from discharging into the MS4. As a result, smaller persistent trash items (e.g., cigarette butts, straws, fragmented plastic, and polystyrene foodware) could readily enter the MS4 through the unscreened horizontal surface grate despite the installation of a curb inlet screen. These smaller trash items are more effectively removed from storm drain inlets that have a full trash capture device (due to the 5 mm minimum screen threshold requirement). Finally, the effectiveness of curb inlet screens was contingent upon the proper implementation of a street sweeping program that collected trash items that would otherwise have accumulated in the streets and washed into the curb inlet. Inadequate street sweeping in areas with high levels of trash generation can lead to

trash accumulation against the screen and reduce screen performance. However, the study did not evaluate the effects of street sweeping on curb inlet screen performance.

Despite the promise of curb inlet screens for trash control in areas where full trash capture devices cannot be installed, there is a need for further investigation into the deficiencies of curb inlet screens and the complementary actions, such as street sweeping, that can help overcome these deficiencies. The Water Board supports: 1) recognizing the potential benefit curb inlet screens may provide, 2) characterizing that benefit appropriately (e.g., whether it gets Moderate areas all the way to Low, or whether it only gets part of the way there), and 3) better understanding how curb inlet screens can fit into Permittees' long-term trash control strategies. The requirement in C.10.b.vi. for additional study of the effectiveness of curb inlet screens will help to substantiate their benefits.

C.10.c. Requirements for Flood Management Agencies

Flood management agencies are required to continue implementing trash contol measures such as trash pickups and installation of trash receptacles to control Moderate, High, and Very High trash generation areas within their jurisdiction, as well as the continued implementation of trash capture requirements as specified in Table 10-1 of Provision C.10.c.

C.10.d. Trash Load Reduction Plans

Similar to the previous permit requirement, Permittees are required to maintain, and provide for inspection and review upon request, a Trash Load Reduction Plan, including an implementation schedule to meet the 90 percent trash load reduction requirement by June 30, 2023 and the 100 percent trash load reduction requirement by June 30, 2025. A Trash Load Reduction Plan provides a means for Permittees to determine and account for appropriate trash management actions in their trash management areas and their schedule of implementation, and it provides documentation of planned actions that can be referenced if annual performance guidelines are not met. It also provides a basis for justifying and accounting for the types and locations of Permittees' assessments of trash management actions, and for optional trash load offset opportunities allowed by Provision C.10.f

C.10.e. Impracticability Report

In some areas within a Permittees' jurisdiction, engineering constraints such as flood risk, flat pipe grade, and/or safety concerns may make it impracticable to control trash to a Low generation rate via a full trash capture device. This Provision allows Permittees to develop an impracticability report to document the constraints in installing full trash capture devises and focus their efforts on planning for alternative control actions to meet the requirements and deadlines in Provision C.10.a.. Once approved, the trash impracticability report shall be used in developing the updated Trash Load Reduction plan as described in Provision C.10.d. An impracticability report is an optional submittal to assist with compliance.

C.10.f. Optional Trash Load Reduction Offset Opportunities

C.10.f.i. Creek and Shoreline Cleanup - Permittees may offset part of their Provision C.10.a trash load percent reduction requirement by conducting cleanup of creek and shoreline areas. These creek and shoreline cleanups are of value in the interim until full trash capture or equivalency is implemented by removing trash from shorelines and creeks or creek banks that are causing or may cause adverse impacts to receiving waters. Permittees conduct some of these additional cleanups with community volunteers, which creates additional public outreach and participation benefits.

One way to recognize the value of these additional cleanups and to account for the short-term benefit (volume) of cleanups compared to ongoing trash load discharges (average volume /time) is to use an offset ratio of ten to one for the mandatory 90 percent compliance benchmark by June 30, 2023. The following formula generates a Permittee-specific trash volume amount, based on its 2009 categorical trash generation areas and a ten to one offset ratio, which may be used to offset one percent of a required percent load reduction value:

1% Reduction Offset (volume) = (12 $A_{VH(2009)}$ + 4 $A_{H(2009)}$ + $A_{M(2009)}$) *OF*

where:

$A_{VH(2009)}$ = total amount of 2009 very high trash generation category jurisdictional area

$A_{H(2009)}$ = total amount of 2009 high trash generation category jurisdictional area

$A_{M(2009)}$ = total amount of 2009 moderate trash generation category jurisdictional area

12 = Very High to Moderate weighing ratio

4 = High to Moderate weighing ratio

OF = offset factor equal to (7.5 x 0.1) for the 2023 mandatory trash load reduction deadline performance guideline, where 7.5 is the conversion from acres to gallons based on trash generation rates and 0.1 is the ten to one offset ratio.

A Permittee can compare the volume of trash collected from additional cleanups to this calculated offset volume and apply one percent offset to a Provision C.10.a.i percent load reduction requirement for each collected volume that equals the 1 percent Reduction Offset (volume). However, the total offset that can be claimed to avoid over-compensation associated with the short-term benefit (volume) of cleanups compared to ongoing trash load discharges (average volume/time) is limited to ten percent. Furthermore, to justify the offset the associated cleanups must occur more than once per year and preferably at a frequency sufficient to demonstrate sustained improvement of a creek or shoreline area. Offset values for creek and shoreline cleanups will no longer be applicable after June 30, 2025, when compliance with the 100 percent trash load reduction requirement is required through implementation of full trash capture systems or equivalent controls. The State Trash Amendments do not allow offset credit for creek or shoreline cleanups in lieu of implementing MS4 controls to meet the Trash Discharge Prohibition.

C.10.f.ii. **Direct Trash Discharge Controls -** Some Permittees are faced with the challenge that large amounts of trash are discharged to receiving waters in their jurisdiction from homeless encampments and direct dumping. These trash discharges are separate from and in addition to discharges from Permittee storm drain systems. Elimination and prevention of adverse water quality impacts due to trash and attainment of water quality standards in receiving waters will require management of these non-storm drain system discharges in addition to control of storm drain system trash discharges by Permittees. In MRP 2, several Permittees developed Direct Discharge Control Plans (DDCPs), which are comprehensive plans that describe actions the Permittee will implement to control these other sources of trash discharged to receiving

waters in their jurisdiction. Accordingly, Permittees should be allowed to offset some of their percent load reduction requirements if they control these other sources, both by removing trash after it has already impacted receiving waters, and by taking steps to permanently reduce direct discharges of trash through the provision of housing and services to unsheltered homeless populations (particularly those located near receiving waters) and by abating and implementing controls at illegal dumping sites (particularly those located near receiving waters).

When Permittees meet the needs for housing and associated services of people experiencing unsheltered homelessness, they are likely to reduce the number of people experiencing homelessness, and the presence of homeless encampments from which direct discharges may occur. Therefore, a key best management practice for mitigating the adverse water quality impacts associated with homelessness is to provide housing and services. If Permittees provide housing, but not services, unsheltered homeless people whose needs for services are not met may leave the provided housing and re-establish homeless encampments. If Permittees provide services, but not housing, it is likely that there will be ongoing direct discharges of trash at homeless encampments, because services provided at homeless encampments have often insufficiently prevented direct discharges. If the needs for both housing and services by people experiencing unsheltered homelessness *are* satisfied, those people are less likely to re-establish homeless encampments, and therefore they are less likely to directly discharge trash from homeless encampments.

Likewise, providing dumping vouchers and holding free waste drop-off events, especially to socioeconomically disadvantaged communities, is likely to avoid and reduce direct discharges at illegal dumping sites.

Examples of sanitary controls include opening restrooms in public buildings, porta potties, hand washing stations and showers that are provided at a sufficient number and provisioned and cleaned at a sufficient rate. Examples of trash controls include trash receptacles that are sufficiently large depending on the homeless encampment, and that are emptied at a sufficient rate.

The Permit's expectation is that housing and services provided to populations experiencing unsheltered homelessness, and structural and institutional mitigation of illegal dumping sites, will increase over the course of the Permit term. This will be tracked by the reporting required in Provision C.10.g.xi.

Because the criteria for what is an acceptable DDCP have changed from the Previous Permit, and because Permittees may have updated their DDCPs over the course of the Previous Permit, this Permit requires Permittees with existing DDCPs to submit their updated DDCPs for approval before the first new water year during the Permit term, in order to continue claiming trash load percent reduction offsets.

Permittees have and likely will continue to demonstrate the benefit of controlling these additional sources by accounting for the volume of trash collected. As with additional

creek and shoreline cleanups, the volume of trash removed cannot be compared directly with trash load discharge rate (volume/time).The simplest, and possibly only way to account for these additional control actions, until more rigorous assessment and accountability methods are developed, is to allow a Permittee to offset part of its Provision C.10.a trash load percent reduction requirement using the Provision C.10.f.i formula to determine an offset from additional creek and shoreline cleanup. However, since control of these other sources by Permittees will be through implementation of a comprehensive and sustained program, Permittees that implement a comprehensive plan approved by the Executive Officer merit a higher offset cap than that allowed by Provision C.10.f.i for additional creek and shoreline cleanup. A fifteen percent offset-cap based on the Provision C.10.f.i formula provides a balance between incentive and reward for control of these non-storm drain system sources and the uncertainties associated with the simple formula.

This offset will no longer be applicable after June 30, 2025, when compliance with the 100 percent trash load reduction requirement is required through implementation of full trash capture systems or equivalent controls. The State Trash Amendments do not allow offset credit for direct discharge controls in lieu of implementing MS4 controls to meet the Trash Discharge Prohibition.

Permittees that develop and implement DDCPs are generally challenged with greater volumes and areas of trash to control, so it is reasonable to allow those Permittees additional time to reach the 100 percent trash load reduction compliance benchmark as they continue to implement their DDCPs. Those Permittees, other than the East Contra Costa County Permittees, that implement an approved DDCP may be granted additional time until December 31, 2025, which is the latest compliance date allowed by the Statewide Trash Amendments, to attain 100 percent trash load reduction. Permittees that are allowed until December 31, 2025, to attain 100 percent trash load reduction must report compliance status as described in C.10.g.viii. The East Contra Costa County Permittees that implement an approved DDCP may be granted until June 30, 2026, to attain 100 percent trash load reduction, because they are not subject to the same December 31, 2025, deadline under the Trash Amendments. These permittees were subject to MRP 2 after its effective date in 2016.

C.10.g. Reporting - The reporting requirements reflect the minimum amount of information needed to demonstrate compliance with all Provision C.10 requirements.

C.11. Mercury Controls

The purpose of this provision is to implement the urban runoff requirements of the San Francisco Bay and Guadalupe River watershed mercury TMDLs and reduce mercury loads to make substantial progress toward achieving the urban runoff mercury wasteload allocations established for the TMDLs.

The C.11 provisions follow the general approach for sediment-bound pollutants discussed above (General Strategy for Sediment-Bound Pollutants (Mercury and PCBs)) and accordingly, build on understanding gained from control measure implementations during the previous permit terms. During the Previous Permit, Permittees were required to implement mercury control measures (source control, treatment control and/or pollution prevention strategies) in areas where benefits are most likely to accrue (focused implementation) and to report on the loads reduced through implementation of those control measures.

In this permit term, the mercury control provision requires specific programmatic control measures deemed effective based on implementation experience and analyses in previous permit terms implemented at full-scale (a “programmatic approach”). For mercury, these control measures include: mercury collection and recycling, source property identification and abatement, control measure implementation in old industrial areas, and green stormwater infrastructure implementation.

The “programmatic approach” to mercury control measures means that the Permit provisions estimate anticipated mercury load reductions for each of these programmatic control measures consistent with an expected level of control measure implementation intensity along with trackable implementation performance metrics to be reported consistent with the stipulated load reductions. Load reductions will be calculated based on the technically sound load reduction accounting methods[286] developed and refined during previous permit terms. Many of the control measures may be chosen primarily for the purpose of achieving PCBs load reductions, but mercury load reductions will often result as a tangential benefit (because of possible co-located PCBs and mercury contamination) and should be accounted for.

As discussed below, based on information gained during control measure pilot testing and reported during the previous permit term, mercury load reductions on the order of those anticipated (approximately 10 kg mercury/year) through implementation of control measures required by this Permit are achievable and necessary in order to make progress toward achieving the regionwide urban runoff wasteload allocation of 82 kg/yr (representing a load reduction from all urban runoff sources of approximately 80 kg/yr compared to loads estimated using data collected in 2003) within the 20-year TMDL timeframe. In the sections below, the mercury-specific control measures will be described along with estimates of load reductions resulting from each.

Fact Sheet Findings in Support of Provision C.11

C.11-1 On August 9, 2006, the Water Board adopted a Basin Plan amendment including a revised TMDL for mercury in San Francisco Bay, two new water quality objectives, and an implementation plan to achieve the TMDL. The State Water Board and U.S. EPA have also approved this Basin Plan amendment. C.11 includes components of the Mercury TMDL implementation plan relevant to implementation through the municipal stormwater permit.

C.11-2 On October 8, 2008, the Water Board adopted a Basin Plan amendment including a TMDL for mercury in the Guadalupe River Watershed (GRW) and an implementation plan to achieve the TMDL. The State Water Board and U.S. EPA have also approved this Basin Plan amendment. The GRW mercury TMDL assigns an urban stormwater runoff allocation proportionally equivalent to the mass allocation in the San Francisco Bay mercury TMDL. Accordingly, the GRW urban stormwater runoff mercury allocation is simply the fraction of the Santa Clara Valley Urban Runoff Pollution Prevention Program allocation attributed to the Guadalupe River watershed. The urban stormwater runoff allocation implicitly includes all current and future permitted discharges within the geographic boundaries of municipalities and unincorporated areas including, but not limited to, California Department of Transportation (Caltrans) roadways and non-roadway facilities and rights-of-way, atmospheric deposition, public facilities, properties proximate to stream banks, industrial facilities, and construction sites.

C.11-3 The 2003 load of mercury from urban runoff was estimated to be 160 kg/yr, and the aggregate WLAs for urban runoff is 82 kg/yr. The mercury TMDL provides as follows:

> *"[The WLAs] shall be implemented through the NPDES stormwater permits issued to urban runoff management agencies and [Caltrans]. The urban stormwater runoff allocations implicitly include all current and future permitted discharges, not otherwise addressed by another allocation, and unpermitted discharges within the geographic boundaries of urban runoff management agencies (collectively, 'source category') including, but not limited to, Caltrans roadway and non-roadway facilities and rights-of-way, atmospheric deposition, public facilities, properties proximate to stream banks, industrial facilities, and construction sites.*
>
> *The allocations for this source category shall be achieved within 20 years, and, as a way to measure progress, an interim loading milestone of 120 kg/yr, halfway between*

the current load and the allocation, should be achieved within 10 years. If the interim loading milestone is not achieved, NPDES-permitted entities shall demonstrate reasonable and measurable progress toward achieving the 10-year loading milestone.

The NPDES permits for urban runoff management agencies shall require the implementation of BMPs and control measures designed to achieve the allocations or accomplish the load reductions derived from the allocations. In addition to controlling mercury loads, BMPs or control measures shall include actions to reduce mercury-related risks to humans and wildlife. Requirements in the permit issued or reissued and applicable for the term of the permit shall be based on an updated assessment of control measures intended to reduce pollutants in stormwater runoff and remain consistent with the section of the Basin Plan chapter titled, Surface Water Protection and Management—Point Source Control—Stormwater Discharges. The following additional requirements are or shall be incorporated into NPDES permits issued or reissued by the Water Board for urban runoff management agencies.

Evaluate and report on the spatial extent, magnitude, and cause of contamination for locations where elevated mercury concentrations exist;

Continue to develop and implement a mercury source control program;

Implement a monitoring system to quantify either mercury loads or loads reduced through treatment, source control, and other management efforts;

Monitor levels of methylmercury in discharges [Note: this requirement was satisfactorily accomplished during MRP 1 and is not included in the Permit.];

Conduct or cause to be conducted studies aimed at better understanding mercury fate, transport, and biological uptake in San Francisco Bay and tidal areas;

Develop an equitable allocation-sharing scheme in consultation with Caltrans to address Caltrans roadway and non-roadway facilities in the program area, and

report the details to the Water Board [Note: Caltrans has mercury-related requirements in its draft permit pursuant to this requirement.]);

Prepare an Annual Report that documents compliance with the above requirements and documents either mercury loads discharged, or loads reduced through ongoing pollution prevention and control activities; and

Demonstrate progress toward (a) the interim loading milestone, or (b) attainment of the allocations shown in [individual WLAs (see Table 4-w of the Basin Plan)], by using one of the following methods:

Quantify the annual average mercury load reduced by implementing

Pollution prevention activities, and

Source and treatment controls. The benefit of efforts to reduce mercury-related risk to wildlife and humans should also be quantified. The Water Board will recognize such efforts as progress toward achieving the interim milestone and the mercury-related water quality standards upon which the allocations and corresponding load reductions are based. Loads reduced as a result of actions implemented after 2001 (or earlier if actions taken are not reflected in the 2001 load estimate) may be used to estimate load reductions.

Quantify the mercury load as a rolling 5-year annual average using data on flow and water column mercury concentrations.

Quantitatively demonstrate that the mercury concentration of suspended sediment that best represents sediment discharged with urban runoff is below the suspended sediment target.

Urban runoff management agencies have a responsibility to oversee various discharges within the agencies' geographic boundaries. However, if it is determined that a source is substantially contributing to mercury loads to the Bay or is outside the jurisdiction or authority of an agency, the Water Board will consider a request from an urban runoff management agency that may include an

allocation, load reduction, and/or other regulatory requirements for the source in question."

C.11-4 Loading estimates using recently available data suggest that the urban runoff mercury loading to San Francisco Bay is on the order of 115 kg/yr (McKee and Yee 2015[284]). While this figure is based on environmental data and thus has inherent uncertainty associated with it, it suggests that current mercury loading is approximately equal to the interim TMDL loading milestone (to be reached at the half-way point of TMDL implementation, 2017) of 120 kg/yr. If mercury loads can be reduced by approximately 35 additional kg/yr, urban runoff loading would meet the TMDL wasteload allocation.

C.11-5 Mercury is distributed more uniformly throughout the urban landscape than PCBs. For example, loading from older industrial and other polluted source areas accounts for only 6% of the average annual mercury load, but these areas account for over 50% of the average annual PCBs load (McKee and Yee 2015). The likely stronger role of atmospheric deposition in the case of mercury, which may account for up to 50% of the mercury found in urban runoff, is part of the reason for the more uniform mercury distribution in the landscape (McKee and Yee 2015).

C.11-6 Monitoring data indicate that, while not always the case, watersheds with high PCBs concentrations often contain high or moderately high mercury concentrations (McKee and Yee 2015). Therefore, control strategies focused on finding and managing PCBs-contaminated drainages will often yield mercury load reduction benefits as well.

C.11-7 This provision is consistent with a 2014 U.S. EPA memorandum[285] providing guidance on implementing TMDL WLAs in NPDES stormwater permits. Specifically, this provision establishes clear and concrete milestones and deadlines (see Provision C.11.a.iii) for the activities associated with achieving mercury load reductions as well as other requirements (see Provision C.11.b-h.), necessary to achieve receiving water limits of this permit term relative to the mercury TMDL WLA.

[284] McKee, L.J. and Yee, D., 2015. *Sources, Pathways and Loadings: Multi-Year Synthesis. A technical report prepared for the Regional Monitoring Program for Water Quality in San Francisco Bay (RMP), Sources, Pathways and Loadings Workgroup (SPLWG), Small Tributaries Loading Strategy (STLS)*. San Francisco Estuary Institute, Richmond, California.

[285] U.S. EPA. November 26, 2014. Revisions to the November 22, 2002 Memorandum "Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs"

Specific Provision C.11 Requirements

Background: The specific requirements in C.11 require Permittees to implement effective control measures to implement the urban runoff requirements from the San Francisco Bay mercury TMDL and achieve mercury load reductions. Permittees must quantitatively document the estimated load reductions achieved through use of the accounting scheme developed and refined during the Previous Permit.

The largest reductions in mercury loads in the urban environment will come from the collection of and recycling of mercury-containing devices, and these activities are, in fact, required by household hazardous waste and producer responsibility laws. Most of the *readily controllable* mercury loads one finds in the urban environment originate in these products, and so eliminating these sources of mercury for subsequent transport is an important and effective strategy for mercury load reductions.[289]

As previously mentioned (in Fact Sheet section C.8), mercury is much more evenly distributed in watersheds than are PCBs so there are fewer opportunities to find and address heavily contaminated (with mercury) sites to achieve substantial, short-term load reductions. Both PCBs and mercury are, however, transported attached to sediment particles so many of the same control measures that capture sediment (e.g., green stormwater infrastructure, other treatment control, trash capture devices, routing stormwater to treatment facilities) will be effective in reducing loads for both contaminants. Consequently, much of the additional benefit to reduce mercury urban runoff loads will come from a combination of proper disposal and management of mercury containing products as well as much more extensive treatment elements (e.g., green infrastructure) incorporated into the stormwater infrastructure.[289] Because PCBs are more concentrated in some locations, the choice of where to implement control measures may be more influenced by known areas of PCBs contamination. However, the mercury removal benefit can be an important contribution to overall mercury load reductions, and available data indicate that this strategy of focusing on PCBs will yield mercury load reductions in many circumstances.

Another reason that control measure implementation tends to focus on addressing PCBs is that the scale of urban runoff load reductions required by the PCBs TMDL (about 90 percent) is far greater than that required by the mercury TMDL (about 50 percent). Moreover, recent loading estimates suggest that current mercury loading to the Bay is at or below the interim loading milestone established in the TMDL.

Provision C.11.a requires Permittees to assess mercury load reductions through use of a previously-developed assessment methodology and data collection program[286] to quantify mercury loads reduced through implementation of any and all pollution prevention, source control and treatment control efforts required by the provisions of this Permit or load reductions achieved through other relevant efforts not explicitly required

[286] *Source Control Load Reduction Accounting for Reasonable Assurance Analysis* (January 2022). Prepared for Bay Area Storm Water Management Agencies by Geosyntec Consultants.

by the provisions of this Permit. As Permittees gain implementation experience and collect information on this implementation, they may request refinement of the accounting system for use in subsequent permit terms.

Permittees are encouraged to build on the loads assessment framework developed in previous permit terms and refine the load assessment methodologies if appropriate. This could include updating and, in some cases, extending the framework presented in that document, justifying assumptions and selected parameters used for each type of control measure, and indicating what information will be collected and submitted to calculate the load reduction for each implemented control measure. The accounting scheme submitted (if necessary) near the end of the permit term (for use in subsequent permits) must be submitted for Executive Officer approval. For more information, please see the discussion under Provision C.12.a, below.

Provision C.11.a also requires Permittees to submit documentation confirming that that all control measures initiated or implemented during the previous permit term for which ongoing load reduction credit was recognized continue to be implemented at an intensity sufficient to maintain the credited load reduction. Examples of this include the enhanced operation and maintenance activities associated with source property referrals, green stormwater infrastructure implementation, trash collection devices with mercury and PCBs-reduction benefit, and other control measures. Appropriate documentation may include dated photographic evidence, maintenance records, and other types of relevant records showing that the control measures continue to be implemented in a manner consistent with the load reduction credit established when they were initiated.

Provision C.11.b requires Permittees to investigate land areas (general older industrial land use areas) that may contribute mercury to MS4s. For those properties or land areas found to be contributing substantial amounts of mercury or where high mercury concentrations are found (generally areas with sediment concentrations greater than 0.5 mg mercury/kg), this provision element requires Permittees to take actions to abate the mercury sources into their MS4s or refer the properties to the Water Board for follow-up measures. Historical monitoring data suggest that mercury concentrations on or near source properties are similar to those found in urban areas in general so identification of source properties for referral is more likely to be based on presence of high PCBs concentrations (generally 0.5 mg PCBs/kg) alone. Please see the discussion under C.12.b for more information about development of the accountability and load reduction estimate methodology.

A logical performance metric for the source area investigations required by Provision C.11.b is the number of acres of investigated relevant (old industrial) land area. These types of investigations have been performed by the programs for over a decade so there is a basis to establish a reasonable pace for investigations.

In selecting a performance metric for the pace of source property investigations during MRP 3, the following criteria are applied:

- Take into consideration the pace of past investigative efforts. This is consistent with the Basin Plan's requirement that the permit must include TMDL WLA implementation provisions based on an updated assessment of best management practices and control measures intended to reduce mercury in urban stormwater runoff to the maximum extent practicable.
- Endeavor to bring the countywide programs to similar levels of completion (of source property investigation) by the end of the permit term.
- Establish regular, clearly presented, enforceable, non-contingent milestones and deadlines for compliance.

All countywide programs have performed desktop screening of their old industrial land use to remove low-likelihood areas from consideration. Thus, the remaining acres of old industrial land use must be actively investigated, often requiring sampling of sediment or stormwater to find possible source properties. The programs have been, over the last (approximately) 10 years, performing active investigations (Landuse Summary[287]) at varying paces. These amounts of land area actively screened can be compared to the amount of land area that originally required investigation, and a percent completion can be computed. The percent completion of these active investigations ranges from 11 to 98 percent among the countywide programs.

- Santa Clara: 4,214 acres investigated (of 5,127, 82 percent of total requiring investigation)
- San Mateo: 2,869 acres investigated (of 4,280, 67 percent of total requiring investigation)
- Alameda: 753 acres investigated (of 6,746, 11 percent of total requiring investigation)
- Contra Costa: 976 acres investigated (of 5,005, 20 percent of total requiring investigation)
- Solano: 1,075 acres investigated (of 1,096, 98 percent of total requiring investigation)

From these data, the average of the investigatory pace of the two fastest programs is 1700 acres in a period of five years, and this pace constitutes the baseline pace for source property investigations for MRP 3. Provision C.11.b requires a slightly faster pace for those programs that would not reach at least 50 percent completion by the end

[287] Source Property Investigation Summary with Performance Metric Calculation (5-14-21). Data Submitted by BASMAA.

of the permit term if they merely achieved the baseline pace. Therefore, the required pace for source property investigations during MRP 3 is the greater of:

(1) A number of acres such that at least 50 percent of the initial amount of old industrial land use requiring investigation (desktop excluded) will be investigated, OR

(2) a baseline pace of 1,700 acres.

According to this performance metric, the programs will complete the following investigations and have the following percent completion by end of MRP 3.

- Santa Clara: 913 acres during MRP 3
    - for total of 5,127 acres, 100 percent of total requiring investigation by end of MRP 3
- San Mateo: 1,411 acres
    - for total of 4,280 acres, 100 percent of required by end of MRP 3
- Alameda: 2,620 acres
    - for total of 3,373 acres, 50 percent of required by end of MRP 3
    - requires pace above baseline
- Contra Costa: 1,700 acres
    - for total of 2,676 acres, 53 percent of required by end of MRP 3
- Solano: 21 acres
    - for total of 1,096, 100 percent of required by end of MRP 3

Summing the required acreage for source property investigations for the countywide programs results in a total of 5,752 acres to be investigated during MRP 3. Making the conservative assumption that the rate of referral (acres referred:acres investigated) will be one-third of the historical ratio of acres referred:acres investigated for each program during MRP 3, approximately 147 acres of source properties will be referred for follow-up action during the MRP 3 permit term.

A simple approach for estimating the load reductions associated with certain control measures involves use of a land-use pollutant yield. A land-use yield is an estimate of the mass of a contaminant contributed by an area of a particular land-use per unit time. Essentially, different types of land uses yield different amounts of pollutants because land use types differ in their degree of contamination resulting from differing intensities of historical or ongoing use of pollutants in those land uses. For example, PCBs were more heavily used in older industrial areas so older industrial land use areas yield a much higher mass of PCBs per unit area than newer urban land use areas where PCBs

were never intensively used. However, this is generally not the case for mercury, where uses were more widespread. This more widespread use and the greater role of atmospheric deposition for mercury in determining the distribution of contamination reduces the likelihood of finding areas with high concentrations of mercury.

Estimated load reductions for source property referral are based on the expectation that the source property will yield less mercury upon cleanup such that the mercury yield will be more like the yield from older commercial areas rather than older industrial areas. For example, when contaminated areas are newly or redeveloped, the pollutant yield of the area will be reduced through a variety of mechanisms (i.e., removal, capping, paving of contaminated sediment). There may be some mercury load reduction from source property referral (which is mainly based on PCBs contamination), but this can be determined on a case-by-case basis provided that pre-cleanup sediment concentration data are available and greater than the typical yield in old industrial, old commercial, and old residential areas of about 50 mg mercury/acre/year.[286]

Contaminated properties often have a “halo” of contamination in the vicinity of the property, and contaminated sediments in this halo can be transported to receiving waters through the stormwater conveyance system. Further, pollutants from the source area may continue to be transported offsite while remediation occurs. Therefore, implementing enhanced O&M both in areas immediately adjacent to the source area and onsite (to prevent offsite migration) while the source property is being remediated is a priority to prevent PCBs or mercury transport to receiving waters. If enhanced O&M measures are not implemented in the immediate vicinity of the referred property, the calculated load reduction will be recognized upon completion of the cleanup project. In order to confirm effective implementation of enhanced O&M plans to address the prevention of pollutants migrating offsite and the “halo” of contamination in the vicinity of the contaminated property, the Permit requires that these plans be submitted to Water Board staff for review and acceptance prior to the referral.

Provision C.11.c requires Permittees to implement control measures (treatment controls, diversion to wastewater treatment plants, or enhanced operation and treatment controls) on 2,580 acres of old industrial land use (see below for more information on this performance metric). Note that this provision is identical to Provision C.12.c, and that the choice of locations for control measures will often be based on PCBs concentrations, and that mercury-related load reduction benefits will, therefore, be largely coincidental. However, there are locations of high mercury concentrations that provide good opportunities for control measure implementation. In choosing locations for treatment controls and diversions, Permittees should focus on public rights-of-way and storm drain infrastructure in catchments containing known or suspected source areas or evidence moderate to high PCBs soil concentrations (generally sediment concentrations greater than 0.3 mg Hg/kg or greater than 0.2 mg PCBs/kg, approximately the 75th percentile concentrations of these pollutants in old industrial areas). These concentrations should not be considered a “bright line” as there are likely

areas of moderate contamination for these pollutants just under these concentrations that would still be good locations for implementation, especially if these locations have a large reservoir of readily transportable, moderately contaminated sediment. Moreover, the available data have uncertainty so a measured concentration under but near 0.3 mg Hg/kg or 0.2 mg PCBs/kg may indicate an area of moderate contamination such that additional monitoring would reveal concentrations higher than these thresholds. Permittees have discretion to choose control measures appropriate to the circumstances. The reason that PCBs concentrations will be generally be more useful for selecting locations is that it is easier to find old industrial areas that are highly elevated in PCBs concentrations than it is to find areas highly elevated in mercury. As an illustration, in over 1,200 sediment samples collected in old industrial areas, the 90th percentile PCBs concentration was 22 times higher than the median. In other words, the more contaminated areas are much more contaminated than the typical (median concentration) value. By contrast, the 90th percentile mercury concentration in over 1,000 samples collected in old industrial areas was only five times higher than the median.[286] See Fact Sheet section for Provision C.12.c for more information and background on this provision element.

As stated previously, all countywide programs have performed desktop screening of their old industrial land use areas. From this information, we can estimate the extent of old industrial land use that may benefit from treatment or other control measures to address the moderately high PCBs and mercury contamination. In the information submitted by the counties, this area is the amount of old industrial land use in 2002 minus the amount redeveloped since 2002 minus the amount not draining to MS4 (see Landuse Summary[287]). The sum of these areas for each county is as follows.

- Santa Clara: 6,647 acres
- San Mateo: 4,450 acres
- Alameda: 9,374 acres
- Contra Costa: 11,199 acres
- Solano: 1,426 acres

These sum to 33,100 acres for the MRP Permit area. The performance metric for MRP 3 is to implement treatment or other controls on 2,580 acres (which represents just less than 8 percent as currently understood) of this old industrial land use across the entire MRP area. Applying the mercury yield from old industrial area (60 mg mercury/acre/year) to this area and a 70 percent treatment efficiency (efficiency factor for green infrastructure or retrofit treatment control[288]), the expected mercury load reduction by the end of the permit is 108 grams/year. It is important to note that the

[288] Geosyntec Consultants (2017). *Interim Accounting Methodology for TMDL Loads Reduced*. Prepared for Bay Area Stormwater Management Agencies Association.

performance metric is expressed as an amount of old industrial land use to address with control measure implementation or, equivalently, the calculated amount of load reduction from this implementation. With our current understanding of the amount of old industrial land use in the region, the areal performance metric is 2,580 acres of old industrial land use throughout the region. The expected scale of implementation (2,580 acres throughout the region) is very similar to the anticipated level of effort for Caltrans in the SF Bay Region, in which Caltrans will implement treatment controls on approximately 11 percent of their 27,000 acres of right-of-way for a total of more than 2,900 acres (draft Caltrans permit). Permittees may provide updated information concerning the actual amount of old industrial land use, and this amount may differ from the 33,100-acre estimate used here. For example, some of this land use may drain directly to the Bay or may not drain to MS4s. If the amount of old industrial land use is reduced with such new information, it may be the case that the old industrial acreage performance metric may constitute greater than 8 percent of the remaining old industrial land use. The performance metric was designed in part based on the level of effort expected of Caltrans in their draft permit and also to make meaningful progress in addressing old industrial land use, thereby reducing loads of mercury and PCBs. The fact that the acreage represents 8 percent of old industrial land use (as currently understood) is coincidental.

The performance metric (acreage to be addressed by the end of the permit term or corresponding estimated load reduction) can also be shown by county along with the estimated mercury load reductions (for 70 percent control measure efficiency, e.g., retrofit treatment control measures) are as follows:

- Alameda County: 664 acres (28 grams/yr)
- Contra Costa County: 664 acres (28 grams/yr)
- San Mateo County: 445 acres (19 grams/yr)
- Santa Clara County: 664 acres (28 grams/yr)
- Solano County: 142 acres (6 grams/yr)

Compliance with the provision element can be accomplished in one of two ways. Permittees within the county can implement control measures on the listed amount of old industrial land use (assuming 70 percent control measure efficiency, amounts could vary depending on efficiencies of control measures actually implemented) or account for the mass reduction of mercury shown in parentheses. These are equivalent performance metrics because the mass reductions were calculated using the listed old industrial acreage multiplied by the old industrial mass yield and 70 percent efficiency for control measures. For example, consider a county that must address 1,000 acres of old industrial land use when implementing control measures with an efficiency of 70 percent (for a load reduction of 42 grams of mercury). If this county chose instead to implement only control measures with 20 percent efficiency (e.g., efficiency of

hydrodynamic separators), the required acreage would be: 1,000 acres x (70% / 20%) = 3,500 acres. However, the load reduction would be calculated as 3,500 acres x 60 mg mercury/acre/year) x 20% treatment efficiency, or 42 grams of mercury.

If treatment control systems are used, they must be designed and sized consistent with Provision C.3.d(2) (Numeric Sizing Criteria for Stormwater Treatment Systems). Because of the higher removal efficiency of wastewater treatment facilities, each acre treated by routing stormwater to wastewater treatment facilities will be credited as 1.3 acres toward satisfying the treatment requirements. This factor is based on the fact[295] that wastewater treatment facilities remove well over 90 percent of suspended sediment particles (to which mercury and PCBs are attached), and the ratio of 0.9 to 0.7 is 1.3. Conversely, if control measures having less than 70 percent efficiency are implemented, the acreage credited will be proportional to the ratio of efficiencies (e.g., acreage credited in the ratio of 0.5/0.7 for control measures with 50 percent efficiency – see example calculation above).

Provision C.11.d requires Permittees to promote, facilitate, and/or participate in collection and recycling of mercury containing consumer products, devices, and equipment (e.g., thermometers, thermostats, switches, bulbs) and report on the amount of material recycled and approximate mass of mercury in this material. The load reduction accounting system[286] contains methodologies developed for estimation of such quantities. Collection and recycling of mercury containing devices are vital to reducing urban runoff mercury loads from the urban environment because of the large amount of mercury contained within such devices.

In the Bay Area, households and small businesses use about 1.8 million fluorescent bulbs annually, and large businesses use 10.2 million annually.[289] The number of bulbs available for recycling each year ranges from 3 to 16 million. Recycled bulbs are estimated to be largely tube lamps, which have an average amount of mercury per tube of 21.4 mg. If fluorescent bulbs, which contain mercury, are broken, it is possible for some of the mercury to volatilize and enter the environment. Some of the volatilized mercury may later become attached to particulates and be deposited, via wet and dry deposition, onto the ground or directly onto the Bay. During wet weather, some of this sediment containing mercury can be mobilized, enter the stormwater system, and potentially be conveyed to the Bay. If bulbs are properly disposed of and recycled, much less mercury enters the Bay.[289] Thermostats are a smaller potential source of mercury in that there is approximately 9.3 kg of mercury contained in the 1,500 thermostats recycled in 2006. However, if these devices are not properly disposed of, the mercury from thermostats can also be transported to receiving waters via the same processes described for fluorescent bulbs. Since 2006, California's Universal Waste Rule has

[289] Geosyntec Consultants (2010). *Desktop Evaluation of Controls for Polychlorinated Biphenyls and Mercury Load Reduction*. SFEI Contribution 613

prohibited landfill disposal of mercury-containing products (fluorescent tubes, switches, and thermostats). These waste products must be separated and properly recycled.

The Desktop Evaluation[289] estimates that the amount of mercury load reduction (mercury prevented from reaching receiving waters) achieved through recycling fluorescent bulbs increases from about 2.4 kg mercury/yr in 2010 to 13 kg mercury/yr by 2030. The same report estimates that the amount of mercury load reduction from thermometer recycling increases from 0.8 to 2.4 kg mercury/yr between 2010 and 2030. Interpolating these load reduction estimates, one calculates that, by the end of MRP3, approximately 8.8 kg mercury/yr load reduction will result from fluorescent tube recycling and 1.3 kg mercury/yr load reduction from thermostat recycling.

Provision C.11.e requires Permittees to implement green infrastructure projects during the term of the Permit at a level consistent with the requirements in Provision C.3.j. The Previous Permit required Permittees "to develop RAAs to estimate the amount and characteristics of land area that will be treated through green infrastructure implementation by 2020, 2030, and 2040." The analysis and resulting estimates for acres treated and mercury load reductions are contained in the Annual Reports for the countywide programs submitted in Fall 2020. Interpolating between the 2020 and 2030 results provides an estimate for the acreage and mercury load reductions resulting from green infrastructure implementation by 2025:

- Alameda County: 1,230 acres 35 g/yr
- Contra Costa County: 950 acres 25 g/yr
- San Mateo County 314 acres 8 g/yr
- Santa Clara County 856 acres 21 g/yr
- Solano County Permittees 821 acres 19 g/yr

The Santa Clara County and San Mateo RAAs did not include green stormwater infrastructure load reduction estimates for mercury. The average mercury load reduction per acre of implemented green infrastructure from Alameda, Contra Costa, and Solano was multiplied by the acres of planned green stormwater infrastructure implemented in these two counties to generate an estimated load reduction. Summing these estimated load reductions across countywide programs results in a regionwide total estimated mercury load reduction from green stormwater implementation of about 108 g/yr by the end of the permit term. Please see the discussion under Provision C.12.f for more information how modeling was used to develop the accountability and load reduction estimate methodology for GSI.

Available information suggests that mercury is distributed more uniformly throughout the Bay Area landscape than is the case for PCBs. Therefore, a focus on highly or even moderately contaminated areas (with mercury) may not be enough to achieve the TMDL-required load reductions. A significant component of the overall strategy to

reduce urban runoff mercury loads will be the implementation of green infrastructure control measures to intercept mercury-containing sediment and stormwater before it is discharged to receiving water. However, the planning, financing and implementation of green infrastructure is going to take a long time, perhaps as much as 25 years or more. This also means that the load reduction benefits of such implementation will also be realized over an extended time frame.

Provisions C.11.f requires Permittees to update (as needed) the plans and schedules prepared during the previous permit for mercury control measure implementation and corresponding reasonable assurance analysis to quantitatively demonstrate that sufficient control measures will be implemented to attain the mercury TMDL wasteload allocations. The updates should focus on those control measures for which new information is available and for control measures not evaluated in previous efforts. The Permit requires that these plans must: identify all technically and economically feasible mercury control measures (including green infrastructure projects) to be implemented; include a schedule according to which these technically and economically feasible control measures will be fully implemented; and provide an evaluation and quantification of the mercury load reduction of such measures as well as an evaluation of costs, control measure efficiency, and significant environmental impacts resulting from their implementation.

Provision C.11.f also requires Permittees to submit information to inform mercury-related requirements in the subsequent permit term. Namely, Permittees must identify all specific control measures to be implemented along with the expected intensity (e.g., acres treated, acres investigated for source areas, types of roadway projects for which protocols applied, etc.) of control measure implementation, and the estimated load reduction benefit from control measures implemented during the subsequent permit term.

The mercury TMDL anticipated the challenge of achieving the urban runoff mercury load reductions required to meet the TMDL allocations within the twenty-year implementation time frame. The TMDL implementation plan states that:

> 3. *"the Water Board will consider modifying the schedule for achievement of the load allocations for a source category or individual discharger provided that they have complied with all applicable permit requirements and all of the following have been accomplished relative to that source category or discharger:*
>
> - *A diligent effort has been made to quantify mercury loads and the sources of mercury and potential bioavailability of mercury in the discharge;*
>
> - *Documentation has been prepared that demonstrates that all technically and economically feasible and cost-*

effective control measures recognized by the Water Board as applicable for that source category or discharger have been fully implemented, and evaluates and quantifies the comprehensive water quality benefit of such measures;

- *A demonstration has been made that achievement of the allocation will require more than the remaining 10 years originally envisioned; and*
- *A plan has been prepared that includes a schedule for evaluating the effectiveness and feasibility of additional control measures and implementing additional controls as appropriate."*

Provision C.11.f provides the opportunity for Permittees to describe the full suite of actions that will be required to achieve the TMDL along with realistic timelines for this achievement. The load reductions for mercury are difficult and time-consuming to achieve because mercury is distributed relatively uniformly throughout the urban landscape, and there are few areas of substantial contamination to address in an aggressive fashion. Proper recycling and disposal of mercury-containing materials (Provision C.11.d) will continue to play an important role in reducing mercury loads in urban runoff. The RAAs submitted during the previous Permit Term emphasize that expected mercury load reductions will come from long-term implementation of control strategies (like source control, cleanup of contaminated sites, green infrastructure, and others) that extend beyond the current implementation timeframe of the TMDL. The updates to the long-term plans and schedules required by this provision could potentially support an amendment to TMDL implementation timeframe.

Provision C.11.g. There are still uncertainties surrounding the magnitude and nature of mercury reaching the Bay in urban runoff and the ultimate fate of such mercury, including biological uptake. Provision C.11.g requires that Permittees ensure that fate and transport studies of mercury in urban runoff are completed. The specific information needs include understanding the in-Bay transport of mercury discharged in urban runoff, the sediment and food web mercury concentrations in margin areas receiving urban runoff, the influence of urban runoff on the patterns of food web mercury accumulation, especially in Bay margins, and the identification of drainages where urban runoff mercury are particularly important in food web accumulation.

Provision C.11.h requires actions to mitigate human health risk due to mercury and PCBs. These may include efforts to communicate the health risks of eating Bay fish to be aimed at high risk-communities such as subsistence fishers and their families. The risk reduction framework developed in a previous permit term, which funded community-based organizations to develop and deliver appropriate communications to appropriately targeted individuals and communities, is an appropriate approach.

C.12. PCBs Controls

The purpose of this provision is to implement the urban runoff requirements of the San Francisco Bay PCBs TMDL and reduce PCBs loads to make substantial progress toward achieving the urban runoff PCBs wasteload allocations established for the TMDL. In order to make substantial progress, Permittees must implement PCBs control measures strategically during this permit term. Moreover, aggressive control measure implementation combined with thoughtful planning for the future (see Provision C.12.h) are conditions that must be satisfied before the Water Board can consider an implementation timeframe longer than the 20 years provided in the TMDL.

The C.12 requirements follow the general approach for sediment-bound pollutants discussed above (General Strategy for Sediment-Bound Pollutants (Mercury and PCBs)). Accordingly, they build on understanding gained during the Previous Permit term, during which Permittees were required to implement PCBs control measures (source control, treatment control and/or pollution prevention strategies) in areas where benefits are most likely to accrue (focused implementation) and to report on the loads reduced through implementation of those control measures.

In this Permit term, the PCBs provision requires specific programmatic control measures deemed effective based on implementation experience and analyses in previous permit terms implemented at full-scale (a “programmatic approach”). For PCBs, these control measures include: source property identification and abatement, control measure implementation in old industrial areas, controlling PCBs in stormwater infrastructure, controlling PCBs from electrical utilities, green stormwater infrastructure, and managing PCBs-containing material during building demolition.

The programmatic approach to PCBs control measures means that the Permit provisions estimate, based on calculations, anticipated PCBs load reductions for each of these programmatic control measures consistent with an expected level of control measure implementation intensity along with trackable implementation performance metrics to be reported consistent with the estimated load reductions. Load reductions will be calculated based on the technically sound load reduction accounting methods[286] developed and refined during previous permit terms.

As discussed below, based on information gained during control measure pilot testing and reported during the Previous Permit term, load reductions on the order of those anticipated (approximately 1.47 kg PCBs/year) through implementation of control measures required by this Permit are achievable and necessary in order to make progress toward achieving the regionwide urban runoff wasteload allocation of 2 kg/yr (representing a load reduction from all urban runoff sources of approximately 18 kg/yr compared to loads estimated using data collected in 2003) within the 20-year TMDL timeframe. Further, load reductions resulting from a variety of PCBs control measures may be feasibly calculated in a straightforward manner (see below) and a clear

accountability metric against which to evaluate the sufficiency of control measure implementation can be applied.

The area covered by the Permit (permit area) is smaller than the region that discharges to the Bay. The discharges in the permit area have been allocated 1.6 kg/yr of the total 2 kg/yr wasteload allocation and the total load reductions required from Permittees in the permit area during TMDL implementation is 14.4 kg/yr of the 18 kg/yr regionwide total.

Fact Sheet Findings in Support of Provision C.12

C.12-1 On February 13, 2008, the Water Board adopted a Basin Plan amendment establishing a TMDL for PCBs in San Francisco Bay and an implementation plan to achieve the TMDL. U.S. EPA approved the TMDL on March 29, 2010.

C.12-2 The following excerpts from the TMDL implementation plan are relevant to implementation of the municipal stormwater permit:

> *"The 2003 load of PCBs from urban runoff is* 20 kg/yr, and the aggregate WLAs for urban runoff total 2 kg/yr. Stormwater runoff wasteload allocations shall be achieved within 20 years and shall be implemented through the NPDES stormwater permits issued to stormwater runoff management agencies and the California Department of Transportation (Caltrans). The urban stormwater runoff wasteload allocations implicitly include all current and future permitted discharges, not otherwise addressed by another allocation, and unpermitted discharges within the geographic boundaries of stormwater runoff management agencies including, but not limited to, Caltrans roadway and non-roadway facilities and rights-of-way, atmospheric deposition, public facilities, properties proximate to stream banks, industrial facilities, and construction sites.
>
> *Requirements in each NPDES permit issued or reissued shall be based on an updated assessment of* best management practices and control measures intended to reduce PCBs in urban stormwater runoff. Control measures implemented by stormwater runoff management agencies and other entities … shall reduce PCBs in stormwater runoff to the maximum extent practicable….
>
> *In the first five-year permit term, stormwater Permittees will be required to implement control measures on a pilot*

*scale to determin*e their effectiveness and technical feasibility. In the second permit term, stormwater Permittees will be required to implement effective control measures, that will not cause significant adverse environmental impacts, in strategic locations, and to develop a plan to fully implement control measures that will result in attainment of allocations, including an analysis of costs, efficiency of control measures and an identification of any significant environmental impacts. Subsequent permits will include requirements and a schedule to implement technically feasible, effective and cost-efficient control measures to attain allocations. If, as a consequence, allocations cannot be attained, the Water Board will take action to review and revise the allocations and these implementation requirements as part of adaptive implementation.

*In addition, stormwater Permittees will be required to develop and implement a monitoring system to quantify PCBs urban stormwater runoff loads and the load reductions achieved through tr*eatment, source control and other actions; support actions to reduce the health risks of people who consume PCBs-contaminated San Francisco Bay fish; and conduct or cause to be conducted monitoring, and studies to fill critical data needs identified in the adaptive implementation section."

C.12-3 Urban runoff management agencies have a responsibility to oversee various discharges within the agencies' geographic boundaries. However, if it is determined that a source is substantially contributing to PCBs loads to the Bay or is outside the jurisdiction or authority of an agency, the Water Board will consider a request from an urban runoff management agency that may include an allocation, load reduction, and/or other regulatory requirements for the source in question. If these sources are contributing to urban runoff loads (as opposed to direct Bay discharge), load reductions from these sources will count toward meeting the urban runoff wasteload allocations.

C.12-4 Some PCB congeners have dioxin-like properties. Dioxins are persistent, bioaccumulative, toxic compounds that are produced from the combustion of organic materials in the presence of chlorine. Dioxins enter the air through fuel and waste emissions, including diesel and other motor vehicle exhaust fumes and trash incineration, and are carried in rain and contaminate soil. Dioxins bioaccumulate in fat, and most human exposure occurs through the consumption of animal fats, including those from fish. Therefore, the actions

targeting PCBs will likely have the simultaneous benefit of addressing a portion of the dioxin impairment resulting from dioxin-like PCBs.

C.12-5 Estimates using the latest available data suggest that the urban runoff PCBs loading to San Francisco Bay is on the order of 19 kg/yr (McKee and Yee 2015). While this figure is based on environmental data and thus has inherent uncertainty associated with it, it agrees very well with the regional urban runoff load estimate of 20 kg/yr provided in the TMDL report.

C.12-6 Studies suggest that PCBs load reductions of approximately 6 kg/yr are possible by 2030 through control measures like street sweeping, control of PCBs during building demolition and renovation, drop inlet cleaning, treatment retrofits, redevelopment of contaminated areas, pump station diversion, and street flushing (McKee and Yee 2015[284]). While there are substantial uncertainties associated with these estimates, these results suggest that a substantial portion of the additional load reductions (~ 12 kg/yr) necessary to achieve the PCBs TMDL may need to come from identification and cleanup of PCBs-contaminated properties.

C.12-7 The distribution of PCBs in the urban landscape is much more variable than it is for mercury. For example, data indicate that PCBs-contaminated land uses yield perhaps 800 times more PCBs per unit area compared to the least contaminated land uses. By contrast, there is a 70-fold difference between the highest and lowest yielding land uses for mercury (McKee and Yee 2015). A large proportion (about 53 percent) of annual average urban runoff PCB loading is likely coming from old industrial or other contaminated areas (McKee and Yee 2015).

C.12-8 A significant recent accomplishment of the Sources, Pathways, and Loadings workgroup (SPLWG) of the Regional Monitoring Program has been the development and refinement of a Regional Watershed Spreadsheet Model (RWSM). This GIS-based model estimates relative land use and source area yields, and integrates them to provide a transparent, mutually accepted, and peer-reviewed analysis of relative watershed scale yield. Outputs from model runs to date suggest yields for the most polluted watershed in excess of 1,000 g/km^2 for PCBs and mercury and a variation between watersheds of ~100,000-fold for PCBs and ~200-fold for mercury. To date, modeling results have a large amount of uncertainty in terms of absolute magnitude, but the results are capturing the patterns of contaminant distribution and transport. The model output is generally consistent with what is known about the distribution of these contaminants in the landscape from stormwater and bedded sediment data. The results are also consistent with what monitoring data tell us about the relative mercury and PCBs loads from land use and source area categories. The SPLWG is currently developing a more sophisticated dynamic watershed loading model that will provide a much better modeling tool to predict

watershed scale loads of PCBs and other contaminants under a variety of management scenarios.

C.12-9 Sufficient information is available to establish default factors for PCBs load reduction credit resulting from foreseeable control measures implemented during this permit term (see information under Provision C.12.a, below). For treatment controls, the estimated load reductions can be calculated by multiplying the assumed land-use PCB yearly mass yield by the treated area and by a treatment efficiency factor. The load reduction resulting from cleaning up contaminated properties can be estimated by recognizing that the yield of the contaminated property will be reduced to an assumed background level over the course of site cleanup. The load reduction resulting from controlling PCBs in building materials during demolition can be estimated by estimating the amount of PCBs in the building, the fraction of those PCBs that would enter the storm drain system in the absence of controls, and the efficiency of control measures applied to the demolished building to prevent such PCBs release.

C.12-10 Limited sampling data from Bay Area structures built between 1950 and 1980 suggest that PCB concentrations in caulks here are similar to those in other parts of North America and Europe. Samples collected in about 1,350 buildings in Switzerland constructed between 1950 and 1980 found almost half the buildings contained PCBs in caulk, with most samples containing >100 ppm and 20 percent containing 10,000 ppm or more. In Bay Area samples, 40 percent contained > 50 ppm PCBs and 20 percent contained > 10,000 ppm PCBs. The study estimates that certain types of Bay Area structures built 1950-1980 contain a mid-range average of 4.7 kg PCBs per building. An estimated 6,300 currently standing non-residential buildings in the MRP area were built between 1954 and1974. The mid-range estimate of the total PCB mass in caulk in these buildings is 10,500 kg.[290]

C.12-11 During the Previous Permit, Permittees were required to develop and implement protocols for identifying PCBs-containing structures at the time of demolition so that PCBs do not enter municipal storm drains. Some demolition sites, especially high-profile sites such as hospitals, bridges and sports arenas, comply with federal law (Toxic Substances Control Act) and State regulations (California Code of Regulations Title 22) that require a project proponent to determine the presence of PCBs and other hazardous substances and to follow applicable disposal requirements. Soil sampling data from such demolition projects indicate that significant concentrations of PCBs can be present in site soils. Such PCB-laden sediment, particularly at a demolition site without adequate controls, is transported by vehicle tracking, wind erosion or precipitation runoff to the storm drain. PCBs entering the storm drain system

[290] Klosterhaus S. and McKee L. et al. 2014. *Polychlorinated Biphenyls in the exterior caulk of San Francisco Bay Area buildings, California, USA*. Environment International 66 (2014) 38–43.

during dry weather are non-stormwater discharges that must be effectively prohibited pursuant to CWA § 402(p)(3)(B)(ii). PCBs that are discharged into storm drain systems and waters of the U.S. through stormwater runoff are appropriate for control in order to make progress in achieving the PCBs TMDL wasteload allocations for urban runoff, pursuant to CWA § 402(p)(3)(B)(iii).

C.12-12 The protocol for requiring applicable structures to sample for PCBs prior to receiving a demolition permit, developed during the Previous Permit term, allowed for identification of structures that contain PCBs. But the Previous Permit did not allow for collection of information that could demonstrate PCBs were properly disposed so they are not transported to water bodies via the MS4. That shortcoming is addressed in this Permit, for those structures where notification and advance approval from the U.S. EPA is not required. This Permit includes a requirement for Permittees to include in their annual reports verification, such as the hazardous waste manifest prepared for transportation of the material to a disposal facility, that demonstrates proper disposal of the building materials with PCBs concentrations of 50 ppm or greater.

C.12-13 U.S. EPA has developed guidelines, available at its "Steps to Safe Renovation and Abatement of Buildings That Have PCB-Containing Caulk" website, for identifying and removing PCBs in building materials that can help in the effort to manage PCBs so that they do not enter municipal storm drains. In addition, during the MRP 1 term, starting in 2009, the Permittees participated in the grant-funded "PCBs in Caulk Project", which addressed potential impacts of PCBs released into stormwater runoff during demolition or remodeling projects in the San Francisco Bay Area. This project fulfilled the permit requirement to investigate the costs, effectiveness, and technical feasibility of PCBs control measures to minimize the release of PCBs in caulks and sealants to stormwater runoff during demolition or remodeling projects. Products developed through this grant-funded project include a fact sheet for developers; a fact sheet on sampling methods; BMPs to control PCBs in caulk at demolition or renovation sites; a Model Implementation Process to incorporate a requirement to use BMPs into the municipal demolition permitting process; a training strategy to train and deploy municipal staff, such as hazardous material or building inspectors, to ensure proper implementation of BMPs; and a technical memorandum on relevant regulations and policies.

C.12-14 This provision is consistent with a recent U.S. EPA memorandum[291] providing guidance on implementing TMDL WLAs in NPDES stormwater permits. Specifically, this provision establishes clear and concrete accountability metrics and deadlines for the achievement of specific anticipated PCBs load reductions

[291] U.S. EPA. November 26, 2014. Revisions to the November 22, 2002 Memorandum "Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs."

from effective control measures as well as other requirements, necessary to achieve receiving water limits of this permit term relative to the PCBs TMDL WLAs.

Specific Provision C.12 Requirements

Provision C.12.a requires Permittees to assess PCBs load reductions through use of a previously-developed assessment methodology and data collection program[286] to quantify PCBs loads reduced through implementation of any and all pollution prevention, source control, and treatment control efforts required by the provisions of this Permit or load reductions achieved through other relevant efforts not explicitly required by the provisions of this Permit. The load reduction assessment methodology is consistent with the PCBs TMDL requirement that *"stormwater Permittees will be required to develop and implement a monitoring system to quantify PCBs urban stormwater runoff loads and the load reductions achieved through treatment, source control and other actions"* (there is a similar requirement in the SF Bay mercury TMDL). As Permittees gain implementation experience and collect information on this implementation, they may request refinement of the accounting system for use in subsequent permit terms.

The goals of the assessment methodology required in this provision element are two-fold. First, it establishes a system of accountability for control measure implementation with which to measure the sufficiency of control measure implementation intensity. Second, it provides an accounting system that relates control measure implementation intensity with estimated PCBs and mercury load reductions. This allows tracking of implementation intensity to assess compliance rather than having to measure actual load reductions to assess compliance, which is impractical. See discussion above under Provision C.8.f on the special challenges of monitoring PCBs and mercury and also in the introduction to pollutants of concern provisions where we describe the for PCBs and mercury control measure implementation. For each provision element, the Fact Sheet describes how data and information are used to develop the trackable accountability metric and load reduction estimate corresponding to the trackable metric.

Permittees are encouraged to build on the loads assessment framework developed in previous permit terms and refine the load assessment methodologies if appropriate. This could include updating and, in some cases, extending the framework presented in that document, justifying assumptions and selected parameters used for each type of control measure, and indicating what information will be collected and submitted to calculate the load reduction for each implemented control measure. The accounting scheme submitted (if necessary) near the end of the Permit term (for use in subsequent permits) must be submitted for Executive Officer approval.

Provision C.12.a also requires Permittees to submit documentation confirming that that all control measures initiated or implemented during the Previous Permit term for which ongoing load reduction credit was recognized continue to be implemented at an

intensity sufficient to maintain the credited load reduction. Examples of this include the enhanced operation and maintenance activities associated with source property referrals, GSI implementation, trash collection devices with mercury and PCBs-reduction benefit, and other control measures. Appropriate documentation may include dated photographic evidence, maintenance records, and other types of relevant records showing that the control measures continue to be implemented in a manner consistent with the load reduction credit established when they were initiated.

Many of the legacy sources of PCBs are found in Bay margins contaminated by historical industrial activity. These legacy sources may be contributing to storm drain runoff conveyances, but Permittees may have jurisdictional challenges in addressing the sources in private property. In addition, Permittees are responsible for contamination in public rights of way. Permittees are expected to make diligent efforts both to address contamination on public property and to refer source properties to the Water Board for possible cleanup and abatement.

Provision C.12.b requires Permittees to investigate land areas (generally older industrial land use areas) that likely contribute PCBs to MS4s. For those properties or land areas found to be contributing substantial amounts of PCBs or where high PCBs concentrations are found (generally areas with sediment concentrations greater than 0.5 mg PCBs/kg), this provision requires Permittees to take actions to abate the PCB sources into their MS4s or refer the properties to the Water Board for follow-up measures.

Permittees have developed a systematic investigatory process (described in appendix C of the load reduction accounting report[286]) to identify source properties, and this process includes the following steps:

(1) Identify areas that should be considered for source area investigations (completed);

(2) Conduct screening-level investigations using desktop analyses or monitoring data in the areas identified in (1) to prioritize these areas as high, moderate, or low-likelihood source areas;

(3) Conduct targeted source area investigations (e.g., records review, ROW surveys, site visits, sampling) in areas prioritized as high or moderate likelihood source areas in (2) to identify and confirm source areas; and

(4) Determine next steps for confirmed source areas.

A useful performance metric for the source area investigations required by Provision C.12.b is the number of acres of investigated relevant (old industrial) land area. These types of investigations have been performed by the programs for over a decade so there is a basis to establish a reasonable pace for investigations. The reason why the Permit uses the acres investigated rather than the acres referred for follow-up action as

the performance metric is that it is not known in advance if the investigation is going to reveal a contaminated property suitable for referral.

In selecting a performance metric for the pace of source property investigations during MRP 3, the following criteria are applied:

- Take into consideration the pace of past investigative efforts. This is consistent with the Basin Plan's requirement that the permit must include TMDL WLA implementation provisions based on an updated assessment of best management practices and control measures intended to reduce PCBs in urban stormwater runoff to the maximum extent practicable.
- Endeavor to bring the countywide programs to similar levels of completion (of source property investigation) by the end of the permit term.
- Establish regular, clearly presented, enforceable, non-contingent milestones and deadlines for compliance.

All countywide programs have performed desktop screening of their old industrial land use to remove low-likelihood areas from consideration. Thus, the remaining acres of old industrial land use must be actively investigated, often requiring sampling of sediment or stormwater to find possible source properties. The programs have been, over the last (approximately) 10 years, performing active investigations (Landuse Summary[287]) at varying paces. These amounts of land area actively screened can be compared to the amount of land area that originally required investigation, and a percent completion can be computed. The percent completion of these active investigations ranges from 11 to 98 percent among the countywide programs.

- Santa Clara: 4,214 acres investigated (of 5,127, 82 percent of total requiring investigation)
- San Mateo: 2,869 acres investigated (of 4,280, 67 percent of total requiring investigation)
- Alameda: 753 acres investigated (of 6,746, 11 percent of total requiring investigation)
- Contra Costa: 976 acres investigated (of 5,005, 20 percent of total requiring investigation)
- Solano: 1,075 acres investigated (of 1,096, 98 percent of total requiring investigation)

From these data, the average of the investigatory pace of the two fastest programs is 1,700 acres in a period of five years, and this pace constitutes the baseline pace for source property investigations for MRP 3. Provision C.12.b requires a slightly faster pace for those programs that would not reach at least 50 percent completion by the end

of the permit term if they merely achieved the baseline pace. Therefore, the required pace for source property investigations during MRP 3 is the greater of:

- A number of acres such that at least 50 percent of the initial amount of old industrial land use requiring investigation (desktop excluded) will be investigated, OR
- a baseline pace of 1,700 acres.

According to this performance metric, the programs will complete the following investigations and have the following percent completion by end of MRP3.

- Santa Clara: 913 acres during MRP 3
    - for total of 5,127 acres, 100 percent of total requiring investigation by end of MRP 3
- San Mateo: 1,411 acres
    - for total of 4,280 acres, 100 percent of required by end of MRP 3
- Alameda: 2,620 acres
    - for total of 3,373 acres, 50 percent of required by end of MRP 3
    - requires pace above baseline
- Contra Costa: 1,700 acres
    - for total of 2,676 acres, 53 percent of required by end of MRP 3
- Solano: 21 acres
    - for total of 1,096, 100 percent of required by end of MRP 3

Summing the required acreage for source property investigations for the countywide programs results in a total of 5,752 acres to be investigated during MRP 3. Making the conservative assumption that the rate of referral (acres referred:acres investigated) will be one-third of the historical ratio of acres referred:acres investigated for each program during MRP 3, approximately 147 acres of source properties will be referred for follow-up action during the MRP 3 permit term. The ratio of acres referred:acres investigated was assumed to be one-third the historical ratio to account for the fact that the easier to find source properties may have already been identified. Therefore, the success rate of finding new source properties as old industrial acres are investigated may decline. The outcome of investigations during MRP 3 can confirm this assumption.

A simple approach for estimating the load reductions associated with certain control measures involves use of a land-use pollutant yield. A land-use yield is an estimate of the mass of a contaminant contributed by an area of a particular land-use per unit time. Essentially, different types of land uses yield different amounts of pollutants because

land use types differ in their degree of contamination resulting from differing intensities of historical or ongoing use of pollutants in those land uses. PCBs were more heavily used in older industrial areas so older industrial land use areas yield a much higher mass of PCBs per unit area than newer urban land use areas where PCBs were never intensively used.

The land use-specific yields were developed by matching the predictions of a watershed model against monitoring data.[292] The inputs to the model include: 1) GIS layers identifying the composition of various types of land use in Bay Area watersheds (e.g., old industrial, old commercial, old residential, new urban, agriculture/open space), 2) information about the volume of water and sediment transported to receiving waters from these watersheds, and 3) PCBs and mercury monitoring data in a subset of these watersheds. The adjustable parameters in the model are the concentrations of pollutants in stormwater or sediment from the various types of land uses, and the final values for these concentrations are selected through an iterative process where the model predictions are matched against the actual data, and the values of the land use-specific concentrations are modified until a best solution is found for the water and sediment pollutant concentrations from various land uses that results in the best match with the monitoring data. This process is known as calibration. The resulting yields for water and sediment are simply the model-selected concentrations divided by the total volume of water or sediment originating from each land use type during a typical year divided by the total acreage of that land use type, and these yields are shown in Tables A-5 and A-6 below.

[292] Wu, J., Gilbreath, A.N., McKee, L.J., 2016. Regional Watershed Spreadsheet Model (RWSM): Year 5 Progress Report. A technical report prepared for the Regional Monitoring Program for Water Quality in San Francisco Bay (RMP), Sources, Pathways and Loadings Workgroup (SPLWG), Small Tributaries Loading Strategy (STLS). Contribution No. 788. San Francisco Estuary Institute, Richmond, California.

Table A-5. Average PCBs and Mercury Yields by Land Use Category

Land Use Category	Average PCBs Yield (mg/ac/yr)	Average Mercury Yield[1] (mg/ac/yr)
Old Industrial and Source Areas	259	53
Old Commercial and Old Transportation	49	57
Old Residential	2.8	57
New Urban	0.4	4
Agriculture/Open Space	0.4	81

1 The model calibration for PCBs is reasonable but there remains a lower confidence in the calibration for mercury.[292]

Table A-6. Total PCBs and Mercury by Land Use Category

Land Use Category	Total PCBs (mg/ac/yr)	Total Mercury[1] (mg/ac/yr)
Old Industrial and Source Areas	204	40
Old Commercial and Old Transportation	40	63
Old Residential	4	63
New Urban	0.2	3
Agriculture/Open Space	0.2	80

1 The model calibration for PCBs is reasonable but there remains a lower confidence in the calibration for mercury.[292]

Because source properties represent a small fraction of the total Bay Area land use, the above calibration procedure will not work so a separate procedure was used to estimate the PCBs yield from source properties. There are no mercury source properties from which to develop a yield so the yield value for old industrial/source areas will be used for load reduction accounting. The PCBs source property yield (5,078 mg PCBs/acre*year) was derived as the product of a representative PCBs concentration from over 670 PCBs surface soil samples collected at known source properties multiplied by a representative soil/sediment yield for old industrial areas obtained through watershed modeling.

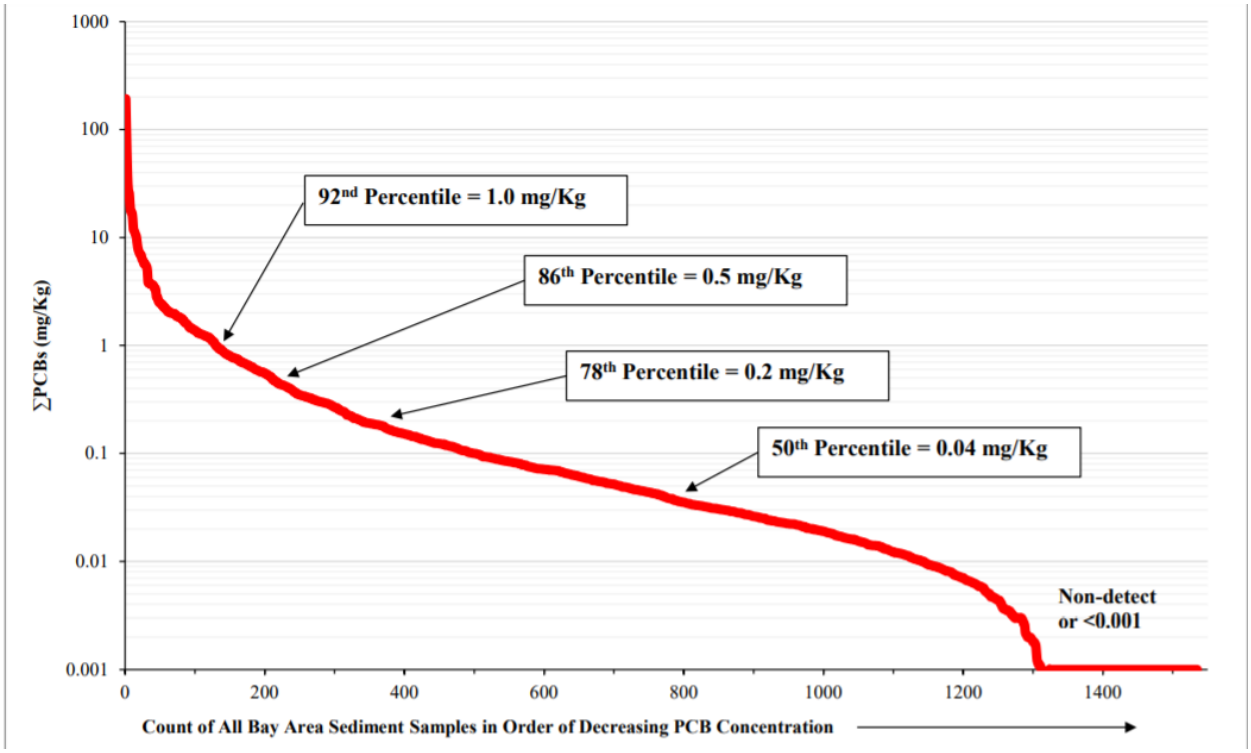
Estimated load reductions for source property abatement or referral are based on the expectation that the source property will yield less PCBs upon cleanup such that the PCBs yield will be more like the yield from older commercial areas rather than older industrial areas. For example, when contaminated areas are newly or redeveloped, the pollutant yield of the area will be reduced through a variety of mechanisms (i.e., removal, capping, paving of contaminated sediment). Accordingly, the amount of reduction can be calculated as the referred-acres multiplied by the difference between the source property yield (5,078 mg PCBs/acre*year[286]) minus the old commercial yield (49 mg PCBs/acre*year). Therefore, controlling the load from the expected acreage of abated or referred properties will ultimately result in an estimated load reduction of 740 g/yr, one-half of which (370 g/yr) can be recognized during MRP 3 provided that effective enhanced operation and measurement (O&M) measures are implemented to prevent off-site migration and address the contamination in the vicinity of the property due do historical off-site migration of PCBs.

PCBs-contaminated properties often have a “halo” of contamination in the vicinity of the property, and contaminated sediments in this halo can be transported to receiving waters through the stormwater conveyance system. Further, pollutants from the source area may continue to be transported offsite while remediation occurs. Therefore, implementing enhanced O&M both in areas immediately adjacent to the source area and onsite (to prevent offsite migration) while the source property is being remediated is a priority to prevent PCBs transport to receiving waters. If enhanced O&M measures are not implemented in the immediate vicinity of the referred property, the calculated load reduction will be recognized upon completion of the cleanup project. In order to confirm effective implementation of enhanced O&M plans to address the prevention of PCBs migrating offsite and the halo of contamination in the vicinity of the contaminated property, the Permit requires that these plans be submitted to Water Board staff for review and acceptance prior to the referral.

Provision C.12.c requires Permittees to implement control measures (treatment controls, diversion to wastewater treatment plants, or enhanced operation and treatment controls) on 2,580 acres of old industrial land use (see below). In choosing locations for treatment controls and diversions, Permittees should focus on public rights-of-way and storm drain infrastructure in catchments containing known or suspected source areas or evidence moderate to high PCBs soil concentrations (generally sediment concentrations greater than 0.3 mg Hg/kg or greater than 0.2 mg PCBs/kg, approximately the 75th percentile concentrations in old industrial areas). These concentrations should not be considered a “bright line” as there are likely situations of moderate contamination for these pollutants just under these concentrations that would still be good locations for implementation, especially if these locations have a large reservoir of readily transportable sediment at these moderate concentrations. Moreover, the available data have uncertainty so a measured concentration under but near 0.3 mg Hg/kg or 0.2 mg PCBs/kg may indicate an area of moderate contamination such that additional

monitoring would reveal concentrations higher than these thresholds. Permittees have discretion to choose control measures appropriate to the circumstances.

In addition to finding and remediating source areas, there is also a need to address the moderate contamination that exists now and will remain even if source properties are identified and abated or referred for additional action. Below is a plot of data representing more than 1,500 PCBs samples taken within the street right-of-way, storm drain conveyance system, and private properties from 1999 through 2019.[286] These data establish a contextual framework to interpret new monitoring data to determine if the new data represent areas of high or moderately high PCBs concentrations. This helps guide decision making for site selection for control measure implementation, especially in old industrial areas. One can see from the figure that there were about 500 of the 1,500 samples with PCBs concentrations over 0.1mg/kg (approximately 70th percentile of the data) and about 200 samples exceeding 0.5 mg/kg (86th percentile of the data). Areas with moderately high PCBs concentrations (e.g., 0.1-0.5 mg/kg) were found throughout areas where historical industrial activity involved use of PCBs[284]). In general, Permittees will search for source properties in areas with measured concentrations at or above 0.5 mg/kg and will implement control measures to address residual moderate contamination in areas with measured PCBs concentrations of about 0.2 mg/kg.



Treatment and other control measures focusing on these highly- and moderately contaminated areas form an important element in achieving the PCBs TMDL-required load reductions. It is also important to attend to these old industrial areas because they are generally located near historically disadvantaged communities and reducing PCBs

and other contamination promotes better health for the residents and helps improve quality of life for these communities. Additionally, PCBs from these old industrial areas are transported to the Bay near many popular shoreline fishing locations so popular fish species caught and consumed by anglers fishing from shoreline fishing locations near these old industrial areas generally have high PCBs concentrations.

As stated previously, all countywide programs have performed "desktop" screening of their old industrial land use areas. From this information, we can estimate the extent of old industrial land use that may benefit from treatment or other control measures to address the moderately high PCBs and mercury contamination. In the information submitted by the Permittees, this area is the amount of old industrial land use in 2002 minus the amount redeveloped since 2002 minus the amount not draining to MS4 (see Landuse Summary[287]). The sum of these areas for each county is as follows.

- Santa Clara: 6,647 acres
- San Mateo: 4,450 acres
- Alameda: 9,374 acres
- Contra Costa: 11,199 acres
- Solano: 1,426 acres

These sum to 33,100 acres for the MRP Permit area. The performance metric for MRP3 is to implement treatment or other controls on 2,580 acres of old industrial land use (which represents slightly less than 8 percent of this old industrial land use area as currently understood) across the entire MRP area. Applying the PCBs yield from old industrial area (259 mg PCBs/acre/year, see discussion under C.12.b for details of derivation) to this area and a 70 percent treatment efficiency (efficiency factor for green infrastructure or retrofit treatment control[288]), the expected PCBs load reduction by the end of the permit term is 467 g/yr.

It is important to note that the performance metric is expressed as an amount of old industrial land use to address with control measure implementation or, equivalently, the calculated amount of load reduction from this implementation. With our current understanding of the amount of old industrial land use in the region, the areal performance metric is 2,580 acres of old industrial land use throughout the region. Permittees may provide updated information concerning the amount of old industrial land use, and this amount may differ from the 33,100-acre estimate used for this requirement. For example, some old industrial land use may drain directly to the Bay or may not drain to MS4s and thus not properly counted in the total. If the amount of old industrial land use is reduced with such new information, it may be the case that the old industrial acreage performance metric may constitute greater than 8 percent of the remaining old industrial land use. However, it should be clearly understood that the performance metric was designed to make meaningful progress in addressing old industrial land use in terms of the calculated amount of load reduction. The acreage

requirement is the performance metric, not the percentage of remaining old industrial land use addressed.

The performance metric of 2,580 acres of old industrial land use throughout the region is very similar to the anticipated level of effort for Caltrans in the SF Bay Region, in which Caltrans will implement treatment controls on approximately 11 percent of their 27,000 acres of right-of-way for a total of more than 2,900 acres (draft Caltrans permit). The performance metric (acreage to be addressed by the end of the permit term or corresponding estimated load reduction) can also be shown by county along with the estimated PCBs load reductions (for 70 percent control measure efficiency, e.g., retrofit treatment control measures) are as follows:

- Alameda County: 664 acres (121 grams/yr)
- Contra Costa County: 664 acres (121 grams/yr)
- San Mateo County: 445 acres (81 grams/yr)
- Santa Clara County: 664 acres (121 grams/yr)
- Solano County: 142 acres (26 grams/yr)

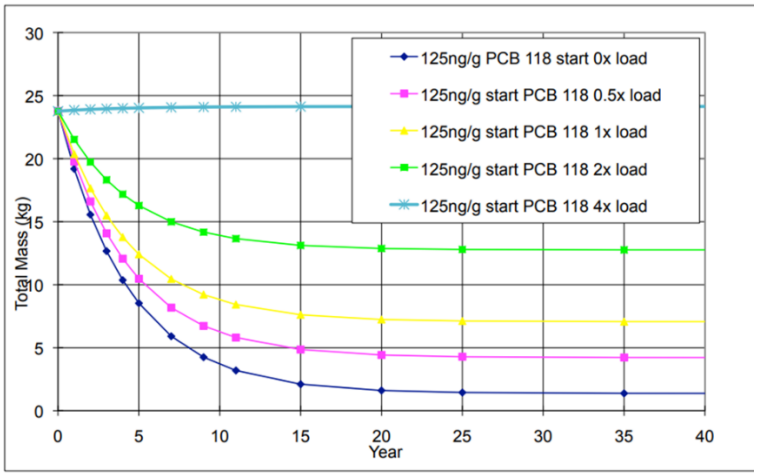
The performance metrics presented in the draft of this Order resulted in large disparities in required implementation effort among the four major countywide stormwater management programs. The Alameda and Contra Costa county performance metrics were substantially greater than those for Santa Clara and San Mateo counties. In order to reduce these disparities in level of effort, the greater of the performance metrics for San Mateo and Santa Clara 664 acres) was assigned both to Alameda and Contra Costa counties. The performance metrics for Solano, Santa Clara and San Mateo counties remain unchanged. With this change, the four large countywide programs have performance metrics of a similar magnitude.

The reduced performance metrics in this Order represent a substantial amount of control measure implementation and PCBs load reduction. According to McKee et al. (2015[284]), about 1.5 kg PCBs/yr loading originates from old industrial landuse. The original C.11/12.c performance metric acreage in the draft of this Order (3,300 acres) would have resulted in about 600 g/yr load reductions, which represents about 40% of the total from McKee et al. 2015. The revised performance metric (2580 acres of old industrial landuse for entire MRP area) represents about a 31% reduction.

The RMP has funded special studies in four representative “Priority Margin Units”, or PMUs. A PMU is a high priority margin area for management and monitoring. The four PMUs are San Leandro Bay (SLB), Emeryville Crescent, Steinberger Slough, and Richmond Harbor. The PMU studies develop conceptual and quantitative models of how PCBs is transported into and through these PMUs. These studies also provide analysis of how the PMUs would respond to load reductions. Because the loads to the PMUs enter a relatively isolated (from Bay influence), the trajectory of recovery is

dominated by what happens to loading directly to the PMU, rather than the overall loading to the Bay as a whole.

The plot below (from the SLB PMU report[293]) shows the modeled recovery of PCBs mass in the system, which is a useful proxy for the scale of reductions in biota. The plot shows the trajectory in PCBs mass in SLB if loads to the system are perturbed but suspended sediment concentrations and tidal export rate parameters remain unchanged. For this representative PMU, the one-box model shows substantial declines in the mass of PCBs in the subembayment. For SLB, reducing loads by 50% resulted in about a 50% reduction in the PCBs mass in SLB in about five years according to the model. If other San Francisco Bay margin areas receiving loads (from local urban runoff sources) respond similarly to SLB, load reductions of this magnitude should manifest in reductions in total mass (in local embayments) of approximately the same order of magnitude. This would result in substantially less PCBs available in these receiving waters for uptake into biota, including the fish caught by local anglers. For the Emeryville Crescent PMU, the recovery is not as dramatic according to the modeling, but the Emeryville Crescent PMU report suggests that the dynamic transport in Emeryville Crescent may not be as amenable to application of a box model[294].



- Figure showing modeled PCBs recovery trajectory in SLB as a function of reduced PCBs loading to SLB subembayment[293]

Compliance with the performance metrics of this provision element can be accomplished in one of two ways. Permittees within the county can implement control measures on the listed amount of old industrial land use (assuming 70 percent control

[293] Conceptual Model to Support PCB Management and Monitoring in the San Leandro Bay Priority Margin Unit – Final Report. Prepared by Donald Yee, Alicia N. Gilbreath, Lester J. McKee, and Jay Davis. San Francisco Estuary Institute. Contribution No. 928. November 2019.

[294] Conceptual Model to Support PCB Management and Monitoring in the Emeryville Crescent Priority Margin Unit – Final Report. Prepared by Jay Davis, Donald Yee, Alicia N. Gilbreath, and Lester J. McKee. San Francisco Estuary Institute. Contribution No. 824. April 2017.

measure efficiency, amounts could vary depending on efficiencies of control measures actually implemented) or account for the mass reduction of PCBs shown in parentheses. Control measure efficiencies are stated in the accounting document along with supporting information for the value. These are equivalent performance metrics because the mass reductions were calculated using the listed old industrial acreage multiplied by the old industrial mass yield and 70 percent efficiency for control measures. For example, consider a county that must address 1,000 acres of old industrial land use when implementing control measures with an efficiency of 70 percent (for a load reduction of 181 grams of PCBs). If this county chose instead to implement only control measures with 20 percent efficiency (e.g., efficiency of hydrodynamic separators), the required acreage would be: 1,000 acres x (70% / 20%) = 3500 acres. However, the load reduction would be calculated as 3,500 acres x 259 mg PCBs/acre/year x 20% treatment efficiency, or 181 grams of PCBs.

If treatment control systems are used, they must be designed and sized consistent with Provision C.3.d (Numeric Sizing Criteria for Stormwater Treatment Systems). Because of the higher removal efficiency of wastewater treatment facilities, each acre treated by routing stormwater to wastewater treatment facilities will be credited as 1.3 acres toward satisfying the treatment requirements. This factor is based on the fact that wastewater treatment facilities remove well over 90 percent[295] of suspended sediment particles (to which mercury and PCBs are attached), and the ratio of 0.9 to 0.7 is 1.3. Conversely, as previously stated, if control measures having less than 70 percent efficiency are implemented, the acreage credited will be proportional to the ratio of efficiencies (e.g., acreage credited in the ratio of 0.5/0.7 for control measures with 50 percent efficiency). As an example, full-trash capture systems will remove some particles (and hence PCBs), and these have an efficiency of about 20 percent so the acreage credited for these systems will be in the ratio of 0.2/0.7). The PCBs in sediment data described above were also analyzed to determine land-use specific sediment concentrations. For example, the average PCBs concentration in old industrial areas was found to be 790 ppb, and the average concentration in new urban areas was just 66 ppb. These average landuse-specific PCBs and mercury concentrations are used in the loads reduction accounting for control measures where the amount of sediment removed can be determined such as in pump station cleanout, storm drain line cleanout, street flushing, and culvert/channel desilting. All of these load reduction accounting methods[286] have been reviewed by Water Board staff and approved by the Executive Officer.

Provision C.12.d requires Permittees to ensure proper management of potential PCBs-containing material in bridge and overpass roadway expansion joints when these facilities are replaced or repaired. They will do so through implementation of a Caltrans specification (to be developed through proposed requirement in Caltrans stormwater permit, likely adopted by late 2022). The requirement for Caltrans to develop this

[295] TSS Removal data for EBMUD and EBDA facilities from May 2016 through April 2021 (spreadsheet of data).

specification is included in the draft version of the statewide Caltrans permit currently under development. The standard operating procedure (SOP) for dealing with the material will likely be similar to that used for the 2018 demolition of the old eastern span of San Francisco Bay Bridge and will involve the removal and proper disposal of PCBs-containing caulk prior to the rehabilitation of existing roadways containing such material. The accountability metric is, therefore, demonstration by Permittees that the Caltrans SOP is applied to management of PCBs-containing material when bridge and overpass roadway surfaces are replaced or repaired.

In order to generate data to develop the load reduction estimate resulting from SOP implementation, the Bay Area Stormwater Management Agencies Association (BASMAA) evaluated PCBs in caulk and sealants in public roadways and storm drain infrastructure by sampling caulk and sealant materials from public roadway and storm drain infrastructure around the Bay Area.[286] The sample locations were identified primarily based on the time period that the infrastructure was originally constructed and/or repaired, with a focus on the 1970s, the most recent time period PCBs were still in widespread use. This effort resulted in 54 caulk or sealant samples from public infrastructure in these locations. A total of 20 composite samples were then analyzed for PCBs concentrations. Ten of these composites were associated with concrete roadways, sidewalks, or bridges, and these ranged in concentration from non-detect to 5,000 mg PCB/kg. Through a maximum likelihood statistical approach applied to the data after estimating values for non-detects, a technically defensible value for the PCBs concentration was derived as 184 mg PCB/kg. The total amount of PCBs in roadway caulk or sealant was estimated using this concentration along with information about the dimensions of Bay Area bridges. The report estimates that the total amount of PCBs in the roadway caulk and longitudinal seal material on the 1,477 bridges in the MRP area is 39 kg.[286]

There are no available data in the literature for the rate at which PCBs leach from this caulk and sealing material, so the report authors evaluated a range of scenarios for the rate at which the PCBs in the material would leach from the joint and sealant material over time. The load reduction associated with this control measure occurs when this leaching process is interrupted through the removal of the material. A high (1% per year) and low (0.5 percent per year) leaching rate were evaluated.[286] Based on the expected replacement rate of bridges, the expected load reduction ranged from 195 to 390 g PCBs/year, assuming that joints and longitudinal seal material would be removed. The estimated load reduction resulting from implementation of this provision element assumes an intermediate leaching rate (0.75 percent per year) and is thus 300 g PCBs/year.

The load reduction calculation method involves generating an estimate of the typical concentration of PCBs in roadway caulking and multiplying this by an estimate for the amount of material removed each year and an estimate for the PCBs leach rate is a sound and practical method for estimating the load reduction. As previously discussed,

attempts to use monitoring data or even modeling to estimate the load reduction resulting from removal of this PCBs-containing caulk would involve great expense and effort and would, despite these efforts, still yield a load reduction estimate with considerable uncertainty. The Water Board has reviewed the data collected, the statistical approach used to generate the typical PCBs concentration, as well as the analytical approach used to generate the load reduction estimate from the concentration data. These data are reliable and the statistical and calculation methodologies are logically consistent and technically sound.

Provision C.12.e requires Permittees to develop and implement a program to manage PCBs in oil-filled electrical equipment (OFEE) for municipally owned electrical utilities and collaborate with the Water Board to determine PCBs loadings in OFEE from non-municipally owned electrical utilities. The Water Board is committed to collaborating with Permittees to request and obtain the needed information from these non-municipally owned electrical utilities. The reporting requirements are contingent upon the Water Board formally transmitting the requested information from the non-municipally owned electrical utilities to the Permittees.

Due to past leaks or spills of PCBs oil from electrical equipment, properties owned and operated by electrical utilities may have elevated concentrations of PCBs in surface soils that can be released to the MS4. The cumulative releases of PCBs-laden soils from these properties was investigated by McKee et al. (2006[296]), and McKee estimated the net mass input of PCBs to MS4s in the Bay Area in 2005 was approximately 28 kg per year. Of this total, roughly 29 percent (8 kg/yr) was estimated to have originated from controlled closed systems (transformers and large capacitors). This estimate suggests that because of both current and past use, transformers and large capacitors, which are both electrical utility applications, may continue to contribute nearly one-third of the net PCBs mass to MS4s in the Bay Area. Therefore, this potential source warrants further investigation and control**.**

BASMAA[286] estimates the annual load reductions from removing OFEE as the estimated annual load of PCBs that entered the MS4 from OFEE at the start of the PCBs TMDL (1.1 kg in 2005) multiplied by the estimated annual percentage of remaining OFEE equipment removed. In other words, all existing OFEE in 2005 were, combined, contributing 1.1 kg PCBs/yr loading to MS4s. Further, a permanent yearly load reduction is realized when a unit of OFEE is removed. The report provides a low, medium, and high estimate for the annual load reduction based on low, medium, and high estimates for the annual removal rate of OFEE (the percentage of remaining equipment removed each year since the start of the PCBs TMDL (in 2005). Using the starting point of 1.1 kg PCBs per year from OFEE in 2005 along with the medium estimate (2.3 percent per year) for the equipment removal rate, there would be 758

[296] McKee, L., Mangarella, P., Williamson, B., Hayworth, J., and Austin, L., 2006. *Review of methods used to reduce urban stormwater loads: Task 3.4. A Technical Report of the Regional Watershed Program*: SFEI Contribution #429. San Francisco Estuary Institute, Oakland, CA.

grams PCB/year mass loading from OFEE entering the MS4 at the start of MRP 3. Using this same 2.3 percent per year removal rate, the estimated cumulative load reduction by the end of MRP 3 is 90 g PCBs/year in consideration of the development of improved standard operating procedures to address spill response and reporting required by the Permit.

The load reduction calculation method for OFEE involves relying on a technically sound PCBs mass loading estimate from 2005 and applying reasonable factors for the removal rate of such equipment. As for other control measures, attempts to use monitoring data or even modeling to estimate the load reduction resulting from OFEE removal would involve great expense and effort and would, despite these efforts, still yield a load reduction estimate with considerable uncertainty. Water Board staff concurs with the calculation method used to generate the load reduction estimate and accept it as logically consistent and technically sound.

Provision C.12.f requires Permittees to implement green infrastructure projects during the term of the Permit at a level consistent with the requirements in Provision C.3.j. Provisions C.11.c and C.12.c of MRP 2 required Permittees "to develop RAAs to estimate the amount and characteristics of land area that will be treated through green infrastructure implementation by 2020, 2030, and 2040." The analysis and resulting estimates for acres treated and PCBs load reductions are contained in the Annual Reports for the countywide programs submitted in Fall 2020.

The Permittees developed a variety of approaches (using models) to estimate the future PCBs and mercury load reductions resulting from future GSI implementation. The approaches were all consistent with guidance developed for the RAA modeling.[297] In addition, all countywide programs' modeling approaches were peer reviewed, and the peer review packages and final Reasonable Assurance Analysis modeling reports are contained in the FY 2019-2020 Annual Reports. There were some differences in the modeling approaches among the countywide programs, but the approach used by Alameda County and Contra Costa County illustrates the general concepts.

Baseline pollutant loading (prior to the application of land use changes or GSI implementation) was accomplished through a continuous simulation hydrology model combined with pollutant loading inputs to obtain the average annual loading of mercury and PCBs across a county during the TMDL baseline period (i.e., 2003 – 2005).[297] The baseline model depends on a hydrology model component that produces average annual runoff across an area (e.g., Alameda County) for the period of record using a hydrologic response unit (HRU) approach. The HRU approach involves modeling various combinations of land surface features (e.g., imperviousness, underlying soil characteristics, slope) present within each county for a unit area drainage catchment. The hydrology output is combined with average annual concentrations estimated by the

[297] Bay Area Stormwater Management Agencies Association (BASMAA, June 2017). *Bay Area Reasonable Assurance Analysis Guidance Document.* Prepared for BASMAA by Geosyntec Consultants.

Regional Monitoring Program's Regional Watershed Spreadsheet Model (RWSM[292]) developed by SFEI to produce average annual PCBs and mercury loading for the period of record. To obtain pollutant loading, average annual concentrations estimated by the RWSM, for each land use category (i.e., Old Industrial, Old Urban Commercial/Transportation, Old Urban Residential, New Urban, and Open Space) are multiplied by the calibrated average annual runoff volume estimated using the HRU approach. The average annual PCBs and mercury loading for the baseline period of record was validated using available in-stream concentration data, as described in Appendix E.

After baseline modeling, future load reduction modeling scenarios were developed to predict how future land use changes and control measure implementation would reduce pollutant loading. Future land use changes resulting from new development and redevelopment often reduce pollutant loading through use of newer building materials and improved runoff management practices. The POC load reductions through GSI implementation were developed through a combination of hydraulic modeling of GSI facilities combined with empirically derived effluent concentration estimates. Loads reduced from baseline are estimated based on projected land use changes and control measure implementation. To calculate pollutant load reductions associated with land use changes and GSI and source control implementation for future scenarios, the difference between the pollutant loading in the baseline scenario and the total pollutant loading associated with each future implementation scenario were calculated. Future scenarios included implementation in years 2030, 2040, and beyond 2040.

Interpolating between the 2020 and 2030 results presented in the RAA GSI modeling documentation for each countywide program (contained in RAA documentation in the FY 2019-20 Annual Reports) provides an estimate for the acreage and PCBs load reductions resulting from green infrastructure implementation by 2025:

- Alameda County: 1,230 acres 75 g/yr
- Contra Costa County: 950 acres 20 g/yr
- San Mateo County 314 acres 20 g/yr
- Santa Clara County 856 acres 13.5 g/yr
- Solano County Permittees 821 acres 76 g/yr

Summing these estimated load reductions across countywide programs results in a regionwide total estimated load reduction from green stormwater implementation of about 200 g/yr by the end of the permit term.

GSI are often watershed-based approaches that can be effective at reducing loads of PCBs and mercury. Because GSI uses a variety of physical removal mechanisms to filter water and remove particles, these control measures will also be effective at reducing loads of most other contaminants in urban stormwater. Thus, GSI implementation provides an effective multi-contaminant benefit in addition to the

benefits of reducing peak runoff and ameliorating the effects of hydromodification. The load reduction credit for GSI implementation will encourage watershed-based approaches, address multiple contaminants encourage the use of green infrastructure and the adoption of low impact development principles.

Some Bay Area drainages contain notably elevated PCBs concentrations in suspended or bedded sediment (e.g., > 500 ppb in bedded sediment). A recent analysis of soil PCBs and mercury data collected in the Bay Area identifies 15 sites where maximum concentrations exceed 3.8 mg/kg for PCBs and 1.6 mg/kg for total mercury. Areas with moderately high PCBs concentrations (e.g., 100-500 ppb) were found throughout areas where historical industrial activity involved use of PCBs (McKee and Yee 2015). Decisions guiding placement of green stormwater infrastructure depend on many factors involving opportunity and feasibility. Contaminant concentrations represent one factor among many and, thus, may not be the chief consideration in many circumstances. Nevertheless, placing green infrastructure in highly- and moderately contaminated areas may form an important element in achieving the PCBs TMDL-required load reductions. However, green infrastructure implementation is a long-term proposition and there is also value in placing green infrastructure across the broader landscape to intercept PCBs before they are discharged to receiving water.

Provision C.12.g requires Permittees to require applicable structures to sample for PCBs prior to receiving a demolition permit, inspect demolition projects during demolition activities, enhance their construction site controls for demolition projects, and for those cases where notification and advance approval from the U.S. EPA is not required, submit a copy of the hazardous waste manifest prepared for transportation of the material to a disposal facility.

After a year of requiring applicable structures to sample for PCBs in five priority building materials (caulk, fiberglass insulation, thermal insulation, adhesive mastic, and rubber window gasket or bulk product waste) prior to issuing a demolition permit, the Permittees' 2019-2020 Annual Reports show that 18 applicable structures had bulk product waste with PCBs concentrations of 50 ppm or greater. As of January 2022, U.S. EPA's database indicated that eight of those applicable structures have submitted hazardous wastes manifest to U.S. EPA, thus demonstrating that the bulk wastes with PCBs concentrations of 50 ppm or greater were disposed appropriately. U.S. EPA was overseeing the demolition and site remediation for all eight structures. For the remaining 10 sites that are undergoing demolition without U.S. EPA oversight, we have no information on whether bulk product wastes with PCBs concentrations of 50 ppm or greater were handled and disposed appropriately. This Provision requires the Permittees to submit a copy of the hazardous waste manifest to document that the PCBs-containing materials were disposed consistent with federal and state regulations, thus ensuring the PCBs in the bulk product waste will not be available to be discharged into the MS4. The hazardous waste manifests can be used as supporting data for the effectiveness of the protocol for controlling PCBs during building demolition.

PCBs can readily migrate to storm drains through vehicle track out of contaminated soils, airborne releases, soil erosion or stormwater runoff during or after demolition. Provision C.6 requires monthly inspections of construction sites, through all phases of construction, during the rainy season to determine the effectiveness of BMPs in preventing the discharge of pollutants into the MS4. Demolition is a phase of construction. This Provision requires the Permittees to enhance their construction site control programs to minimize the migration of PCBs from demolition sites into the MS4. Enhancement of construction site control programs could include dry season monthly inspections, street sweeping during active work hours at demolition sites, post-demolition of surrounding streets after any airborne releases are likely to have settled, and use of street sweepers that are designed to effectively remove sediment and dust from paved surfaces.

Soil and sediment characterizations at demolition sites with bulk product waste, including the Kaiser Permanente Medical Center Oakland Legacy Tower Demolition Project in Oakland, show that soils up to 10 feet from the building and up to 4 feet deep, and sediment in storm drains can have PCBs concentrations between 0.24 ppm and 50 ppm. If an applicable structure does not require notification and advance approval from U.S. EPA for disposal, soil and storm drain sediments may not be tested for PCBs. Contaminated soils and sediment in the storm drains may not be removed and properly disposed during the demolition of the applicable structure. As such, they will continue to be sources of PCBs to the MS4. For this Permit term, the requirement to demonstrate proper disposal of PCB-containing wastes is a proxy to demonstrate that the entire demolition project, including surrounding soils, is managed properly. However, the Permittees are encouraged to take additional steps as needed to prevent PCBs-containing soils from demolition sites from entering the MS4.may want to consider a special project designed to characterize, at demolition projects, the concentration of PCBs in soils near the applicable structures and in the sediment in the storm drains.

Klosterhaus et al.(2014)[290] estimated that 10,500 kg of PCBs remain in interior and exterior caulk in buildings located in the permit area, which equates to an average of 4.7 kg PCBs per building with PCBs. The 2013 Integrated Monitoring Report (IMR)[298] presents estimates of the mass of PCBs per building (constructed or renovated prior to 1979) ranging from 0.6-16 kg and contribution to stormwater ranging from 0.8 to 4000 grams/year. PCBs from building materials is one of the largest known sources of PCBs and it is distributed throughout the region. For a building containing the average amount of 4.7 kg of PCBs and control measures of medium effectiveness, there may be 280 grams of PCBs released to stormwater during demolition, assuming control measures are only moderately effective. If only control measures of low effectiveness were in place, such a building would release 560 grams PCBs during demolition.[298]

[298] Integrated Monitoring Report Part B: PCB and Mercury Loads Avoided and Reduced via Stormwater (IMR). Prepared by Geosyntec Consultants for the Bay Area Stormwater Management Agencies Association. 2013.

The PCBs load reductions expected through this control measure will be the same as those estimated for MRP2 because the same control measures are in place, and the method for calculating the load reductions remains the same. In other words, no additional load reductions are expected. The PCBs load reductions resulting from implementing control measures to prevent discharge to storm drains of PCBs in building materials during demolition can be computed as: the mass of PCBs contained in applicable buildings multiplied by the fraction of PCBs entering stormwater conveyances in the absence of controls multiplied by the effectiveness of controls preventing PCBs from entering stormwater conveyances. Each term in this calculation can be represented by a range of values, and information is limited on some of these terms (particularly the fraction of PCBs entering storm drains). However, reasonable values, derived from information available from Klosterhaus,[290] are:

- Mass of PCBs per building = 5 kg
- Number of regulated buildings demolished/year = 50
- Average fraction of PCBs in building material that enters MS4s during demolition without controls = 1 percent
- Average effectiveness of controls at preventing PCBs from entering storm drains = 80 percent

Multiplying these parameters suggests that about 2 kg/yr of PCBs loads can be reduced by effectively controlling PCBs-containing material during demolition. The actual number of demolitions will vary, but 2 kg represents a reasonable estimate for the load reduction in the Bay Area during a typical year and is the basis for establishing the yearly estimated load reduction for controlling the release of PCBs to storm drains from such demolitions.

As previously discussed, using monitoring data or even modeling to estimate the load reduction resulting from controlling the PCBs-containing demolition debris would be a complex and expensive undertaking. Despite these efforts, the monitoring data would still yield a load reduction estimate with considerable uncertainty. The Water Board has reviewed and approved the method to estimate the PCBs load reduction using information from the Klosterhaus technical paper. The calculation methodology is logically consistent and technically sound.

The Previous Permit allowed Permittees to seek exemption from implementing Provision C.12.f – Manage PCB-Containing Materials and Wastes During Building Demolition Activities So That PCBs Do Not Enter Municipal Storm Drains (Provision C.12.f). For this exemption, Permittees were required to provide documentation acceptable to the Executive Officer in their 2017 Annual Reports that the only structures that existed pre-1980 within their jurisdiction are single-family residential and/or wood-frame structures. Only the Town of Clayton requested and received exemption form Provision C.12.f. This Permit extends the deadline for requesting and receiving this

exemption to the 2023 Annual Report, because there are a few Permittees who were unable to gather the needed documentation by the exemption deadline. The Water Board does not anticipate another extension of this exemption deadline.

Provision C.12.h requires Permittees to update (as needed) the plans and schedules prepared during MRP2 for PCBs control measure implementation and corresponding reasonable assurance analysis to quantitatively demonstrate that sufficient control measures will be implemented to attain the PCBs TMDL wasteload allocations. The updates should focus on those control measures for which new information is available and for control measures not evaluated in previous efforts. The Permit requires that these plans must: identify all technically and economically feasible PCBs control measures (including green infrastructure projects) to be implemented; include a schedule according to which these technically and economically feasible control measures will be fully implemented; and provide an evaluation and quantification of the PCBs load reduction of such measures as well as an evaluation of costs, control measure efficiency, and significant environmental impacts resulting from their implementation.

Provision C.12.h also requires Permittees to submit information to inform PCBs-related requirements in the subsequent permit term. Namely, Permittees must identify all specific control measures to be implemented along with the expected intensity (e.g., acres treated, acres investigated for source areas, types of roadway projects for which protocols applied, etc.) of control measure implementation, and the estimated load reduction benefit from control measures implemented during the subsequent permit term.

The PCBs TMDL anticipated the challenge of achieving the urban runoff load reductions required to meet the TMDL allocations within the twenty-year implementation time frame. The TMDL implementation plan states that

> 4. *"... achievement of the allocations for stormwater runoff, which is projected to take 20 years, will be challenging. Consequently, the Water Board will consider modifying the schedule for achievement of the load allocations for stormwater runoff provided that dischargers have complied with all applicable permit requirements and accomplished all of the following:*
>
>   - *A diligent effort has been made to quantify PCBs loads and the sources of PCBs in the discharge;*
>
>   - *Documentation has been prepared that demonstrates that all technically and economically feasible and cost-effective control measures recognized by the Water Board have been fully implemented, and evaluates and quantifies the PCBs load reduction of such measures;*

- *A demonstration has been made that achievement of the allocation will require more than the remaining 10 years originally envisioned; and*
- *A plan has been prepared that includes a schedule for evaluating the effectiveness and feasibility of additional control measures and implementing additional controls as appropriate."*

Provision C.12.h provides the opportunity for Permittees to describe the full suite of actions that will be required to achieve the TMDL along with realistic timelines for this achievement. The load reductions for PCBs are difficult and time-consuming to achieve because of the distribution of sources in the landscape; challenges associated with finding and reducing these existing sources; and unpredictability related to demolition of PCBs containing structures. The RAAs submitted during MRP 2 emphasize that expected PCB load reductions will come from long-term implementation of control strategies (like source control, cleanup of contaminated sites, green infrastructure, and others) that extend beyond the current implementation timeframe of the TMDL. The updates to the long-term plans and schedules required by this provision could potentially support an amendment to the TMDL implementation timeframe.

Provision C.12.i. There are still uncertainties surrounding the magnitude and nature of PCBs reaching the Bay in urban runoff and the ultimate fate of such PCBs, including biological uptake. Provision C.12.g requires that Permittees ensure that fate and transport studies of PCBs in urban runoff are completed. The specific information needs include understanding the in-Bay transport of PCBs discharged in urban runoff, the sediment and food web PCBs concentrations in margin areas receiving urban runoff, the influence of urban runoff on the patterns of food web PCBs accumulation, especially in Bay margins, and the identification of drainages where urban runoff PCBs are particularly important in food web accumulation.

Provision C.12.j requires actions to mitigate human health risk due to mercury and PCBs. These may include efforts to communicate the health risks of eating Bay fish to be aimed at high risk-communities such as subsistence fishers and their families. The risk reduction framework developed in a previous permit term, which funded community-based organizations to develop and deliver appropriate communications to appropriately targeted individuals and communities, is an appropriate approach.

C.13. Copper Controls

Chronic and acute site-specific objectives (SSOs) for dissolved copper have been established in all segments of San Francisco Bay. The plan to implement the SSOs and ensure the achievement and ongoing maintenance of the SSOs in the entire Bay includes three types of actions for urban runoff management agencies. These actions are implemented through this Permit as provisions to control urban runoff sources of copper.

The control measures for urban runoff target significant sources of copper identified in a report produced in 2004 for the Clean Estuary Partnership.[299] This report updated information on sources of copper in urban runoff, loading estimates and associated level of uncertainty, and summarized feasible control measures and priorities for further investigation. Accordingly, the Permit provisions target major sources of copper including architectural copper, copper pesticides, and industrial copper use.

Fact Sheet Findings in Support of Provision C.13.

C.13-1 Urban runoff is a conveyance mechanism by which copper reaches San Francisco Bay.

C.13-2 Copper has the reasonable potential to cause or contribute to exceedances of copper water quality standards in San Francisco Bay.

C.13-3 SSOs for dissolved copper have been adopted for all segments of San Francisco Bay.

C.13-4 The Permit requirements to control copper to the MEP are necessary to implement and support ongoing achievement of the SSOs.

C.13-5 One of the major sources of copper to urban runoff has been addressed through passage of Senate Bill 346 in 2010, which requires brake pad manufacturers to reduce the use of copper in brake pads sold in California to no more than 5 percent by weight by 2021, and no more than 0.5 percent by 2025. The law also provides an objective process to ensure that any new brake materials meet all applicable safety and performance standards. To make sure that new materials will not cause future environmental problems, the law requires brake manufacturers to screen potential alternatives for their impacts on human health and the environment using the Toxic Information Clearinghouse, and to select less hazardous options.

C.13-6 A scientific uncertainty regarding sediment toxicity was identified during the development of SSOs for copper. Bay sediment copper concentrations are somewhat elevated above the natural background (from native soils). Local

[299] TDC (TDC Environmental), 2004. *Copper Sources in Urban Runoff and Shoreline Activities*. Prepared for the Clean Estuary Partnership.

soils contain 30- 35 ppm (DW, dry weight) based on deep (> 2 meter) sediment core results for SF Bay. The copper ERL (effects range low) is 34 ppm (DW) and the ERM (effect range median) is 240 ppm (DW). Thus, the natural concentration of local soils is very close to the ERL. There has never been an exceedance of the ERM in the 975 samples collected and analyzed through RMP data. The maximum copper sediment concentration ever recorded in RMP samples (94 ppm DW) is well below the LC50 (concentration that kills 50 percent of test organisms) of the amphipod *Eohaustorius estaurius* (534 ppm) or the amphipod crustacean *Hyalella azteca* (260 ppm). Surface sediment copper concentrations have trended lower over the last 25 years according to monitoring in the Bay. The median surface concentration of copper was 40 ppm (DW) during the period 1993-2004 and dropped to 36 ppm in 2009-2018 (data from SFEI's Contaminant Data Download and Display system, https://cd3.sfei.org/). This reduced concentration occurred despite significant population increases in the Bay Area and increased sampling in the shallower parts of the Bay (where copper concentrations would be expected to be higher due to human activities and urban sources) during the latter period because of a re-design of RMP sampling strategies. There was some evidence of possible copper-related toxicity in the late 1990s, but there has not been additional evidence of this phenomenon. Possible sediment toxicity occurred in the northern portions of San Francisco Bay (Suisun Bay and San Pablo Bay) where sediment copper concentrations are higher. However, the decrease in median sediment copper concentrations in the northern estuary from the time period 1993-2004 (52 ppm DW) to 2009-2018 (43 ppm DW) has been even more pronounced than the reduction for the Bay as a whole. Because there has not been additional evidence of copper sediment toxicity and copper concentrations in surface sediments appear to be decreasing over time, Permit requirements to further investigate copper sediment toxicity in San Francisco Bay were satisfied by information collected under MRP 1.0 and are no longer needed. If more evidence of such toxicity does appear, this requirement may be reinstated.

C.13-7 Scientific uncertainty regarding the olfactory impairment of salmonids was identified during development of SSOs for copper. Exposure to dissolved copper has been shown to cause olfactory impairment at relatively low concentrations in freshwater fish, resulting in an impaired avoidance response to predators. When the SSOs were established, studies were planned to address whether or not this phenomenon occurred in estuarine water. The studies[300] were supported in part through requirements under MRP 1 and were conducted by David Baldwin of NOAA's Northwest Fisheries Science Center.

[300] David Baldwin, NOAA Fisheries, Northwest Fisheries Science Center, 2015. *Impact of dissolved copper on the olfactory system of juvenile salmon, Phase II: Effect of estuarine salinity on olfactory toxicity*.

Dr. Baldwin measured the firing of neurons in response to exposure to odorant chemicals. The studies indicate that salmon in saline or moderately saline water are much less sensitive than salmon in freshwater, and that the potential effect of copper on salmon olfaction is not a concern in the Bay.

Specific Provision C.13. Requirements

Provision C.13.a. Copper is used as an architectural feature in roofs, gutters and downspouts. When these roofs are cleaned with aggressive cleaning solutions, substantial amounts of copper can be liberated. Provision C.13.a for architectural copper involves a variety of strategies ranging from BMPs to prohibition against discharge of these cleaning wastes to the storm drain.

Provision C.13.b. Copper is commonly used as an algaecide in pools, spas, and fountains. Provision C.13.b prohibits discharge to the storm drain of copper-containing wastewater from such amenities.

Provision C.13.c. Some industrial facilities likely use copper or have sources of copper (e.g., plating facilities, metal finishers, and auto dismantlers). This control measure requires municipalities to include these facilities in their inspection program plans.

C.14. Bacteria Controls

Fact Sheet Findings in Support of Provision C.14

C.14-1 This Permit Provision implements the urban runoff requirements of TMDLs that contain wasteload allocations for MS4 discharges of bacteria. Each subprovision references applicable TMDL approval and effective dates. A separate subprovision (C.14.a) requires actions Permittees must take when MS4 discharges may be causing or contributing to exceedances of applicable bacteria water quality objectives in a receiving water for which a TMDL has not been established.

Specific Provision C.14 Requirements

C.14.a. Enhanced Bacteria Control

The provision applies to the cities of Sunnyvale and Mountain View (referred to as the Cities in C.14.a), which may be causing or contributing to exceedances of applicable bacteria water quality objectives in a receiving water (hereafter referred to as waters with elevated bacteria densities). The provision calls for strategic and enhanced implementation of BMPs that are required in other provisions of this Permit; thus, the authorities for Provision C.14.a. are stated in the fact sheet for Provisions C.2, C.4, C.7, C.10, and C.15. This Provision also requires the Cities to conduct additional water quality monitoring to identify sources of bacteria to the receiving water and to determine whether the applicable bacteria objectives have been achieved after implementation of BMPs. The monitoring and reporting requirements of Provision C.14.a. are authorized under Clean Water Act § 308, 40 C.F.R. §§ 122.26(d)(2), 122.41(h), (j) and (l), 122.42(c), 122.44(i) and 122.48, and Water Code § 13383.

The pollution control and reporting requirements of this provision are consistent with the phased implementation strategies of the bacteria TMDLs adopted in the San Francisco Bay Region. This Provision requires implementation of the source control actions required in phase one of adopted TMDLs. The Cities are expected to meet Receiving Water Limitations B.2 for applicable bacteria water quality objectives by the June 30, 2027. If receiving water limitations are not met, despite a diligent effort to quantify levels and the sources of bacteria in MS4 discharges and documentation of completion of controls required by C.14.a.i-vii, then the Cities must submit a plan for additional actions to attain the receiving water limitations as soon as possible.

This Provision applies to the City of Mountain View for discharges to Stevens Creek and the City of Sunnyvale for discharges to Stevens Creek, Calabazas Creek, and Sunnyvale East Channel/Guadalupe Slough. Data collected by San Francisco Baykeeper indicated that discharges from these cities' MS4s may have caused or contributed to exceedances of the bacteria water quality objectives, and both Mountain View and Sunnyvale have submitted to the Water Board notification and a report of proposed actions as set forth in Provision C.1. The enhanced bacteria controls required

by this Provision are based on controls proposed by the Cities and phase one bacteria controls required of municipalities with bacteria wasteload allocations in adopted TMDLs. They are also consistent with management strategies for bacteria in stormwater described in the Minnesota Stormwater Manual.

Other Permittees that find their MS4 discharges may be causing or contributing to exceedances of applicable bacteria water quality objectives in a receiving water, in accordance with Provision C.1.a. of this Permit, must notify the Water Board and submit a report that describes controls or BMPs currently being implemented and the current level of implementation, and proposes additional controls or BMPs and/or an increased level of implementation, to prevent or reduce exceedances of bacteria water quality objectives. If such controls and BMPs are consistent with Provision C.1.a requirements, the Water Board will consider amending this Permit to require implementation of the controls and BMPs.

Path to Compliance with Bacteria Receiving Water Limitations

Provision C.14.a provides a directed path, with enforceable requirements, that allow the Cities appropriate time to come into compliance with receiving water limitations without being in violation of bacteria receiving water limitations during full implementation of the directed path to compliance. This directed path to compliance is consistent and conforms with State Board Orders WQ 2015-0075, as amended by Order WQ 2021-0052-EXEC, and WQ 2020-0038.

WQ 2015-0075, as amended, directs regional water boards to consider and allow a path to compliance with receiving water limitations guided by a set of principles unless a regional water board makes a specific showing that application of a given principle is not appropriate for region-specific or permit-specific reasons. The path to compliance directed by Provision C.14.a meets each of the applicable principles (see further detail below).

In WQ 2020-0038, the State Water reiterated WQ 2015-0075's standards for rigor, transparency, and accountability for alternate compliance, and further emphasized that regional water boards must ensure any approved alternative compliance plans regional water boards using alternative compliance approaches to ensure plans approved clearly explain their development process and identify enforceable milestones. However, the State Water Board recognized WQ 2020-0038 is not intended to curtail the flexibility of the regional water boards to adopt alternative compliance approaches that best fit their particular regions or to restrain the evolution of the regional water boards' approaches to alternative compliance. The path to compliance directed by Provision C.14.a is based on rigorous and transparent consideration of the state of science and understanding of sources of fecal indicator bacteria and options to control them and includes enforceable requirements. However, rather than approval of compliance plans submitted by the Cities, Provision C.14.a directly specifies actions that must be implemented by the Cities that are consistent with bacteria TMDLs requirements in the region and informed

by the Water Board's knowledge and expertise regulating bacteria and the plans submitted by the Cities. These required actions are clear, transparent, and directly enforceable rather than reliance on a plan.

The path to compliance directed by Provision C.14.a is based on the following points that describe state of science and understanding of sources of fecal indicator bacteria and options to control them.

- Fecal indicator bacteria, E. coli and enterococci, are bacteria that are normally prevalent in the intestines and feces of warm-blooded animals.
- Levels of bacteria are measured as number of colony forming units (cfu) of bacteria in a 100 mL of sample. Maximum level (statistical threshold value) water quality objectives are 320 cfu/mL for E. coli and 100 cfu/100 mL for enterococci. Levels in the parts of the Cities' receiving waters have periodically been as high as about 4,000 cfu/mL during dry weather and 17,000 cfu/100mL, but they are substantially lower—about a billion times less—than levels of these bacteria in raw sewage (trillions of cfu/100mL). Accordingly, the levels in receiving waters are likely not associated with discrete ongoing discharges of untreated raw sewage.
- Bacteria sources and discharges in municipal stormwater runoff and dry weather discharges are episodic, not constant, except where there is an illicit connection from a sanitary sewer or other ongoing discharge of sewage.
- It is not possible to model sources and loading of bacteria in MS4s using watershed pollutant loading models due to the episodic and variable nature of bacteria sources. Some quantitative analysis of loading may be possible through monitoring; however, since bacteria discharge volumes are highly variable both spatially and temporally and difficult to measure, the analysis would inevitably involve a great deal of uncertainty and be unreliable for purposes of quantifying loads from drainage areas. However, mapping of potential sources areas and targeting of control efforts can be tracked and analyzed using geographic information systems.
- Controllable sources to the Cities' MS4s or surface waters located within the Cities' boundaries include the following:
    - Direct sources of human fecal matter (e.g., homeless encampments, recreational vehicle discharges, illegal dumping of human waste/diapers);
    - Sanitary sewer sources of human fecal matter (e.g., sanitary sewer overflows, exfiltration, illicit connections);
    - Pet waste (e.g., dogs, domestic and feral cats, backyard chickens, livestock);
    - Trash receptacle leachate. Trash bins may also contain discarded pet waste or diapers; and

- Wildlife waste (e.g., birds, rodents, deer, raccoons, coyotes) if associated with human activities, such as littering and exposed trash receptacles, which can attract wildlife by creating scavenging areas. Some wildlife waste may be moderately controllable; however, most is uncontrollable.

- Uncontrollable sources to the Cities' MS4s or surface waters located within the Cities' boundaries include:
  - Wildlife waste (e.g., birds, rodents, deer, raccoons, squirrels, rabbits, skunks, opossums, coyotes, wild turkey, bobcats, mountain lions) from wildlife in open space, creek corridors, and in creeks and stormwater conveyance systems. Given these are predominantly natural corridors, elimination of natural wildlife from creeks would not be desirable; and
  - Bacteria naturally present in the environment, such as biofilms, organic matter, soils, and sediments in the watershed, and creeks.

- Effective control of bacteria sources and discharges requires a comprehensive surveillance and source identification and control program in drainages to creeks experiencing elevated bacteria.

- Existing efforts may or may not be sufficient. After initial source identification and control of the most likely or possible sources that contribute to segments of creeks experiencing elevated bacteria, there must be ongoing surveillance and discharge response and control actions, including outreach and enforcement, to maintain existing controls, and if necessary to identify additional sources and enhanced or additional controls.

- Treatment of runoff to reduce fecal indicator bacteria levels below water quality objectives is not feasible. While some treatment systems that provide biofiltration and bioretention and/or capture runoff will reduce levels of bacteria in runoff discharges, reduction to levels below water quality objectives requires disinfection, as in municipal wastewater treatment systems. Disinfection of stormwater runoff is not feasible with episodic and variable runoff discharges, and if chlorine were to be used for disinfection, due to its high toxicity, a system would also have to include dichlorination, which is also not feasible for episodic and variable runoff discharges. Strategic routing of contaminated runoff to the sanitary system may have some viability.

- Basin Plan Section 4-8 - Stormwater Discharges provides a phased approach towards attainment of water quality objectives in MS4 receiving waters, wherein if a first phase of actions does not result in attainment of water quality objectives, the Water Board will consider subsequent permit conditions that require implementation of additional control measures. In such circumstances, the Water Board may consider dischargers' proposed schedules for identification and implementation of additional control measures designed to attain water quality objectives. Such

schedules shall be as short as practicable and will only be considered for inclusion in permits when a discharger has demonstrated the following:

(a) A diligent effort to quantify pollutant levels and the sources of the pollutant in stormwater discharges; and

(b) Documentation of completion of implementation of all technically and economically reasonable control measures.

- The Water Board has adopted numerous TMDLs for bacteria and pathogens for select impaired waters. The TMDLs and wasteload allocations are based on rigorous analyses of the problems associated with these pollutants and the solutions to address them. Their implementation plans to achieve the MS4 wasteload allocations rely on source identification and control for MS4 discharges and a phased approach toward achieving water quality objectives, namely implementing source-specific controls and monitoring to find sources and determine effectiveness of controls. Where wasteload allocations are not met after the first phase of actions, additional and enhanced actions and monitoring are required.

Based on these points, the Order provides time for the Cities to comprehensively evaluate their existing bacteria control actions, systematically conduct surveillance and monitoring to identify sources, implement existing or appropriate new or enhanced controls where necessary, and monitor effectiveness of those controls to comply with bacteria receiving water limitations by the end of the permit term. The source identification and source control requirements are practical and robust and represent a logical first phase that could or should result in elimination of bacteria sources that result in MS4 discharges that cause or may cause or contribute to exceedances of bacteria water quality objectives in receiving waters. Given the completeness and thoroughness of what is required to find and control bacteria sources, the Water Board expects compliance with bacteria receiving water limitations by the end of the Permit term. However, due to impossibilities or limitations of modeling or conducting quantitative analysis for bacteria MS4 discharges and known and unknown uncertainties associated with identifying and controlling possible sources, it is impossible to assert with certainty at the onset of the Permit term that source identification and control actions will result in compliance by the end of the Permit term. For this reason, the expectation to comply with receiving water limitations by June 30, 2027, is not expressed in the Permit as an enforceable final deadline.

Given the challenges and uncertainties with bacteria source identification and control actions, there is the possibility that phase one actions will not result in compliance by the end of the permit term. As such, the Order calls for a mid-term report to document progress and communicate adaptation of efforts based on initial successes and challenges, and an end of Permit term report to either document compliance with bacteria receiving water limitations or if necessary, a plan and schedule of new or enhanced controls to attain compliance as soon as possible in the next permit term.

Phase two actions, if necessary, will depend on the actions taken during the permit term (phase one), and, therefore, cannot yet be specified. This adaptive phased implementation approach is consistent with bacteria TMDL wasteload allocation implementation requirements for municipal stormwater dischargers adopted by the Regional Water Board and approved by the State Water Board and is the most effective way to achieve compliance with bacteria receiving water limitations in a timely manner.

The path to compliance directed by Provision C.14.a meets each of the applicable principles in State Water Board WQ Order 2015-0075, as amended by Order 2021-0052-EXEC.

- In accordance with principle 1, this Order continues to use the receiving water limitations provisions as directed by State Water Board Order WQ 99-05 and does not deem good faith engagement in the iterative process to constitute compliance with receiving water limitations. Rather, it includes prescriptive requirements (Provision C.14.a) with deliverables and deadlines for the Cities to implement actions and controls to comply with receiving water limitations for bacteria, which are based on best available science and knowledge of bacteria sources and controls.
- Principle 2, that permits should include a provision stating that, for water body-pollutant combinations with a TMDL, full compliance with the requirements of the TMDL constitutes compliance with the receiving water limitations for that water body-pollutant combination, is not applicable. There is not a bacteria TMDL for any of the Cities' receiving waters; however, the requirements in Provision C.14.a are based on the requirements of adopted and approved bacteria TMDLs for other waterbodies. The requirements reflect the Water Board's determination in these TMDLs of the most effective way to resolve bacteria impairments in the region.
- In accordance with principle 3, this Order incorporates an ambitious, rigorous, and transparent alternative compliance path that allows the Cities appropriate time to come into compliance with receiving water limitations without being in violation of the receiving water limitations during full implementation of the compliance alternative. It includes requirements to implement a comprehensive monitoring and surveillance program and source control actions to identify all controllable sources of bacteria and to control them in a timely manner. The requirements necessarily involve planning and studying because it is unknown where the bacteria sources are.[301] As discussed previously, due to impossibilities or limitations of modeling or conducting quantitative analysis for bacteria MS4 discharges, at the onset of the Permit term, it

[301] The State Water Board has held that the "safe harbor" in the planning phase is appropriate if it is clearly constrained in a manner that sustains incentives to move on from planning to approval of plans in the case of the Los Angeles Regional Water Board's MS4 permit and is structured with clear, enforceable provisions. (WQ Order 2021-0052-EXEC, p. 62.) The evaluations that must be done here are clear and have enforceable deadlines. (See, e.g., Provision C.14.a.viii(2).) In addition, the requirements have built-in source control actions informed by the evaluations, such that progress can be made and compliance achieved.

is impossible to assert with certainty that specific water quality improvement milestones can be achieved during the Permit term. Furthermore, given the challenges and uncertainties with bacteria source identification and control actions, there is the possibility that phase one actions will not result in compliance by the end of the Permit term. The Order calls for a mid-Permit term report to adapt efforts based on initial successes and challenges, and an end of Permit report to either document compliance with bacteria receiving water limitations or if necessary, a plan and schedule of new or enhanced controls to attain compliance as soon as possible in the next permit term. The State Water Board supports this kind of adaptive management where compliance is not achieved. (WQ Order 2021-0052-EXEC, p. 65-66.)

- In accordance with principle 4, this Order calls for a watershed-based approach to identify and control likely or potential sources of bacteria in storm drain drainage areas that discharge to receiving waters. This Order partly conforms to the part of principle 4 to address multiple contaminants to the extent that source controls for other contaminants or pollutants, such as trash, may also control bacteria. The Provision C.14.a compliance path does not incorporate TMDL requirements as called for in principle 4, because there is not a bacteria TMDL for the affected receiving waters. However, the requirements are consistent with implementation requirements for other bacteria TMDLs.

- Partially in accordance with principle 5 and principal 6, this Order calls for use of green infrastructure and the adoption of low impact development principles and encourage multi-benefit regional projects that capture, infiltrate, and reuse stormwater and support a local sustainable water supply. The Provision C.3 New and Redevelopment requirements call for use of green infrastructure and low impact development principles, including multi-benefit regional projects that capture, infiltrate, and reuse stormwater, on projects and plans for implementing green infrastructure over time with a mandatory minimum during the permit term. These actions will result in some bacteria reduction. However, there are no current available and viable treatment controls, including green infrastructure, that can reduce concentrations of fecal bacteria to low levels consistent with applicable water quality objectives.

- Consistent with principle 7, the Provision C.14.a compliance path has rigor and accountability. The compliance path provided by this provision is based on the rigorous analyses done for other bacteria TMDLs and thus reflect the most effective way to address bacteria in MS4 discharges. The requirements also reflect rigor, accountability, and transparency in that the Cities are required to conduct a comprehensive monitoring and surveillance program based on watershed and drainage area characteristics to systematically identify bacteria sources and implement and assess control actions in a timely manner, and subsequently conduct further monitoring to evaluate the effectiveness of controls. This includes geographic

information analysis of potential sources and existing bacteria control action locations to optimize additional controls, which analysis is a form of quantitative analysis for bacteria (modeling and quantitative analyses of bacteria loading is infeasible or unreliable, as explained above). The Order calls for annual reporting on completed and planned actions and monitoring results, a mid-Permit term report to adapt efforts based on initial successes and challenges, and an end of Permit term report to either document compliance with bacteria receiving water limitations or if necessary, a plan and schedule of new or enhanced controls to attain compliance as soon as possible in the next permit term. Again, as discussed previously, due to impossibilities or limitations of modeling or conducting quantitative analysis for bacteria MS4 discharges, at the onset of the Permit term, it is impossible to assert with certainty that specific water quality improvement milestones can be achieved during the Permit term. **Provision C.14.a.**l. requires the Cities to evaluate the potential for municipal operations to generate bacteria that can be discharged in runoff and, where needed, to enhance existing BMPs to minimize the transport of bacteria. In this subprovision, “municipal operations” refers to street, sidewalk, and plaza cleaning; maintenance of parks and open spaces; and cleaning of catch basins, pump stations, and other storm sewer system components. Examples of enhanced maintenance activities that help to reduce bacteria loading include (Geosyntec Consultants 2012):

- Street Cleaning. Street Cleaning Measurements of fecal coliform bacteria on sediment collected during street cleaning have ranged up to 108 colonies per pound of sediment (Bannerman 1993, Snyder 2012). Street and parking lot cleaning reduces sediment, trash, and other pollutant loading to urban storm drains. High efficiency street sweepers, such as regenerative air sweepers and vacuum assisted sweepers, remove more sediment from roadways, and capture the fine particles with which bacteria are typically associated (UWRRC 2014).
- Storm Sewer Cleaning: Cleaning by jet spraying and vacuuming of wash water removes accumulated trash, sediment, organic matter and animal waste, thereby reducing both fecal indicator bacteria and other pollutants. Features and locations to be cleaned can be prioritized based on proximity to receiving waters, magnitude of threat, and similar considerations.
- Catch Basin Cleaning: The dark, humid environment and presence of wildlife (e.g., raccoons and rats in storm drain catch basins) provide conditions favorable to the persistence of bacteria in storm drain systems. A San Diego study found that commercial catch basins had significantly higher bacteria than residential catch basins (Weston Solutions 2010b); thus, prioritizing catch basin cleaning in commercial areas is expected to yield more significant bacteria reductions.

Provision C.14.a.ii. requires the Cities to enhance industrial and commercial site stormwater inspections such that illicit discharges and other bacteria sources are identified and controlled. Bacteria sources at these sites may include connection of

sanitary sewer lines to the stormwater system (indicated by evidence of dry weather flows); leaking or poorly maintained porta-potties; outdoor washing of floor mats; and overflowing garbage and recycle bins.

Provision C.14.a.iii. requires the Cities to evaluate the potential for bacteria transport to surface waters from areas inhabited by unsheltered homeless persons, and to implement BMPs to minimize such transport. This Provision is intended to require Permittees to implement or enhance BMPs described in the Fact Sheet and Permit for Provision C.17 in areas with unsheltered homeless populations that discharge to water bodies with elevated bacteria densities.

Provision C.14.a.iv. requires the Cities to evaluate the potential for bacteria transport from areas where domestic animals are present to surface waters with elevated bacteria densities. The waste from dogs, cats, horses, and other domestic animals can contain bacteria and parasites like *E. coli*, *Salmonella*, *Giardia*, and tape worms, which can infect and cause illness in humans, as well as wildlife and domestic animals. Pet waste left on the ground either passes through storm sewers untreated or washes directly into water bodies. Appropriate BMPs include inspections of pet and horse boarding facilities and installation and maintenance of pet waste stations.

Provision C.14.a.v. requires the Cities to enhance public outreach where it is likely to improve human behavior regarding bacteria pollution prevention practices. Such practices include cleaning up pet waste and litter, eliminating outdoor restaurant floor mat washdown, using proper BMPs for sidewalk cleaning, covering trash areas, and maintaining porta-potties properly.

Pet waste is a significant contributor to bacteria in runoff; in a study of the Patapsco River in Maryland, for instance, pet waste was estimated to contribute approximately 26% of bacteria pollution.[302] The degree of behavior change resulting from pet waste outreach campaigns has been measured in association with bacteria TMDLs in southern California and other places. A report on the Dog Waste Management Plan for Dog Beach and Ocean Beach found that public compliance with the “scoop the poop” policy was highly dependent on awareness of the policy and availability of waste disposal bags and trash cans (Weston 2004). In Bellingham, Washington, public outreach over two years increased respondents’ awareness of bacteria impacts from dog waste and was correlated with a 6% increase in the number of respondents who cleaned up their dogs’ waste at home.[303] Scoop the poop pledges can be successful; for instance, in Kirkland, Washington, a follow up survey of several hundred people who signed a pledge to scoop their pet waste indicated that 94% of them scooped their pets’

[302] Maryland Dept. of the Environment, Total Maximum Daily Loads of Fecal Bacteria for the Patapsco River Lower North Branch Basin in Anne Arundel, Baltimore, Carroll, and Howard Counties, and Baltimore City, Maryland (Aug. 2009) Fig. C-2, p. C14.

[303] Squalicum Residential Dog Waste Post-Program Survey Findings (2015)

poop all the time.[304] The City of Austin, Texas, conducted public surveys and found their educational campaign resulted in a 9% improvement in the number of pet owners who claim to regularly pick up waste (UWRRC 2014), and its twenty-year-old program of deploying poop bag dispensers and trash cans throughout the city has reduced bacteria levels in receiving waters. (*Austin Statesman* 2019[305]).Studies in San Diego have shown that installation of pet waste stations with trash cans and disposal bags has resulted in a 37% reduction in the total amount of pet waste in city parks (UWRRC 2014).

Where controllable wildfowl may be contributing to elevated bacteria densities in water bodies, control strategies have been developed by the University of Nebraska at Lincoln (Cleary 1994, Internet Center for Wildlife Damage Management 2015) and the U.S. Department of Agriculture APHIS (Preusser 2008), and some of these strategies are appropriate for waterfowl in general. In Alaska, a lake was delisted for bacteria after the state implemented goose management practices, including egg harvesting, habitat alteration, and hunting, and a pet waste campaign that included outreach and installation of pet waste stations.[306]

Provision C.14.a.vi. requires the Cities to collaborate with entities responsible for maintenance and repair of the sanitary sewerage system to minimize the transport of sanitary sewer overflows to surface waters with elevated bacteria densities. Sewer line backups, overflows and leaks commonly occur during periods of wet weather, creating a potential source of bacteria on land surface that may be transported to surface water via urban runoff. The Cities should work with sanitary sewerage system entities to prioritize maintenance and repair in areas contributing to bacteria loads in surface waters with elevated bacteria densities; ensure rapid response to cleaning up overflows; and developing sewer lateral maintenance and replacement programs for consideration by the appropriate local authority.

Provision C.14.a.vii requires the Cities to evaluate the potential bacteria-reduction benefit of prioritizing trash control efforts in areas discharging to waters with elevated bacteria densities. This Provision is intended to require Permittees to implement or enhance BMPs described in the Fact Sheet and Permit for Provision C.10 in areas that discharge to surface waters with elevated bacteria.

Provision C.14.a.viii. requires the Cities to monitor their receiving waters, outfalls, and stormwater catchments to identify sources of bacteria, i.e., through microbial source testing, observations, and fecal indicator bacteria measurements, and to evaluate effectiveness of controls and determine whether the bacteria water quality objectives

[304] City of Kirkland, Pet Waste Bacteria, Monitoring, Outreach and Education (2020), p. 11. Available at: https://www.kirklandwa.gov/files/sharedassets/public/public-works/2020-kcd-pet-waste-final-report.pdf)

[305] https://www.statesman.com/news/20190813/scoop-poop-dog-waste-on-greenbelts-affecting-more-than-bottom-of-your-shoes

[306] U.S. EPA, Reducing Animal Sources of Bacteria Restores Water Quality (2011).

and/or bacteria receiving water limitations are achieved. For the latter, it may be possible to show that bacteria water quality objectives exceedances occur but MS4 discharges do not cause or contribute to them. The regulatory authority and supporting information for monitoring are provided in the Fact Sheet for Provision C.8.

Identification of sources, evaluation of effectiveness of controls, and determination of compliance with bacteria receiving water limitations can be demonstrating through a monitor program designed to answer the following logical questions:

- What is the spatial and temporal extent of dry weather flows in the MS4?
- Are indicators of human fecal material present in both dry and wet weather flows observed in the MS4?
    - If so, in which stormwater catchments are sources most prominent?
    - Where are the likely locations of these sources in the catchments?
    - What measures can be implemented to control these sources?
- Are water quality objectives being achieved during dry weather?
- Are water quality objectives being achieved during wet weather?

The required levels of implementation to answer these questions, e.g., location and number of sites, sampling events, frequencies, and methods are based on the monitoring program and information provided by the Cities in their Fecal Indicator Bacteria Monitoring and Source Identification Program (April 2022). The required monitoring provides an initial comprehensive and robust means to identify sources, evaluate effectiveness of controls, and determine compliance or progress towards compliance with bacteria receiving water limitations. Monitoring at the required numbers of monitoring sites, events, and frequencies may be sufficient to answer some of the questions for some areas in the Cities' jurisdictions. It is likely that the monitoring will have to be adapted to respond to the results of the required surveillance and monitoring. For example, the results could show that the bacteria exceedances in the receiving waters have been resolved or are worse and more extensive than is currently understood. In either case, different monitoring will be needed to respond to the new information. Since it is not possible to prescribe new monitoring requirements until the results of the required monitoring are known, the Cities are required to include proposed monitoring in the Mid-Permit Interpretive Report to be conducted through the remainder of the Permit term to answer the questions in C.14.a.viii.(1). The proposed monitoring must be as comprehensive, systematic, and robust as what is currently required while being commensurate with the need to address and resolve bacteria exceedances in the receiving waters. The Water Board will subsequently amend the Permit to include approved second phase monitoring requirements.

Provision C.14.a.ix. requires the Cities to conduct a comprehensive assessment of their bacteria source identification and control actions and determine whether discharges from their MS4s are causing or contributing to exceedances of bacteria water quality objectives in receiving waters after implementation of control measures required by C.14.a.i-vii. It is possible that implementation of these requirements in conjunction with C.14.a.viii monitoring requirements will result in compliance with bacteria receiving water limitation requirements, as discussed above in this Fact Sheet under Path to Compliance with Bacteria Receiving Water Limitations, but it is not possible to justify a date by which compliance must be achieved due to the modeling or quantitative analysis limitations discussed above and known and unknown uncertainties associated with identifying and controlling possible sources. Accordingly, C.14.a.xi sets an expectation to achieve compliance by the end of the permit term, June 30, 2022, but if compliance will not be achieved despite diligent efforts to identify and control sources and compliance with C.14.a.i-viii, those efforts, successes, and lessons learned should inform determination of additional or enhanced efforts and a schedule to implement additional or enhanced efforts to achieve receiving water limitations as soon as possible.

The required Mid-Permit Interpretive Report and Final Interpretive Report provide a means to demonstrate progress towards answering the monitoring program questions and achieving bacteria receiving water limitations, based on monitoring results and description of source identification and control efforts, to provide justification for monitoring program revisions, and to either provide documentation that bacteria receiving water limitations have been or will be achieved by the end of the Permit term, or if not, documentation and justification for new or enhanced efforts to achieve compliance in a timely manner and a proposed monitoring program to further inform and evaluate those efforts.

C.14.b. City of Pacifica and San Mateo County Bacteria Controls

This Permit Provision implements the San Pedro Creek and Pacifica State Beach Bacteria TMDL adopted by the Water Board on November 14, 2012, and approved by the U.S. EPA on August 1, 2013, which is the effective date of the TMDL. The water quality attainment strategy included in this TMDL requires urban runoff management agencies to implement controls and take other actions to reduce bacteria loads in urban runoff.

The TMDL contains allocations for urban runoff, including urban runoff associated with MS4s and Caltrans facilities. The allocations are the same as the Numeric Targets and are expressed in terms of allowable exceedances of single-sample objectives.

This provision is consistent with 2014 U.S. EPA Memo[307] providing guidance on implementing TMDL WLAs in NPDES stormwater permits. Specifically, this provision establishes clear actions to achieve bacteria reductions necessary to achieve receiving water limits. The timeline for achieving wasteload allocations for Pacifica State Beach is by August 1, 2021 (8 years from the TMDL effective date) and by August 1, 2028 for San Pedro Creek (15 years from the TMDL effective date).

Provision C.14.b.i requires the Pacifica and San Mateo Permittees to implement control measures and education and outreach activities to achieve bacteria load reductions, such as: prohibit potential illicit discharges to the storm drain from the sanitary sewer collection system; repair the fence along the Crespi Canal and clean up trash from the Canal; address bacteria discharges from horse facilities; maintain dog waste-clean-up signs, waste bag dispensers, and trash receptacles; implement a visual inspection and clean-up plan for high dog waste accumulation areas; and implement an enhanced public outreach and education campaign for managing pet waste. This provision is critical to the successful implementation of the urban runoff requirements for the TMDL. The accountability mechanism for control measure implementation consists of three parts: 1) the identification of control measures and associated watersheds or locations, 2) a commitment to an implementation schedule, and 3) the quantification of the benefit resulting from control measure implementation.

Provision C.14.b.ii requires the Pacifica and San Mateo Permittees to monitor water quality to assess attainment of wasteload allocations. To comply with this requirement, the Pacifica and San Mateo Permittees are required to monitor bacteria levels in San Pedro Creek and at Pacifica State Beach and report the results to the Water Board. Further, they must provide an annual report of the quantitative analysis of trends in bacteria densities and exceedances of applicable water quality objectives. This provision is necessary to determine whether wasteload allocations are being attained, so additional or enhanced measures are implemented, if necessary.

Provision C.14.b.iii requires the Pacifica and San Mateo Permittees to conduct a water quality monitoring program to 1) better characterize bacteria sources and 2) evaluate the effectiveness of the bacteria control measures. The results of the monitoring shall be reported to the Water Board on an annual basis. The findings from these assessments will be used throughout this and future Permit terms to revise, refocus, and enhance bacteria control measures to make them as effective and efficient as possible. Future permits will be based on an updated assessment of bacteria sources and control measure effectiveness. This provision is necessary to allow the Pacifica and San Mateo Permittees to identify and implement effective BMPs in an efficient manner.

C.14.c. City of San Mateo Marina Lagoon Beaches Bacteria Controls

[307] U.S. EPA. November 26, 2014. Revisions to the November 22, 2002 Memorandum "Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs"

This Permit Provision implements the San Francisco Bay Beaches Bacteria TMDL adopted by the Water Board April 13, 2016 and approved by the U.S. EPA on February 23, 2017. The State Office of Administrative Law approved the TMDL on December 13, 2016, which is the effective date of the TMDL. The implementation plan included in this TMDL requires urban runoff management agencies to implement controls and take other actions to reduce bacteria loads in urban runoff.

The TMDL contains allocations for urban runoff associated with MS4s in the City of San Mateo (City). The allocations are the same as the Numeric Targets and are expressed in terms of a geometric mean for Enterococcus. The Numeric Targets must be achieved in Parkside Aquatic and Lakeshore beaches on Marina Lagoon.

This provision is consistent with 2014 U.S. EPA Memo (see C.14.b) providing guidance on implementing TMDL WLAs in NPDES stormwater permits. Specifically, this provision establishes clear actions to achieve bacteria reductions necessary to achieve receiving water limits. The TMDL requires the City to attain its wasteload allocation by taking a phased approach in which additional or enhanced actions are required if initial implementation actions do not result in attainment of the TMDL within five years.

Provision C.14.c.i. requires the City to implement control measures and education and outreach activities to achieve bacteria load reductions. The City is also required to report on the control measures on an annual basis. This provision is critical to the successful implementation of the urban runoff requirements for the TMDL. This provision requires the actions described above in this Fact Sheet for Provisions:

- C.14.a.1 and C.14.a.2, to control potential bacteria discharges from the sources as described above for these Provisions.
- C.14.a.4 and C.14.a.5, because pets and controllable wildlife were found to be significant sources to Parkside Aquatic and Lakeshore beaches.
- C.14.a.6, because sanitary sewer overflows were found to be the greatest potential source of bacteria to Parkside Aquatic and Lakeshore beaches.
- C.14.a.8, to monitor as describe in the Fact Sheet above.

Provision C.14.c.ii. requires the City to implement additional BMPs to reduce bacteria loads if the wasteload allocation is not met by December 13, 2021. The TMDL calls for a phased approach to achieving the wasteload allocation, wherein additional BMPs must be implemented if targets are not achieved after implementing Phase 1 actions within five years of the TMDL effective date. This provision calls for Phase 2 actions and is critical to the successful implementation of the urban runoff requirements for the TMDL.

Provision C.14.c.iii. requires the City to prepare a plan of additional actions to take if wasteload allocations are not met by December 13, 2026, six months before the end of the Permit Term. The plan shall include an assessment of bacteria sources with a schedule and description of additional control measures or increased levels of existing

control measures that will be implemented to attain bacteria water quality objectives. Additional monitoring studies to identify sources, track, and/or quantify the risk of bacteria in the receiving water may be included in this effort.

C.14.d. City of Half Moon Bay and San Mateo County Bacteria Controls

This Permit Provision implements the TMDL for Bacteria in Beaches in Pillar Point Harbor and Venice Beach adopted by the Water Board February 10, 2021. The implementation plan included in this TMDL requires urban runoff management agencies to implement controls and take other actions to reduce bacteria loads in urban runoff.

The TMDL contains wasteload allocations for urban runoff, including urban runoff associated with MS4s in the City of Half Moon Bay (City) and San Mateo County (County). The wasteload allocations are the same as the Numeric Targets and are expressed in terms of a geometric mean for Enterococcus. The Numeric Targets must be achieved in Venice Beach in the City and in the following beaches in Pillar Point Harbor (County): Inner Harbor Beach, Mavericks Beach, Pillar Point Marsh Beach, Yacht Club Beach, Capistrano Beach and Beach House Beach.

This provision is consistent with 2014 U.S. EPA Memo[308] providing guidance on implementing TMDL WLAs in NPDES stormwater permits. Specifically, this provision establishes clear actions to achieve bacteria reductions necessary to achieve receiving water limits. The TMDL requires the City and County to attain wasteload allocations by taking a phased approach in which additional or enhanced actions are required if initial implementation actions do not result in attainment of the TMDL within five years.

Provision C.14.d.i. requires the City of Half Moon Bay (City) and County of San Mateo (County) to submit a written plan for and to implement control measures and education and outreach activities to achieve bacteria load reductions, including the elements described in the Fact Sheet above for Provisions C.14.a.1 through C.14.a.8. The City and County are required to report on the control measures on an annual basis. This provision is critical to the successful implementation of the urban runoff requirements for the TMDL.

Provision C.14.d.ii. requires the City and County to obtain and evaluate water quality monitoring data for bacteria at the beaches included in this TMDL, and to submit a report on the data annually. The monitoring and reporting requirements of Provision C.14 are authorized under Clean Water Act § 308, 40 C.F.R. §§ 122.26(d)(2), 122.41(h), (j) and (l), 122.42(c), 122.44(i) and 122.48, and Water Code § 13383.

Provision C.14.d.iii. requires the City and County to prepare a plan of additional actions to take if wasteload allocations are not met within five years of the TMDL effective date, as called for in the TMDL. The plan shall include an assessment of

[308] U.S. EPA. November 26, 2014. Revisions to the November 22, 2002 Memorandum "Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs"

bacteria sources; a summary of control actions taken; and a schedule and description of additional control measures or increased levels of existing control measures that will be implemented to attain bacteria water quality objectives. Additional monitoring studies to identify sources, track, and/or quantify the risk of bacteria in the receiving water may be included in this effort.

C.15. Exempted and Conditionally Exempted Discharges

Legal Authority

Broad Legal Authority: CWA section 402(p)(3)(B)(ii-iii), CWC sections 13377 and 13263, 40 CFR 122.26(d)(2)(i)(B, C, D, E, and F), and 40 CFR 122.26(d)(2)(iv).

Specific Legal Authority: Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(B) requires MS4 operators "to detect and remove (or require the discharger to the municipal separate storm sewer to obtain a separate NPDES permit for) illicit discharges and improper disposal into the storm sewer."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(B)(1) provides that the Permittees shall prevent all types of illicit discharges into the MS4 except for certain non-stormwater discharges. Illicit discharge means "any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from fire fighting activities" (40 CFR 122.26(b)(2)).

Fact Sheet Findings in Support of Provision C.15.

C.15-1 Prohibition A.1 effectively prohibits the discharge of non-stormwater discharges into the storm sewer system. However, certain types of non-stormwater discharges may be exempted from this prohibition if they are unpolluted and do not violate water quality standards. Other types of non-stormwater discharges may be conditionally exempted from Prohibition A.1 if the discharger employs appropriate control measures and BMPs prior to discharge, and monitors and reports on the discharge.

C.15-2 Removal of Conditional Exemption for Planned and Unplanned Discharges of the Potable Water System

MRP 1 contained requirements for planned and unplanned discharges from the potable water systems owned and/or operated by Permittees who are water purveyors. The discharges were conditionally exempted provided the Permittees complied with the BMP, monitoring, and reporting requirements in the Previous Permit. The requirements were necessary because potable water discharges contain chlorine and chloramines, two very toxic chemicals to aquatic life, and can cause erosion, scouring of stream and creek banks, and sedimentation. The conditional exemption and requirements were included as an interim measure until such time an NPDES permit regulating potable water discharges was adopted. The State Water Board adopted the statewide General NPDES Permit for Drinking Water System Discharges to Waters of the United States, Order WQ 2014-0194-DWQ (Potable Water General Permit) on

November 18, 2014.[309] Therefore, the conditional exemption and requirements for planned and unplanned discharges from the Permittees' potable water systems is no longer necessary. The Permittees should seek coverage under the Potable Water General Permit for their potable water system discharges. NPDES-permitted discharges, such as those permitted by the Potable Water General Permit, are exempt from Discharge Prohibition A.1.

Specific Provision C.15. Requirements

Provision C.15.a. Exempted Non-Stormwater Discharges. This section of the Permit identifies the types of non-stormwater discharges that are exempted from Discharge Prohibition A.1 if such discharges are unpolluted and do not violate water quality standards. If any exempted non-stormwater discharge is identified as a source of pollutants to receiving waters, the discharge shall be addressed as a conditionally exempted discharge and must meet the requirements of Provision C.15.b.

Provision C.15.b. Conditionally Exempted Non-Stormwater Discharges. This section of the Permit identifies the types of non-stormwater discharges that are conditionally exempted from Discharge Prohibition A.1 if they are identified by Permittees or the Executive Officer as not being sources of pollutants to receiving waters. To eliminate adverse impacts from such discharges, project proponents shall implement appropriate pollutant control measures and BMPs, and where applicable, shall monitor and report on the discharges in accordance with the requirements specified in Provision C.15.b. The intent of Provision C.15.b's requirements is to facilitate Permittees in regulating these non-stormwater discharges to the storm drains since the Permittees have ultimate responsibility for what flows in those storm drains to receiving waters. For all planned discharges, the nature and characteristic of the discharge must be verified prior to the discharge so that effective pollution control measures are implemented, if deemed necessary. Such preventative measures are cheaper by far than post-discharge cleanup efforts.

- **Provision C.15.b.i.(1). Pumped Groundwater from Non-Drinking Water Aquifers.** These aquifers tend to be shallower than drinking water aquifers and more subject to contamination. The wells must be purged prior to sample collection. Since wells are purged regularly, this section of the Permit requires twice a year monitoring of these aquifers. Discharges of pumped groundwater from nondrinking water aquifers, which are owned and/or operated by Permittees who pump groundwater as drinking water, are conditionally exempted as long as the discharges meet the requirements in this section of the Permit. U.S. EPA Method 8260B and 8270C for volatile and semi-volatile organic compounds have been replaced with U.S. UPA Method 624.1 and 625.1, respectively, to be consistent with 40 C.F.R. Part 136 (p. 4).

[309] https://www.waterboards.ca.gov/water_issues/programs/npdes/general_permits.html

- **Provision C.15.b.i.(2). Pumped Groundwater, Foundation Drains, and Water from Crawl Space Pumps and Footing Drains.** This section of the Permit encourages these types of discharges to be directed to landscaped areas or bioretention units, when feasible. If the discharges cannot be directed to vegetated areas, it requires testing to determine if the discharge is uncontaminated. Uncontaminated discharges shall be treated, if necessary, to meet specified discharge limits for turbidity and pH.

  Updates have been made to the Provision C.15.b.i.(2)(b)(ii). U.S. EPA Method 8260B and 8270C for volatile and semi-volatile organic compounds have been replaced with U.S. EPA Method 624.1 and 625.1, respectively, to be consistent with 40 C.F.R. Part 136 (p. 4). Several of the reporting limits in the Provision C.15.b.i.(2)(b)(ii) Constituent Reporting Limit table have been updated or modified, to reflect the latest reissuance of the VOC and Fuel General Permit, NPDES Permit No. CAG912002 (Order No. R2-2017-0048, as amended by Order No. R2-2018-0050), which covers discharges from groundwater treatment facilities that extract or treat groundwater polluted by volatile organic compounds (VOCs), fuel leaks, fuel additives, or other related wastes (e.g., semi-volatile organic compounds [SVOCs], polycyclic aromatic hydrocarbons [PAHs], and metals).

- **Provision C.15.b.ii. Air Conditioning Condensate.** Small air conditioning units are usually operated during the warm weather months. The condensate from these units is uncontaminated and unlikely to reach a storm drain or waters of the State because it tends to be low in volume and tends to evaporate or percolate readily. Therefore, condensate from small air conditioning units should be discharged to landscaped areas or the ground. Commercial and industrial air conditioning units tend to produce year-round continuous flows of condensate. It may be difficult to direct a continuous flow to a landscaped area large enough to accommodate the volume. While the condensate tends to be uncontaminated, it picks up contaminants on its way to the storm drain and/or waters of the State and can contribute to unnecessary dry weather flows. Therefore, discharges from new commercial and industrial air conditioning units should be discharged to landscaped areas, if they can accommodate the continuous volume, or to the sanitary sewer, with the local sanitary sewer agency's approval. If none of these options are feasible, air conditioning condensate can be directly discharged into the storm drain. If descaling or anti-algal agents are used to treat the air conditioning units, residues from these agents must be properly disposed of.

- **Provision C.15.b.iii. Emergency Discharges of Firefighting Water and Foam.** According to 40 C.F.R §122.26, MS4 Permits may address discharges or flows from firefighting only where such discharges or flows are identified as significant sources of pollutants to waters of the United States. Discharges from firefighting activities are excluded from the definition of illicit discharges, but may be regulated where they are

significant contributors to water pollution.[310] This is consistent with U.S. EPA's treatment of firefighting discharges to small MS4s.[311] U.S. EPA envisions that significance is determined with reference to the category of discharges, not individual fires.[312]

At the same time, water quality impacts from individual fires illustrate the significance of the category of discharges. For instance, in April 2019, the discharge of firefighting foam through the storm drain to Codornices Creek in Berkeley caused a fish kill of at least 60 fish, including steelhead.[313]

Potable water is also used to fight fires. In the Bay Area, chloramines are typically used to control pathogens in potable water, and they are toxic to aquatic life.[314] Discharges of chloraminated potable water to Bay Area receiving waters have caused fish kills.[315] As a result, discharges of chloraminated potable water used for firefighting have the potential to impact aquatic life, including by causing fish kills.

The Water Board observes the following: fish kills from potable water discharges almost every year; small volumes of potable water discharges (between 4,000 and 10,000 gallons) kill fish; and many species of fish (steelhead, rainbow trout, three-spine stickleback, Sacramento suckers, hitch, California roach, mosquitofish, green sunfish, bluegill, fathead minnows, sculpin, golden shiners) and crayfish have been killed by potable water discharges.

There are several recent examples of potable water discharges that resulted in fish kills (and fines) in the Bay Area, listed below. It is important to note that this list is inexhaustive. It includes all fines since 2007, but not all fish kills since 2007. That is because it excludes potable water discharges (resulting in fish kills) between 2018

[310] 40 C.F.R. 122.26(d)(2)(iv)(B)(1)

[311] 64 Fed. Reg. 68722, 68756: "[D]ischarges or flows from fire fighting activities are excluded from the definition of illicit discharge and only need to be addressed where they are identified as significant sources of pollutants to waters of the United States."

[312] 64 Fed. Reg. 68722, 68758: "If an MS4 is concerned that flows from firefighting are, as a category, contributing substantial amounts of pollutants to their system, they could develop a program to address those flows prospectively. The program may include an analysis of the flow from several sources, steps to minimize the pollutant contribution, and a plan to work with the sources of the discharge to minimize any adverse impact on water quality. During the development of such a program, the MS4 may determine that only certain types of flows within a particular category are a concern, for example, fire fighting flows at industrial sites where large quantities of chemicals are present."

[313] McKenney, Hope. Fire Retardant Linked to Fish Deaths in Berkeley Creek Identified by State Fish and Wildlife, *KQED* April 12, 2019; accessed at https://www.kqed.org/news/11739651/fire-retardant-linked-to-fish-deaths-in-berkeley-creek-identified-by-state-fish-and-wildlife.

[314] SFPUC, September, 2010. *Questions and Answers Regarding Chloramine.* Accessed on August 30, 2020, from: https://www.sfdph.org/dph/files/EHSdocs/ehsWaterdocs/Chloramine/SFDPH_Chloramine_in_Drinking_Water_Document_Collection.pdf

[315] Aaron Kinney, November 18, 2014. "Cal Water hit with $3 million penalty for fish-killing San Mateo pipe leak." San Jose Mercury News.

and 2022 which normally would have resulted in fines, because the Water Board chose not to enforce; review of the Water Board's Enforcement Policy resulted in coordination with water purveyors to improve their asset management programs in lieu of penalties.

(1) Cal Water Service Company, $200,000 ACL, 137,640 gallon discharge to Polhemus Creek in September 2007, killed 21 steelhead + 2 stickleback (R2-2009-0006);

(2) EBMUD, $72,000 ACL, 4,200 gallon discharge to Sausal Creek in August 2010 killed 25+ rainbow trout and 23,400 gallon discharge to Reliez Valley Creek in January 2010 with unknown impact. (R2-2012-0008);

(3) CalTrans, $31,250 ACL, 8,250 gallon discharge to Bear Gulch Creek in May 2011, resulted in fish kill (R2-2012-0009);

(4) SFPUC, $608,310 ACL for 4 violations, including a 37,500 gallon discharge to San Mateo Creek in Jan 2011 killing 5 rainbow trout and 16,500 gallon discharge to San Mateo Creek in October 2012 killing 64 fish including 28 steelhead. (R2-2014-1003);

(5) CA Water Service Company, $1,020,000 ACL for 8,207,560-gallon discharge to Polhemus Creek and San Mateo Creek in October 2013 killing 231 fish including rainbow trout and 1 crayfish (R2-2016-1012);

(6) Town Hillsborough, $221,030 ACL for 153,000-gallon discharge to San Mateo Creek in September 2015 killing 505 fish including threatened species under the Endangered Species Act (R2-2017-1028);

(7) EBMUD, $893,190 ACL for 3 discharges: (1) a 72,000-gallon discharge to San Ramon Creek in October 2015 killing 104 fish including mosquitofish, Sacramento suckers, hitch, and California roach; (2) 2,200,000-gallon discharge to Las Trampas Creek in November 2015 killing 17 California roach and 2 Sacramento suckers; and (3) 191,400-gallon discharge to San Ramon Creek killing 140 California roach, 100 three-spined stickleback, 75 mosquitofish, 6 green sunfish, 4 bluegill, and 2 fathead minnows (R2-2017-1031);

(8) Marin Municipal Water District, $129,250 ACL for 105,000-gallon discharge to San Anselmo Creek in July 2016 killing an unquantified number of fish that included sculpin, California roach, and rainbow trout or steelhead (R2-2018-1004);

(9) Dublin-San Ramon Services District, $129,250 ACL for 61,000-gallon discharge to Alamo Creek in September 2017 killing 130 golden shiners and 1 bluegill (R2-2018-1006);

(10) San Jose Water Company, $75,000 ACL for 111,250-gallon discharge to Babb Creek in September 2017 killing 565 fish (R2-2018-1011); and

(11)City of San Mateo, $73,700 ACL for 7,720-gallon discharge to San Mateo Creek in May 2021 killing 44 steelhead, 26 prickly sulpin, 19 Sacramento suckers, 8 threespine stickleback, and 1 crayfish (R2-2022-1001).

The Berkeley incident and the use of chloraminated potable water for firefighting demonstrate that flows from firefighting activities can contribute substantial amounts of pollutants to receiving waters if not managed. As a result, the Water Board has determined that firefighting discharges can contribute significant pollution to receiving waters and require management by Permittees.

This Provision addresses discharges of firefighting water and foam associated with emergency firefighting activities. Discharges of firefighting water and foam associated with non-emergency firefighting activities such as training are neither exempted nor conditionally exempted by this Provision; they are prohibited pursuant to Discharge Prohibition A.1. If there are discharges to storm drain systems or watercourses of firefighting water and/or foam (or other non-stormwater) associated with non-emergency (e.g., training) firefighting activities, which would violate Discharge Prohibition A.1, then Permittees must comply with the reporting specified in Provision C.23.c.

This Provision acknowledges that in cases of emergency discharge, such as from firefighting and disasters, priority of efforts shall be directed toward life, property, and the environment, in that order. Therefore, Permittees are required to implement BMPs only when they do not interfere with immediate emergency response operations or impact public health and safety.

The requirements in Provision C.15.b.iii ensure that Permittees reduce or eliminate the significant pollution from firefighting foam and water discharged during firefighting emergencies, without compromising the ability of firefighting personnel to protect lives and property. Permittees are required to evaluate and improve the efficacy of their BMPs and SOPs for the containment and cleanup of firefighting water and foam discharged during firefighting emergencies. These discharges are significant contributors to pollution in waters of the U.S., for the following reasons:

(1) Potable water is used in emergency firefighting situations, often in combination with firefighting foams. Potable water discharges contribute pollution to water quality in receiving waters because they contain chlorine or chloramines, two chemicals that are toxic to aquatic life. Such discharges can also cause erosion and scouring of stream and creek banks and can result in sedimentation if effective BMPs are not implemented.

(2) Discharges of Class A firefighting foams contribute pollution to water quality in receiving waters, because they contain constituents that are acutely toxic to

aquatic species.[316,317,318,319] In April 2019, a vehicle fire in the City of Berkeley resulted in the discharge of 4,500-12,000 gallons of potable water and 20 gallons of a Class A firefighting foam (for which the primary/active ingredient is a hydrocarbon surfactant; 96-hr LC_{50} Rainbow Trout = 16.8 mg/L) into the City's MS4, which discharged to Codornices Creek and resulted in the deaths of at least 63 Central Coast California Steelhead Trout and 1 sculpin. Similar discharges of other Class A foams with comparable acute aquatic toxicity[316] are likely to cause similar impacts.

(3) Class B firefighting foams are generally divided into two types, fluorinated and fluorine-free. Discharges of both types of Class B firefighting foams[320] contribute pollution to water quality in receiving waters, because they contain constituents that are toxic to aquatic species. Fluorine-free Class B foams do not contain PFAS, but are still acutely toxic to aquatic species[321] because their primary active ingredient is typically a hydrocarbon surfactant.[322] Fluorinated Class B foams typically contain perfluoroalkyl and polyfluoroalkyl substances (PFAS), which are environmentally persistent and toxic to both human health and aquatic species.[323,324,325]

(4) California Senate Bill 1044,[326] approved by the Governor on September 29, 2020, and effective January 1, 2022, prohibits the sale and use of Class B firefighting foams that contain intentionally added PFAS chemicals, with phaseouts for certain continued applications of such foams. This Provision requires the Permittees to recommend reporting requirements (for example,

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[316] https://www.fs.fed.us/rm/fire/wfcs/sds.php

[317] https://www.fs.fed.us/rm/fire/wfcs/documents/NONCONFIDENTIAL-EcoRA-Foams%20June2020draft.pdf

[318]https://www.fs.fed.us/rm/fire/wfcs/documents/307b_Wildland%20Foam_Master%20Draft%20(for%20Public%20release).pdf

[319] https://www3.epa.gov/pesticides/endanger/litstatus/effects/redleg-frog/rotenone/appendix-f.pdf

[320] Class B firefighting foams are commercial surfactant solutions that are used for fire suppression (in particular, of flammable liquids like gasoline, oil and jet fuel) and flammable vapor suppression at military installations and civilian facilities and airports, as well as at petroleum refineries and bulk storage facilities, and chemical manufacturing plants and storage facilities. Municipal fire departments also use Class B firefighting foams for emergency response. Accessed on August 2, 2021, from: https://www4.des.state.nh.us/nh-pfas-investigation/?page_id=148

[321] https://store.danko.net/files/documents/SDS_PC-1-Fluorine-Free-OSHA-WHMIS-GHS_2019-09-13_EN-23.pdf. Web. Viewed <August 2, 2021>

[322] https://serdp-estcp.org/Program-Areas/Weapons-Systems-and-Platforms/Waste-Reduction-and-Treatment-in-DoD-Operations/WP-2738/WP-2738. Web. Viewed <August 2, 2021>

[323] https://www.epa.gov/pfas/basic-information-pfas

[324] https://leginfo.legislature.ca.gov/faces/billAnalysisClient.xhtml?bill_id=201920200SB1044

[325] https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/risk-management-and-polyfluoroalkyl-substances-pfas

[326]https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200SB1044

reporting if any of the exemptions in Senate Bill 1044 are invoked by parties acting within Permittees' jurisdictions, such that firefighting foams containing PFAS chemicals are used during firefighting emergencies) then implement those recommendations. Reporting on discharges of PFAS and other foams is necessary to ensure transparency about continued PFAS use within the Permit region, and transparency about discharges of other firefighting foams which also have adverse environmental impacts.

Provision C.15.b.iii.(2), Regional Coordination, requires the Permittees to convene a regionwide Firefighting Discharges Working Group (Working Group) together with Water Board staff, to identify and evaluate opportunities to reduce the impacts of emergency discharges to the MS4 associated with firefighting activities. The Permittees will collectively (e.g., through the Working Group) evaluate the adequacy of existing BMPs, SOPs and resources used for the containment and cleanup of firefighting foam discharged during firefighting emergencies, culminating in a Firefighting Discharges Report by September 30, 2025, containing recommendations to the Permittees regarding the implementation of BMPs, SOPs, and resources used for the containment and cleanup of firefighting water and foam discharged during firefighting emergencies. A footnote in the Provision clarifies that the Working Group does not have to review every single Permittee's BMPs/SOPs/resources, but that the Working Group can review a representative subset of them. Regarding resources used to determine if and how firefighting water and foam discharged during emergencies will impact receiving waters (e.g., maps), the intent is not to task firefighting personnel with developing/providing/utilizing those resources at each emergency on the spot, but instead, to preemptively consider the availability, need, and utility of the resources, then incorporate the resources that will be helpful (i.e., helpful for mitigating adverse environmental impacts) into the collective municipality's BMPs and SOPs. The Fact Sheet, below, gives examples of BMPs and SOPs that the Working Group should consider. In addition, the Working Group should consider identifying areas where more information or effective BMPs and SOPs may be needed or desirable, if it or they are not yet otherwise available, and as noted above the Group is expected to include reporting recommendations associated with firefighting discharges, and particularly firefighting foams. The requirement for a region-wide Working Group and for the report will help to create administrative efficiencies by allowing Permittees to pool resources and avoid the duplication of work that might occur if they studied these issues individually. The Water Board may consider requiring the Working Group to continue to convene on an ongoing basis in subsequent permit terms, to update the recommendations in the Firefighting Discharges Report as needed.

The Permittees estimate that a portion of fires are responded to (for containment and cleanup) not with municipal resources, but by private contractors. Therefore, Provision C.15.b.iii.(2) additionally requires the Permittees to collectively (e.g., through the Working Group): 1) develop (and revise on an ongoing basis, as-

needed) outreach materials regarding BMPs and SOPs for the containment and cleanup of discharges of firefighting water and foam, for private contractors hired by either Permittees or by private parties to conduct firefighting, containment and cleanup within Permittees' jurisdictions, because a significant portion of fires on private properties are responded to (for containment and cleanup) by private contractors hired by the owners of those private properties. Separately, it is also true that there are some private firefighting crews within the region, such as at large industrial sites like the Chevron refinery in Richmond; the Working Group is encouraged to discuss coordination with these private firefighting crews, as needed (for example, if it is likely that there are emergency discharges from such sites to Permittees' MS4s).

This provision also requires the Permittees to collectively (e.g., through the Working Group) evaluate the environmental impacts of foams and make recommendations about which foams are least environmentally harmful while still performing well. Certain firefighting foams appear to be less environmentally harmful than others (within and between Class A and Class B foams).[327] Then the Permittees are instructed to collectively (e.g., through the Working Group) develop SOPs for the use of those foams, and coordinate with relevant federal, state and local entities, such as the California Department of Forestry and Fire Protection, because those entities may be undergoing similar exercises and may be able to share information that could inform these and other tasks required by Provision C.15.b.iii.(2).

The Working Group could consider addressing reasonably related issues that are beyond the scope of this Provision, such as addressing prohibited (not conditionally-exempted) discharges associated with non-emergency firefighting activities, such as training.

Provision C.15.b.iii.(3), Ongoing Implementation Practices, requires the Permittees to implement the recommendations, to the extent they apply to Permittees' individual firefighting programs, that are included in the Firefighting Discharges Report developed pursuant to Provision C.15.b.iii.(2)(b).

Provision C.15.b.iii.(4), Required BMPs, requires Permittees to implement BMPs and SOPs for the containment and cleanup of discharges of firefighting water and foam associated with emergency firefighting activities, only to the extent that the implementation of such BMPs and SOPs does not jeopardize the ability of firefighting personnel to protect public health and safety. If and when the recommended BMPs and SOPs are implemented, they are likely to prevent or

[327] Fluorine-free foams have been on the market for approximately twenty years, though even these foams have toxic effects, as the fish kill in Berkeley shows. Clean Production Action, a nonprofit based in Somerville, Massachusetts, has developed an environmental screening tool for firefighting foams, which could be a starting point for the Working Group. See Thorpe, Bev. "GreenScreen Certified for Fire Fighting Foam Launched" (Sept. 2020) (accessible at: https://www.cleanproduction.org/resources/entry/fff-launched).

reduce impacts to receiving waters that would otherwise be caused by the discharges associated with the emergency firefighting activities.

BMPs and SOPs may include, but are not limited to, the following:

(1) Plugging of the storm drain collection system for temporary storage;

(2) Dechlorination prior to discharge to the MS4 and receiving waters;

(3) Proper disposal of water and foam according to jurisdictional requirements;

(4) Use of the least environmentally harmful firefighting foams;

(5) Avoiding the use of firefighting foam when it is not necessary;

(6) Use of the proper firefighting foam depending on the type of fire;

(7) When firefighting foam is used, limiting the amount used;

(8) Communication and coordination between both municipal responding departments (e.g., fire, public works, environmental services) and external responding agencies (e.g., CalFire, special district fire departments);

(9) Categorizing fire types and establishing expectations for BMP and SOP implementation based on that categorization; and

(10) Discouraging the use of firefighting foam where it may discharge to receiving waters, particularly receiving waters that may have sensitive habitat, such as habitat for special status species, including certain salmonids.

These recommended BMPs and SOPs will be discussed in the Firefighting Discharges Working Group, including which scenarios they are appropriate for.

Provision C.15.b.iii.(5) requires the Permittees to implement the reporting that is recommended by the Firefighting Discharges Working Group in the Firefighting Discharges Report. Provision C.15.b.iii.(2)(a)(vii) specifies the reporting requirements that Permittees must consider, including what type of information will be reported, as well as how reporting will be triggered, such as: in the case that any amount of any firefighting foam discharges to a receiving water,[328] in the case that five or more gallons of any firefighting foam concentrate discharges to the MS4, regardless of whether or not it impacts a receiving water,[329] and in the case that any amount of PFAS-containing firefighting foam concentrate is used during an emergency, regardless of whether it discharges to the MS4 or a receiving water. The purpose of these additional reporting requirements is to increase transparency about

[328] Pursuant to California Fish and Game Code, Section 5650, there is no minimum reportable quantity for discharges of firefighting foam to waters of the state. https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=FGC&sectionNum=5650

[329] For firefighting personnel, the reportable quantity of HAZMAT released to the environment is five gallons. Additionally, five gallons of firefighting foam is the size of a typical concentrated foam container.

the use of and discharges of non-stormwater to MS4s and receiving waters, as well as to provide direct feedback on the Permittees' implementation of Provision C.15.b.iii.

The Working Group should also discuss notification of the California State Warning Center and the California Department of Fish and Wildlife, for discharges to marine waters (pursuant to CGC 8670.25.5 and 8670.26, FWPCA 311, 33 CFR 153.203, and 40 CFR 302.6), and for discharges to non-marine waters (pursuant to 23 CCR 2250(a), HSC 5411, CWC 13271(a)).

The Water Board may consider including more specific reporting requirements in a future Permit term, based on the reporting recommendations (and the Permittees' implementation of those recommendations) in the Firefighting Discharges Report.

- **Provision C.15.b.iv. Individual Residential Car Washing.** Soaps and automotive pollutants such as oil and metals can be discharged into storm drains and waterbodies from individual residential car washing activities. However, it is not feasible to prohibit individual residential car washing because it would require too much resources for the Permittees to regulate the prohibition. This section of the Permit requires Permittees to encourage residents to implement BMPs such as directing car washwaters to landscaped areas, using as little detergent as possible, and washing cars at commercial car washing facilities.
- **Provision C.15.b.v. Swimming Pool, Hot tub, Spa, and Fountain Water Discharges.** These types of discharges can contain high levels of chlorine and copper. Permittees shall prohibit the discharge of such waters that contain chlorine residual, copper algaecide, filter backwash, or other pollutants to the storm drains or to waterbodies. High flow rates into the storm drain or a waterbody could cause erosion and scouring of the stream or creek banks. These types of discharges should be directed to landscaped areas large enough to accommodate the volume or to the sanitary sewer, with the local sanitary sewer's approval. If these discharge options are not feasible and the swimming pool, hot tub, spa, or fountain water discharges must enter the storm drain, they must be dechlorinated to non-detectable levels of chlorine and they must not contain copper algaecide. Flow rate should be regulated to minimize downstream erosion and scouring. We strongly encourage local sanitary sewer agencies to accept these types of non-stormwater discharges, especially for new and rebuilt ones where a connection could be achieved with marginal effort. This provision also requires Permittees to coordinate with local sanitary agencies in these efforts.
- **Provision C.15.b.v.i. Irrigation Water, Landscape Irrigation, and Lawn or Garden Watering.** Fertilizers and pesticides can be washed off of landscaping and discharged into storm drains and waterbodies. However, it is not feasible to prohibit excessive irrigation because it would require too much resource for the Permittees to regulate such a prohibition. It is also not feasible for individual Permittees to ban the

use of fertilizers and pesticides. This section of the Permit requires Permittees to promote and/or work with potable water purveyors to promote measures that minimize runoff and pollutant loading from excess irrigation, such as conservation programs, outreach regarding overwatering and less toxic options for pest control and landscape management, the use of drought tolerant and native vegetation, and to implement appropriate illicit discharge response and enforcement for ongoing, large-volume landscape irrigation runoff to the storm drains.

C.16. Discharges to Areas of Special Biological Significance

Legal Authority

Broad Legal Authority: CWA section 402(p)(3)(B)(ii-iii), CWC sections 13377 and 13263, 40 CFR 122.26(d)(2)(i)(B, C, D, E, and F), and 40 CFR 122.26(d)(2)(iv).

Specific Legal Authority: In 1972, the State Water Board adopted the Water Quality Control Plan for Ocean Waters of California, California Ocean Plan (Ocean Plan). The State Water Board adopted the most recent amendment to the Ocean Plan on October 16, 2012, and the plan was subsequently approved by the State Office of Administrative Law and U.S. EPA. The State Water Board is responsible for reviewing the Ocean Plan water quality standards and for modifying and adopting standards in accordance with CWA section 303(c)(1) and CWC section 13170.2. Pursuant to CWA sections 13263 and 13377, this Permit implements the Ocean Plan. In accordance with the Ocean Plan, the State Water Board granted an exception to the prohibition of stormwater discharges to Areas of Special Biological Significance (ASBSs), as discussed further below.

Fact Sheet Findings in Support of Provision C.16.

C.16-1 The Ocean Plan prohibits the discharge of waste to designated ASBSs. ASBSs are designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. On March 20, 2012, the State Water Board approved Resolution No. 2012-0012, approving a general exception to the Ocean Plan prohibition against discharges to ASBSs for certain nonpoint source discharges and NPDES-permitted municipal storm water discharges (ASBS Exception), as long as those discharges are covered under an appropriate authorization to discharge, such as this Order and comply with the Special Protections contained in Attachment B (Special Protections) to that resolution, among other requirements. The ASBS Exception was subsequently amended by State Water Board Resolution No. 2012-0031, which required pollutant reductions to be achieved within six years, in accordance with ASBS Compliance Plans.

C.16-2 This provision applies to discharges from the County of San Mateo into the James V. Fitzgerald Marine Reserve ASBS. The provision authorizes the County of San Mateo's stormwater discharge as set forth in the provision and implements the Ocean Plan and the exceptions granted under it by the State Water Board to allow the County of San Mateo to discharge stormwater into the ASBS. The requirements of the Provision are from the ASBS Exception and its Special Protections, which are incorporated into the Order as Attachment F.

C.16-3 The County of San Mateo began development of the Fitzgerald ASBS Pollution Reduction Program in 2011 to comply with the ASBS Exception. The program

is led by the San Mateo County Department of Public Works in collaboration with the San Mateo County Resource Conservation District and the San Francisco Estuary Institute. The project includes implementation of targeted stormwater BMPs, water quality studies, BMP effectiveness monitoring, and education and outreach.

C.16-4 In addition to these efforts, the Water Board has developed a Water Quality Improvement Plan for Bacteria in San Vicente Creek,[330] which is tributary to the Fitzgerald ASBS. In 2016, the Water Board also delisted the Fitzgerald Marine Reserve Beach for bacteria from the 303(d) List based on water quality improvements from BMP implementation, identification and removal of illicit septic system connections, and education and outreach activities.

[330] San Francisco Bay Regional Water Board, "Supporting Implementing a Water Quality Improvement Plan to Achieve Water Quality Objectives for Bacteria in San Vicente Creek, and Recommending Delisting of the Fitzgerald Marine Reserve for Bacteria Pursuant to Section 303(d) of the Clean Water Act," Resolution No. R2-2016-0024.

C.17. Discharges Associated with Unsheltered Homeless Populations

Legal Authority

Broad and Specific Legal Authority: CWA §§ 308(a), 402(p)(3)(B)(ii-iii); CWC §§ 13377, 13263, and 13383; 40 CFR § 122.26(d)(1)(v)(B); 40 CFR § 122.26(d)(2)(i)(B, C, D, E, and F); and 40 CFR § 122.26(d)(2)(iv); Basin Plan Discharge Prohibitions 7, 8, and 15; and Statewide Prohibition on Trash: "The discharge of trash to surface waters of the State or the deposition of trash where it may be discharged into surface waters of the State is prohibited."

Fact Sheet Findings in Support of Provision C.17.

Driven in part by a lack of affordable housing and the high cost of living, a significant number of Bay Area residents are experiencing homelessness. That number increased markedly during MRP 2. For example, according to the latest Point-in-Time counts, between 2017 and 2019, the South Bay, East Bay, and the San Francisco Peninsula saw an approximate 25 percent increase (with individual increases of 17 to 43 percent) in their unsheltered homeless populations. Discharges associated with people experiencing unsheltered homelessness, including human waste and trash, are unauthorized discharges that are prohibited under the MRP. Such discharges are a significant water quality concern because they adversely impact water quality and public health (through the spread of disease). At the same time, these water quality and sanitation issues can be difficult to address because sanitation services can be challenging to provide and homeless populations may not always be receptive to the services being provided. In addition, while longer-term measures to address unsheltered homelessness, such as the provision of housing and supportive services may over time reduce problematic discharges, they do not effectively reduce ongoing discharges over the short term. Thus, actions to reduce and/or eliminate MS4 discharges associated with unsheltered homelessness are necessary to prevent and minimize impacts to water quality and public health. Such actions also can improve overall water quality and sanitary conditions for people experiencing unsheltered homelessness.

In 2015, the Water Board adopted Resolution No. R2-2015-0024, which identified discharges of trash and human waste from homeless encampments as significant water quality and public health concern. The resolution encouraged municipalities to consider water quality issues while addressing the broader social issue of homelessness and undertake efforts to prevent or eliminate discharges from homeless encampments. The resolution further recommended that municipal efforts "…include clear and measurable goals for preventing trash and human waste from discharging" to receiving waters. The resolution also affirmed the Board's authority to issue cleanup and abatement

orders or waste discharge requirements to regulate discharges associated with homeless encampments.

Since adoption of the resolution, some Bay Area municipalities have made progress towards controlling discharges associated with unsheltered homelessness under the Provision C.10 Direct Discharge Control Program. Although efforts under that program have provided benefit with respect to reducing discharges of trash and certain other pollutants, they have not fully addressed discharges associated with unsheltered homelessness that impact water quality. Furthermore, only five Permittees have an approved Direct Discharge Control Plan.

A number of Permittees are taking actions that help address problematic discharges. For example, East Palo Alto and Mountain View have established formalized RV encampments or RV safe parking areas where RV waste can be appropriately collected and disposed using mobile services. In Oakland, where the unsheltered homeless population increased to about 4,000 in 2020, an increase of about 63 percent from 2017,[331] the city has established formalized encampments and is directing resources into affordable housing with the aim of getting those who are willing into housing. In 2020, Oakland adopted a new ordinance regarding where homeless encampments could be located, and is also working to provide sanitary services and manage sites for RVs, and has been targeting services to encampments that are within 500 feet of waterways.[332] Similarly, San Jose has a dedicated outreach team that provides emergency shelter, meals, showers, and other basic needs while working to match individuals experiencing homelessness with an appropriate housing program. The City of San Jose also coordinates with Santa Clara Valley Water District to address discharges associated with unsheltered homelessness in and around creeks.

As noted above, the Bay Area population of people experiencing unsheltered homelessness has continued to grow, and is expected to grow further as eviction moratoria implemented during the COVID-19 pandemic expire. Meanwhile, outbreaks of *Shigella* and Hepatitis A, both spread through fecal-oral contact, among homeless people in California underscore the risks posed by unregulated discharges, particularly of untreated human waste, from encampments.[333] To encourage Permittees' efforts, gain a better understanding of populations experiencing unsheltered homelessness, the location of encampments in relation to storm drain inlets and receiving waters,

[331] Rodriguez, October 21, 2020. Oakland Approves Rules to Restrict Homeless Encampments. U.S. News.

[332] Ibid.

[333] Liu, et al. Communicable Disease Among People Experiencing Homelessness in California, in Epidemiology and Infection (2020).

water quality related impacts, and associated sanitation-related needs, and to better understand the portion of discharges that are being addressed by Permittee efforts, and the extent to which practices may be effective, Provision C.17 requires that Permittees use results from biennial point-in-time census surveys and related information (e.g., databases, complaint logs) to review and update municipalities' implementation practices.

To encourage regional coordination between cities, Caltrans, sanitary sewer agencies, flood control districts, and other agencies (e.g., railroads, non-governmental organizations), Provision C.17 requires that Permittees collectively develop a BMP report that identifies effective practices to address MS4 discharges associated with unsheltered homelessness that impact water quality. The clearing and abating of homeless encampments, in response to public complaints, can often result in the encampment simply moving to a different location and continuing the discharges in the new location. The intent of this BMP report is therefore to foster (and prioritize) regional collaboration that takes into account the transient nature of unsheltered homeless populations, and the inherent benefit to Permittees sharing knowledge and resources on proven and effective strategies to managing the associated discharges from homeless encampments that impact water quality. The three main components of this report include:

(1) Identifying practices (e.g., outreach, cleanup, sanitation) that could be implemented by Permittees to address discharges associated with unsheltered homelessness that are impacting water quality;

(2) Identifying regional and/or countywide efforts and implementation actions towards addressing discharges associated with unsheltered homelessness. Permittees should include recommendations for engaging in such efforts that aim to provide clean water and sanitation needs for the homeless population; and

(3) Identifying practices implemented by municipalities during the COVID-19 pandemic to reduce the spread of the virus in homeless populations (such as providing temporary housing, etc.) that may have contributed towards a water quality benefit.

The tasks identified above are intended to assist Permittees in developing a framework for controlling and eliminating MS4 discharges associated with homeless encampments, and refining individual and collaborative best management practices (associated with unsheltered homelessness) to ensure the protection of water quality and public health. Practices that harm or criminalize unsheltered homeless residents, such as encampment sweeps, are discouraged under this provision. To evaluate BMP effectiveness, Provision C.17 requires that Permittees report on the control measures being

implemented, the approximate portion and locations of the unsheltered homeless population being served by those measures, and the portion (number of people) and location not reached, or not fully served by those measures. Examples of control measures include, but are not limited to, access to emergency shelters; the provision of social services, clean drinking water, and sanitation services; voucher programs for proper disposal of RV sanitary sewage; establishment of designated RV “safe parking” areas or formalized encampments with appropriate services; provision of mobile pump-out services; establishing and updating sidewalk/street/plaza cleaning standards for the cleanup and appropriate disposal of human waste; and establishing various cleanup or pickup programs within the Permittees jurisdiction, or at the countywide or regional level.

C.18. Control of Sediment Discharges from Coastal San Mateo County Roads

Legal Authority

This is a TMDL-derived Provision, for which the legal authority is cited in the Fact Sheet section on Provisions C.9-C.14.

Fact Sheet Findings in Support of Provision C.18

C.18-1 This Permit Provision implements the Pescadero and Butano Creeks Watershed Sediment TMDL adopted by the Water Board June 13, 2018 and approved by the U.S. EPA on June 24, 2019. The implementation plan included in this TMDL requires San Mateo County to complete a roads assessment, including a prioritized list of road repair projects, stormproof unpaved roads, and implement other BMPs to reduce sediment in runoff from County roads in the Pescadero Creek and Butano Creek watersheds. A similar strategy is being developed for the San Gregorio watershed to address sediment impairment; thus, this Permit Provision includes the San Gregorio watershed as well. For the San Gregorio Creek watershed, the Water Quality Improvement Plan calls for San Mateo County to complete twenty percent of the sediment reductions actions described above by June 30, 2029, and fifty percent by 2032.

C.18-2 The TMDL contains allocations for sediment loading from County road runoff expressed in tons per year and as a percentage of the natural background sediment load. Attainment of this allocation is required to achieve the Numeric Targets for the Pescadero and Butano Creek Watershed. Consequently, this provision is critical to the successful implementation of the sediment reduction requirements of the TMDL.

Specific Provision C.18 Requirements

Provision C.18.a Road Erosion Inventory requires the County to prepare a road erosion inventory to identify and prioritize actions to reduce road-related erosion from hydrologically connected County roads. Hydrologic connectivity refers to the length or proportion of a road that drains runoff directly to streams or other water bodies. The County is required to report on the road erosion inventory as part of the 2023 Annual Report.

Provision C.18.b Prioritized List and Schedule of Actions requires the County to develop a prioritized list and schedule of actions, such as culvert repair or replacement, to reduce road related sediment delivery to stream channels, based on the results of the Road Erosion Inventory conducted in Provision C.18.a. The County is required to submit the prioritized list and schedule of actions as part of the 2023 Annual Report.

Provision C.18.c Implement Control Measures to Attain Performance Standards requires the County to implement control measures and pollution prevention strategies to reduce road related sediment delivery from County roads to stream channels, based on the Prioritized List and Schedule of Actions completed in Provision C.16.b. The County is required to implement and complete at least twenty percent (20%) of the control measures identified in the Prioritized List and Schedule of Actions by 2027. The County is required to report on the status of completed control measures in the Annual Report each year starting the first year of project implementation.

Provision C.18.d. Monitoring requires the County to conduct implementation, effectiveness and forensic monitoring to assess the performance of implemented control measures. The County is required to provide a monitoring report as part of the Annual Report each year starting in the first year of project implementation. The monitoring and reporting requirements of Provision C.18 are authorized under CWA § 308, 40 C.F.R. §§ 122.26(d)(2), 122.41(h), (j) and (l), 122.42(c), 122.44(i) and 122.48, and CWC § 13383.

C.19. Cities of Antioch, Brentwood, and Oakley, Unincorporated Contra Costa County, and the Contra Costa County Flood Control and Water Conservation District Requirements

Findings in Support of Provision C.19

C.19-1 Contra Costa County watersheds are under two Regional Water Quality Control Boards' jurisdiction, the San Francisco Bay Water Board and the Central Valley Water Board. The cities of Antioch, Brentwood, and Oakley, and portions of Unincorporated Contra Costa County and the Contra Costa County Flood Control and Water Conservation District (CCCFCWCD) (the East County Permittees) in Contra Costa County are in the Central Valley Water Board's jurisdiction.

C.19-2 The East County Permittees are member agencies of the Contra Costa Clean Water Program (CCCWP). CCCWP assists its member agencies – most of whom are within the San Francisco Bay Water Board's jurisdictional boundaries – with tasks that can be done consistently throughout the County.

C.19-3 In 1992, the San Francisco Bay Water Board issued the first NPDES permit with requirements for stormwater discharges from municipal separate storm sewer systems (MS4s) in Contra Costa County cities and towns, and the portions of the County and CCCFCWCD located in its jurisdiction. In 1993, the Central Valley Water Board used the permit issued by the San Francisco Bay Water Board as a model and issued an NPDES permit with waste discharge requirements for stormwater discharges from MS4s within the East County Permittees' jurisdictions. In subsequent permit reissuance cycles, each Regional Water Board adopted stormwater permits for Contra Costa County with similar provisions, exercising an inter-regional, collaborative approach for the East County Permittees.

C.19-4 On October 14, 2009, the San Francisco Bay Water Board issued its first region-wide NPDES permit, Order No. R2-2009-0074, NPDES Permit No. CAS612008, for stormwater discharges from MS4s in Alameda, Contra Costa, San Mateo, and Santa Clara counties, the cities of Fairfield, Suisun, and Vallejo, and the Vallejo Sanitation and Flood Control District. The Central Valley Water Board used Order No. R2-2009-0074 as a model and adopted Order No. R5-2010-0102, reissuing NPDES Permit No. CAS083313 for the East County Permittees to discharge stormwater from MS4s in their jurisdictions on September 23, 2010. Where Order No. R2-2009-0074 provisions were sufficient to meet the requirements of the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Central Valley Basin Plan) and other Central Valley Water Board policies, the provisions in Order No. R5-2010-0102 were the same as those in Order No. R2-2009-0074. Where different or additional provisions were required to meet

the requirements of the Central Valley Basin Plan or other Central Valley Water Board policies, including the Sacramento-San Joaquin Delta Estuary Methylmercury Total Maximum Daily Load (TMDL), those different or additional provisions were included in Order No. R2-2009-0074.

C.19-5 On November 19, 2015, the San Francisco Bay Water Board adopted Order No. R2-2015- 0049, updating and reissuing waste discharge requirements for stormwater discharges from MS4s in Alameda, Contra Costa, San Mateo, and Santa Clara counties, the cities of Fairfield, Suisun, and Vallejo, and the Vallejo Sanitation and Flood Control District.

C.19-6 The East County Permittees submitted to the Central Valley Water Board a report of waste discharge, dated March 4, 2015, for reissuance of their waste discharge requirements under NPDES permit to discharge stormwater runoff from storm drains and watercourses within their jurisdictions. The East County Permittees anticipated that the Central Valley Water Board would reissue their stormwater permit with requirements consistent with the San Francisco Bay Water Board 's Order No. R2-2015-0049. However, the Central Valley Water Board was already preparing a region-wide General Waste Discharge Requirements and NPDES Permit for stormwater discharges from MS4s (General Permit) within the Central Valley region.

C.19-7 The Central Valley Water Board did not support adopting separate waste discharge requirements for stormwater discharges from the East County Permittees, which would be consistent with the San Francisco Bay Water Board's Order No. R2-2015-0049. The General Permit is significantly different from Order No. R2-2015-0049 and thus would not allow the East County Permittees to continue the collaborative approach through CCCWP. The Central Valley Water Board offered the East County Permittees two options: request a transfer of jurisdiction for stormwater permitting to the San Francisco Bay Water Board or obtain coverage under the General Permit.

C.19-8 In the fall of 2016, the East County Permittees asked the Central Valley Water Board to designate the San Francisco Bay Water Board as the permitting entity for stormwater discharges from their MS4s.

C.19-9 In a letter dated January 6, 2017, the San Francisco Bay Water Board and the Central Valley Water Board designated the San Francisco Bay Water Board to regulate MS4 discharges from the East County Permittees. The designation set forth the following conditions:

(1) The designation is only for MS4 permitting

(2) Each Regional Water Board reserves the right to take enforcement actions authorized by law against an East County Permittee for violations of an MS4 permit provision that affects that Regional Water Board's watershed

(3) The San Francisco Bay Water Board will consult and coordinate with the Central Valley Water Board in the development of MS4 permit provisions to ensure they adequately reflect and implement the Central Valley Water Board's Basin Plan and policies; and

(4) The Central Valley Water Board will approve any plans and/or studies required for compliance with the Central Valley Water Board's Basin Plan and policies.

C.19-10 Order No. R2-2019-0004 amended Order No. R2-2015-0049 to add the East County Permittees. It also allowed them extended timelines to come into compliance with specific Order No. R2-2015-0049 provisions and identified and exempted those Order No. R2-2015-0049 provisions that do not apply to the East County Permittees, and incorporated requirements for the Sacramento-San Joaquin Delta Estuary Methylmercury TMDL and the Sacramento-San Joaquin Delta Diazinon and Chlorpyrifos TMDL.

Specific C.19 requirements

Provision C.19.a (Mercury Controls) exempts the East County Permittees from Provision C.11, Mercury Controls, because the East County Permittees are not subject to the San Francisco Bay Mercury TMDL. Therefore, they do not have San Francisco Bay Mercury TMDL wasteload allocations (WLAs) for mercury (See Provision 19.d concerning compliance with the Delta Methylmercury TMDL).

Provision C.19.b (Polychlorinated Biphenyls (PCBs) Controls) exempts the East County Permittees from Provision C.12, PCBs Controls, because the East County Permittees are not subject to the San Francisco Bay PCBs TMDL. Therefore, they do not have San Francisco Bay PCBs TMDL WLAs.

Provision C.19.c (Diazinon and Chlorpyrifos Controls) implements the Sacramento-San Joaquin Delta Diazinon and Chlorpyrifos TMDL. The Central Valley Water Board adopted a basin plan amendment including a TMDL for diazinon and chlorpyrifos in the Sacramento-San Joaquin Delta Waterways (Delta Waterways)[334] on June 23, 2006. The State Water Board and U.S. EPA both approved the basin plan amendment. The TMDL includes WLAs for diazinon and chlorpyrifos applicable to the East County Permittees.

(1) The TMDL states that levels of diazinon and chlorpyrifos shall not exceed the sum (S) of one (1) as defined below:

[334] The Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin Appendix 42 lists the Delta Waterways to which the site-specific diazinon and chlorpyrifos water quality objectives and implementation and monitoring provisions apply.

$$S = \frac{C_D}{WQO_D} + \frac{C_C}{WQO_C} \leq 1.0$$

where:

C_D = diazinon concentration in ug/L of point source discharge

C_C = chlorpyrifos concentration in ug/L of point source discharge

WQO_D = acute or chronic diazinon water quality criterion (0.160 and 0.100 ug/L, respectively)

WQO_C = acute or chronic chlorpyrifos water quality criterion (0.025 and 0.015 ug/L, respectively)

For the purpose of calculating the sum (S) above, non-detectable concentrations are considered to be zero.

The East County Permittees' previous permit included requirements for the Diazinon and Chlorpyrifos TMDL. The final compliance deadline for the TMDL was December 1, 2011.

The East County Permittees submitted a letter dated September 13, 2018, demonstrating their discharge has not exceeded the TMDL WLAs or water quality objective concentrations for diazinon and chlorpyrifos since 2008. The letter summarizes the results of diazinon and chlorpyrifos monitoring from 2012 - 2014 under the CCCWP's Pollutants of Concern Load Monitoring at Lower Marsh Creek. This sampling location is directly downstream from one of the largest continuous urbanized areas in East County and samples characterized critical storm runoff events.

In addition, the letter includes diazinon and chlorpyrifos summary monitoring data from other County locations, in areas with both urban and agricultural lands from 2001-2017 by three programs: the State of California's Surface Water Ambient Monitoring Program (SWAMP), the Department of Pesticide Regulation (DPR) Statewide Pesticide Monitoring Program, and the San Francisco Estuary Institute (SFEI) Small Tributaries Loading Strategy. The SWAMP monitoring data includes 16 chlorpyrifos samples with no detections or exceedances, and 16 diazinon samples with 9 detections and 9 exceedances from 2001 - 2005. The DPR monitoring data includes 13 chlorpyrifos samples with 1 detection and 1 exceedance, and 13 diazinon samples with 1 detection and 1 exceedance from 2008 - 2009 and 2017. The chlorpyrifos and diazinon exceedances occurred in 2009 and could have been from agricultural sources. The SFEI monitoring data includes 5 chlorpyrifos samples with no detections or exceedances, and 5 diazinon samples with no detections or exceedances from 2013 -

2014. The monitoring data from SWAMP, DPR, and SFEI show that water quality objectives for diazinon and chlorpyrifos have not been exceeded since 2009, providing additional data to reflect the trend of reduced diazinon and chlorpyrifos concentrations in urban runoff.

The decline in concentrations of diazinon and chlorpyrifos in the waters to which the East County Permittees discharge is consistent with observations of declines in urban runoff concentrations in the Central Valley Watershed following cancellation of urban uses of these chemicals. U.S. EPA cancelled the sale of nearly all non-agricultural diazinon and chlorpyrifos products by 2004. However, residents could still be storing diazinon and chlorpyrifos products, and old supplies remain legal to use. Because use of these products is still allowed and out of the direct control of the East County Permittees, there still is potential that such use could make consistent attainment of numeric effluent limits infeasible. The implementation of Provision C.9 by the East County permittees is consistent with the requirements of the Sacramento-San Joaquin Delta Diazinon and Chlorpyrifos TMDL. Provision C.9 requirements are in the implementation plan for the Sacramento-San Joaquin Delta Diazinon and Chlorpyrifos TMDL. The existing monitoring for toxicity and pesticides in Provision C.8. will be sufficient to demonstrate continued compliance with the diazinon and chlorpyrifos TMDL.

Provision C.19.d (Methylmercury Control Measure Plan and Monitoring) requires the East County Permittees to submit a methylmercury control plan and conduct a corresponding reasonable assurance analysis. The East County Permittees proposed completing these documents as part of their Delta Mercury Control Study Final Report that was submitted to meet Phase 1 of the Central Valley Water Board's Water Quality Control Plan for the Sacramento River and San Joaquin River Basin's Sacramento-San Joaquin River Delta Mercury Control Program and associated Methylmercury TMDL (see Fact Sheet for Provision C.19.e, below). Provision C.19.d requires methylmercury monitoring intended to assess inputs of methylmercury to the Delta from Marsh Creek and urban runoff; provide information to support implementation of pollutant control strategies; and assess progress toward achieving WLAs for the TMDL; and help resolve uncertainties in loading estimates and impairments associated with methylmercury. In particular, methylmercury monitoring addresses the management questions proposed by the CCCWP and set forth in Provision C.19.d.ii.(1)(f)

CWA section 402 (a)(2); 40 CFR sections 122.42(c)(4), 122.44(i), and 122.48(b); and CWC section 13383 provide authority for the Water Board to require monitoring and technical water quality reports. Provision C.19.d. requires Permittees to submit electronic and comprehensive reports on their water quality monitoring activities to (1) determine compliance with monitoring requirements and (2) provide information useful in evaluating compliance with all Permit requirements.

Provision C.19.e (Delta Mercury Control Program) implements the Delta Methylmercury TMDL in. the Water Quality Control Plan for the Sacramento River and

San Joaquin River Basins to address the mercury impairments (See Resolution No. R5-2010-0043.). The Delta Methylmercury TMDL was approved by the State Water Resources Control Board and the California Office of Administrative Law. Final approval by the U.S. EPA occurred on October 20, 2011.

The Delta is impaired because of elevated levels of methylmercury in fish. The Delta is on the CWA 303(d) list for mercury and the State Water Resources Control Board has designated the Delta as a toxic hot spot under the Bay Protection and Toxic Hot Spot Cleanup Program. Mercury problems are evident throughout the Central Valley watershed. The main concern with inorganic mercury is that it can develop into methylmercury, a powerful neurotoxin that bioaccumulates in the aquatic food chain to harmful levels. Health advisories have been issued which recommend limiting consumption of fish from the Bay/Delta, tributaries to the Delta, and many lakes and reservoirs in the Central Valley. Concentrations of mercury in fish in other water bodies approach or exceed National Academy of Science (NAS), U.S. EPA, and/or U.S. Food and Drug Administration (FDA) guidelines for wildlife and human protection. Mercury levels also exceed water quality objectives for the Delta and elsewhere. In addition to these concerns, fish-eating birds taken from some bodies of water in the basins have levels of mercury that can be expected to cause toxic effects. Bird-kills from mercury also have been documented in Lake Berryessa.

Components of the Delta Methylmercury TMDL relevant to municipal stormwater that are implemented through Provisions C.19.d and C.19.e are as follows:

(1) The methylmercury wasteload allocations for the East County Permittees, by Delta subarea, are:

   (a) Central Delta 0.75 grams/year;

   (b) Marsh Creek 0.30 grams/year; and

   (c) West Delta 3.2 grams/year

(2) Compliance with the methylmercury waste load allocations are required to be met as soon as possible, but no later than January 1, 2030, unless the Central Valley Regional Water Board modifies the TMDL implementation schedule and final compliance date. The wasteload allocations for the Central and West Delta subareas are associated with a 0% reduction requirement while the wasteload allocation for the Marsh Creek subarea is associated with a 73% reduction requirement.

(3) The NPDES permits for urban runoff management agencies shall require pollution prevention measures and the implementation of BMPs to minimize total mercury discharges, as well BMPs to control erosion and sediment discharges with the goal of reducing mercury discharges. In addition to controlling mercury loads, BMPs or control measures shall include actions to reduce mercury-related risks to human health and wildlife. Requirements in the permit issued or reissued

and applicable for the term of the permit shall be based on an updated assessment of pollution prevention measures and BMPs to minimize total (inorganic) mercury discharges.

(4) Annual methylmercury loads in urban runoff in MS4 service area within the Delta and Yolo Bypass may be calculated by the following method or by an alternate method approved the Central Valley Water Board Executive Officer. The annual methylmercury load in urban runoff for a given MS4 service area during a given year may be calculated by the sum of wet weather and dry weather methylmercury loads. To estimate wet weather methylmercury loads discharged by MS4 urban areas, the average of wet weather methylmercury concentrations observed at the MS4's compliance locations maybe multiplied by the wet weather runoff volume estimated for all urban areas within the MS4 service area within the Delta and Yolo Bypass. To estimate dry weather methylmercury loads, the average dry weather methylmercury concentrations observed at the MS4's compliance locations may be multiplied by the estimated dry weather urban runoff volume in the MS4 service area within the Delta and Yolo Bypass. This method is consistent with that used to develop load estimates in the Delta Methylmercury TMDL.

(5) Urban runoff management agencies have a responsibility to oversee various discharges within the agencies' geographic boundaries. However, if it is determined that a source is substantially contributing to mercury or methylmercury loads to the Delta or is outside the jurisdiction authority of any agency, the Central Valley Water Board may consider issuing additional allocations and regulatory requirements for the source in question.

Since a methylmercury reduction was not required for the West or Central subareas, the Delta Mercury Control Study Final Report did not identify any new mercury control measures beyond implementing green infrastructure in new and retrofitted urban developments and continuing to implement the control measures consistent with the Delta Methylmercury TMDL. The Delta Mercury Control Study Final Report states that additional information is required to determine if elevated methylmercury in Marsh Creek can be controlled as part of the actions to also prevent eutrophication conditions. This study will be completed as part of the methylmercury control plan and corresponding reasonable assurance analysis.

Provision C.19.e requires the East County Permittees to implement the following pollution prevention measures, BMPs, and risk reduction measures.

Mercury Collection and Recycling – Mercury is found in a wide variety of consumer products (e.g., fluorescent bulbs, thermometers) that are subject to recycling requirements. These recycling efforts are already happening throughout the Region, and this Provision requires continued implementation of collection and recycling of

mercury containing devices and waste products and alternative procedures to improve proper handling, disposal, and recycling of mercury-containing products.

Enhanced Municipal Management Practices to Reduce Sediment Discharges – Unless appropriate BMPs are implemented, municipal operations and maintenance activities are potential sources of sediment discharges. Sediment accumulated on sidewalks, corporation yards, roads, parking lots, and landscaping, is a major source of point source pollutants found in urban runoff. The enhanced municipal management practices to reduce sediment discharges are intended to minimize total (inorganic) mercury discharges required by the Delta Methlymercury TMDL. Thus, Provision C.19.e requires the East County permittees to implement minimum BMPs for municipal facilities and activities as part of their ongoing pollution prevention efforts. Such prevention measures include, but are not limited to, storm drain drop inlet and pipeline cleaning, landscaping, road construction, road repair, and pump station cleaning. The work of municipal maintenance personnel vital to minimize stormwater pollution because personnel work directly on municipal storm drains and other municipal facilities. Through work such as inspecting, and cleaning storm drain drop inlets and pipes and conducting municipal construction and maintenance activities upstream of the storm drain, municipal maintenance personnel are directly responsible for preventing and removing pollutants from the storm drain.

Public Education and Risk Reduction – An informed and knowledgeable community is critical to the success of a stormwater program since it helps ensure greater support for the program as the public gains a greater understanding of stormwater pollution issues and its importance and influences positive stormwater pollution prevention behavior.

The East County Permittees have been implementing public outreach campaigns to educate their community on mercury pollution prevention. This Permit requires the East County Permittees to continue implementing a public education, outreach and participation program that is designed to reach residential, commercial, and industrial sources of mercury-containing products or emissions. The East County Permittees can utilize various electronic and print media and paid and free media to best reach the different various target audiences. Additionally, the East County Permittees need to continue communicating with a broad spectrum of citizens with stormwater pollution prevention information through long-established outreach mechanisms such as staffing tables or booths at fairs, street fairs, and other community events. An informed community ensures greater compliance with the stormwater program as the public becomes aware of the personal responsibilities expected of them and others in the community, including the individual actions they can take to protect or improve the quality of local waters.

Methylmercury is a toxicant that is harmful to the brain and nervous system of infants, children, and the developing fetus. Nearly all fish caught in the Delta contain traces of methylmercury, the methylated form of mercury. However, larger fish that have lived longer have the highest levels of methylmercury because they have had more time to

accumulate it. These large fish pose the greatest risk to children and pregnant women who eat them regularly. This Provision requires continual actions to manage human health risk due to mercury in Delta fish. This includes effort to communicate the health risks of eating Delta fish to high risk-communities.

Methylmercury Controls - In a previous permit (Order No. R5-2010-0102), the East County Permittees were required to implement Phase 1 of the Delta Methylmercury TMDL. Phase 1 required them to conduct methylmercury control studies to monitor and evaluate the effectiveness of existing BMPs to control methylmercury and to develop and evaluate additional BMPs effectiveness to control methylmercury. In October 2018, the East County Permittees submitted the Delta Methylmercury Control Study Final Report to the Central Valley Water Board documenting the results of their control studies. As was shown in bioretention cell LAU3, construction of bioretention cells with an underdrain in areas allowing tidal inundation of the media may lead to an increase in mercury methylation. Therefore, this Provision requires the Permittees to implement control measures that reduce mercury methylation potential and retrofit existing BMPs that show an increased potential for mercury methylation. This Provision is also intended to require the Permittees to implement any other methylmercury controls identified in the methylmercury control plan and corresponding reasonable assurance analysis.

The Central Valley Regional Water Board will use the results of the control studies to conduct a Phase 1 Delta Methylmercury TMDL Review that considers:

- Modification of methylmercury goals, objectives, allocations and/or the final compliance date;
- Implementation of management practices and schedules for methylmercury controls; and
- Adoption of a mercury offset program for dischargers who cannot meet their load and waste load allocations after implementing all reasonable load reduction strategies.

The findings of the control studies and other information will also be used to re-evaluate the fish tissue objectives, the linkage analysis between objectives and sources, and the attainability of the allocations. The linkage analysis, fish tissue objectives, allocations, and time schedules may also be adjusted. In addition, the Central Valley Water Board will use the Phase 1 Control Studies' results and other information to consider amendments to the Delta Methylmercury TMDL during the Phase 1 Delta Methylmercury TMDL Review.

Phase 2 of the Delta Methylmercury TMDL begins after the Phase 1 Delta Methylmercury TMDL Review. If Phase 2 begins during this Permit term, this Permit may be amended to include additional requirements.

C.19.f (Pyrethroid Control Program) implements the Central Valley Water Board's Water Quality Control Plan for the Sacramento and San Joaquin River Basins' conditional prohibition of the discharges of pyrethroid pesticides as well as monitoring and reporting requirements (adopted through Resolution No. R5-2017-0057). On August 31, 2020, the East Contra Costa Permittees submitted for approval as a pyrethroid management plan the actions required under Provision C.9. On December 30, 2020, the Central Valley Water Quality Board sent a letter to the East County Permittees stating that the elements of the Pesticide Control Program in Provision C.9 were consistent with the Pyrethroid Basin Plan Amendment requirements for a pyrethroid management plan and included all the management practices required to be considered for inclusion in a pyrethroid management plan. Additionally, this provision implements the requirement to submit a baseline monitoring report to the Central Valley Water Board as required in the Pyrethroid Basin Plan Amendment of municipal dischargers discharging to non-pyrethroid TMDL waters.

C.20. Cost Reporting

Legal Authority

The following legal authority applies to Provision C.20:

Broad Legal Authority: CWA sections 402(p)(3)(B)(ii-iii), CWC sections 13377 and 13263, and Federal NPDES regulations 40 CFR 122.26(d).

Specific Legal Authority: Federal NPDES regulation 40 CFR 122.26(d)(1)(vi) requires "[for] each fiscal year to be covered by the permit, a description of the financial resources currently available to the municipality to complete part 2 of the permit application. A description of the municipality's budget for existing storm water programs, including an overview of the municipality's financial resources and budget, including overall indebtedness and assets, and sources of funds for storm water programs."

Federal NPDES regulation 40 CFR 122.26(d)(2)(vi) requires "[for] each fiscal year to be covered by the permit, a fiscal analysis of the necessary capital and operation and maintenance expenditures necessary to accomplish the activities of the programs under paragraphs (d)(2) (iii) and (iv) of this section. Such analysis shall include a description of the source of funds that are proposed to meet the necessary expenditures, including legal restrictions on the use of such funds."

Fact Sheet Findings in Support of Provision C.20

C.20-1 Fiscal analysis and cost reporting provide a useful tool to evaluate program implementation and effectiveness. U.S. EPA has found that "examining the levels of proposed spending and funding allows the permitting authority to gauge the ability of the applicant to implement the program and predict its effectiveness. The fiscal analysis also will help determine whether the applicant has met the statutory requirement of reducing the discharge of pollutants to the MS4 to the maximum extent practicable. Finally, the estimates help the applicant evaluate the feasibility and cost-effectiveness of its program."[335]

C.20-2 Standardization and comparison of cost reporting is supported by the State Water Board-funded NPDES Stormwater Cost Survey, which finds that "standards for reporting costs and stormwater activities are needed to allow accurate cost comparisons to be made between stormwater activities."[336]

[335] "Guidance Manual for the Preparation of Part II of the NPDES Permit Applications for Discharges from Municipal Separate Storm Sewer Systems," U.S. EPA 833-B-92-002, November 1992.

[336] "NPDES Storm Water Cost Survey Final Report. Office of Water Programs," California State University, Currier, Brian K., et al. 2005.

C.20-3 The State Water Board's Office of Research, Planning, and Performance (ORPP) has also developed guidance[337] for Water Board staff on obtaining MS4 Permit implementation costs from permittees. This guidance describes the benefits from greater detail and more standardization in cost reporting because stormwater issues vary from system to system, often making it difficult to compare compliance costs for individual MS4 permits. Collecting standardized data on what permittees spend to comply with their MS4 permits will allow the Water Boards and stakeholders to broadly compare across regions and systems and to identify trends over time.

C.20-4 The City of Salinas MS4 Permit provides another example of standardized cost reporting data being used to evaluate the effectiveness of program implementation.[338] It finds that "consistent and reliable cost information is critical for the Permittee to manage its assets, programs, funding strategies, and potential future credit programs and stormwater utility fees."

C.20-5 The cost reporting categories were developed considering the ORPP guidance, as well as the cost reporting requirements of the City of Salinas MS4 Permit and the Regional MS4 Permit for Los Angeles and Ventura Counties.[339]

C.20-6 To provide additional flexibility to Permittees in developing a reporting methodology that considers the unique aspects of each program, while also allowing for broad comparisons between program components and costs, the Permit allows Permittees to engage in a collaborative approach to developing a consistent framework.

[337] "Guidance for Staff on Obtaining MS4 Permit Implementation Costs from Permittees and Factors Permittees Could Consider When Reporting to the Water Boards," State Water Board Office of Research, Planning, and Performance (ORPP), April 16, 2019.

[338] Central Coast Regional Water Board, NPDES Permit and WDR for the City of Salinas Municipal Stormwater Discharges, NPDES Permit No. CA0049981, Order No. R3-2019-0073, adoption date: September 20, 2019, effective date: October 1, 2019.

[339] Los Angeles Regional Water Board, NPDES Permit for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles and Ventura County, NPDES Permit No. CAS004004, Order No. R4-2021-0105, NPDES Permit No. CAS004004.

C.21. Asset Management

Legal Authority

The following legal authority applies to Provision C.21:

Broad Legal Authority: CWA sections 402(p)(3)(B)(ii-iii), CWC sections 13377 and 13263, and Federal NPDES regulations 40 CFR section 122.26(d).

Specific Legal Authority: Federal NPDES regulation 40 CFR section 122.41(e) requires a permittee to properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with its permit.

Federal NPDES regulation 40 CFR section 122.26(d)(1)(v) requires permittees to supply information on implementation and operation and maintenance measures for structural controls.

Federal NPDES regulation 40 CFR section 122.26(d)(1)(iii)(B)(5) requires permittees to provide, “the location of major structural controls for stormwater discharge (retention basins, detention basins, major infiltration devices, etc.).”

Federal NPDES regulation 40 CFR section 122.26(d)(2)(iv) requires permittees to provide, “a description of structural control measures to reduce pollutants in runoff from commercial and residential areas.” It also requires permittees to “describe priorities for implementing controls.”

Federal NPDES regulation 40 CFR section 122.26(d)(1)(vi) requires permittees to provide, “A description of the municipality’s budget for existing storm water programs, including an overview of the municipality’s financial resources and budget, including overall indebtedness and assets, and sources of funds for storm water programs.”

Federal NPDES regulation 40 CFR section 122.26(d)(2)(vi) requires an annual fiscal analysis of the necessary capital and operation and maintenance expenditures necessary to accomplish the activities of the programs under 40 CFR sections 122.26(d)(2)(iii) and (iv).

Fact Sheet Findings in Support of Provision C.21

C.21-1 This Order requires each Permittee to develop and implement an Asset Management Plan to ensure the satisfactory condition of all hard assets constructed during this and previous permit terms, by continuing to improve its understanding of its stormwater infrastructure condition and performance, by accounting for additional stressors on those assets, such as those related to climate change, and by identifying cost factors to support more accurate forecasting and budget development.

C.21-2 Asset management has been defined as an integrated optimization process of "managing infrastructure assets to minimize the total cost of owning and operating them, while continuously delivering the service levels customers desire, at an acceptable level of risk."[340]

C.21-3 Asset management is important to ensure proper operation and maintenance of all facilities and controls used to comply with an NPDES permit. U.S. EPA has also recognized the importance of incorporating asset management provisions into permits to ensure permittees implement sound system operation and maintenance practices, properly plan for needed system replacements and upgrades, and meet water quality protection requirements.[341]

C.21-4 An MS4 permittee must establish appropriate quality assurance procedures to ensure that its discharge meets MEP and water-quality based requirements. Asset management plans provide a framework for setting and operating these quality assurance procedures and ensure that the MS4 permittee has sufficient financial and technical resources to continually maintain a minimum performance level of its hard assets, in compliance with 40 CFR § 122.41(e).

C.21-5 40 CFR sections 122.26(d)(1)(iii)(B)(5) and 122.26(d)(2)(iv) support the inclusion of structural controls in the asset inventory.

C.21-6 The fiscal requirements at 40 CFR sections 122.26(d)(1)(vi) and 122.26(d)(2)(vi) are integral components of the Asset Management Plan required by this Order. They support the requirement to evaluate or forecast costs necessary for the implementation of the Operation, Maintenance, Rehabilitation, and Replacement plan, as well as the overall concept of the asset management program to identify assets and describe the financial plan to manage those assets.

C.21-7 U.S. EPA Support for Asset Management and Available Guidance and Examples: U.S. EPA has emphasized the development of asset management programs in recent years as a useful tool for ensuring consistent performance of water infrastructure systems while minimizing the costs associated with the operation of these systems. U.S. EPA has required stormwater utilities to develop and implement asset management plans to provide the tracking and planning framework needed to meet these requirements in their permitting.[342] The growing concern for aging infrastructure among entities responsible for

[340] Association of Metropolitan Sewerage Agencies (AMSA), et al. 2002.

[341] "Asset Management: Incorporating Asset Management Planning Provisions into NPDES Permits," December 2014, U.S. EPA, Region 9.

[342] U.S. EPA issued NPDES Permit No. GUS040001, authorizing the Guam Department of Public Works to discharge under the National Pollutant Discharge Elimination System, issuance date: December 20, 2018. Provisions requiring an Asset Management Plan are found on page 38 of the Guam Permit.

operating, maintaining, and improving stormwater, wastewater, and drinking water systems has led to development and implementation of formal asset management programs to reduce unexpected and expensive repairs and increase overall system performance. The CWA specifies that NPDES permits must include requirements for discharging facilities to develop and implement operation and maintenance procedures and financial plans sufficient to ensure their future operational integrity and help them comply with permit discharge conditions. U.S. EPA has encouraged stormwater utilities to develop and implement asset management planning tools to provide the tracking and planning framework needed to meet these requirements. U.S. EPA has also encouraged water utilities to use modern analytical planning tools to support deployment of greener, more sustainable, better integrated water infrastructure improvements to help implement NPDES permit requirements. U.S. EPA anticipates formal asset management requirements in NPDES permits increasing in the future, as the benefits of asset management plans are realized.[343]

C.21-8 The City of San Diego (San Diego) provides an example of asset management planning for stormwater. San Diego developed an integrated Watershed Asset Management Plan for its stormwater management system in order to anticipate and justify current and projected costs of complying with federal, state, and local stormwater regulations.[344] San Diego took approximately five years to complete its Watershed Asset Management Plan. San Diego's Watershed Asset Management Plan identifies and prioritizes potential water quality and flood risk management. San Diego is currently developing the database capabilities to support its plan.

C.21-9 U.S. EPA's Water Finance Clearinghouse and the California State University Sacramento Office of Water Program's Environmental Finance Center (Region 9 U.S. EPA Environmental Finance Center) are conducting work to support stormwater asset management. For example, the U.S. EPA Region 9 Environmental Finance Center has developed draft stormwater finance and asset management guidance and toolkits, including resources for estimating stormwater costs, and is supporting a few California municipal stormwater programs to test out and refine the toolkit with the intent of using the asset management results to support the development of stormwater utilities to fund stormwater programs. Additionally, Region 9 U.S. EPA Environmental Finance Center is disseminating information through asset management forums, developing an asset management mobile assistance app, has supported the State Water Board's Strategy to Optimize Resource Management of Storm

[343] "Asset Management Programs for Stormwater and Wastewater Systems: Overcoming Barriers to Development and Implementation," March 6, 2017, p. ii. Prepared for U.S. EPA by PG Environmental.

[344] "Case Study: City of San Diego Watershed Asset Management Planning," p. 1, U.S. EPA, Region 9.

Water (STORMS) Stormwater Funding Report,[345] and is supporting other asset management-related tools and resources.[346]

C.21-10 The Order's asset management requirements are consistent with: U.S. EPA's asset management plan requirements in Guam's municipal stormwater Permit;[347] U.S. EPA, Region 9's 2014 guidance for incorporating asset management planning requirements into NPDES permits, which includes suggestions for an inventory of MS4 assets, an identification of the required performance, a plan for maintenance, rehabilitation and replacement of assets, cost projections, and an assessment of climate change impacts;[348] San Diego's Watershed Asset Management Plan;[349] and the California Regional Water Quality Control Board, Central Coast Region's asset management plan requirements in the City of Salinas' municipal stormwater permit.[350]

C.21-11 Many of the provisions in the Previous Permit (Order No. R2-2015-0049, as amended) required the Permittees to develop and maintain effective information management systems to track hard assets. It required, and this Order continues to require, Permittees to implement various measures which support the development and implementation of the Asset Management Plan. For example, in both this Order and the Previous Permit, Provision C.3.b requires Permittees to track and report on hard assets built pursuant to the requirements for Regulated Projects and Provision C.3.h requires Permittees to implement an Operation and Maintenance Verification Program, which compels, for example, inspections by Permittees or their agents. In both the current and Previous Permit, Provision C.10.b requires Permittees to maintain Full Trash Capture Systems within their jurisdictions, maintain records of those systems, and certify annually that those systems are operated and maintained to meet the requirements for Full Trash Capture Systems, and Provision C.10.f requires Permittees to retain and update trash generation maps depicting the location and tributary drainage area of all Full Trash Capture Systems within

[345] "Strategy to Optimize Resource Management of Storm Water (STORMS): Project 4b: Eliminate Barriers to Funding Stormwater Programs and Identify Funding for Stormwater Capture and Use Projects," May 31, 2018.

[346] "Asset Management Storm Water Roundtable Presentation," by Bola Odusoga, U.S. EPA Region 9, March 28, 2019, slide 28.

[347] U.S. EPA issued NPDES Permit No. GUS040001, authorizing the Guam Department of Public Works to discharge under the National Pollutant Discharge Elimination System, issuance date: December 20, 2018.

[348] "Asset Management: Incorporating Asset Management Planning Provisions into NPDES Permits," December 2014, U.S. EPA, Region 9.

[349] "Transportation and Storm Water Department Storm Water Division: Watershed Asset Management Plan," July 19, 2013, Prepared for City of San Diego by URS Corporation.

[350] Central Coast Regional Water Quality Control Board, NPDES Permit and WDR for the City of Salinas Municipal Stormwater Discharges, NPDES Permit No. CA0049981, Order No. R3-2019-0073, adoption date: September 20, 2019, effective date: October 1, 2019.

their jurisdictions which they are receiving credit for towards their Trash Reduction Requirements.

C.21-12 This Order includes requirements in other provisions that support components of the Asset Management Plan. For example, Provision C.5.f requires Permittees to identify information missing from their current MS4 maps and develop a plan and schedule to compile additional storm sewer system information, including component locations, size or specifications, materials of construction, and condition, which will be used to update Permittee maps and databases. The Permittees' implementation of Provision C.5.f will support the Permittees' implementation of Provision C.21 because it will help them understand where and how their hard assets are connected to their MS4s.

C.21-13 Provision C.20 requires Permittees to undertake a fiscal analysis of the capital and operation and maintenance costs incurred to comply with this Order's requirements listed in Provision C.20.b.(iv), which includes the capital, operation, and maintenance costs of hard assets. Therefore, some of the information generated by the Permittees' implementation of Provision C.20 is likely to directly inform the Permittees' implementation of and reporting on Provision C.21. This is further discussed below under the Specific Provision C.21 Requirements for Provision C.21.b, Implementation level.

Specific Provision C.21 Requirements

Provision C.21. Asset Management requires Permittees to develop, implement, and report on asset management programs. Each component of the asset management provision is necessary to address the objectives, information needs, and questions listed in findings C.21-1 through C.21-12, above.

Provision C.21.a. Task Description. Provision C.21.a requires Permittees to develop and implement an Asset Management Plan in order to ensure the satisfactory condition of all hard assets constructed during this and previous permit terms pursuant to Provisions C.2. Municipal Operations, C.3. New Development and Redevelopment, C.10. Trash Load Reduction, C.11. Mercury Controls, C.12. PCBs Controls, C.13. Copper Controls, C.14. Bacteria Control for Impaired Water Bodies, C.17. Discharges Associated with Unsheltered Homeless Populations, C.18. San Mateo County Sediment Controls, and C.19. Cities of Antioch, Brentwood, and Oakley, Unincorporated Contra Costa County, and the Contra Costa County Flood Control and Water Conservation District Requirements. These Provisions contain requirements to implement, track, operate and maintain hard assets (structural controls). The inclusion of the development and implementation of the Asset Management Plans in this Order is necessary to comply with the federal regulations cited above.

Provision C.21.b. Implementation Level. Provision C.21.b describes the Asset Management Plans, which Permittees must develop by June 30, 2025.[351]

An integral component of the Asset Management Plan is the development of an Operation, Maintenance, Rehabilitation, and Replacement Plan (Asset Management O&M Plan), which is prescribed in Provision C.21.b.i.(3), to effectuate sound asset management. The evaluation or forecasting of costs necessary for the implementation of the Asset Management O&M Plan is likewise necessary for this purpose. Such evaluation may supplement Permittees' compliance with Provision C.20. Cost Reporting, because Provision C.20 includes requirements for Permittees to report on the costs associated with their hard assets; however, it does not include the level of detail specified in Provision C.21.b.(i)(3)(c). Therefore, although the implementation of Provision C.21 may inform the cost reporting required in Provision C.20, the information that will be generated by the two Provisions is distinct.

Provision C.21.b further requires the Permittees to begin implementation of the Asset Management Plans no later than July 1, 2025,[352] to reassess and update the Asset Management Plans on an as-needed basis to address changing conditions and resources, to provide the latest version of the Asset Management Plans to Water Board staff during inspections and audits or otherwise upon request, and to complete a Climate Change Adaptation Report to identify potential climate change-related threats to assets and appropriate adaptation strategies. In subsequent permits, Permittees will likely be expected to reassess and update their Asset Management Plans at least once per permit term, likely by no later than the end of the fourth year of the Permit terms.

The purpose of the Climate Change Adaptation Report is to ensure that in the long term, as climate change impacts increase, Permittees are able to make any necessary adjustments to the design, operation, and maintenance of their hard assets to ensure their satisfactory condition and performance, in response to impacts to those assets associated with climate change. U.S. EPA, Region 9's 2014 guidance for incorporating asset management planning requirements into NPDES permits includes a requirement for the assessment of climate change impacts.[348]

Provision C.21.c. Reporting. Provision C.21.c requires Permittees to submit their individual Asset Management Plans with their 2025 Annual Reports, to report individually on the implementation of their Asset Management Plans starting with the 2026 Annual Reports,[353] as detailed in Provision C.21.c.ii, and to submit their Climate Change Adaptation Report(s) with the 2027 Annual Reports (on an all-Permittee scale or countywide scale). This schedule provides Permittees three years from the start of the Permit term to develop and ultimately submit the Asset Management Plans, an

[351] This date is the last day of the third fiscal year of the permit term.

[352] This date is the first day of the fourth fiscal year of the Permit term.

[353] By this reporting date, the Permittees will have had a full year of implementation of their Asset Management Plans, pursuant to Provision C.21.b.ii.

additional year after that submittal before they must implement the Asset Management Plans, and five years from the start of the Permit term to complete their Climate Change Adaptation Report(s). This timing is sufficient and necessary for the Permittees to develop robust Asset Management Plans, and will allow the Water Board and stakeholders enough time prior to the Permit's subsequent reissuance to consider necessary changes to Provision C.21.

VII. Attachment G: Standard NPDES Stormwater Permit Provisions

The following legal authority applies to Attachment G:

Broad Legal Authority: CWA sections 402(p)(3)(B)(ii-iii), CWC section 13377, and federal NPDES regulations 40 CFR 122.26(d)(2)(i)(B, C, D, E, and F) and 40 CFR 122.26(d)(2)(iv).

Specific Legal Authority: Standard provisions, reporting requirements, and notifications are consistent to all NPDES permits and are generally found in federal NPDES regulation 40 CFR 122.41.

Attachment G includes Standard Provisions. These Standard Provisions ensure that NPDES stormwater permits are consistent and compatible with U.S. EPA's federal regulations. Some Standard Provision sections specific to publicly owned sewage treatment works are not included in Attachment G.

ATTACHMENT B

Provision C.3.b.
Sample Reporting Table

Provision C.3.b. Sample Reporting Table
Regulated Projects Approved During the Reporting Period 07/15 to 06/16
City of Eden Annual Report FY 2015-16

Project Name, Project Number, Location, Street Address,	Name of Developer, Project Phase No.,[1] Project Type & Description	Project Watershed[2]	Total Site Area, Total Area of Land Disturbed	Total New and/or Replaced Impervious Surface Area[3]	Total Pre- and Post-Project Impervious Surface Area[4]	Status of Project[5]	Source Control Measures	Site Design Measures	Treatment Systems Installed[6]	Operation & Maintenance Responsibility Mechanism	Hydraulic Sizing Criteria	Alternative Compliance Measures[7,8]	HM Controls[9,10]
Private Projects													
Nirvana Estates; Project #05-122; Property bounded by Paradise Lane, Serenity Drive, and Eternity Circle; Eden, CA	Heavenly Homes; Phase 1; Construction of 156 single-family homes and 45 townhomes with commercial shops and underground parking.	Runoff from site drains to Babbling Brook	25 acres site area, 21 acres disturbed	20 acres new	20 acres post-project	Application submitted 12/29/14, Application deemed complete 1/30/15, Project approved 7/16/15	Stenciled inlets, street sweeping, covered parking, car wash pad drains to sanitary sewer	Pervious pavement for all driveways, sidewalks, and commercial plaza	vegetated swales, detention basins,	Conditions of Approval require Homeowners Association to perform regular maintenance. Written record will be made available to City inspectors.	WEF Method	n/a	Contra Costa sizing charts used to design detention basin at Peace Park. Also contributed to in-stream projects in Babbling Brook
Barter Heaven; Project #05-345; Shoppers Lane & Bargain Avenue; 14578 Shoppers Lane, Eden, CA	Deals Galore Development Co.; Demolition of strip mall and parking lot and construction of 500-unit 5-story shopping mall with underground parking and limited outdoor parking.	Runoff from site drains to Bargain River	5 acres site area, 3 acres disturbed	1 acre new, 2 acres replaced	3.5 acres pre-project, 4.5 acres post-project	Application submitted 7/9/15, Application deemed complete 8/2/15, Project approved 12/12/15	Stenciled inlets, trash enclosures, underground parking, street sweeping	One-way aisles to minimize outdoor parking footprint; roof drains to planter boxes	tree wells with bioretention; planter boxes with bioretention	Conditions of Approval require property owner (landlord) to perform regular maintenance. Written record will be made available to City inspectors.	BMP Handbook Method	$ 250,000 paid to Renew Regional Project sponsored by Riverworks Foundation, 243 Water Way, Eden, CA 408-345-6789	Renew Project includes treatment and HM Controls

Provision C.3.b. Sample Reporting Table
Regulated Projects Approved During the Reporting Period 07/15 to 06/16
City of Eden Annual Report FY 2015-16

Project Name, Project Number, Location, Street Address,	Name of Developer, Project Phase No.,[1] Project Type & Description	Project Watershed[2]	Total Site Area, Total Area of Land Disturbed	Total New and/or Replaced Impervious Surface Area[3]	Total Pre- and Post-Project Impervious Surface Area[4]	Status of Project[5]	Source Control Measures	Site Design Measures	Treatment Systems Installed[6]	Operation & Maintenance Responsibility Mechanism	Hydraulic Sizing Criteria	Alternative Compliance Measures[7,8]	HM Controls[9,10]
New Beginnings; Project No. #05-456; Hope Street & Chance Road; 567 Hope Boulevard, Eden, CA	Fresh Start Corporation; Demolition of abandoned warehouse and construction of a 5-story building with 250 low-income rental housing units.	Runoff from site drains to Poor Man Creek	5 acres site area, 100,000 ft^2 disturbed	1 acre replaced	2 acres pre-project, 1 acre post-project	Application submitted 2/9/16, Application deemed complete 4/10/16; Project approved 6/30/16; estimated completion date 9/30/17	Trash enclosures, underground parking, street sweeping, car wash pad drains to sanitary sewer	roof drains to landscaping	parking runoff flows to six bioretention units/gardens	Conditions of Approval require property owner (landlord) to perform regular maintenance. Written record will be made available to City inspectors.	BMP Handbook Method	n/a	n/a
Public Projects													
Gridlock Relief, Project No. #05-99, ABC Blvd between Main and Huett Streets, Eden, CA	City of Eden. Widening of ABC Blvd from 4 to 6 lanes	Runoff from site drains to Congestion River	6 acres site area, 3 acres disturbed	2 acres new, 1 acre replaced	4 acres pre-project, 6 acres post-project	Application submitted 7/9/15, Application deemed complete 10/6/15, Project approved 12/9/15, Construction scheduled to begin 2/10/16 and estimated to	none	ABC Blvd sloped to drain runoff into landscaped areas in median	Runoff leaving underdrain system of landscaped median is pumped to bioretention gardens along either side of ABC Blvd	Signed statement from City of Eden assuming post-construction responsibility for treatment BMP maintenance.	WEF Method	n/a	BAHM used to design and size stormwater treatment units so that increased runoff is detained.

Provision C.3.b. Sample Reporting Table
Regulated Projects Approved During the Reporting Period 07/15 to 06/16
City of Eden Annual Report FY 2015-16

Project Name, Project Number, Location, Street Address,	Name of Developer, Project Phase No.,[1] Project Type & Description	Project Watershed[2]	Total Site Area, Total Area of Land Disturbed	Total New and/or Replaced Impervious Surface Area[3]	Total Pre- and Post-Project Impervious Surface Area[4]	Status of Project[5]	Source Control Measures	Site Design Measures	Treatment Systems Installed[6]	Operation & Maintenance Responsibility Mechanism	Hydraulic Sizing Criteria	Alternative Compliance Measures[7,8]	HM Controls[9,10]
						complete by 9/30/16							

Sample Reporting Table C.3.b. Footnotes

1. If a project is being constructed in Phases, use a separate row entry for each Phase.
2. State the watershed(s) that the Regulated Project drains to. Optional but recommended: Also state the downstream watershed(s).
3. State both the total new impervious surface area and the total replaced impervious surface area, as applicable.
4. For redevelopment projects state both the pre-project impervious surface area and the post-project impervious surface area.
5. State project application date; application deemed complete date; and final, major, staff-level discretionary review and approval date.
6. List stormwater treatment system(s) installed onsite or at a joint stormwater treatment system facility.
7. For Alternative Compliance at an offsite location in accordance with Provision C.3.e.i.(1), on a separate page, give a discussion of the alternative compliance site including the information specified in Provision C.3.b.iv.(2)(m)(i) for the offsite project.
8. For Alternative Compliance by paying in-lieu fees in accordance with Provision C.3.e.i.(2), on a separate page, provide the information specified in Provision C.3.b.iv.(2)(m)(ii) for the Regional Project.
9. If HM control is not required, state why not.
10. If HM control is required, state control method used (e.g., method to design and size device(s) or method(s) used to meet the HM Standard, and description of device(s) or method(s) used, such as detention basin(s), biodetention unit(s), regional detention basin, or in-stream control).

Instructions for Provision C.3.b. Sample Reporting Table

1. **Project Name, Number, Location, and Street Address** – Include the following information:
   - Name of the project
   - Number of the project (if applicable)
   - Location of the project with cross streets
   - Street address of the project (if available)

2. **Name of Developer, Project Phase Number, Project Type, and Project Description** – Include the following information:
   - Name of the developer
   - Project phase name and/or number (only if the project is being developed in phases) – each phase should have a separate row entry
   - Type of development (i.e., new and/or redevelopment)
   - Description of development (e.g., 5-story office building, residential with 160 single-family homes with five 4-story buildings to contain 200 condominiums, 100 unit 2-story shopping mall, mixed use retail and residential development (apartments), industrial warehouse)

3. **Project Watershed**
   - State the watershed(s) that the Project drains into
   - Optional but recommended: Also state the downstream watershed(s)

4. **Total Site Area and Total Area of Land Disturbed** – State the total site area and the total area of land disturbed.

5. **Total New and/or Replaced Impervious Surface Area**
   - State the total new impervious surface area
   - State the total replaced impervious surface area, as applicable

6. **Total Pre- and Post-Project Impervious Surface Area** – For redevelopment projects, state both the pre-project impervious surface area and the post-project impervious surface area.

7. **Status of Project –** Include the following information:
   - Project application submittal date
   - Project application deemed complete date
   - Final, major, staff-level discretionary review and approval date
   - Whether the project has been completed. If not, the estimated project completion date.

8. **Source Control Measures** – List all source control measures that have been or will be included in the project.

9. **Site Design Measures –** List all site design measures that have been or will be included in the project.

10. **Treatment Systems Installed** – List all post-construction stormwater treatment system(s) installed onsite and/or at a joint stormwater treatment system facility.

11. **Operation and Maintenance Responsibility Mechanism –** List the legal mechanism(s) that have been or will be used to assign responsibility for the maintenance of the post-construction stormwater treatment systems.

12. **Hydraulic Sizing Criteria Used** – List the hydraulic sizing criteria used for the Project.

13. **Alternative Compliance Measures**

    - **Option 1: LID Treatment at an Offsite Location (Provision C.3.e.i.(1))** – On a separate page, give a discussion of the alternative compliance project including the information specified in Provision C.3.b.v.(1)(m)(i) for the offsite project.
    - **Option 2: Payment of In-Lieu Fees (Provision C.3.e.i.(2))** – On a separate page, provide the information specified in Provision C.3.b.v.(1)(m)(ii).

14. **HM Controls**

    - If HM control is not required, state why not
    - If HM control is required, state control method used (e.g., method to design and size device(s), method(s) used to meet the HM Standard, and description of device(s) or method(s) used, such as detention basin(s), biodetention unit(s), regional detention basins, or in-stream control)

ATTACHMENT C

Provision C.3.g.
Hydromodification Applicability Maps

Attachment A:
HMP susceptibility map

Alameda Countywide
Clean Water Program
November 13, 2006

LEGEND (see text also)

- Major highways
- Major watersheds
- County boundary
- Streets

Channel type

- Natural creek or stream (susceptible)
- Earthen channel or connector
- Engineered channel - materials unknown
- Engineered channel - concrete
- Enclosed pipe or culvert

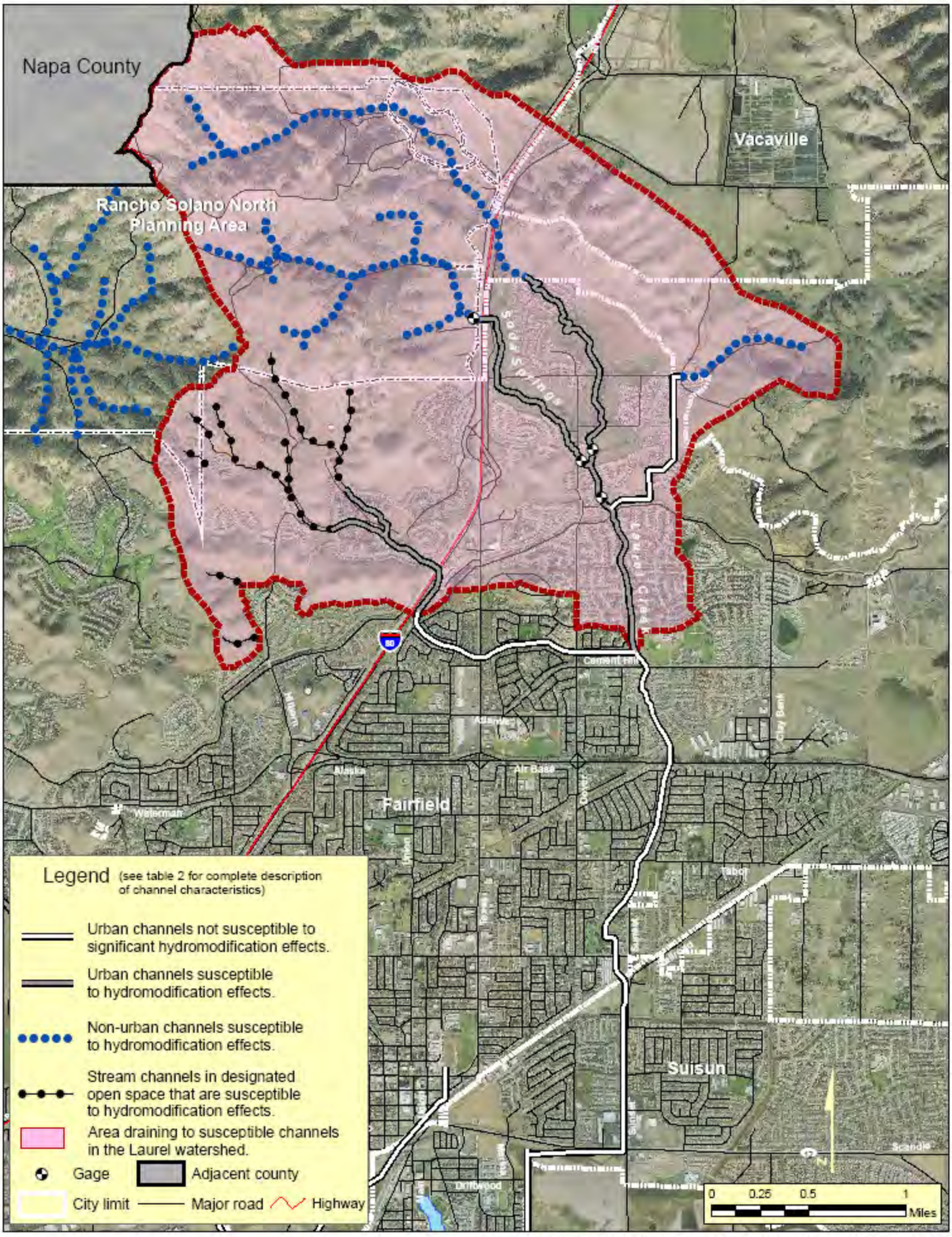
- Special consideration - San Lorenzo & Alameda Creeks
- Special consideration - Codornices Creek
- Hill or high slope region (susceptible)
- Tidally influenced / depositional - exempt
- Not included in HMP

Data sources:
Alameda County Flood Control and Water Conservation District; ACCWP;
Zone 7 Water Agency; U.S. Census Bureau; U.S. Geological Survey;
William Lettis Associates (Oakland Museum creek and watershed mapping project);
Balance Hydrologics and EIP Associates (Proposed test of the approach for the ACCWP HMM Preliminary Map, July 2003)

N
W E
S

2 0 2 4 6 Miles

Contra Costa County
Alameda County
Contra Costa County
Alameda County
Alameda County
Santa Clara County
Alameda County
Santa Clara County
Alameda County
San Joaquin County



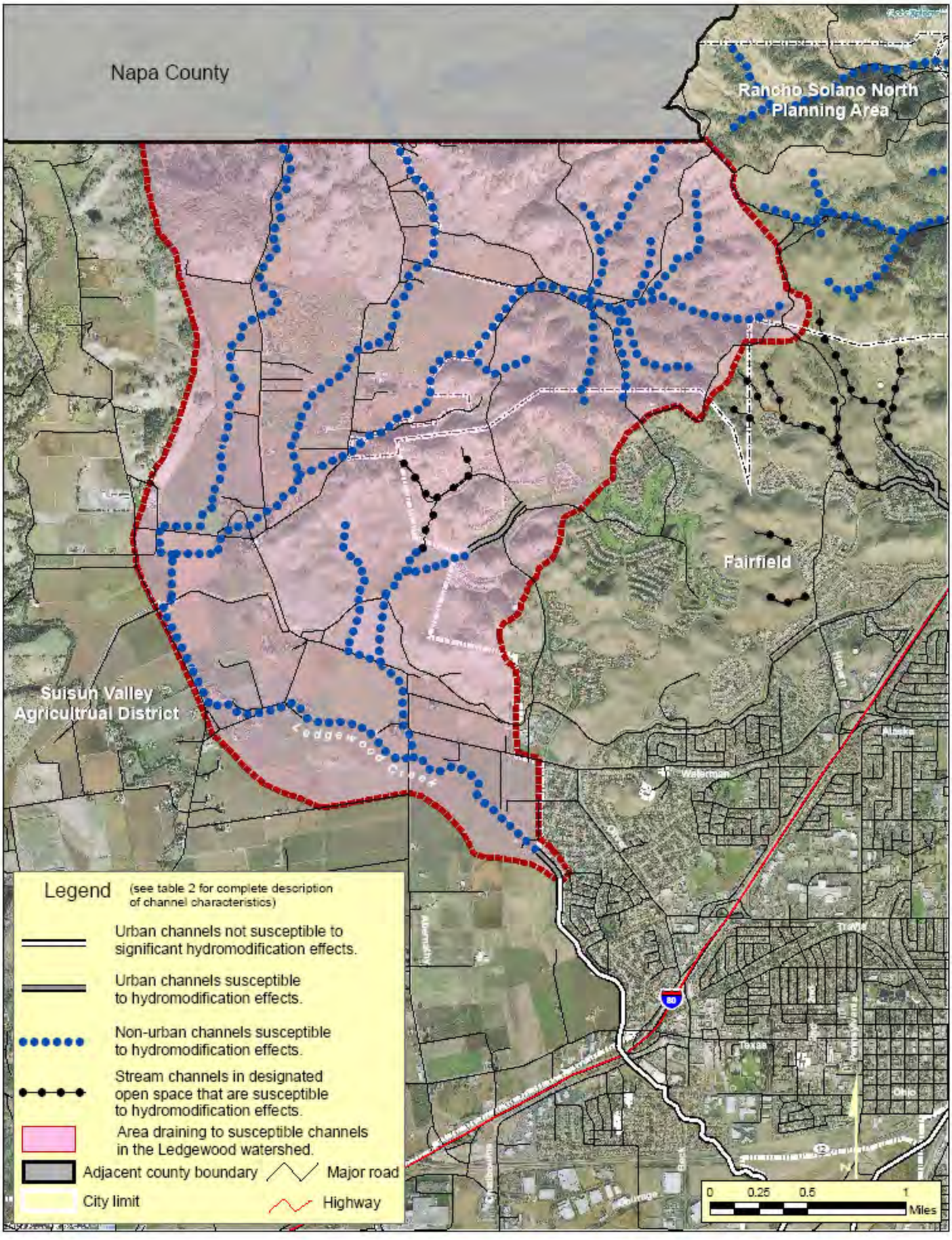
Source: Basemap data provided by Fairfield-Suisun Sewer District. Note that the roads layer does not include the most recently urbanized areas (north of Cement Hill Road, for example).

Balance Hydrologics, Inc.

Figure 2. Map showing HMP channel Classification for the Laurel Creek watershed. The mid- to upper reaches include all channels within the watershed that are susceptible to hydromodification effects (dotted and gray-shaded channels on this map). Hydromodification controls are not required for projects that drain directly to non-susceptible urban channels.

W:\Projects\204126 Fairfield HMP\204003\204126_Figure2_edits.mxd

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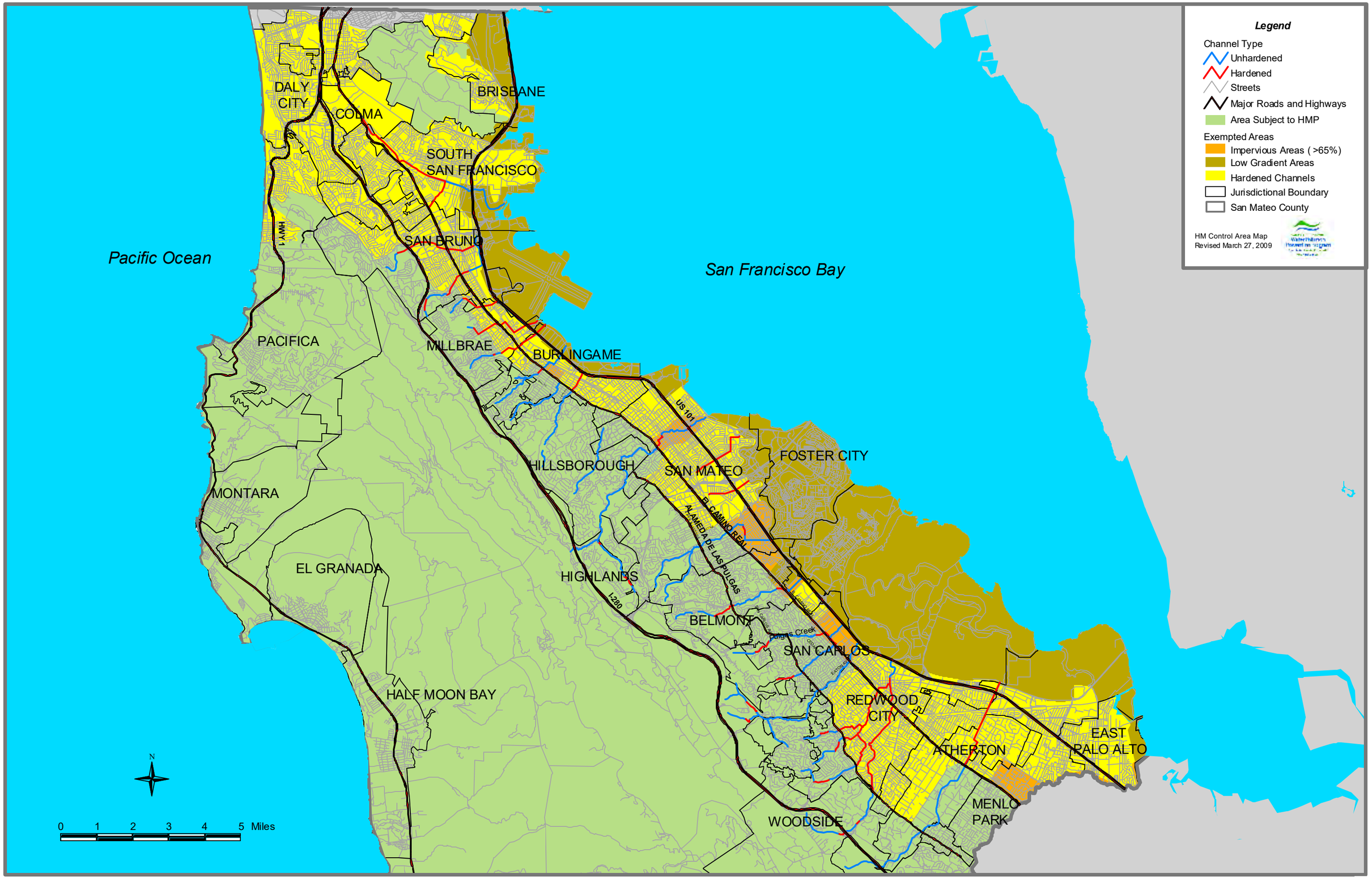
Basemap data provided by Fairfield-Suisun Sewer District. Note that the roads layer does not include the most recently urbanized areas, as shown in the aerial photo.

Balance Hydrologics, Inc.

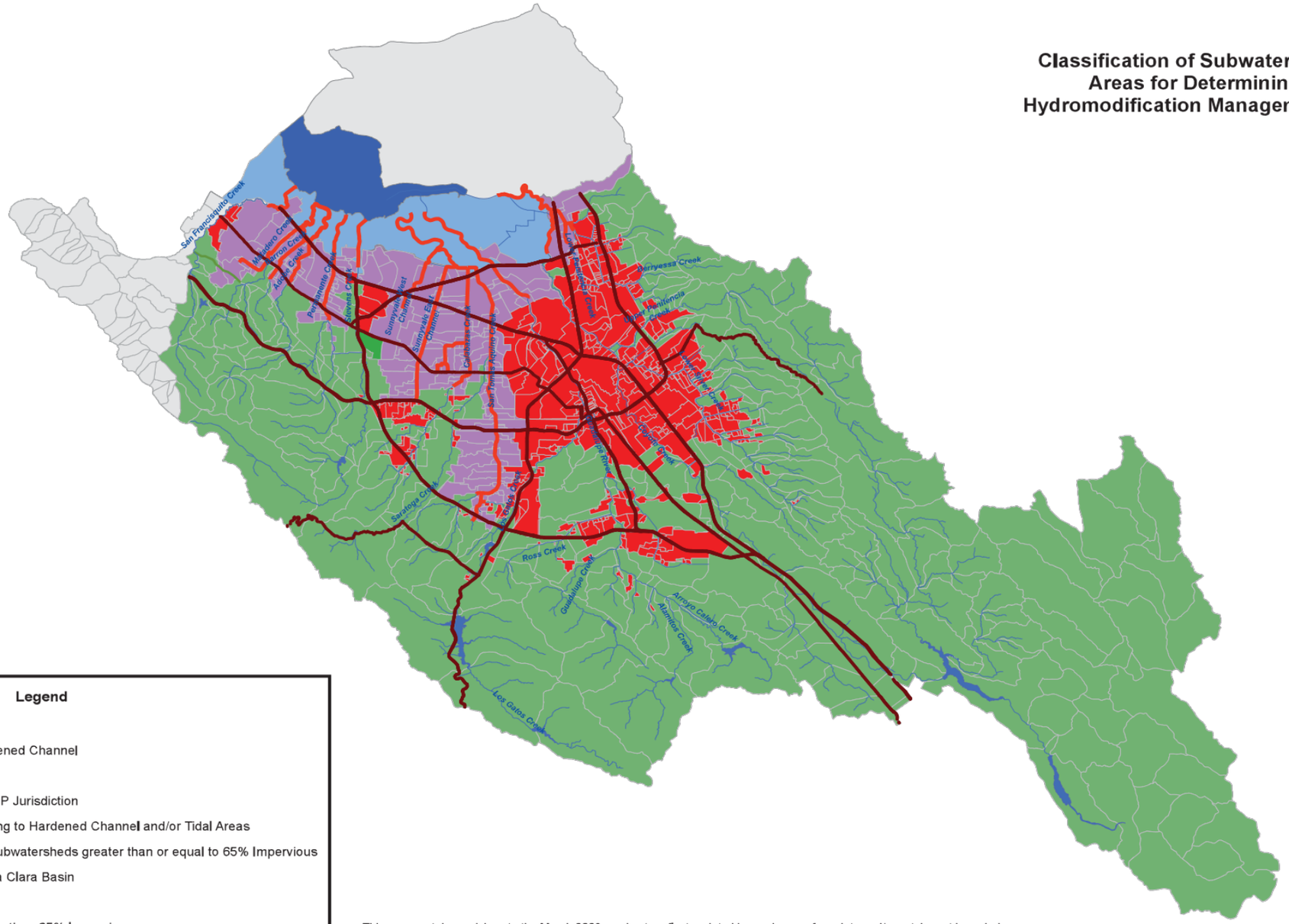
Figure 3. Map showing HMP channel Classification for the Ledgewood Creek watershed. The mid- to upper reaches include all channels within the watershed that are susceptible to hydromodification effects (dotted and gray-shaded channels on this map), however areas outside the City of Fairfield are not included in this permit unless annexed by the city. The non-developed areas within the current city limits are designated open space in relatively steep terrain, and are unlikely to be converted to urban areas however the HMP still applies in these areas.

W:\Projects\204126 Fairfield HMP\204003\204126_Figure3_edits.mxd

©2006 Balance Hydrologics, I


Legend
Channel Type
Unhardened
Hardened
Streets
Major Roads and Highways
Area Subject to HMP
Exempted Areas
Impervious Areas (>65%)
Low Gradient Areas
Hardened Channels
Jurisdictional Boundary
San Mateo County
HM Control Area Map
Revised March 27, 2009
Pacific Ocean
San Francisco Bay
DALY CITY
COLMA
BRISBANE
SOUTH SAN FRANCISCO
SAN BRUNO
HWY 1
PACIFICA
MILLBRAE
BURLINGAME
US 101
FOSTER CITY
SAN MATEO
HILLSBOROUGH
EL CAMINO REAL
ALAMEDA DE LAS PULGAS
MONTARA
EL GRANADA
HIGHLANDS
I-280
BELMONT
San Carlos Creek
Pulgas Creek
SAN CARLOS
HALF MOON BAY
REDWOOD CITY
ATHERTON
EAST PALO ALTO
MENLO PARK
WOODSIDE
N
0 1 2 3 4 5 Miles

Classification of Subwatersheds and Catchment Areas for Determining Applicability of Hydromodification Management (HM) Requirements



Legend

- Major Roads
- Continuously Hardened Channel
- Major Creeks
- Outside SCVURPPP Jurisdiction
- Catchments Draining to Hardened Channel and/or Tidal Areas
- Catchments and Subwatersheds greater than or equal to 65% Impervious
- Reservoirs in Santa Clara Basin
- Baylands
- Subwatersheds less than 65% Impervious

Revision Date: November 2010

This map contains revisions to the March 2009 version to reflect updated impervious surface data and/or catchment boundaries in the Cities of San Jose, Sunnyvale, Mountain View, and Milpitas, as described in the report to the Water Board dated October 14, 2010, consistent with the HM applicability criteria set forth in Attachment F, Section 4 of the MRP.

Legend

- HMP Boundary
- Fully Hardened Channels
- Non-Hardened Channels (Non-Tidal)
- Non-Hardened Channels (Tidal)
- Storm Drain System
- Open Water
- Areas Draining to Continuously Hardened Conveyances to the Bay
- HMP Applicable Areas
- Subcatchments with greater than or equal to 65% Impervious
- Baylands

N

0 1.25 2.5 3.75 Miles

HMP Applicability Map

Vallejo HMP

Geosyntec consultants

Figure 3-1

WW1538 | April 2013

P:\GIS\Vallejo_HMP\Projects\Figure3-1.mxd

ATTACHMENT D

Provision C.8.
Standard Monitoring Provisions

All monitoring activities shall meet the following requirements:

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. [40 CFR 122.41(j)(1)]
2. Permittees shall retain records of all monitoring information, including all calibration and maintenance of monitoring instrumentation, and copies of all reports required by this Order for a period of at least five (5) years from the date of the sample, measurement, report, or application. This period may be extended by request of the Water Board or USEPA at any time and shall be extended during the course of any unresolved litigation regarding this discharge. [40 CFR 122.41(j)(2), CWC section 13383(a)]
3. Records of monitoring information shall include [40 CFR 122.41(j)(3)]:
   a. The date, exact place, and time of sampling or measurements;
   b. The individual(s) who performed the sampling or measurements;
   c. The date(s) analyses were performed;
   d. The individual(s) who performed the analyses;
   e. The analytical techniques or methods used; and,
   f. The results of such analyses.
4. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this Order shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than two years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four years, or both. [40 CFR 122.41(j)(5)]
5. Calculations for all limitations that require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the monitoring Provisions. [40 CFR 122.41(l)(4)(iii)]
6. All chemical, bacteriological, and toxicity analyses shall be conducted at a laboratory certified for such analyses by the California Department of Health Services or a laboratory approved by the Executive Officer.
7. For priority toxic pollutants that are identified in the California Toxics Rule (CTR) (65 Fed. Reg. 31682), the Permittees shall instruct their laboratories to establish calibration standards that are equivalent to or lower than the Minimum Levels (MLs) published in Appendix 4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP). If a Permittee can demonstrate that a particular ML is not attainable, in accordance with procedures set forth in 40 CFR 136, the lowest quantifiable concentration of the lowest calibration standard analyzed by a specific analytical procedure (assuming that all the method specified sample weights, volumes, and processing steps have been followed) may be used instead of the ML listed in Appendix 4 of the SIP. The

Permittee must submit documentation from the laboratory to the Water Board for approval prior to raising the ML for any priority toxic pollutant.

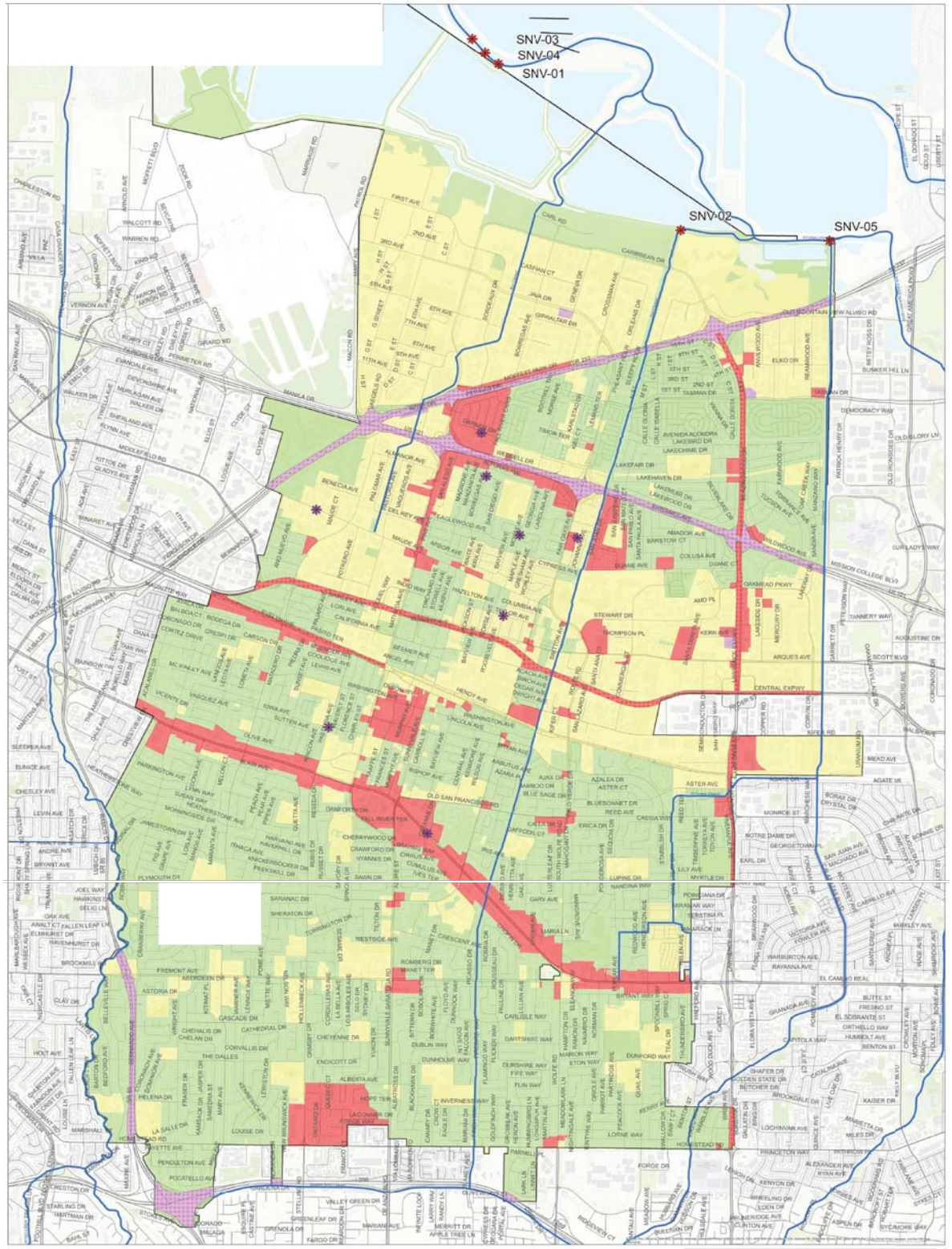
8. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both. [40 CFR 122.41(k)(2)]
9. If a Permittee monitors any pollutant more frequently than required by the Permit, unless otherwise specified in the Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the reports requested by the Water Board. [40 CFR 122.41(l)(4)(ii)]

ATTACHMENT E

Supporting Information for Provision C.10.

Example Trash Generation Rate Map

303(d) Trash Resolution and Staff Report February 2009



Attachment E - 2

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

RESOLUTION NO. R2-2009-0008

RECOMMENDING CHANGES TO THE LIST OF WATER BODIES AS REQUIRED IN SECTION 303(d) OF THE CLEAN WATER ACT

WHEREAS, the California Regional Water Quality Control Board, San Francisco Bay Region (Water Board), finds that:

1. Section 305(b) of the federal Clean Water Act requires the State to prepare a biennial update of an assessment of the waters within the State; and

2. Section 303(d) of the federal Clean Water Act requires the State to identify waters within the State for which water quality standards are not attained; and

3. The Water Board actively solicited water quality information from the public on December 4, 2006, and received 16 data and information submittals; and

4. Water Board staff assembled and considered all readily available data to assess water quality conditions and prepared fact sheets supporting recommendations for additions, deletions and changes to the existing list of impaired water bodies consistent with the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy); and

5. Water Board staff provided advanced notice and opportunity for public comment on the draft recommendations for public review during a 45-day public comment period commencing on October 30, 2008; and

6. Water Board staff developed written responses to all public comments received and revised the supporting staff report and water body fact sheets for the Water Board's consideration; and

7. The Listing Policy requires that the Water Board consider and approve each proposed list change as documented in a water body fact sheet; and

8. On January 14, 2009, the Water Board held a public hearing to consider the recommendations to change the 303(d) list; and

9. On February 11, 2009, the Water Board held a second public hearing to consider all testimony and comments, both oral and written, regarding the 2008 Water Quality Assessment and 303(d) list for the San Francisco Bay Region.

THEREFORE, BE IT RESOLVED that the Water Board approves each proposed 303(d) list addition, deletion or change as documented in the attached Staff Report.

BE IT FURTHER RESOLVED that the Water Board, in fulfillment of the requirements described in Sections 305(b) and 303(d) of the federal Clean Water Act, hereby authorizes the Executive Officer to transmit the Water Board's assessment, including recommended modifications to the section 303(d) list, as detailed in the attached Staff Report dated February 11, 2009, and associated water body Fact Sheets to the State Water Resources Control Board for approval of the 303(d) list and inclusion in the 2008 California Integrated Report on Water Quality.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a Resolution adopted by the Water Board, San Francisco Bay Region, on February 11, 2009.

Digitally signed
by Bruce Wolfe
Date: 2009.02.13
16:42:14 -08'00'

BRUCE H. WOLFE
Executive Officer

Attachment: Staff Report dated February 11, 2009, Evaluation of Water Quality Conditions for the San Francisco Bay Region - Proposed Revisions to Section 303(d) List

STAFF REPORT

EVALUATION OF WATER QUALITY CONDITIONS FOR THE SAN FRANCISCO BAY REGION

PROPOSED REVISIONS TO SECTION 303(d) LIST

February 2009



San Francisco Bay Regional
Water Quality Control Board

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1 Introduction

One of the San Francisco Bay Water Board's functions is to evaluate the water quality condition of waters in the San Francisco Bay Region. To accomplish this goal, staff gathers and evaluates data that are the basis of its water quality assessments. This staff report presents the results of staff's review and consideration of the available water quality data for the Region, including data submitted by the public. One important outcome of the assessment process is the identification of water bodies that are being proposed for inclusion on the list of impaired water bodies. Under federal Clean Water Act (CWA) regulations, the State is required every two years to report to the U.S. EPA on the status of water quality in the State (Section 305(b) water quality assessment), and provide a list of impaired water bodies (Section 303(d) list). Impaired water bodies are those where water quality standards are not met or expected to be met after implementation of technology based requirements of the CWA.

The 303(d) list of impaired waters must include a description of the pollutants causing the violation of water quality standards. As defined in CWA and federal regulations, water quality standards include the designated uses of a water body, the adopted water quality criteria, and the State's antidegradation policy. For water quality limited segments included on the 303(d) list, the State is required to develop a Total Maximum Daily Load (TMDL) to address the impairment. A TMDL is defined as the "sum of the individual waste load allocations for point sources and load allocations for non-point sources and natural background" (40 CFR130.2) such that the capacity of the water body to assimilate pollutant loadings (the loading capacity) is not exceeded. The federal requirement for setting priorities on which TMDLs will be developed is addressed in the State Board's *2004 Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy) by the establishment of schedules for TMDL development.

The last review of the 303(d) list and update occurred in 2006. The review was based on the Listing Policy developed in 2004. For the 2008 update, the Water Board is considering for approval, recommendations on the conditions of waters in the Region, applying the Listing Policy in the process.

This staff report presents the current status of water quality in the San Francisco Bay Region for water bodies with readily available data, and identifies the methods and data used to evaluate water quality status. The report identifies the proposed additions, deletions, and changes to the 2006 303(d) list. The water quality assessments also result in the identification of water bodies where water quality standards are met or where not enough information is available to accurately assess water quality. The results of the water quality assessments are compiled into a statewide integrated report referred to as the 303(d)/305(b) Integrated Report (Integrated Report) by the State Board.

The State Board will include the Water Boards' listing/delisting recommendations in its preparation of the statewide 303(d) list for submission to the U.S. EPA. The statewide 303(d) list will be part of the Integrated Report. The State Board's deliberative process will be conducted in 2009.

Appendix A of this staff report includes the public solicitation letters requesting that the public submit any and all available data to support the assessment of water quality in the Region. Appendix B provides a summary of the data received from the public and an assessment of data quality. Appendix C refers to the Fact Sheets supporting the 303(d) list change recommendations The Fact Sheets are available online at http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/303dlist.shtml

Fact Sheets showing water bodies that support at least some beneficial uses, water bodies not listed due to insufficient information and revisions to the 2006 303(d) list are also available for viewing by following the link above.

2 Listing Policy and Evaluation Criteria

The proposed 2008 303(d) list of impaired water bodies in the San Francisco Bay Region was developed in accordance with the Listing Policy (SWRCB 2004). The Listing Policy establishes a standardized approach for developing California's section 303(d) list. It outlines an approach that provides the rules for making listing decisions based upon different kinds of data and establishes a systematic framework for statistical analysis of water quality data. The Listing Policy also establishes requirements for data quality, data quantity, and administration of the listing process. Decision rules for listing and delisting are provided for: chemical-specific water quality standards; bacterial water quality standards; health advisories; bioaccumulation of chemicals in aquatic life tissues; nuisances such as trash, odor, and foam; nutrients; water and sediment toxicity; adverse biological response; and degradation of aquatic life populations and communities.

Listing and delisting decisions were made in accordance with the Listing Policy, using all applicable narrative and numeric water quality criteria contained in the San Francisco Bay Basin Plan and in the California and National Toxic Rules. The Listing Policy specifies the frequency of exceedance of applicable water quality objectives that is necessary to make a determination that the water is impaired. When applying narrative water quality criteria, staff used guidelines developed by the U.S. EPA and other government agencies together with findings published in the scientific peer-reviewed literature to interpret data and evaluate the water quality conditions.

3 Information Received and Analyzed

3.1 Data solicitation

Federal regulation [(40 CFR § 130.7(b)(5)] states that "Each State shall assemble and evaluate all existing and readily available water quality-related data and information" when developing the 303(d) list. In December 2006, Water Board staff solicited the public to submit any and all water quality data to be considered in preparation of the 2008 303(d) list and 305(b) report.

This solicitation established a data submittal deadline of February 28, 2007. On January 30, 2007, staff transmitted a notice clarifying that there were no limits on the type or format of data and information that the public could provide to the Water Boards for their assessment. The notices provided to the public can be found in Appendix A of this report.

Appendix B contains a summary of the data and information submitted to the Water Board for consideration in the 2008 303(d) listing process. We received 15 submissions in response to the data solicitation, including multiple requests to list water bodies, two requests to delist and/or not to list water bodies as well as data sets without any accompanying request to list or delist. Water Board staff evaluated the submitted data in accordance with the Listing Policy, taking into account spatial and temporal representativeness and quality (Appendix B). The submissions and listing requests covered four major categories of pollutants and stressors including (1) trash; (2) general water quality parameters such as dissolved oxygen and temperature; (3) nutrients and biostimulatory substances; and (4) suspended solids, sedimentation /siltation.

3.2 Data analysis and recommendations

The assessment process began by identifying and compiling all readily available water quality data as described above. Then, staff systematically reviewed these data sets. Due to the relatively limited number of data sets identified through the solicitation process, much of the effort focused on reviewing the available data collected by the Surface Water Ambient Monitoring Program (SWAMP) and the Regional Monitoring Program (RMP). Staff also developed an approach for interpreting the photographic and narrative documentation for trash relative to applicable water quality standards, consistent with the Listing Policy. In addition, beach water quality data collected by county health departments and stored in the State Board Beach Water Quality Database were evaluated to determine whether the most recently collected data would result in new listing or de-listing decisions for our Region. No changes to the 2006 303(d) list were identified.

The SWAMP data include field surveys of water column chemistry, sediment chemistry, sediment toxicity, and water toxicity data as well as ancillary data on factors such as flows, biological community and physical habitat indicators. SWAMP was designed to provide information necessary to effectively manage the State's water resources and, subsequently, facilitate assessment of water quality under sections 305(b) and 303(d) of the Clean Water Act. Objectives of SWAMP include: (1) assessing the physical, chemical, and biological condition of water bodies in each region in order to determine if water bodies are impaired and beneficial uses are being protected; (2) generating data and information during different seasonal conditions; and (3) generating data and information that is somewhat evenly distributed across a water body to provide a screening level assessment of water quality. These objectives ensure that the SWAMP data meet all quality requirements of the Listing Policy.

For the purpose of analyzing the data and developing the proposed revisions to the 303(d) list, the Listing Policy recommends a "line of evidence" approach to establish both whether a water

body is impaired and what pollutant is causing the impairment. The lines of evidence in support of listing and/or delisting decisions for each affected water body are summarized in a water body-specific fact sheet. Fact sheets were developed for each water body for which sufficient data were available to evaluate during the review.

3.2.1 SWAMP data evaluation

Over the 5-year period (2001 – 2005) SWAMP conducted water quality monitoring in 37 watersheds in the Region (SFBRWQCB 2007c, 2007d). Data were collected at multiple locations within each water body over three hydrologic cycles including the wet season (January through March), the spring/decreasing flow season (April through May) and the dry season (June through October). Altogether data from over 190 sampling locations were evaluated. Selected sites in each water body were sampled to determine benthic macroinvertebrate assemblages, temperature, dissolved oxygen, nutrients, trace metals, trace organic compounds, toxicity, and coliforms. Temporal variability in basic water quality (temperature, dissolved oxygen (DO), pH, and specific conductance) was determined by continuous deployment of field measurement devices. These continuous deployments typically lasted one to two weeks and were conducted three to four times per year. Water, sediment and tissue samples that were collected were analyzed to determine concentrations of more than 230 constituents.

The first step of the water quality assessment involved screening all the data against the available water quality criteria and guidelines. For pollutants with applicable numeric water quality criteria, the impairment status was evaluated by comparing the concentration data with existing water and sediment objectives and standards contained chiefly in the San Francisco Bay Basin Plan, California and National Toxic Rules and U.S. EPA guidelines. When only narrative water quality objectives existed, staff identified evaluation guidelines protective of the beneficial use and specified the conditions above which impacts were minimal. Table 1 and Table 2 show a complete list of numeric criteria and evaluation guidelines used in this assessment.

Table 1: Water quality thresholds for 303(d) data screening of freshwater creeks for selected beneficial uses including aquatic life, municipal and domestic supply (MUN), agricultural supply (AGR) and water contact recreation (REC1)

Analyte	*Description of Standard*	*Numeric Limit*	*Units*	*Reference*
Field measures				
Temperature	Maximum, salmonid	24	° C	USEPA, 1977
	7-day mean, coho	14.8	° C	Sullivan *et al.*, 2000
	7-day mean, steelhead	17	° C	Sullivan *et al.*, 2000
Oxygen, dissolved	Minimum, warmwater	5	mg/L	Basin Plan, 2007b
	Minimum, coldwater	7	mg/L	Basin Plan, 2007b
pH	Range	6.5 to 8.5	S.U.	Basin Plan, 2007b
Specific conductance	Min for AGR	200	µS	Basin Plan, 2007b
	Max for AGR	3000	µS	Basin Plan, 2007b
	Max for MUN	900	µS	Basin Plan, 2007b
Salts – AGR only	***Salt thresholds apply only to waters with AGR beneficial use assigned.***			
Boron	Maximum	0.5	mg/L	Basin Plan, 2007b
Chloride	Maximum	142	mg/L	Basin Plan, 2007b
Metals	***Cadmium, copper, nickel, silver, and zinc values assume a hardness of 100 mg/L CaCO3. Values at other hardness levels must be calculated using formulas in the Basin Plan.***			
Arsenic, dissolved	1-hour average WQO	340	µg/L	Basin Plan, 2007b
	4-day average WQO	150		
Cadmium, total	1-hour average WQO	3.9	µg/L	Basin Plan, 2007b
	4-day average WQO	1.1		
Chromium VI, dissolved	1-hour average WQO	16	µg/L	Basin Plan, 2007b
	4-day average WQO	11		
Copper, dissolved	1-hour average WQO	13	µg/L	Basin Plan, 2007b
	4-day average WQO	9		
Lead, dissolved	1-hour average WQO	65	µg/L	Basin Plan, 2007b
	4-day average WQO	2.5		
Mercury, total	1-hour average WQO	2.4	µg/L	Basin Plan, 2007b
	4-day average WQO	0.025		
Nickel, dissolved	1-hour average WQO	470	µg/L	Basin Plan, 2007b
	4-day average WQO	52		
Selenium, total	4-day average WQO	5	µg/L	Basin Plan, 2007b
	1-hour average WQO	20		
Silver, dissolved	1-hour average WQO	3.4	µg/L	Basin Plan, 2007b
Zinc, dissolved	1-hour average WQO	120	µg/L	Basin Plan, 2007b
	4-day average WQO	120		
Metals -- MUN only	***These Metals thresholds apply only to waters with MUN beneficial use assigned.***			
Manganese, total	Maximum	50	µg/L	Basin Plan, 2007b
Mercury, total	Maximum	2	µg/L	Basin Plan, 2007b
Organics				
PCBs	Freshwater Criterion Continuous Concentration	0.014	µg/L	CTR
Chlorpyrifos	4-day average (chronic)	0.015	µg/L	CVRWQCB, 2006
Dacthal (DCPA)	Instantaneous maximum AWQC	14300	µg/L	CVRWQCB, 2008
Diazinon	1-hour average	0.1	µg/L	SFBRWQCB, 2005
Disulfoton (Disyston)	Instantaneous maximum	0.05	µg/L	CVRWQCB, 2008

Analyte	*Description of Standard*	*Numeric Limit*	*Units*	*Reference*
Field measures				
	AWQC			
Endosulfan	Continuous 4-day average	0.056	ug/l	CTR
	Instantaneous maximum	0.22		CTR
HCH, gamma- (gamma-BHC, Lindane)	Maximum 1-hour average	0.95	µg/L	CTR
Parathion, methyl	Instantaneous maximum AWQC	0.08	µg/L	CDFG
Thiobencarb	Instantaneous maximum AWQC	3.1	µg/L	CDFG
Pathogens – Water Contact Recreation (REC1)				
E. coli (freshwater)	Steady state (all areas)	126	MPN /100 mL	US EPA, 1986
	Designated beach (max)	235		
Fecal coliform	Geometric mean	200	MPN /100 mL	Basin Plan, 2007b
	90th percentile	400		
Total coliform	Median	240	MPN /100 mL	Basin Plan, 2007b
	Maximum	10000		
Coliforms – MUN only	***MUN thresholds are DOHS recommendations for surface water that serves as drinking water source.***			
Fecal coliform	Geometric mean	<20	MPN /100 mL	Basin Plan, 2007b
Total coliform	Geometric mean	<100		
Toxicity -- Basin Plan	***Two-sample t-tests (one-tailed, alpha = 0.05) were performed on station data versus control data.***			
For *Ceriodaphnia and Pimephales*, the null hypothesis tested was that the station response was less than (less growth, survival, etc) the control response.		80	%	Basin Plan (2007b) - "There shall be no chronic/acute toxicity in ambient waters." (3.3.18)
For Selenastrum, where we are testing that station responses are greater than (more growth) or less than (less growth) the control, these two-sample tests have an alpha of 0.10.		80	%	

CTR - (Federal Register, Part III; EPA; 40 CFR Part 131 Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California; Rule. May 18, 2000)

CDFG - California Department of Fish and Game, Office of Spill Prevention and Emergency Response, Hazard Assessment and Water Quality Criteria documents for pesticides (various dates), http://www.cdpr.ca.gov/docs/sw/hazasm.htm

Table 2: Freshwater sediment quality pollutant thresholds for 303(d) data screening

SQG type: *Analyte*	**Probable effect concentration** *mg/kg*	*µg/kg*	*Reference*
Metals			MacDonald et al. 2000
Arsenic	33		
Cadmium	4.98		
Chromium	111		
Copper	149		
Lead	128		
Mercury	1.06		
Nickel	48.6		
Zinc	459		
Organics			MacDonald et al. 2000
Anthracene		845	
Fluorene		536	
Naphthalene		561	
Phenanthrene		1170	
Benz(a)anthracene		1050	
Benzo(a)pyrene		1450	
Chrysene		1290	
Fluoranthene		2230	
Pyrene		1520	
PAH (total)		22800	
PCB (total)		676	
Chlordane		17.6	
Dieldrin		61.8	
DDD (sum op + pp)		28	
DDE (sum op + pp)		31.3	
DDT (sum op + pp)		62.9	
DDT (total)		572	
Endrin		207	
Heptachlor epoxide		16	
HCH, gamma		4.99	

Toxicity	***Two-sample t-tests (one-tailed, alpha = 0.05) were performed on station data versus control data.***
For *Hyalella*, the null hypothesis tested was that the station response was less than (less growth, survival, etc) the control response. 80% of the control group was the threshold for sediment toxicity.	Basin Plan (2007b) - "There shall be no chronic/acute toxicity in ambient waters." (3.3.18)

3.2.2 Trash

Trash is not a new problem for the Bay Region, but it is a continuing problem both as an aesthetic nuisance, as a serious threat to aquatic life in tributaries, and as a threat to marine life in estuaries and oceans. Data suggest that plastic from trash persists for hundreds of years in the environment and can pose a threat to wildlife through ingestion, entrapment and entanglement, and this plastic can leach potentially harmful chemicals to the aquatic environment. During the 2002 303(d) listing update effort, Staff discussed the water quality impacts associated with trash at some length (SFRWQCB 2001). Water Board staff found that trash threatened water quality in all urban creeks, lakes, and shorelines. Rather than listing all urban creeks at that time, the Water Board urged municipalities to implement trash control measures, assess trash impairments in their jurisdictions and document these assessments in annual reports submitted to the Board. Since 2002, Water Board staff has developed, refined, and implemented (2002 through 2005) a rapid trash assessment method as part of SWAMP (SFBRWQCB 2007a). Other local entities, e.g., the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP), also collected trash assessment data. The water quality assessments for trash conducted for this 303(d) update are based on the results of the rapid trash assessment method and interpretation of data submitted by the public using a similar approach.

The data solicitation for this update resulted in the submission of a large quantity of trash-related data and accompanying requests for 303(d) listings. These data consisted mainly of photographs and narrative documentation on the status of trash levels for specific water bodies. In addition to these data, staff compiled and considered rapid trash assessment data collected by SWAMP as well as similar trash assessment data collected by SCVURPPP. The two types of trash data, photographs and trash assessment results, required distinct evaluation methodologies described below. Because there are no numeric water quality criteria for trash, the trash data were reviewed according to the "weight of evidence" guidelines established in section 3.11 of the Listing Policy. After reviewing these data in accordance with the Listing Policy, there were several water bodies for which we did not have compelling evidence to place them on the 303(d) list. These water bodies are identified in Table 3 below. The water bodies recommended for placement on the 303(d) list for trash impairment are identified in Table 4 below, and the lines of evidence are described in detail in the Fact Sheets (Appendix C).

Relevant Beneficial Uses and Water Quality Objectives

Several beneficial uses may be adversely impacted by trash, including recreation, aquatic life, wildlife habitat, and navigation. However, data were not readily available to allow staff to evaluate all beneficial uses possibly impaired by trash. Instead, we focused our review on evaluating impairment of the non-contact water recreation (REC-2) and wildlife habitat (WILD) beneficial uses, because these uses can be most easily evaluated through review of available trash data. Impairment of REC-2 can be readily evaluated based on the level of trash present. Impairment of WILD can be evaluated based on the level of certain types of trash associated with threat to wildlife, a beneficial use that implicitly includes aquatic life.

Beneficial uses adversely impacted by trash are, in turn, supported by the following set of narrative water quality objectives and Basin Plan prohibitions. The Basin Plan (Table 4-1,

Prohibition Number 7) prohibits discharge of "rubbish, refuse, bark, sawdust, or other solid wastes into surface waters or at any place where they would contact or where they would be eventually transported to surface waters, including flood plain areas." The Basin Plan (Section 3.3.6) also has a narrative objective for floating material, "waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses." Last, the Basin Plan (Section 3.3.13) has a narrative objective for settleable material, "waters shall not contain substances in concentrations that result in the deposition of material that cause nuisance or adversely affect beneficial uses."

Table 3: List of water bodies with insufficient evidence to establish trash impairment

Water Body	Designated/Potential Uses	Supporting Data
Adobe Creek	Non-Contact Recreation and Wildlife Habitat	RTA [1], Photos
Alamitos Creek	Non-Contact Recreation and Wildlife Habitat	RTA
Alhambra Creek	Non-Contact Recreation and Wildlife Habitat	Photos
Arroyo Corte Madera del Presidio	Non-Contact Recreation and Wildlife Habitat	Photos
Arroyo Los Positas	Non-Contact Recreation and Wildlife Habitat	RTA
Arroyo Mocho	Non-Contact Recreation and Wildlife Habitat	RTA
Arroyo Seco	Non-Contact Recreation and Wildlife Habitat	Photos
Barron Basin	Non-Contact Recreation and Wildlife Habitat	RTA
Berryessa Creek	Non-Contact Recreation and Wildlife Habitat	RTA
Calabazas Creek	Non-Contact Recreation and Wildlife Habitat	Photos
Corte Madera Creek	Non-Contact Recreation and Wildlife Habitat	Photos
Lagunitas Creek	Non-Contact Recreation and Wildlife Habitat	RTA
Las Trampas Creek	Non-Contact Recreation and Wildlife Habitat	Photos
Lafayette Creek	Non-Contact Recreation and Wildlife Habitat	Photos
Ledgewood Creek	Non-Contact Recreation and Wildlife Habitat	Photos
Los Gatos Creek	Non-Contact Recreation and Wildlife Habitat	RTA, Photos
McCoy Creek	Non-Contact Recreation and Wildlife Habitat	Photos
Pacheco Slough	Non-Contact Recreation and Wildlife Habitat	Photos
Randall Creek	Non-Contact Recreation and Wildlife Habitat	RTA
Rodeo Creek	Non-Contact Recreation and Wildlife Habitat	RTA
San Gregorio Creek	Non-Contact Recreation and Wildlife Habitat	RTA
San Ramon Creek	Non-Contact Recreation and Wildlife Habitat	Photos
Sulphur Creek	Non-Contact Recreation and Wildlife Habitat	Photos
Thompson Creek	Non-Contact Recreation and Wildlife Habitat	RTA
Upper Penitencia Creek	Non-Contact Recreation and Wildlife Habitat	RTA
Vista Grande Canal	Non-Contact Recreation and Wildlife Habitat	Photos
Walnut Creek	Non-Contact Recreation and Wildlife Habitat	Photos

Wildcat Creek	Non-Contact Recreation and Wildlife Habitat	RTA
Yerba Buena Creek	Non-Contact Recreation and Wildlife Habitat	RTA

[1] RTA – Rapid Trash Assessment

Evaluation of Trash Assessment Results

The Water Board's rapid trash assessment method generates site-specific scores on a scale from 0 to 120, with higher scores indicating cleaner sites. The method also documents the number of pieces of trash per one hundred feet of stream or shoreline, and the rate of return of trash under different hydrologic conditions. The trash assessment protocol involves picking up and tallying all of the trash items found within the defined boundaries of a site. When repeated several times throughout a year, this procedure allows for the assessment of temporal changes in impairment, usage patterns, and trash deposition rates under wet and dry weather conditions (SFBRWQCB 2007a).

The Rapid Trash Assessment (RTA) method evaluates six parameters of trash impacts (level of trash, number of items found, threat to wildlife, threat to human health, illegal dumping, and trash accumulation). For purposes of determining impairment status, Water Board staff evaluated the magnitudes of the "level of trash" and "threat to aquatic life" parameters. If the "level of trash" parameter score fell in the 'poor condition category' (scores 0-5), REC-2 is deemed not supported. According to the RTA, the "poor condition" score corresponds to a level of trash that "distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). This score suggests that the site is being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing." SCVURPPP developed a similar "level of trash" parameter that can be interpreted similarly. Water Board staff reason that if there is sufficient trash to "distract the eye on first glance" and there are substantial levels of litter and debris, then the non-contact beneficial use would be impaired.

The second RTA parameter considered is the "threat to aquatic life" category. If this parameter score fell in the 'poor condition' category (scores 0-5), then WILD is deemed not supported. According to the RTA, the 'poor condition' score corresponds to a "large amount (>50 pieces) of transportable, persistent, buoyant litter (such as hard or soft plastics, balloons, styrofoam, cigarette butts); toxic items (such as batteries, lighters, or spray cans); large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal."

Water Board staff used the "threat to aquatic life" parameter to assess impairment to wildlife habitat beneficial uses (WILD) because the type of trash measured by this parameter is particularly problematic for wildlife (including aquatic life). The two primary problems that trash poses to wildlife are entanglement and ingestion. Mammals, turtles, birds, fish, and crustaceans all have been affected by entanglement in or ingestion of floatable debris. Many of the species most vulnerable to the problems of floatable debris are endangered or threatened. Entanglement is harmful to wildlife because it can cause wounds that can lead to infections or loss of limbs and also cause strangulation, suffocation, drowning, or limited escape from predators (EPA 2002). Ingestion of trash can lead to starvation or malnutrition if the ingested items block the intestinal tract, preventing digestion, or accumulate in the digestive tract, making the animal feel "full" and lessening its desire to feed. Ingestion of sharp objects can damage the mouth, digestive tract and/or stomach lining and cause infection or pain. Ingested items can also block air passages and prevent breathing, thereby causing death (EPA 2002).

The Urban Rapid Trash Assessment (URTA) developed by SCVURPPP is a very slightly modified version of the original SWAMP RTA. It was modified to make it easier to apply in urban creeks, and the way in which category scores are interpreted was also modified. However, the URTA has an identical parameter assessing threat to aquatic life (wildlife) by characterizing the amount of "Transportable, Persistent, Buoyant Litter." If the raw score for this parameter fell in the marginal urban or poor condition category (scores 0-10, corresponding to a count of 76-200 pieces of such litter), then WILD is deemed not supported.

Although Water Board staff only considered the "level of trash" and "threat to aquatic life" parameters for determining impairment status, the SWAMP and SCVURPPP trash assessment methods have four additional parameters that can provide additional information about both the condition and cause of the trash encountered during assessment (SFBRWQCB 2007a). The assessments include a parameter indicating the total number of trash items counted on the 100-foot stream reach, both above and below the high water line. This is an efficient parameter to use to obtain a rough comparison of the trash impacts between sites, but it can be misleading because sometimes trash items are broken into many pieces, thus inflating the count.

The "threat to human health" parameter accounts for the number of items that are dangerous to humans who wade or swim in the water, and the presence of pollutants that could accumulate in fish in the downstream environment, such as mercury. The worst conditions for this parameter have the potential for the presence of dangerous bacteria or viruses, such as with medical waste, diapers, and human or pet waste. The "illegal dumping and littering" parameter relates to direct placement of trash items at a site, with "poor" conditions assigned to sites that appear to be dumping or littering locations based on adjacent land use practices or site accessibility. Finally, the "accumulation of trash" parameter can be used to distinguish trash that is transported from upstream locations from dumped trash. This is accomplished by noting indications of age and transport. Faded colors, silt marks, trash wrapped around roots, and signs of decay suggest downstream transport, indicating that the local drainage system facilitates conveyance of trash to water bodies.

Evaluation of Photographic Evidence for Trash

Nearly 900 photos of trash impacts were submitted and evaluated to make impairment determinations. These photos presented a fundamental impairment assessment challenge: how to interpret what can be seen in the photos relative to beneficial use impairment? The method we employed was to view the photos as if the water body was being assessed according to the RTA procedure. One of the co-authors of the RTA inspected every photograph and attempted to establish the RTA score for the "level of trash" and "threat to aquatic life" parameters, which relates to impairment of REC-2 and WILD, respectively. One of the first objectives of this photo inspection was to determine if the quantity and quality of the photos were sufficient to establish these parameter scores. Some photos were not clear enough to accomplish this.

In order to establish that the "Level of Trash" parameter was in the poor condition category, we required that reach-scale (i.e., showing most or all of the reach of the creek being photographed) and close-up photos of stream reaches must demonstrate a similar level of

trashiness as the 'poor condition' category of the RTA assessment parameter. In other words, we determined if the visual impression of the photos was consistent with the visual impression the evaluator might have experienced during actual RTA assessments for locations scoring in the 'poor condition" category. A similar determination was made for each photo relative to the "threat to aquatic life" parameter.

Spatial and Temporal Representativeness of Trash Impairment

As a general rule, water bodies recommended for inclusion on the 303(d) list for trash are those for which there is evidence of trash problems persisting through space and time. We applied this rule to trash assessment data and photographic data. In order to recommend listing, we typically required both that the water body contain two or more sites that show evidence of trash impairment (according to assessment or photo documentation) and that evidence of trash impairment existed on two or more occasions. There were instances in which a listing recommendation was made based on data for multiple occasions but only at one location if there were no other data available, but these were very rare exceptions. For San Francisco Bay listings, if shoreline or creek mouth sites satisfied these data sufficiency requirements, we recommended that the applicable bay segment be listed. In fact, for the bay segments recommended for listing (Central and Lower), there were at least two shoreline or creek mouth locations with unacceptably high levels of trash.

3.3 Fact sheet development

Water Board staff developed a Fact Sheet for each water body - pollutant combination that resulted in a listing or delisting recommendation, summarizing the data used to make the decision, the criteria used, and the basic water body characteristics. Figure 1 shows a template provided by the State Board and lists all categories of information required to develop a fact sheet and characterize the cause of impairment.

Region:
Water Body Segment:

Pollutant:
Decision: *List/De-List*

Weight of Evidence
RWQCB Staff Recommendation

Line of Evidence:

Fraction:	*Options for this field are none, not recorded, total, dissolved (does not include suspended), and total dissolved.*
Matrix:	*Options for this field are tissue, water, sediment, N/A. This is the monitoring data sample medium.*
Beneficial use(s):	*Find appropriate beneficial use in your Region's Basin Plan.*
Water Quality Objective/Criteria:	*Find in Basin Plan or use CTR or other appropriate water quality objective or criterion and completely cite it here and reference where you found it.*
Evaluation Guideline:	*If the objective is narrative, use the appropriate evaluation guideline and completely cite it here and reference where you found it.*
Data Used to Assess Water Quality:	*Summarize data assessed here. What is the total number of samples? How many of these samples exceed the objective/criterion/guideline?*
Data References:	*Cite the data reference used for this assessment.*
Spatial Representation:	*Where were the samples collected? How many stations, etc?*
Temporal Representation:	*When were the samples collected? What was the sampling timeframe, etc?*
Water Body Specific Information:	*Environmental conditions or factors that might effect data used in assessment [e.g. Fire/Flood/Dry Year event, etc.]*
Data Quality Assessment	*Excellent, good, fair, poor, unknown, and none*
QAPP Information:	*Clearly describe the quality assurance plan or document that applies to the data used for this assessment. Reference the QA plan that was used. For example: "Quality Control for the chemical analysis portion of this study was conducted in accordance with Standard Operating Procedure QAQC001.00 (Segawa, 1995)."*

Figure 1: Fact sheet template for the 303(d) List

4 Listing Decisions

4.1 Proposed additions to the 303(d) list of impaired water bodies

Table 4 shows all proposed additions to the 303(d) list. Much more comprehensive information is available regarding these new proposed listings in the Fact Sheets (Appendix C). Locations of the water bodies evaluated as impaired during the 2008 listing period are shown in Figure 2 and Figure 3.

Table 4: Proposed 2008 additions to 303(d) list of impaired water bodies

Water Body	Beneficial Uses	Pollutant/ Cause of impairment
Almaden Lake	Commercial and Recreational Collection of Fish, Shellfish, or organisms	Mercury (tissue)[1]
Almaden Reservoir	Commercial and Recreational Collection of Fish, Shellfish, or organisms	Mercury (tissue)[1]
Arroyo Las Positas Creek	Warm Freshwater Habitat	Nutrient/Eutrophication Biological Indicators
Arroyo Mocho Creek	Cold Freshwater Habitat (potential)	Temperature
Codornices Creek	Cold Freshwater Habitat	Temperature
Kirker Creek	Warm Freshwater Habitat	Pyrethroids[2] Water Toxicity
Mount Diablo Creek	Cold Freshwater Habitat	Water Toxicity
Permanente Creek	Cold Freshwater Habitat	Selenium Water Toxicity
San Mateo Creek Lower	Wildlife Habitat	Sediment Toxicity
Stevens Creek	Cold Freshwater Habitat	Temperature
Suisun Creek	Cold Freshwater Habitat	Dissolved Oxygen Temperature
Old Alameda Creek	Non-Contact Recreation and Wildlife Habitat	Trash
Baxter Creek	Non-Contact Recreation and Wildlife Habitat	Trash
Cerrito Creek	Non-Contact Recreation and Wildlife Habitat	Trash

[1] The Guadalupe River Watershed TMDL is expected to address this impairment

[2] San Francisco Bay Urban Creeks Diazinon and Pesticide-Related Toxicity TMDL approved by USEPA on 5/16/07 will address pyrethroids impairment in Kirker Creek.

Water Body	Beneficial Uses	Pollutant/ Cause of impairment
Codornices Creek	Non-Contact Recreation and Wildlife Habitat	Trash
Colma Creek	Non-Contact Recreation and Wildlife Habitat	Trash
Coyote Creek	Non-Contact Recreation and Wildlife Habitat	Trash
Damon Slough	Non-Contact Recreation and Wildlife Habitat	Trash
Grayson Creek	Wildlife Habitat	Trash
Guadalupe River	Non-Contact Recreation and Wildlife Habitat	Trash
Kirker Creek	Wildlife Habitat	Trash
Matadero Creek	Wildlife Habitat	Trash
Permanente Creek	Wildlife Habitat	Trash
Petaluma River	Non-Contact Recreation and Wildlife Habitat	Trash
Rindler Creek	Non-Contact Recreation and Wildlife Habitat	Trash
San Francisco Bay (Central) shoreline	Non-Contact Recreation and Wildlife Habitat	Trash
San Francisco Bay (Lower) shoreline	Non-Contact Recreation and Wildlife Habitat	Trash
San Francisquito Creek	Non-Contact Recreation and Wildlife Habitat	Trash
San Leandro Creek Lower	Non-Contact Recreation and Wildlife Habitat	Trash
San Mateo Creek	Non-Contact Recreation and Wildlife Habitat	Trash
San Pablo Creek	Non-Contact Recreation	Trash
San Tomas Creek	Wildlife Habitat	Trash
Saratoga Creek	Wildlife Habitat	Trash
Sausal Creek	Wildlife Habitat	Trash
Silver Creek	Wildlife Habitat	Trash
Stevens Creek	Wildlife Habitat	Trash
Strawberry Creek	Non-Contact Recreation and Wildlife Habitat	Trash

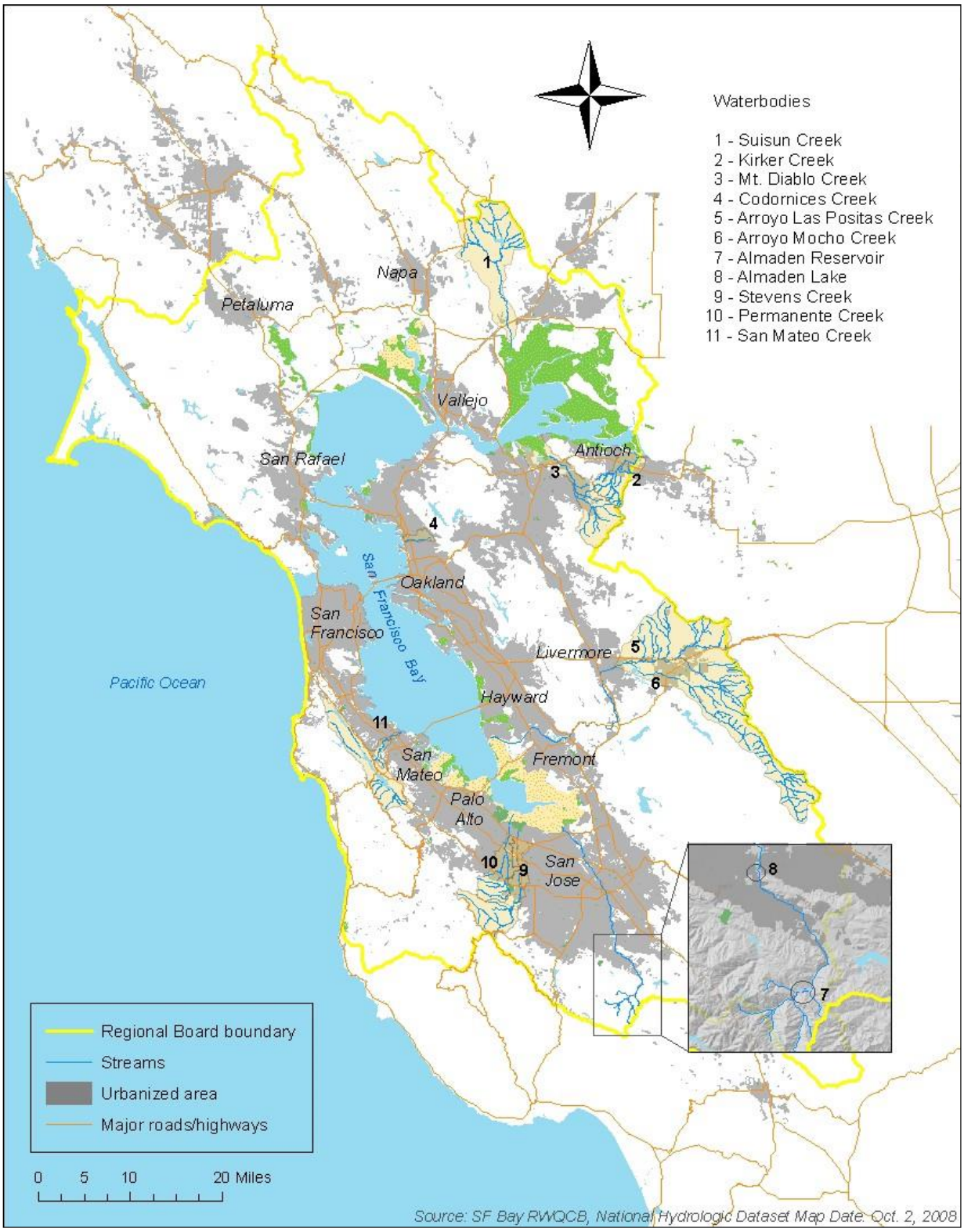


Figure 2: Proposed 2008 new 303(d) listings for toxicants and conventional pollutants

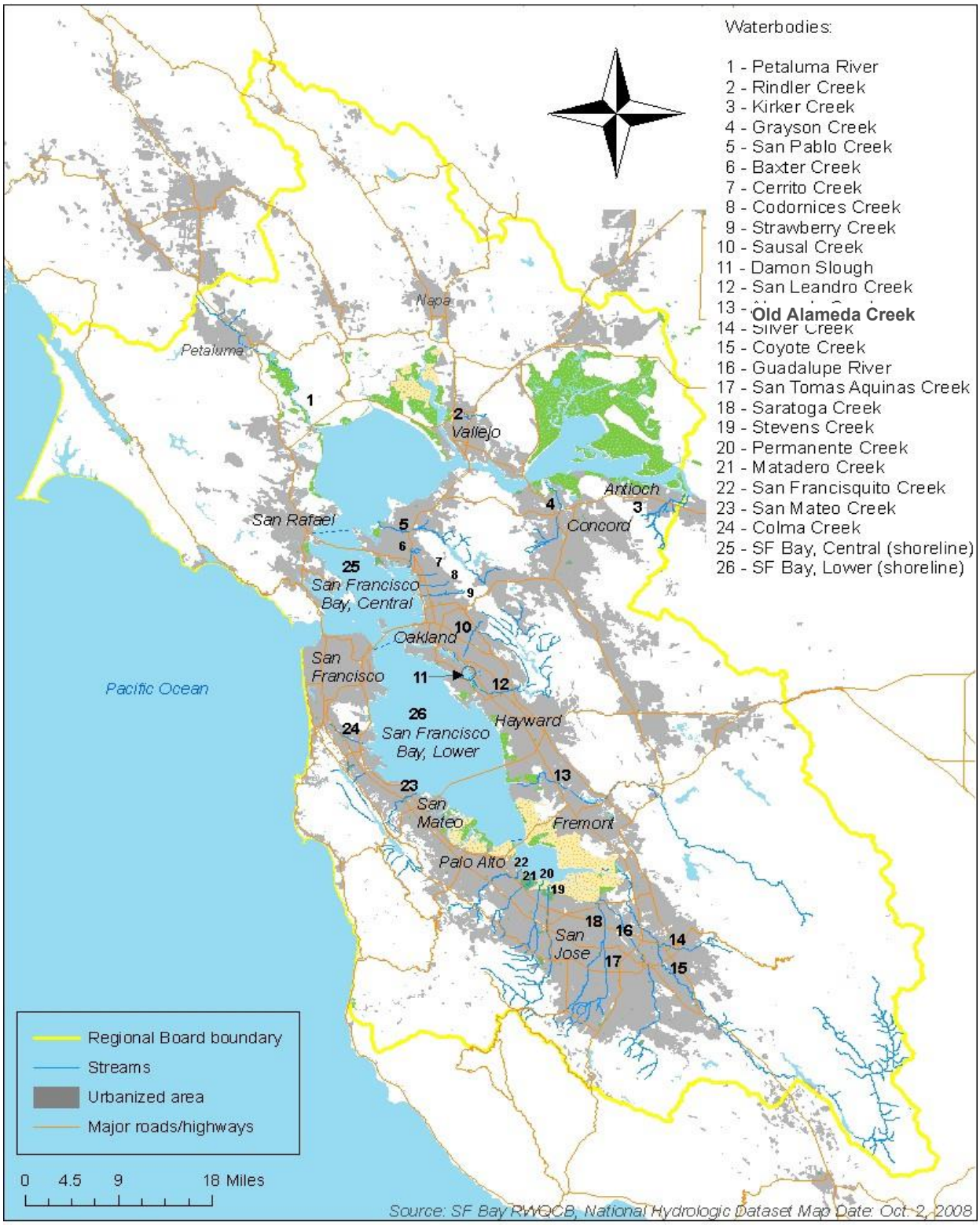


Figure 3: Proposed 2008 303(d) listings for trash

4.2 Proposed delisting and status change

Delist nickel in Sacramento San Joaquin Delta, San Pablo Bay, Suisun Bay

Based on the readily available data and information, there is strong justification for removing these water segment-pollutant combinations from the section 303(d) list in the Water Quality Limited Segments category. The Basin Plan contains nickel water quality objectives of 8.2µg/L as a 4-day average and 74µg/L as a 1-hour average. Data collected by the Regional Monitoring Program and Special Copper/Nickel study from 1993 through 2005 showed that none of the 59 analyzed water samples from the Sacramento San Joaquin Delta exceeded the water quality objectives, none of the 107 analyzed water samples from San Pablo Bay exceeded the water quality objectives, and none of the 96 analyzed water samples from Suisun Bay exceeded the objectives.

Change listing status: Castro Cove, Richmond (San Pablo Basin) - addressed by action other than TMDL

This water body was listed in 2006. Since that time a cleanup and abatement order (Order No. R2-2006-0078) requiring remediation of sediment contamination in the listed portion of Castro Cove was issued. The cleanup action involves removal of contaminated sediment and supports other abatement measures in place, such as the mercury TMDL approved by USEPA on February 12, 2008. Cleanup is underway and, upon its completion, it is expected that this water body will meet applicable water quality standards.

In November 2007, the Water Board received a Monitoring and Risk Management Plan that includes post-dredging confirmation monitoring to demonstrate that chemical contamination in the sediment has been reduced to levels that no longer pose unacceptable ecological risk. The cleanup completion is scheduled for 2010, and it is expected that this action will attain beneficial uses. Therefore, we recommend that Castro Cove be moved from the 303(d) list requiring a TMDL to the 303(d) list of water bodies being addressed by an action other than a TMDL.

4.3 TMDL schedule

All water body-pollutant combinations on the section 303(d) list are assigned with a proposed TMDL completion date. The maximum time that can elapse between 303(d) listing and TMDL completion is 13 years. Accordingly, we have assigned all new listings a TMDL completion date of 2021. This does not suggest that all new listings have the same priority, but rather that the factors determining TMDL priorities have not yet been evaluated as part of this listing process. These factors will be considered through our continuing planning process and with input from our Board and stakeholders. These factors include:

- Water body significance;
- Severity of pollution;
- Degree of impairment;

- Potential threat to human health and the environment;
- Water quality benefits of ongoing activities in the watershed;
- Potential for beneficial use protection and recovery;
- Degree of public concern;
- Availability of funding; and
- Availability of data and information to address the water quality problem.

4.4 Do-Not-List recommendations

This section presents two categories of water bodies for which a "do not list" decision was made. Table 5 lists good quality waters. For these waters there are sufficient data to determine that at least some beneficial uses are supported, and no data are available that suggest non-attainment of beneficial uses. Fact sheets for each of these recommendations are available online (Appendix C).

Table 5: Do Not List recommendations: Some beneficial uses supported

Water Body	Designated/Potential Uses	Supporting Data
Easkoot Creek	Aquatic Life/ Cold Freshwater Habitat	Benthic macroinvertebrate bioassessment
		Temperature
		Dissolved Oxygen
Pine Gulch Creek	Aquatic Life/ Cold Freshwater Habitat	Benthic macroinvertebrate bioassessment
		Temperature
		Dissolved Oxygen
Redwood Creek	Aquatic Life/ Cold Freshwater Habitat	Benthic macroinvertebrate bioassessment
		Temperature
		Dissolved Oxygen
Rodeo Creek	Aquatic Life/ Cold Freshwater Habitat	Benthic macroinvertebrate bioassessment
		Temperature
		Dissolved Oxygen
Tennessee Valley Creek	Aquatic Life/ Cold Freshwater Habitat	Benthic macroinvertebrate bioassessment
		Temperature
		Dissolved Oxygen
Webb Creek	Aquatic Life/ Cold Freshwater Habitat	Benthic macroinvertebrate bioassessment
		Temperature
		Dissolved Oxygen

Table 6 lists water body-pollutant combinations, for which there was insufficient information

to determine whether or not water quality standards are being attained. In some cases, there are a small number of water quality standard exceedances, but they are insufficient to demonstrate impairment in accordance with the Listing Policy. Thus, for these water body-pollutant combinations, more data should be collected to allow for a definitive determination ina subsequent listing cycle. The Fact Sheets for these water body-pollutant combinations, other than for trash assessment, are provided in Appendix C, online.

Table 6: Do Not List recommendations: Insufficient information to determine if beneficial uses are attained

Water Body	Designated/Potential Uses	Supporting Data
Arroyo Viejo Creek	Aquatic Life/ Warm Freshwater Habitat	Toxicity sediment Cr , Cu, As, Ni – sediment
Audubon Canyon Creek	Aquatic Life/ Cold Freshwater Habitat	Nitrate
Codornices Creek	Aquatic Life / Warm Freshwater Habitat	Dissolved oxygen
Glen Echo Creek	Aquatic Life/ Warm Freshwater Habitat	Toxicity sediment As, Cr, Cd, Cu, Pb, Hg, Ni – sediment Cu, Pb, Ni, Zn – water
Lion Creek	Aquatic Life/ Warm Freshwater Habitat	Dissolved oxygen
Lobos Creek	Aquatic Life/ Warm Freshwater Habitat	Toxicity water Toxicity sediment
Morses Gulch Creek	Aquatic Life/ Cold Freshwater Habitat	Nitrate
Mt Diablo Creek	Aquatic Life / Warm Freshwater Habitat	Dissolved oxygen Toxicity sediment
Peralta Creek	Aquatic Life / Warm Freshwater Habitat	Toxicity sediment Pyrethroids Diazinon
Permanente Creek	Aquatic Life / Cold Freshwater Habitat	Toxicity sediment
San Leandro Creek, Lower	Aquatic Life / Warm Freshwater Habitat	Chromium
Stevens Creek	Aquatic Life / Warm Freshwater Habitat	Dissolved oxygen
Temescal Creek	Aquatic Life/ Warm Freshwater Habitat	Toxicity water Cu, Pb, Ni, Zn – water
Walker Creek	Aquatic Life / Cold Freshwater Habitat	Temperature

4.5 Editorial revisions to the 2006 303(d) list

In addition to the proposed status changing actions, we reviewed and clarified the decision language for water bodies on the 303(d) list adopted in 2006. In particular, careful consideration was given to updating the expected schedules for TMDL completion. In addition, the updated list reflects U.S. EPA approval of TMDLs adopted since the 2006 303(d) list was approved. All of these revisions are editorial in nature and do not change the listing status of any water body. These revisions to the 2006 303(d) list of impaired water bodies are shown in Appendix C, online.

5 303(d)/305(b) Integrated Report

The 303(d)/305(b) Integrated Report will be prepared by State Board based on the information submitted in this report and similar information prepared by all the other Regions. The Integrated Report will then be submitted to the U.S. EPA. All of the assessments reflected in the Fact Sheets included in this report will be used to determine which category to assign to the evaluated water bodies. Additional Fact Sheets may be prepared for non-303(d) listed water bodies for inclusion in the Integrated Report.

The US EPA defines five non-overlapping categories for use in the integrated assessment (USEPA 2005). These categories include:

Category 1: All designated uses are supported, no use is threatened;

Category 2: Available data and/or information indicate that some, but not all of the designated uses are supported (see Table 5 above);

Category 3: There is insufficient available data and/or information to make a use support determination (see Table 6 above);

Category 4: Available data and/or information indicate that at least one designated use is not being supported or is threatened, but a TMDL is not needed; and

Category 5: Available data and/or information indicate that at least one designated use is not being supported or is threatened, and a TMDL is needed (Table 4 above).

The 2008 Integrated Report adopted by State Board will include the 303(d) listing changes approved by each Regional Water Board. Categories 4 and 5 reflect those water bodies placed on the 303(d) list.

6 References

CVRWQCB. 2006. *Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin Rivers Basins for the Control of Diazinon and Chlorpyrifos*. June 2006. Final Staff Report: http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/delta_op_pesticide/final_staff_report/delta_dc_bpa_staff_rpt.pdf

CVRWQCB. 2008. A Compilation of Water Quality Goals. Report prepared by J.B. Marshack. http://www.swrcb.ca.gov/rwqcb5/water_issues/water_quality_standards_limits/water_quality_goals/index.shtml

MacDonald, D.D., Ingersoll, C.G. and T.A. Berger. 2000. "Development and evaluation of consensus-based sediment quality guidelines for freshwater ecosystems". *Archives of Environmental Contamination and Toxicology*. 39:20-31.

SFBRWQCB. 2001. *Draft Staff Report: Proposed Revisions to Section 303(d) List and Priorities for Development of Total Maximum Daily Loads (TMDLs) for the San Francisco Bay Region.* August 2001. http://www.waterboards.ca.gov/sanfranciscobay/water_issues/available_documents/draft303drb2.pdf

SFBRWQCB. 2005. Diazinon and pesticide-related toxicity in San Francisco Bay Area urban creeks Total Maximum Daily Load (TMDL) Staff Report, November 9, 2005. San Francisco Bay Regional Water Quality Control Board, Oakland, CA. http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/urbancrksdiazinontmdl.shtml

SFBRWQCB. 2007a. *A Rapid Trash Assessment Method Applied to Waters of the San Francisco Bay Region: Trash Measurement in Streams.* April 2007. http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/planningtmdls/surfacemonitoring/rb2swamptrashrpt06152007.pdf

SFBRWQCB. 2007b. San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan). January 18, 2007.

SFBRWQCB. 2007c. Water quality monitoring and bioassessment in nine San Francisco Bay Region watersheds: Walker Creek, Lagunitas Creek, San Leandro Creek, Wildcat Creek/San Pablo Creek, Suisun Creek, Arroyo Las Positas, Pescadero Creek/Butano Creek, San Gregorio Creek, and Stevens Creek/Permanente Creek. Oakland, CA: Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board.

SFBRWQCB. 2007d. Water Quality Monitoring and Bioassessment in Four San Francisco Bay Region Watersheds in 2003-2004: Kirker Creek, Mt. Diablo Creek, Petaluma River, and San

Mateo Creek. Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board, Oakland, CA.

SWRCB. 2004. Water Quality Control Policy for Developing California's Section 303(d) List. Resolution No. 2004-0063. Sacramento, CA: State Water Resources Control Board. California Environmental Protection Agency.

Sullivan, K., D.J. Martin, R.D. Cardwell, J.E. Toll and S. Duke. 2000. *An Analysis of the Effects of Temperature on Salmonids of the Pacific Northwest with Implications for Selecting Temperature Criteria*. Sustainable Ecosystems Institute.

U.S. EPA. 1977. Temperature criteria for freshwater fish: protocol and procedures. Ecological Research Series. EPA-600/3-77-061 (NTIS PB270032). Prepared by W.A. Brungs and B.R. Jones. U.S. Environmental Protection Agency, Washington, D.C.

U.S. EPA. 1986. Ambient Water Quality Criteria for Bacteria. EPA 440/5-84-002. Office of Water, Regulations and Standards, Criteria and Standards Division, Washington, D.C.

U.S. EPA. 2002. Draft: Assessing and Monitoring Floatable Debris. EPA-842-B-02-002.

U.S. EPA. 2005. Guidance for 2006 assessment, listing and reporting requirements pursuant to sections 303(d), 305(b) and 314 of the Clean Water Act. July 29, 2005. http://www.epa.gov/owow/tmdl/2006IRG/report/2006irg-report.pdf

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APPENDIX A

PUBLIC SOLICITATION for Water Quality Information

available online at

http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/303dlist.shtml

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APPENDIX B

SUMMARY OF DATA RECEIVED AND DATA QUALITY EVALUATION

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Summary of Data Received as a Result of Solicitation Process in February 2007

REQUESTS TO LIST					
Water Body	**Pollutant/ Water quality parameter**	**Data Source**	**Spatial Representation**	**Temporal Representation**	**Data Quality**
Guadalupe River, Los Gatos Creek, Richmond Marsh, San Rafael Creek, Wildcat Creek, Stevens Creek	**Trash**	**Save the Bay** Photographic documentation and estimates of trash loads	1-4 locations on each water body	Data collected in January and February 2007	Medium – photographic documentation
Guadalupe River, Coyote Creek	**Trash**	**GCRCD**: Guadalupe-Coyote Resource Conservation District Photographic and narrative documentation of trash, debris, channel blockages, encampments and dumping	5 locations on Coyote Creek and 1 location on Guadalupe River	Data collected in March 2002, May 2005, and May 2006	Medium – photographic documentation
Bay area storm drain channels, creeks, wetlands and San Francisco Bay Damon Slough, Eastshore Park, Strawberry Creek, Temescal Creek, Adobe Creek, Alameda Creek, Alhambra Creek, Arroyo Seco, Coyote Creek, Richardson Bay shoreline, Aquatic Park Lagoon, Calabazas Creek, Colma Creek, Corte Madera Creek, Middle Harbor Park shoreline, Frontage Road Beach, Grayson Creek, Guadalupe River, Lafayette Creek, Lake Merritt,	**Trash/Gross pollutants**	Roger B. James & Lawrence P. Kolb Photographic and narrative documentation over a 10-year period	1-5 locations on each water body	Data collected mainly in winter months from 1997-2007, majority in 2006 and 2007	Medium – photographic documentation

REQUESTS TO LIST					
Water Body	**Pollutant/ Water quality parameter**	**Data Source**	**Spatial Representation**	**Temporal Representation**	**Data Quality**
Las Trampas Creek, Ledgewood Creek, Matadero Creek, McCoy Creek, Pacheco Slough, Rindler Creek, San Leandro Creek, San Mateo Creek, San Rafael Creek, San Pablo Creek, San Ramon Creek, San Tomas Aquino Creek, Sausal Creek, Stevens Creek, Sulphur Creek, Vista Grande Canal, Walnut Creek, 54th Ave. Creek (tidal near Oakport)					
Rodeo Creek	**Sediment**	**Muir Heritage Land Trust** No quantitative data, geomorphic assessment and creek analysis (*Geomorphic and Hydrologic Assessment of Fernandez Ranch* prepared by Watershed Sciences	N/A	N/A	No data submitted
Willow Creek (tributary of Wildcat Creek near Saratoga)	**Sediment**	Margaret Giberson of Los Gatos	Willow Creek	1985-1991, 2002	Law – old (1985-1991, 2002) photographic documentation of sediment runoff
San Francisco Bay – areas adjacent to dredge material disposal sites	**Suspended sediment**	Fred Krieger of Berkeley Narrative evidence and references to USGS mapping, SFEI assessments of sediment loadings, RMP data and a White Paper on	San Francisco Bay	N/A	No data submitted

REQUESTS TO LIST					
Water Body	**Pollutant/ Water quality parameter**	**Data Source**	**Spatial Representation**	**Temporal Representation**	**Data Quality**
		Herring			
Abbotts Lagoon and associated tributaries in Point Reyes National Park	**Biostimulatory substances, dissolved oxygen, un-ionized ammonia**	Fred Krieger of Berkeley Link to the USGS report http://pubs.usgs.gov/sir/2005/5261/sir_2005-5261.pdf *Assessment of Hydrologic and Water Quality Data Collected in Abbotts Lagoon Watershed, Point Reyes National Seashore, California, during Water Years 1999 and 2000*	Eleven monitoring locations including 3 locations in Abbotts Lagoon and 8 locations in unnamed tributaries draining into Abbotts Lagoon	Old data collected from November 1998 through August 1999. Quarterly sampling at the 3 lagoon sites and one perennial tributary and sampling of two storm events at several tributary sites	Old data. Medium quality – limited quality control procedures
Lake Chabot and its tributary Rindler Creek (Solano County)	**Trash, dissolved oxygen, sediment**	**Friends of Lake Chabot** Data not submitted, reference made to the data collected by the Vallejo Sanitation and Flood Control District	N/A	N/A	No data submitted
California Ocean Waters	**Carbon dioxide**	**Center for Biological Diversity** No data submitted. Scientific papers and supporting documentation on acidification of ocean waters	N/A	N/A	No numerical data submitted

REQUESTS NOT TO LIST / DE-LIST / OTHER					
Water Body	**Pollutant/ Water quality parameter**	**Data Source**	**Spatial Representation**	**Temporal Representation**	**Data Quality**
Urban Creeks – Santa Clara Basin Adobe Creek, Alamitos Creek, Barron Creek, Berryessa Creek, Calabazas Creek, Coyote Creek, El Camino Storm Drain Channel, Guadalupe River, Los Gatos Creek, Silver Creek, Matadero Creek, Penitencia Creek, Permanente Creek, Randall Creek, Rodeo Creek, San Francisquito Creek, San Tomas Creek, Saratoga Creek, Stevens Creek, Thompson Creek	**Trash and water quality data**	**SCVURPPP:** Santa Clara Valley Urban Runoff Pollution Prevention Program Photographic and narrative documentation of creeks impacted by trash including additional physical, chemical and biological data	1-3 locations on each water body	Data collected 1 to 3 times per location from 2004 through 2006	High Quantitative Trash Assessment Methodology documented in separate report
Lake Merced	**Dissolved oxygen, pH**	**San Francisco Public Utilities Commission** Data submitted in support of not listing Lake Merced on the 303(d) list	Four monitoring locations in Lake Merced including 2 locations in South Lake Merced and 1 location in North and 1 in North East section of the lake.	DO and pH measured from 4 to 8 times a year over a period from 05/27/2004 to 12/20/2006	Quality control procedures unknown
Lake Del Valle Reservoir	**Basic water quality, conventional chemistry, E. coli, Total coliform, Giardia and Cryptosporidium**	**Alameda Food Control and Water Conservation District** Data submitted to document good quality of the drinking water supply. Request to modify the current 303(d) listing of the	Seven monitoring locations at 3 water bodies - including 3 locations at the Lake Del Valle and 4 locations at major inputs to the South Bay Aqueduct	Samples collected from December 2005 through March 2006	Description of the QA/QC protocols not included

REQUESTS NOT TO LIST / DE-LIST / OTHER					
Water Body	**Pollutant/ Water quality parameter**	**Data Source**	**Spatial Representation**	**Temporal Representation**	**Data Quality**
		reservoir for Hg and PCBs to state that there is no threat to treated drinking water supply.			
San Francisco Bay	**Selenium**	**Western State Petroleum Association** Request to de-list Literature review and interpretation of selenium concentration data in San Francisco Bay and the likely toxicological effects of selenium.	N/A	N/A	RMP data available – high quality
Mount Diablo Creek	**Temperature, dissolved oxygen, pH, conductivity, bacteria**	**Friends of Mount Diablo Creek** Data provided for ongoing assessment of Mount Diablo Ck.	Six sampling locations (3 sites on the main stem of Mount Diablo Ck and 3 sites on the local tributaries)	Physico-chemical parameters measured monthly from March 2006 through February 2007. E coli and total coliforms measured at 3 sites in July and August 2006	QA/QC protocols included
N/A	**Pesticides**	**DPR**[1]: Department of Pesticide Regulation - links to the Surface Water Database containing pesticides data for California waterways. **No specific data submitted.**	Contra Costa, San Mateo, Solano and Santa Clara County,	Old data (1992-1998)	High

[1] The database comprises a limited amount of pesticide data (diazinon, chloropyrifos, diuron, metha diuron) collected more than 10 years ago from 12 creeks within Region 2 boundaries.

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APPENDIX C

WATER BODY FACT SHEETS

available online at

http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/303dlist.shtml

ATTACHMENT F

State Water Resources Control Board
Resolution No. 2012-0031, Attachment B
Special Protections for Areas of Biological Significance

State Water Resources Control Board

Resolution No. 2012-0031

Attachment B - Special Protections for Areas of Special Biological Significance, Governing Point Source Discharges of Storm Water and Nonpoint Source Waste Discharges

I. PROVISIONS FOR POINT SOURCE DISCHARGES OF STORM WATER ANDNONPOINT SOURCE WASTE DISCHARGES

The following terms, prohibitions, and special conditions (hereafter collectively referred to as special conditions) are established as limitations on point source storm water and nonpoint source discharges. These special conditions provide Special Protections for marine aquatic life and natural water quality in Areas of Special Biological Significance (ASBS), as required for State Water Quality Protection Areas pursuant to California Public Resources Code Sections 36700(f) and 36710(f). These Special Protections are adopted by the State Water Board as part of the California Ocean Plan (Ocean Plan) General Exception.

The special conditions are organized by category of discharge. The State Water Resources Control Board (State Water Board) and Regional Water Quality Control Boards (Regional Water Boards) will determine categories and the means of regulation for those categories [e.g., Point Source Storm Water National Pollutant Discharge Elimination System (NPDES) or Nonpoint Source].

A. PERMITTED POINT SOURCE DISCHARGES OF STORM WATER

1. General Provisions for Permitted Point Source Discharges of Storm Water

   a. Existing storm water discharges into an ASBS are allowed only under the following conditions:

      (1) The discharges are authorized by an NPDES permit issued by the State Water Board or Regional Water Board;

      (2) The discharges comply with all of the applicable terms, prohibitions, and special conditions contained in these Special Protections; and

      (3) The discharges:

         (i) Are essential for flood control or slope stability, including roof, landscape, road, and parking lot drainage;

         (ii) Are designed to prevent soil erosion;

         (iii) Occur only during wet weather;

         (iv) Are composed of only storm water runoff.

b. Discharges composed of storm water runoff shall not alter natural ocean water quality in an ASBS.

c. The discharge of trash is prohibited.

d. Only discharges from existing storm water outfalls are allowed. Any proposed or new storm water runoff discharge shall be routed to existing storm water discharge outfalls and shall not result in any new contribution of waste to an ASBS (i.e., no additional pollutant loading). “Existing storm water outfalls” are those that were constructed or under construction prior to January 1, 2005. “New contribution of waste” is defined as any addition of waste beyond what would have occurred as of January 1, 2005. A change to an existing storm water outfall, in terms of re-location or alteration, in order to comply with these special conditions, is allowed and does not constitute a new discharge.

e. Non-storm water discharges are prohibited except as provided below:

(1) The term “non-storm water discharges” means any waste discharges from a municipal separate storm sewer system (MS4) or other NPDES permitted storm drain system to an ASBS that are not composed entirely of storm water.

(2) (i) The following non-storm water discharges are allowed, provided that the discharges are essential for emergency response purposes, structural stability, slope stability or occur naturally:

(a) Discharges associated with emergency fire fighting operations.

(b) Foundation and footing drains.

(c) Water from crawl space or basement pumps.

(d) Hillside dewatering.

(e) Naturally occurring groundwater seepage via a storm drain.

(f) Non-anthropogenic flows from a naturally occurring stream via a culvert or storm drain, as long as there are no contributions of anthropogenic runoff.

(ii) An NPDES permitting authority may authorize non-storm water discharges to an MS4 with a direct discharge to an ASBS only to the extent the NPDES permitting authority finds that the discharge does not alter natural ocean water quality in the ASBS.

(3) Authorized non-storm water discharges shall not cause or contribute to a violation of the water quality objectives in Chapter II of the Ocean Plan nor alter natural ocean water quality in an ASBS.

2. Compliance Plans for Inclusion in Storm Water Management Plans (SWMP) and Storm Water Pollution Prevention Plans (SWPPP).

The discharger shall specifically address the prohibition of non-storm water runoff and the requirement to maintain natural water quality for storm water discharges to an ASBS in an

ASBS Compliance Plan to be included in its SWMP or a SWPPP, as appropriate to permit type. If a statewide permit includes a SWMP, then the discharger shall prepare a stand-alone compliance plan for ASBS discharges. The ASBS Compliance Plan is subject to approval by the Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (for permits issued by Regional Water Boards).

a. The Compliance Plan shall include a map of surface drainage of storm water runoff, showing areas of sheet runoff, prioritize discharges, and describe any structural Best Management Practices (BMPs) already employed and/or BMPs to be employed in the future. Priority discharges are those that pose the greatest water quality threat and which are identified to require installation of structural BMPs. The map shall also show the storm water conveyances in relation to other features such as service areas, sewage conveyances and treatment facilities, landslides, areas prone to erosion, and waste and hazardous material storage areas, if applicable. The SWMP or SWPPP shall also include a procedure for updating the map and plan when changes are made to the storm water conveyance facilities.

b. The ASBS Compliance Plan shall describe the measures by which all non-authorized non-storm water runoff (e.g., dry weather flows) has been eliminated, how these measures will be maintained over time, and how these measures are monitored and documented.

c. For Municipal Separate Storm Sewer System (MS4s), the ASBS Compliance Plan shall require minimum inspection frequencies as follows:

   (1) The minimum inspection frequency for construction sites shall be weekly during rainy season;

   (2) The minimum inspection frequency for industrial facilities shall be monthly during the rainy season;

   (3) The minimum inspection frequency for commercial facilities (e.g., restaurants) shall be twice during the rainy season; and

   (4) Storm water outfall drains equal to or greater than 18 inches (457 mm) in diameter or width shall be inspected once prior to the beginning of the rainy season and once during the rainy season and maintained to remove trash and other anthropogenic debris.

d. The ASBS Compliance Plan shall address storm water discharges (wet weather flows) and, in particular, describe how pollutant reductions in storm water runoff, that are necessary to comply with these special conditions, will be achieved through BMPs. Structural BMPs need not be installed if the discharger can document to the satisfaction of the State Water Board Executive Director (statewide permits) or Regional Water Board Executive Officer (Regional Water Board permits) that such installation would pose a threat to health or safety. BMPs to control storm water runoff discharges (at the end-of-pipe) during a design storm shall be designed to achieve on average the following target levels:

   (1) Table B Instantaneous Maximum Water Quality Objectives in Chapter II of the Ocean Plan; or

(2) A 90% reduction in pollutant loading during storm events, for the applicant's total discharges.

The baseline for these determinations is the effective date of the Exception, except for those structural BMPs installed between January 1, 2005 and adoption of these Special Protections, and the reductions must be achieved and documented within six (6) years of the effective date.

e. The ASBS Compliance Plan shall address erosion control and the prevention of anthropogenic sedimentation in ASBS. The natural habitat conditions in the ASBS shall not be altered as a result of anthropogenic sedimentation.

f. The ASBS Compliance Plan shall describe the non-structural BMPs currently employed and planned in the future (including those for construction activities), and include an implementation schedule. The ASBS Compliance Plan shall include non-structural BMPs that address public education and outreach. Education and outreach efforts must adequately inform the public that direct discharges of pollutants from private property not entering an MS4 are prohibited. The ASBS Compliance Plan shall also describe the structural BMPs, including any low impact development (LID) measures, currently employed and planned for higher threat discharges and include an implementation schedule. To control storm water runoff discharges (at the end-of-pipe) during a design storm, permittees must first consider, and use where feasible, LID practices to infiltrate, use, or evapotranspirate storm water runoff on-site, if LID practices would be the most effective at reducing pollutants from entering the ASBS.

g. The BMPs and implementation schedule shall be designed to ensure that natural water quality conditions in the receiving water are achieved and maintained by either reducing flows from impervious surfaces or reducing pollutant loading, or some combination thereof.

h. If the results of the receiving water monitoring described in IV.B. of these special conditions indicate that the storm water runoff is causing or contributing to an alteration of natural ocean water quality in the ASBS, the discharger shall submit a report to the State Water Board and Regional Water Board within 30 days of receiving the results.

(1) The report shall identify the constituents in storm water runoff that alter natural ocean water quality and the sources of these constituents.

(2) The report shall describe BMPs that are currently being implemented, BMPs that are identified in the SWMP or SWPPP for future implementation, and any additional BMPs that may be added to the SWMP or SWPPP to address the alteration of natural water quality. The report shall include a new or modified implementation schedule for the BMPs.

(3) Within 30 days of the approval of the report by the State Water Board Executive Director (statewide permits) or Regional Water Board Executive Officer (Regional Water Board permits), the discharger shall revise its ASBS Compliance Plan to incorporate any new or modified BMPs that have been or will be implemented, the implementation schedule, and any additional monitoring required.

(4) As long as the discharger has complied with the procedures described above and is implementing the revised SWMP or SWPPP, the discharger does not have to repeat the same procedure for continuing or recurring exceedances of natural ocean water quality conditions due to the same constituent.

(5) The requirements of this section are in addition to the terms, prohibitions, and conditions contained in these Special Protections.

3. Compliance Schedule

a. On the effective date of the Exception, all non-authorized non-storm water discharges (e.g., dry weather flow) are effectively prohibited.

b. Within eighteen (18) months from the effective date of the Exception, the discharger shall submit a draft written ASBS Compliance Plan to the State Water Board Executive Director (statewide permits) or Regional Water Board Executive Officer (Regional Water Board permits) that describes its strategy to comply with these special conditions, including the requirement to maintain natural water quality in the affected ASBS. The ASBS Compliance Plan shall include a description of appropriate non-structural controls and a time schedule to implement structural controls (implementation schedule) to comply with these special conditions for inclusion in the discharger's SWMP or SWPPP, as appropriate to permit type. The final ASBS Compliance Plan, including a description and final schedule for structural controls based on the results of runoff and receiving water monitoring, must be submitted within thirty (30) months from the effective date of the Exception.

c. Within 18 months of the effective date of the Exception, any non-structural controls that are necessary to comply with these special conditions shall be implemented.

d. Within six (6) years of the effective date of the Exception, any structural controls identified in the ASBS Compliance Plan that are necessary to comply with these special conditions shall be operational.

e. Within six (6) years of the effective date of the Exception, all dischargers must comply with the requirement that their discharges into the affected ASBS maintain natural ocean water quality. If the initial results of post-storm receiving water quality testing indicate levels higher than the 85th percentile threshold of reference water quality data and the pre-storm receiving water levels, then the discharger must re-sample the receiving water, pre- and post-storm. If after re-sampling the post-storm levels are still higher than the 85th percentile threshold of reference water quality data, and the pre-storm receiving water levels, for any constituent, then natural ocean water quality is exceeded. See attached Flowchart.

f. The Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (Regional Water Board permits) may only authorize additional time to comply with the special conditions d. and e., above if good cause exists to do so. Good cause means a physical impossibility or lack of funding.

If a discharger claims physical impossibility, it shall notify the Board in writing within thirty (30) days of the date that the discharger first knew of the event or circumstance that caused or would cause it to fail to meet the deadline in d. or e. The notice shall describe

the reason for the noncompliance or anticipated noncompliance and specifically refer to this Section of this Exception. It shall describe the anticipated length of time the delay in compliance may persist, the cause or causes of the delay as well as measures to minimize the impact of the delay on water quality, the measures taken or to be taken by the discharger to prevent or minimize the delay, the schedule by which the measures will be implemented, and the anticipated date of compliance. The discharger shall adopt all reasonable measures to avoid and minimize such delays and their impact on water quality.

The discharger may request an extension of time for compliance based on lack of funding. The request for an extension shall require:

1. for municipalities, a demonstration of significant hardship to discharger ratepayers, by showing the relationship of storm water fees to annual household income for residents within the discharger's jurisdictional area, and the discharger has made timely and complete applications for all available bond and grant funding, and either no bond or grant funding is available, or bond and/or grant funding is inadequate; or

2. for other governmental agencies, a demonstration and documentation of a good faith effort to acquire funding through that agency’s budgetary process, and a demonstration that funding was unavailable or inadequate.

B. NONPOINT SOURCE DISCHARGES

1. General Provisions for Nonpoint Sources

   a. Existing nonpoint source waste discharges are allowed into an ASBS only under the following conditions:

      (1) The discharges are authorized under waste discharge requirements, a conditional waiver of waste discharge requirements, or a conditional prohibition issued by the State Water Board or a Regional Water Board.

      (2) The discharges are in compliance with the applicable terms, prohibitions, and special conditions contained in these Special Protections.

      (3) The discharges:

         (i) Are essential for flood control or slope stability, including roof, landscape, road, and parking lot drainage;

         (ii) Are designed to prevent soil erosion;

         (iii) Occur only during wet weather;

         (iv) Are composed of only storm water runoff.

   b. Discharges composed of storm water runoff shall not alter natural ocean water quality in an ASBS.

c. The discharge of trash is prohibited.

d. Only existing nonpoint source waste discharges are allowed. "Existing nonpoint source waste discharges" are discharges that were ongoing prior to January 1, 2005. "New nonpoint source discharges" are defined as those that commenced on or after January 1, 2005. A change to an existing nonpoint source discharge, in terms of relocation or alteration, in order to comply with these special conditions, is allowed and does not constitute a new discharge.

e. Non-storm water discharges from nonpoint sources (those not subject to an NPDES Permit) are prohibited except as provided below:

(1) The term "non-storm water discharges" means any waste discharges that are not composed entirely of storm water.

(2) The following non-storm water discharges are allowed, provided that the discharges are essential for emergency response purposes, structural stability, slope stability, or occur naturally:

(i) Discharges associated with emergency fire fighting operations.

(ii) Foundation and footing drains.

(iii) Water from crawl space or basement pumps.

(iv) Hillside dewatering.

(v) Naturally occurring groundwater seepage via a storm drain.

(vi) Non-anthropogenic flows from a naturally occurring stream via a culvert or storm drain, as long as there are no contributions of anthropogenic runoff.

(3) Authorized non-storm water discharges shall not cause or contribute to a violation of the water quality objectives in Chapter II of the Ocean Plan nor alter natural ocean water quality in an ASBS.

f. At the San Clemente Island ASBS, discharges incidental to military training and research, development, test, and evaluation operations are allowed. Discharges incidental to underwater demolition and other in-water explosions are not allowed in the two military closure areas in the vicinity of Wilson Cove and Castle Rock. Discharges must not result in a violation of the water quality objectives, including the protection of the marine aquatic life beneficial use, anywhere in the ASBS.

g. At the San Nicolas Island and Begg Rock ASBS, discharges incidental to military research, development, testing, and evaluation of, and training with, guided missile and other weapons systems, fleet training exercises, small-scale amphibious warfare training, and special warfare training are allowed. Discharges incidental to underwater demolition and other in-water explosions are not allowed. Discharges must not result in a violation of the water quality objectives, including the protection of the marine aquatic life beneficial use, anywhere in the ASBS.

h. All other nonpoint source discharges not specifically authorized above are prohibited.

2. Planning and Reporting

a. The nonpoint source discharger shall develop an ASBS Pollution Prevention ~~P~~lan, including an implementation schedule, to address storm water runoff and any other nonpoint source discharges from its facilities. The ASBS Pollution Prevention Plan must be equivalent in contents to an ASBS Compliance Plan as described in I (A)(2) in this document. The ASBS Pollution Prevention Plan is subject to approval by the Executive Director of the State Water Board (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements).

b. The ASBS Pollution Prevention Plan shall address storm water discharges (wet weather flows) and, in particular, describe how pollutant reductions in storm water runoff that are necessary to comply with these special conditions, will be achieved through Management Measures and associated Management Practices (Management Measures/Practices). Structural BMPs need not be installed if the discharger can document to the satisfaction of the State Water Board Executive Director or Regional Water Board Executive Officer that such installation would pose a threat to health or safety. Management Measures to control storm water runoff during a design storm shall achieve on average the following target levels:

(1) Table B Instantaneous Maximum Water Quality Objectives in Chapter II of the Ocean Plan; or

(2) A 90% reduction in pollutant loading during storm events, for the applicant's total discharges.

The baseline for these determinations is the effective date of the Exception, except for those structural BMPs installed between January 1, 2005 and adoption of these Special Protections, and the reductions must be achieved and documented within six (6) years of the effective date.

c. If the results of the receiving water monitoring described in IV.B. of these special conditions indicate that the storm water runoff or other nonpoint source pollution is causing or contributing to an alteration of natural ocean water quality in the ASBS, the discharger shall submit a report to the State Water Board and the Regional Water Board within 30 days of receiving the results.

(1) The report shall identify the constituents that alter natural water quality and the sources of these constituents.

(2) The report shall describe Management Measures/Practices that are currently being implemented, Management Measures/Practices that are identified in the ASBS Pollution Prevention Plan for future implementation, and any additional Management Measures/Practices that may be added to the Pollution Prevention Plan to address the alteration of natural water quality. The report shall include a new or modified implementation schedule for the Management Measures/Practices.

(3) Within 30 days of the approval of the report by the State Water Board Executive Director (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements), the discharger shall revise its ASBS Pollution Prevention Plan to incorporate any new or modified Management Measures/Practices that have been or will be implemented, the implementation schedule, and any additional monitoring required.

(4) As long as the discharger has complied with the procedures described above and is implementing the revised ASBS Pollution Prevention Plan, the discharger does not have to repeat the same procedure for continuing or recurring exceedances of natural water quality conditions due to the same constituent.

(5) The requirements of this section are in addition to the terms, prohibitions, and conditions contained in these Special Protections.

3. Compliance Schedule

a. On the effective date of the Exception, all non-authorized non-storm water discharges (e.g., dry weather flow) are effectively prohibited.

b. Within eighteen (18) months from the effective date of the Exception, the dischargers shall submit a draft written ASBS Pollution Prevention Plan to the State Water Board Executive Director (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements) that describes its strategy to comply with these special conditions, including the requirement to maintain natural ocean water quality in the affected ASBS. The Pollution Prevention Plan shall include a description of appropriate non-structural controls and a time schedule to implement structural controls to comply with these special conditions for inclusion in the discharger's Pollution Prevention Plan. The final ASBS Pollution Prevention Plan, including a description and final schedule for structural controls based on the results of runoff and receiving water monitoring, must be submitted within thirty (30) months from the effective date of the Exception.

c. Within 18 months of the effective date of the Exception, any non-structural controls that are necessary to comply with these Special Protections shall be implemented.

d. Within six (6) years of the effective date of the Exception, any structural controls identified in the ASBS Pollution Prevention Plan that are necessary to comply with these special conditions shall be operational.

e. Within six (6) years of the effective date of the Exception, all dischargers must comply with the requirement that their discharges into the affected ASBS maintain natural ocean water quality. If the initial results of post-storm receiving water quality testing indicate levels higher than the 85th percentile threshold of reference water quality data and the pre-storm receiving water levels, then the discharger must re-sample the receiving water pre- and post-storm. If after re-sampling the post-storm levels are still higher than the 85th percentile threshold of reference water quality data and the pre-storm receiving water levels, for any constituent, then natural ocean water quality is exceeded. See attached Flowchart.

f. The Executive Director of the State Water Board (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements) may only authorize additional time to comply with the special conditions d. and e., above if good cause exists to do so. Good cause means a physical impossibility or lack of funding.

If a discharger claims physical impossibility, it shall notify the Board in writing within thirty (30) days of the date that the discharger first knew of the event or circumstance that caused or would cause it to fail to meet the deadline in d. or e. The notice shall describe the reason for the noncompliance or anticipated noncompliance and specifically refer to this Section of this Exception. It shall describe the anticipated length of time the delay in compliance may persist, the cause or causes of the delay as well as measures to minimize the impact of the delay on water quality, the measures taken or to be taken by the discharger to prevent or minimize the delay, the schedule by which the measures will be implemented, and the anticipated date of compliance. The discharger shall adopt all reasonable measures to avoid and minimize such delays and their impact on water quality.

The discharger may request an extension of time for compliance based on lack of funding. The request for an extension shall require:

1. a demonstration that the discharger has made timely and complete applications for all available bond and grant funding, and either no bond or grant funding is available, or bond and/or grant funding is inadequate; or

2. for governmental agencies, a demonstration and documentation of a good faith effort to acquire funding through that agency's budgetary process, and a demonstration that funding was unavailable or inadequate.

II. ADDITIONAL REQUIREMENTS FOR PARKS AND RECREATION FACILITIES

In addition to the provisions in Section I (A) or I (B), respectively, a discharger with parks and recreation facilities shall comply with the following:

A. The discharger shall include a section in an ASBS Compliance Plan (for NPDES dischargers) or an ASBS Pollution Prevention Plan (for nonpoint source dischargers) to address storm water runoff from parks and recreation facilities.

1. The plan shall identify all pollutant sources, including sediment sources, which may result in waste entering storm water runoff. Pollutant sources include, but are not limited to, roadside rest areas and vistas, picnic areas, campgrounds, trash receptacles, maintenance facilities, park personnel housing, portable toilets, leach fields, fuel tanks, roads, piers, and boat launch facilities.

2. The plan shall describe BMPs or Management Measures/Practices that will be implemented to control soil erosion (both temporary and permanent erosion controls) and reduce or eliminate pollutants in storm water runoff in order to achieve and maintain natural water quality conditions in the affected ASBS. The plan shall include BMPs or

Management Measures/Practices to ensure that trails and culverts are maintained to prevent erosion and minimize waste discharges to ASBS.

3. The plan shall include BMPs or Management Measures/Practices to prevent the discharge of pesticides or other chemicals, including agricultural chemicals, in storm water runoff to the affected ASBS.

4. The plan shall include BMPs or Management Measures/Practices that address public education and outreach. The goal of these BMPs or Management Measures/Practices is to ensure that the public is adequately informed that waste discharges to the affected ASBS are prohibited or limited by special conditions in these Special Protections. The BMPs or Management Measures/Practices shall include signage at camping, picnicking, beach and roadside parking areas, and visitor centers, or other appropriate measures, which notify the public of any applicable requirements of these Special Protections and identify the ASBS boundaries.

5. The plan shall include BMPs or Management Measures/Practices that address the prohibition against the discharge of trash to ASBS. The BMPs or Management Measures/Practices shall include measures to ensure that adequate trash receptacles are available for public use at visitor facilities, including parking areas, and that the receptacles are adequately maintained to prevent trash discharges into the ASBS. Appropriate measures include covering trash receptacles to prevent trash from being wind blown and periodically emptying the receptacles to prevent overflows.

6. The plan shall include BMPs or Management Measures/Practices to address runoff from parking areas and other developed features to ensure that the runoff does not alter natural water quality in the affected ASBS. BMPs or Management Measures/Practices shall include measures to reduce pollutant loading in runoff to the ASBS through installation of natural area buffers (LID), treatment, or other appropriate measures.

B. Maintenance and repair of park and recreation facilities must not result in waste discharges to the ASBS. The practice of road oiling must be minimized or eliminated, and must not result in waste discharges to the ASBS.

III. ADDITIONAL REQUIREMENTS – WATERFRONT AND MARINE OPERATIONS

In addition to the provisions in Section I (A) or I (B), respectively, a discharger with waterfront and marine operations shall comply with the following:

A. For discharges related to waterfront and marine operations, the discharger shall develop a Waterfront and Marine Operations Management Plan (Waterfront Plan). This plan shall contain appropriate Management Measures/Practices to address nonpoint source pollutant discharges to the affected ASBS.

1. The Waterfront Plan shall contain appropriate Management Measures/Practices for any waste discharges associated with the operation and maintenance of vessels, moorings, piers, launch ramps, and cleaning stations in order to ensure that beneficial uses are protected and natural water quality is maintained in the affected ASBS.

2. For discharges from marinas and recreational boating activities, the Waterfront Plan shall include appropriate Management Measures, described in The Plan for California's Nonpoint Source Pollution Control Program, for marinas and recreational boating, or equivalent practices, to ensure that nonpoint source pollutant discharges do not alter natural water quality in the affected ASBS.

3. The Waterfront Plan shall include Management Practices to address public education and outreach to ensure that the public is adequately informed that waste discharges to the affected ASBS are prohibited or limited by special conditions in these Special Protections. The management practices shall include appropriate signage, or similar measures, to inform the public of the ASBS restrictions and to identify the ASBS boundaries.

4. The Waterfront Plan shall include Management Practices to address the prohibition against trash discharges to ASBS. The Management Practices shall include the provision of adequate trash receptacles for marine recreation areas, including parking areas, launch ramps, and docks. The plan shall also include appropriate Management Practices to ensure that the receptacles are adequately maintained and secured in order to prevent trash discharges into the ASBS. Appropriate Management Practices include covering the trash receptacles to prevent trash from being windblown, staking or securing the trash receptacles so they don't tip over, and periodically emptying the receptacles to prevent overflow.

5. The discharger shall submit its Waterfront Plan to the by the State Water Board Executive Director (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements) within six months of the effective date of these special conditions. The Waterfront Plan is subject to approval by the State Water Board Executive Director or the Regional Water Board Executive Officer, as appropriate. The plan must be fully implemented within 18 months of the effective date of the Exception.

B. The discharge of chlorine, soaps, petroleum, other chemical contaminants, trash, fish offal, or human sewage to ASBS is prohibited. Sinks and fish cleaning stations are point source discharges of wastes and are prohibited from discharging into ASBS. Anthropogenic accumulations of discarded fouling organisms on the sea floor must be minimized.

C. Limited-term activities, such as the repair, renovation, or maintenance of waterfront facilities, including, but not limited to, piers, docks, moorings, and breakwaters, are authorized only in accordance with Chapter III.E.2 of the Ocean Plan.

D. If the discharger anticipates that the discharger will fail to fully implement the approved Waterfront Plan within the 18 month deadline, the discharger shall submit a technical report as soon as practicable to the State Water Board Executive Director or the Regional Water Board Executive Officer, as appropriate. The technical report shall contain reasons for failing to meet the deadline and propose a revised schedule to fully implement the plan.

E. The State Water Board or the Regional Water Board may, for good cause, authorize additional time to comply with the Waterfront Plan. Good cause means a physical impossibility or lack of funding.

If a discharger claims physical impossibility, it shall notify the Board in writing within thirty (30) days of the date that the discharger first knew of the event or circumstance that caused or would cause it to fail to meet the deadline in Section III.A.5. The notice shall describe the reason for the noncompliance or anticipated noncompliance and specifically refer to this Section of this Exception. It shall describe the anticipated length of time the delay in compliance may persist, the cause or causes of the delay as well as measures to minimize the impact of the delay on water quality, the measures taken or to be taken by the discharger to prevent or minimize the delay, the schedule by which the measures will be implemented, and the anticipated date of compliance. The discharger shall adopt all reasonable measures to avoid and minimize such delays and their impact on water quality. The discharger may request an extension of time for compliance based on lack of funding. The request for an extension shall require:

1. a demonstration of significant hardship by showing that the discharger has made timely and complete applications for all available bond and grant funding, and either no bond or grant funding is available, or bond and/or grant funding is inadequate.

2. for governmental agencies, a demonstration and documentation of a good faith effort to acquire funding through that agency's budgetary process, and a demonstration that funding was unavailable or inadequate.

IV. MONITORING REQUIREMENTS

Monitoring is mandatory for all dischargers to assure compliance with the Ocean Plan. Monitoring requirements include both: (A) core discharge monitoring, and (B) ocean receiving water monitoring. The State and Regional Water Boards must approve sampling site locations and any adjustments to the monitoring programs. All ocean receiving water and reference area monitoring must be comparable with the Water Boards' Surface Water Ambient Monitoring Program (SWAMP).

Safety concerns: Sample locations and sampling periods must be determined considering safety issues. Sampling may be postponed upon notification to the State and Regional Water Boards if hazardous conditions prevail.

Analytical Chemistry Methods: All constituents must be analyzed using the lowest minimum detection limits comparable to the Ocean Plan water quality objectives. For metal analysis, all samples, including storm water effluent, reference samples, and ocean receiving water samples, must be analyzed by the approved analytical method with the lowest minimum detection limits (currently Inductively Coupled Plasma/Mass Spectrometry) described in the Ocean Plan.

A. CORE DISCHARGE MONITORING PROGRAM

1. General sampling requirements for timing and storm size:

   Runoff must be collected during a storm event that is greater than 0.1 inch and generates runoff, and at least 72 hours from the previously measurable storm event. Runoff samples shall be collected during the same storm and at approximately the same time when post-

storm receiving water is sampled, and analyzed for the same constituents as receiving water and reference site samples (see section IV B) as described below.

2. Runoff flow measurements

   a. For municipal/industrial storm water outfalls in existence as of December 31, 2007, 18 inches (457mm) or greater in diameter/width (including multiple outfall pipes in combination having a width of 18 inches, runoff flows must be measured or calculated, using a method acceptable to and approved by the State and Regional Water Boards.

   b. This will be reported annually for each precipitation season to the State and Regional Water Boards.

3. Runoff samples – storm events

   a. For outfalls equal to or greater than 18 inches (0.46m) in diameter or width:

      (1) samples of storm water runoff shall be collected during the same storm as receiving water samples and analyzed for oil and grease, total suspended solids, and, within the range of the southern sea otter indicator bacteria or some other measure of fecal contamination; and

      (2) samples of storm water runoff shall be collected and analyzed for critical life stage chronic toxicity (one invertebrate or algal species) at least once during each storm season when receiving water is sampled in the ASBS.

      (3) If an applicant has no outfall greater than 36 inches, then storm water runoff from the applicant's largest outfall shall be further collected during the same storm as receiving water samples and analyzed for Ocean Plan Table B metals for protection of marine life, Ocean Plan polynuclear aromatic hydrocarbons (PAHs), current use pesticides (pyrethroids and OP pesticides), and nutrients (ammonia, nitrate and phosphates).

   b. For outfalls equal to or greater than 36 inches (0.91m) in diameter or width:

      (1) samples of storm water runoff shall be collected during the same storm as receiving water samples and analyzed for oil and grease, total suspended solids, and, within the range of the southern sea otter indicator bacteria or some other measure of fecal contamination; and

      (2) samples of storm water runoff shall be further collected during the same storm as receiving water samples and analyzed for Ocean Plan Table B metals for protection of marine life, Ocean Plan polynuclear aromatic hydrocarbons (PAHs), current use pesticides (pyrethroids and OP pesticides), and nutrients (ammonia, nitrate and phosphates); and

      (3) samples of storm water runoff shall be collected and analyzed for critical life stage chronic toxicity (one invertebrate or algal species) at least once during each storm season when receiving water is sampled in the ASBS.

c. For an applicant not participating in a regional monitoring program [see below in Section IV (B)] in addition to (a.) and (b.) above, a minimum of the two largest outfalls or 20 percent of the larger outfalls, whichever is greater, shall be sampled (flow weighted composite samples) at least three times annually during wet weather (storm event) and analyzed for all Ocean Plan Table A constituents, Table B constituents for marine aquatic life protection (except for toxicity, only chronic toxicity for three species shall be required), DDT, PCBs, Ocean Plan PAHs, OP pesticides, pyrethroids, nitrates, phosphates, and Ocean Plan indicator bacteria. For parties discharging to ASBS in more than one Regional Water Board region, at a minimum, one (the largest) such discharge shall be sampled annually in each Region.

4. The Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (Regional Water Board permits) may reduce or suspend core monitoring once the storm runoff is fully characterized. This determination may be made at any point after the discharge is fully characterized, but is best made after the monitoring results from the first permit cycle are assessed.

B. Ocean Receiving Water and Reference Area Monitoring Program

In addition to performing the Core Discharge Monitoring Program in Section II.A above, all applicants having authorized discharges must perform ocean receiving water monitoring. In order to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within their ASBS, dischargers may choose either (1) an individual monitoring program, or (2) participation in a regional integrated monitoring program.

1. Individual Monitoring Program: The requirements listed below are for those dischargers who elect to perform an individual monitoring program to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within the affected ASBS. In addition to Core Discharge Monitoring, the following additional monitoring requirements shall be met:

   a. Three times annually, during wet weather (storm events), the receiving water at the point of discharge from the outfalls described in section (IV)(A)(3)(c) above shall be sampled and analyzed for Ocean Plan Table A constituents, Table B constituents for marine aquatic life, DDT, PCBs, Ocean Plan PAHs, OP pesticides, pyrethroids, nitrates, phosphates, salinity, chronic toxicity (three species), and Ocean Plan indicator bacteria.

      The sample location for the ocean receiving water shall be in the surf zone at the point of discharges; this must be at the same location where storm water runoff is sampled. Receiving water shall be sampled prior to (pre-storm) and during (or immediately after) the same storm (post storm). Post storm sampling shall be during the same storm and at approximately the same time as when the runoff is sampled. Reference water quality shall also be sampled three times annually and analyzed for the same constituents pre-storm and post-storm, during the same storm seasons when receiving water is sampled. Reference stations will be determined by the State Water Board's Division of Water Quality and the applicable Regional Water Board(s).

   b. Sediment sampling shall occur at least three times during every five (5) year period. The subtidal sediment (sand or finer, if present) at the discharge shall be sampled and analyzed for Ocean Plan Table B constituents for marine aquatic life, DDT, PCBs, PAHs,

pyrethroids, and OP pesticides. For sediment toxicity testing, only an acute toxicity test using the amphipod *Eohaustorius estuarius* must be performed.

c. A quantitative survey of intertidal benthic marine life shall be performed at the discharge and at a reference site. The survey shall be performed at least once every five (5) year period. The survey design is subject to approval by the Regional Water Board and the State Water Board's Division of Water Quality. The results of the survey shall be completed and submitted to the State Water Board and Regional Water Board at least six months prior to the end of the permit cycle.

d. Once during each five (5) year period, a bioaccumulation study shall be conducted to determine the concentrations of metals and synthetic organic pollutants at representative discharge sites and at representative reference sites. The study design is subject to approval by the Regional Water Board and the State Water Board's Division of Water Quality. The bioaccumulation study may include California mussels (*Mytilus californianus*) and/or sand crabs (*Emerita analoga* or *Blepharipoda occidentalis*). Based on the study results, the Regional Water Board and the State Water Board's Division of Water Quality, may adjust the study design in subsequent permits, or add or modify additional test organisms (such as shore crabs or fish), or modify the study design appropriate for the area and best available sensitive measures of contaminant exposure.

e. Marine Debris: Representative quantitative observations for trash by type and source shall be performed along the coast of the ASBS within the influence of the discharger's outfalls. The design, including locations and frequency, of the marine debris observations is subject to approval by the Regional Water Board and State Water Board's Division of Water Quality.

f. The monitoring requirements of the Individual Monitoring Program in this section are minimum requirements. After a minimum of one (1) year of continuous water quality monitoring of the discharges and ocean receiving waters, the Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (Regional Water Board permits) may require additional monitoring, or adjust, reduce or suspend receiving water and reference station monitoring. This determination may be made at any point after the discharge and receiving water is fully characterized, but is best made after the monitoring results from the first permit cycle are assessed.

2. Regional Integrated Monitoring Program: Dischargers may elect to participate in a regional integrated monitoring program, in lieu of an individual monitoring program, to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within their ASBS. This regional approach shall characterize natural water quality, pre- and post-storm, in ocean reference areas near the mouths of identified open space watersheds and the effects of the discharges on natural water quality (physical, chemical, and toxicity) in the ASBS receiving waters, and should include benthic marine aquatic life and bioaccumulation components. The design of the ASBS stratum of a regional integrated monitoring program may deviate from the otherwise prescribed individual monitoring approach (in Section IV.B.1) if approved by the State Water Board's Division of Water Quality and the Regional Water Boards.

   a. Ocean reference areas shall be located at the drainages of flowing watersheds with minimal development (in no instance more than 10% development), and shall not be located in CWA Section 303(d) listed waterbodies or have tributaries that are 303(d)

listed. Reference areas shall be free of wastewater discharges and anthropogenic non-storm water runoff. A minimum of low threat storm runoff discharges (e.g. stream highway overpasses and campgrounds) may be allowed on a case-by-case basis. Reference areas shall be located in the same region as the ASBS receiving water monitoring occurs. The reference areas for each Region are subject to approval by the participants in the regional monitoring program and the State Water Board's Division of Water Quality and the applicable Regional Water Board(s). A minimum of three ocean reference water samples must be collected from each station, each from a separate storm during the same storm season that receiving water is sampled. A minimum of one reference location shall be sampled for each ASBS receiving water site sampled per responsible party. For parties discharging to ASBS in more than one Regional Water Board region, at a minimum, one reference station and one receiving water station shall be sampled in each region.

b. ASBS ocean receiving water must be sampled in the surf zone at the location where the runoff makes contact with ocean water (i.e. at "point zero"). Ocean receiving water stations must be representative of worst-case discharge conditions (i.e. co-located at a large drain greater than 36 inches, or if drains greater than 36 inches are not present in the ASBS then the largest drain greater than18 inches.) Ocean receiving water stations are subject to approval by the participants in the regional monitoring program and the State Water Board's Division of Water Quality and the applicable Regional Water Board(s). A minimum of three ocean receiving water samples must be collected during each storm season from each station, each from a separate storm. A minimum of one receiving water location shall be sampled in each ASBS per responsible party in that ASBS. For parties discharging to ASBS in more than one Regional Water Board region, at a minimum, one reference station and one receiving water station shall be sampled in each region.

c. Reference and receiving water sampling shall commence during the first full storm season following the adoption of these special conditions, and post-storm samples shall be collected during the same storm event when storm water runoff is sampled. Sampling shall occur in a minimum of two storm seasons. For those ASBS dischargers that have already participated in the Southern California Bight 2008 ASBS regional monitoring effort, sampling may be limited to only one storm season.

d. Receiving water and reference samples shall be analyzed for the same constituents as storm water runoff samples. At a minimum, constituents to be sampled and analyzed in reference and discharge receiving waters must include oil and grease, total suspended solids, Ocean Plan Table B metals for protection of marine life, Ocean Plan PAHs, pyrethroids, OP pesticides, ammonia, nitrate, phosphates, and critical life stage chronic toxicity for three species. In addition, within the range of the southern sea otter, indicator bacteria or some other measure of fecal contamination shall be analyzed.

3. Waterfront and Marine Operations: In addition to the above requirements for ocean receiving water monitoring, additional monitoring must be performed for marinas and boat launch and pier facilities:

   a. For all marina or mooring field operators, in mooring fields with 10 or more occupied moorings, the ocean receiving water must be sampled for Ocean Plan indicator bacteria, residual chlorine, copper, zinc, grease and oil, methylene blue active substances (MBAS), and ammonia nitrogen.

(1) For mooring field operators opting for an individual monitoring program (Section IV.B.1 above), this sampling must occur weekly (on the weekend) from May through October.

(2) For mooring field operators opting to participate in a regional integrated monitoring program (Section IV.B.2 above), this sampling must occur monthly from May through October on a high use weekend in each month. The Water Boards may allow a reduction in the frequency of sampling, through the regional monitoring program, after the first year of monitoring.

b. For all mooring field operators, the subtidal sediment (sand or finer, if present) within mooring fields and below piers shall be sampled and analyzed for Ocean Plan Table B metals (for marine aquatic life beneficial use), acute toxicity, PAHs, and tributyltin. For sediment toxicity testing, only an acute toxicity test using the amphipod *Eohaustorius estuarius* must be performed. This sampling shall occur at least three times during a five (5) year period. For mooring field operators opting to participate in a regional integrated monitoring program, the Water Boards may allow a reduction in the frequency of sampling after the first sampling effort's results are assessed.

Glossary

At the point of discharge(s) – Means in the surf zone immediately where runoff from an outfall meets the ocean water (a.k.a., at point zero).

Areas of Special Biological Significance (ASBS) – Those areas designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. All Areas of Special Biological Significance are also classified as a subset of State Water Quality Protection Areas.

Design storm – For purposes of these Special Protections, a design storm is defined as the volume of runoff produced from one inch of precipitation per day or, if this definition is inconsistent with the discharger's applicable storm water permit, then the design storm shall be the definition included in the discharger's applicable storm water permit.

Development – Relevant to reference monitoring sites, means urban, industrial, agricultural, grazing, mining, and timber harvesting land uses.

Higher threat discharges - Permitted storm drains discharging equal to or greater than 18 inches, industrial storm drains, agricultural runoff discharged through an MS4, discharges associated with waterfront and marina operations (e.g., piers, launch ramps, mooring fields, and associated vessel support activities, except for passive discharges defined below), and direct discharges associated with commercial or industrial activities to ASBS.

Low Impact Development (LID) – A sustainable practice that benefits water supply and contributes to water quality protection. Unlike traditional storm water management, which entails collecting and conveying storm water runoff through storm drains, pipes, or other conveyances to a centralized storm water facility, LID focuses on using site design and storm water management to maintain the site's pre-development runoff rates and volumes. The goal of LID is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to the source of rainfall.

Marine Operations – Marinas or mooring fields that contain slips or mooring locations for 10 or more vessels.

Management Measure (MM) - Economically achievable measures for the control of the addition of pollutants from various classes of nonpoint sources of pollution, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives. For example, in the "marinas and recreational boating" land-use category specified in the Plan for California's Nonpoint Source Pollution Control Program (NPS Program Plan) (SWRCB, 1999), "boat cleaning and maintenance" is considered a MM or the source of a specific class or type of NPS pollution.

Management Practice (MP) - The practices (e.g., structural, non-structural, operational, or other alternatives) that can be used either individually or in combination to address a specific MM class or classes of NPS pollution. For example, for the "boat cleaning and maintenance" MM, specific MPs can include, but are not limited to, methods for the selection of environmentally sensitive hull paints or methods for cleaning/removal of hull copper anti-fouling paints.

Municipal Separate Storm Sewer System (MS4) – A municipally-owned storm sewer system regulated under the Phase I or Phase II storm water program implemented in compliance with Clean Water Act section 402(p). Note that an MS4 program's boundaries are not necessarily congruent with the permittee's political boundaries.

Natural Ocean Water Quality - The water quality (based on selected physical, chemical and biological characteristics) that is required to sustain marine ecosystems, and which is without apparent human influence, *i.e.*, an absence of significant amounts of: (a) man-made constituents (*e.g.,* DDT); (b) other chemical (*e.g.,* trace metals), physical (temperature/thermal pollution, sediment burial), and biological (*e.g.*, bacteria) constituents at concentrations that have been elevated due to man's activities above those resulting from the naturally occurring processes that affect the area in question; and (c) non-indigenous biota (*e.g.,* invasive algal bloom species) that have been introduced either deliberately or accidentally by man. Discharges "*shall not alter natural ocean water quality*" as determined by a comparison to the range of constituent concentrations in reference areas agreed upon via the regional monitoring program(s). If monitoring information indicates that *natural ocean water quality* is not maintained, but there is sufficient evidence that a discharge is not contributing to the alteration of natural water quality, then the Regional Water Board may make that determination. In this case, sufficient information must include runoff sample data that has equal or lower concentrations for the range of constituents at the applicable reference area(s).

Nonpoint source – Nonpoint pollution sources generally are sources that do not meet the definition of a point source. Nonpoint source pollution typically results from land runoff, precipitation, atmospheric deposition, agricultural drainage, marine/boating operations or hydrologic modification. Nonpoint sources, for purposes of these Special Protections, include discharges that are not required to be regulated under an NPDES permit.

Non-storm water discharge – Any runoff that is not the result of a precipitation event. This is often referred to as "dry weather flow."

Non-structural control – A Best Management Practice that involves operational, maintenance, regulatory (e.g., ordinances) or educational activities designed to reduce or eliminate pollutants in runoff, and that are not structural controls (i.e. there are no physical structures involved).

Physical impossibility - Means any act of God, war, fire, earthquake, windstorm, flood or natural catastrophe; unexpected and unintended accidents not caused by discharger or its employees' negligence; civil disturbance, vandalism, sabotage or terrorism; restrain by court order or public authority or agency; or action or non-action by, or inability to obtain the necessary authorizations or approvals from any governmental agency other than the permittee.

Representative sites and monitoring procedures – Are to be proposed by the discharger, with appropriate rationale, and subject to approval by Water Board staff.

Sheet-flow – Runoff that flows across land surfaces at a shallow depth relative to the cross-sectional width of the flow. These types of flow may or may not enter a storm drain system before discharge to receiving waters.

Storm Season – Also referred to as rainy season, means the months of the year from the onset of rainfall during autumn until the cessation of rainfall in the spring.

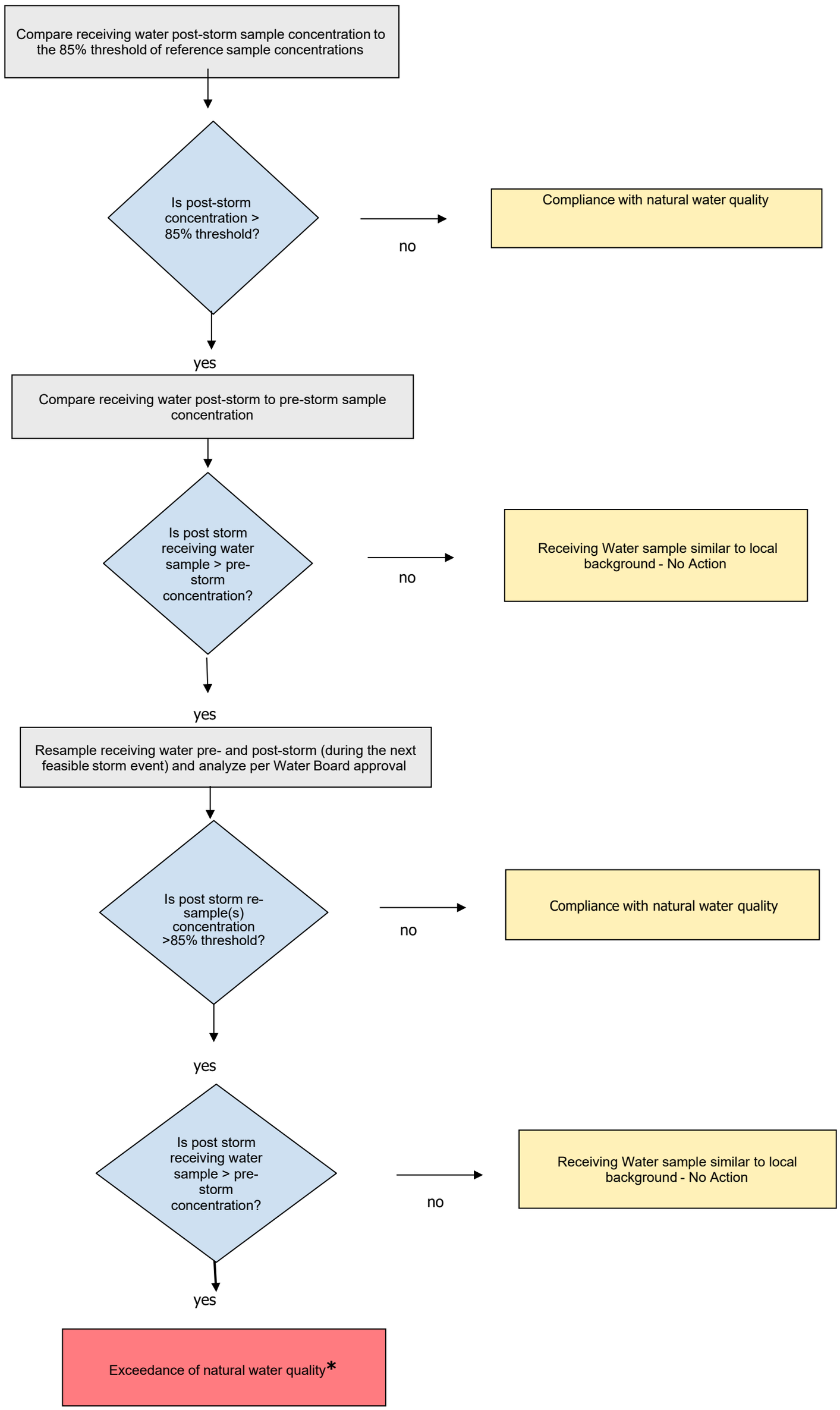
Structural control – A Best Management Practice that involves the installation of engineering solutions to the physical treatment or infiltration of runoff.

Surf Zone - The surf zone is defined as the submerged area between the breaking waves and the shoreline at any one time.

Surface Water Ambient Monitoring Program (SWAMP) comparable – Means that the monitoring program must 1) meet or exceed 2008 SWAMP Quality Assurance Program Management Plan (QAPP) Measurement Quality Objectives, or 2) have a Quality Assurance Project Plan that has been approved by SWAMP; in addition data must be formatted to match the database requirements of the SWAMP Information Management System. Adherence to the measurement quality objectives in the Southern California Bight 2008 ASBS Regional Monitoring Program QAPP and data base management comprises being SWAMP comparable.

Waterfront Operations - Piers, launch ramps, and cleaning stations in the water or on the adjacent shoreline.

Attachment 1
Special Protections Sections I(A)(3)(e) and I(B)(3)(e)
Flowchart to Deteremine Compliance with natural Water Quality



*** When an exceedance of natural water quality occurs, the discharger must comply with section I.A.2.h (for permitted storm water) or section I.B.2.c (for nonpoint sources). Note, when sampling data is available, end-of-pipe effluent concentrations will be considered by the Water Boards in making this determination.**

ATTACHMENT G

Standard NPDES Stormwater Permit Provisions

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN FRANCISCO BAY REGION

Standard Provisions and Reporting Requirements for NPDES Stormwater Discharge Permits

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Permittees (hereinafter individually referred to as Discharger) must comply with all of the terms, requirements, and conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action; permit termination, revocation and reissuance, or modification; denial of a permit renewal application; or a combination thereof. (40 C.F.R. § 122.41(a); California Water Code, §§ 13261, 13263, 13265, 13000, 13001, 13304, 13350, 13385.)

2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 C.F.R. § 122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 C.F.R. § 122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge in violationof this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 C.F.R. § 122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar

systems that are installed by a Discharger only when necessary to achieve compliance with theconditions of this Order. (40 C.F.R. § 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 C.F.R. § 122.41(g).)
2. The issuance of this Order does not authorize any injury to persons or property or invasionof other private rights, or any infringement of state or local law or regulations. (40 C.F.R. §122.5(c).)

F. Inspection and Entry

The Discharger shall allow the Water Board, State Water Board, U.S. EPA, and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be requiredby law, to (33 U.S.C. § 1318(a)(4)(B); 40 C.F.R. § 122.41(i); California Water Code, § 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (33 U.S.C. § 1318(a)(4)(B)(i); 40 C.F.R. § 122.41(i)(1); California Water Code, § 13383);
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (33 U.S.C. § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(2); CaliforniaWater Code, §13383);
3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (33 U.S.C. § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(3); California Water Code, § 13383); and
4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (33 U.S.C. § 1318(a)(4)(B); 40 C.F.R. § 122.41(i)(4); California Water Code, § 13383.)

G. Bypass

1. Definitions

a. “Bypass” means the intentional diversion of waste streams from any portion of a treatment facility. (40 C.F.R. § 122.41(m)(1)(i).)

b. “Severe property damage” means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss

caused by delays in production. (40 C.F.R. § 122.41(m)(1)(ii).)

2. **Bypass not exceeding limitations.** The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. (40 C.F.R. § 122.41(m)(2).)

3. **Prohibition of bypass.** Bypass is prohibited, and the Water Board may take enforcement action against a Discharger for bypass, unless (40 C.F.R. § 122.41(m)(4)(i)):

   a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. § 122.41(m)(4)(i)(A));

   b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 C.F.R. § 122.41(m)(4)(i)(B)); and

   c. The Discharger submitted notice to the Water Board as required under Standard Provisions notice requirements. (40 C.F.R.§ 122.41(m)(4)(i)(C).)

4. The Water Board may approve an anticipated bypass, after considering its adverse effects, if the Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance Part I.G.3 above. (40 C.F.R. § 122.41(m)(4)(ii).)

H. Notice

a. **Anticipated bypass.** If the Discharger knows in advance of the need for a bypass, itshall submit prior notice, if possible at least 10 days before the date of the bypass. The notice shall be sent to the Water Board. As of December 21, 2020, all notices must be submitted electronically to the initial recipient defined in Standard Provisions – Reporting Part V.J of this Attachment G. Notices shall comply with 40 C.F.R. part 3, 40 C.F.R. section 122.22, and 40 C.F.R. part 127. (40 C.F.R. § 122.41(m)(3)(ii).)

b. **Unanticipated bypass.** The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting Part V.E of this Attachment G (24-hour notice). The notice shall be sent to the Water Board. As of December 21, 2020, all notices must be submitted electronically to the initial recipient defined in Standard Provisions – Reporting Part V.J of this Attachment G. Notices shall comply with 40 C.F.R. part 3, 40 C.F.R. section 122.22, and 40

C.F.R. part 127.(40 C.F.R. § 122.41(m)(3)(ii).)

I. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond thereasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 C.F.R. § 122.41(n)(1).)

1. **Effect of an upset.** An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance Part I.H.2 below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 C.F.R. § 122.41(n)(2).)

2. **Conditions necessary for a demonstration of upset.** A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 C.F.R. § 122.41(n)(3)):

   a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40C.F.R. § 122.41(n)(3)(i));

   b. The permitted facility was, at the time, being properly operated (40 C.F.R. §122.41(n)(3)(ii));

   c. The Discharger submitted notice of the upset as required in Standard Provisions –
   Reporting V.E.2.b below (24-hour notice) (40 C.F.R. § 122.41(n)(3)(iii)); and

   d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 C.F.R. § 122.41(n)(3)(iv).)

3. **Burden of proof.** In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 C.F.R. § 122.41(n)(4).)

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 C.F.R. § 122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration dateof this Order, the Discharger must apply for and obtain a new permit. (40 C.F.R. § 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the Water Board. The Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as maybe necessary under the CWA and the Water Code. (40 C.F.R. §§ 122.41(l)(3), 122.61.)

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative ofthe monitored activity. (40 C.F.R. § 122.41(j)(1).)

B. Monitoring must be conducted according to test procedures approved under 40 C.F.R. part 136 for the analyses of pollutants unless another method is required under 40 C.F.R. chapter 1, subchapter N. Monitoring must be conducted according to sufficiently sensitive test methods approved under 40 C.F.R. part 136 for the analysis of pollutants or pollutant parameters or as required under 40 C.F.R. chapter 1, subchapter N. For the purposes of this paragraph, a method is sufficiently sensitive when:

1. The method minimum level (ML) is at or below the level of the most stringent effluent limitation established in the permit for the measured pollutant or pollutant parameter, andeither the method ML is at or below the level of the most stringent applicable water quality criterion for the measured pollutant or pollutant parameter or the method ML is above the applicable water quality criterion but the amount of the pollutant or pollutant parameter in the facility's discharge is high enough that the method detects and quantifies the level of the pollutant or pollutant parameter in the discharge; or

2. The method has the lowest ML of the analytical methods approved under 40 C.F.R. part 136 or required under 40 C.F.R. chapter 1, subchapter N for the measured pollutant or pollutant parameter.

In the case of pollutants or pollutant parameters for which there are no approved methods under40 C.F.R. part 136 or otherwise required under 40 C.F.R. chapter 1, subchapter N, monitoringmust be conducted according to a test procedure specified in this Order for such pollutants or pollutant parameters. (40 C.F.R. §§ 122.21(e)(3), 122.41(j)(4), 122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

A. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order,

for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Water Board Executive Officer or U.S. EPA at any time. (40 C.F.R. § 122.41(j)(2);California Water Code § 13383(a))

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 C.F.R. § 122.41(j)(3)(i));

2. The individual(s) who performed the sampling or measurements (40 C.F.R. §122.41(j)(3)(ii));

3. The date(s) analyses were performed (40 C.F.R. § 122.41(j)(3)(iii));

4. The individual(s) who performed the analyses (40 C.F.R. § 122.41(j)(3)(iv));

5. The analytical techniques or methods used (40 C.F.R. § 122.41(j)(3)(v)); and

6. The results of such analyses. (40 C.F.R. § 122.41(j)(3)(vi).)

C. Claims of confidentiality for the following information will be denied (40 C.F.R. § 122.7(b)):

1. The name and address of any permit applicant or Discharger (40 C.F.R. § 122.7(b)(1));and

2. Permit applications and attachments, permits and effluent data. (40 C.F.R. § 122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Water Board, State Water Board, or U.S. EPAwithin a reasonable time, any information which the Water Board, State Water Board, or U.S. EPA may request to determine whether cause exists for modifying, revoking andreissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Water Board, State Water Board, or U.S. EPA copies of records required to be kept by this Order. (40 C.F.R. § 122.41(h); California Water Code, §13383.)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Water Board, State Water Board, and/or U.S. EPA shall be signed and certified in accordance with Standard Provisions – Reporting Parts V.B.2, V.B.3, V.B.4, V.B.5, and V.B.6 below. (40 C.F.R. § 122.41(k).)

2. All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having

responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of U.S. EPA). (40 C.F.R. § 122.22(a)(3)).

3. All reports required by this Order and other information requested by the Water Board, State Water Board, or U.S. EPA shall be signed by a person described in Standard Provisions – Reporting Part V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

e. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 C.F.R. § 122.22(b)(1));

f. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 C.F.R. § 122.22(b)(2)); and

g. The written authorization is submitted to the Water Board and State Water Board. (40 C.F.R. § 122.22(b)(3).)

4. If an authorization under Standard Provisions – Reporting Part V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting Part V.B.3 above must be submitted to the Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 C.F.R. § 122.22(c).)

5. Any person signing a document under Standard Provisions – Reporting Parts V.B.2 or V.B.3 above shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared undermy direction or supervision in accordance with a system designed to assure that qualifiedpersonnel properly gather and evaluate the information submitted. Based on my inquiry ofthe person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowingviolations." (40 C.F.R. § 122.22(d).)

6. Any person providing the electronic signature for documents described in Standard Provisions – Parts V.B.1, V.B.2, or V.B.3 above that are submitted electronically shall meet all relevant requirements of this Standard Provisions – Reporting Part V.B, and shall ensure that all relevant requirements of 40 C.F.R. part 3 (Cross-Media Electronic Reporting) and 40 C.F.R. part 127 (NPDES Electronic Reporting Requirements) are met for that submission. (40 C.F.R § 122.22(e).)

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the this Order. (40 C.F.R. § 122.41(l)(4).)

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Water Board or State Water Board. As of December 21, 2020, all reports and forms must be submitted electronically to the initial recipient defined in Standard Provisions – Reporting Part V.J of this Attachment G and comply with 40 C.F.R. part 3, 40 C.F.R. section 122.22, and 40 C.F.R. part 127. (40 C.F.R.
§ 122.41(l)(4)(i).)

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 C.F.R. part 136, or another method required for an industry-specific waste stream under 40 C.F.R. subchapter N, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or reporting form specified by the Water Board or State Water Board. (40 C.F.R. § 122.41(l)(4)(ii).)

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 C.F.R. § 122.41(l)(4)(iii).)

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 C.F.R. § 122.41(l)(5).)

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written report shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written report shall contain a description of the noncompliance and its cause; the period ofnoncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is

expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 C.F.R. § 122.41(l)(6)(i).)

For noncompliance events related to combined sewer overflows, sanitary sewer overflows,or bypass events, these reports must include the data described above (with the exceptionof time of discovery) as well as the type of event (i.e., combined sewer overflow, sanitary sewer overflow, or bypass event), type of overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volume untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the event, and whether the noncompliance was related to wet weather.

As of December 21, 2020, all reports related to combined sewer overflows, sanitary seweroverflows, or bypass events must be submitted to the Water Board and mustbe submitted electronically to the initial recipient defined in Standard Provisions – Reporting Part V.J of this Attachment G. The reports shall comply with 40 C.F.R. part 3, 40 C.F.R. section 122.22, and 40 C.F.R. part 127. The Water Board may also require the Discharger to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section. (40 C.F.R. § 122.41(l)(6)(i).)

2. The following shall be included as information that must be reported within 24 hours underthis paragraph (40 C.F.R. § 122.41(l)(6)(ii)):

a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(A).)

b. Any upset that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(B).)

c. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Water Board in this Order [40 CFR Section (l)(6)(ii)(C) and 122.44(g)].

3. The Water Board may waive the above-required written report under this provision on a case by case basis if an oral report has been received within 24 hours. (40 C.F.R. § 122.41(l)(6)(iii).)

F. Planned Changes

The Discharger shall give notice to the Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 C.F.R. § 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR section 122.29(b) (40 C.F.R. § 122.41(l)(1)(i));or

2. The alteration or addition could significantly change the nature or increase the quantity ofpollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this Order. (40 C.F.R. § 122.41(l)(1)(ii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with this Order's requirements. (40 C.F.R. § 122.41(l)(2).)

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting Parts V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in StandardProvision – Reporting Part V.E above and the applicable required data in appendix A to 40 C.F.R. part 127. The Water Board may also require the Discharger to electronicallysubmit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section. (40 C.F.R. § 122.41(l)(7).)

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Water Board, State Water Board, or U.S. EPA, the Discharger shall promptly submit such facts or information. (40 C.F.R. § 122.41(l)(8).)

J. Initial Recipient for Electronic Reporting Data

The owner, operator, or the duly authorized representative is required to electronically submit NPDES information specified in appendix A to 40 C.F.R. part 127 to the initial recipient definedin 40 C.F.R. section 127.2(b). U.S. EPA will identify and publish the list of initial recipients on its website and in the Federal Register, by state and by NPDES data group [see 40 C.F.R. section 127.2(c)]. U.S. EPA will update and maintain this listing. (40 C.F.R. § 122.41(l)(9).)

VI. STANDARD PROVISIONS – ENFORCEMENT

A. The Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and13387.

B. The CWA provides that any person who violates Section 301, 302, 306, 307, 308, 318 or 405 of the CWA, or any permit condition or limitation implementing any such Sections in a permit issued under Section 402, or any

requirement imposed in a pretreatment program approved under Sections 402(a)(3) or 402(b)(8) of the CWA is subject to a civil penalty not to exceed
$25,000 per day for each violation. The CWA provides that any person who negligently violatesSections 301, 302, 306, 307, 308, 318, or 405 of the CWA, or any condition or limitation implementing any of such Sections in a permit issued under Section 402 of the CWA, or any requirement imposed in a pretreatment program approved under Section 402(a)(3) or 402(b)(8)of the CWA, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more

than $50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such Sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates Section 301, 302, 303, 306, 307, 308, 318 or 405 of the CWA, or any permit conditionor limitation implementing any of such Sections in a permit issued under Section 402 of the CWA, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than
$250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions [40 CFR Section 122.41(a)(2)] [California Water Code Sections 13385 and 13387].

C. Any person may be assessed an administrative penalty by the Water Board for violating Section 301, 302, 306, 307, 308, 318 or 405 of the CWA, or any permit condition or limitation implementing any of such Sections in a permit issued under Section 402 of the CWA. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with themaximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for ClassII violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000 [40 CFR Section 122.41(a)(3)].

D. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be

maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than two (2) years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four (4) years, or both [40 CFR Section122.41(j)(5)].

E. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this Order, including monitoring reports or reports of compliance or noncompliance shall, uponconviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both [40 CFR Section 122.41(k)(2)].

IV. CONTINUATION OF EXPIRED PERMIT

A. This Order continues in force and effect until the effective date of a new permit or the Water Board rescinds this Order. (40 C.F.R. section 122.6(d).) Only those dischargers authorized to discharge under the expiring Order are covered by the continued Order.

ATTACHMENT H

Provision C.3.j.ii.(2)

Numeric Implementation Retrofit Requirements

Table H-1. Numeric Retrofit Requirements

County	**Permittee**	2019 US Census Bureau Population Estimate	MRP 3 Provision C.3.j Retrofit Assignment (acres)	County Total (acres)
Alameda	Alameda	77,624	4.66	58.42
Alameda	Alameda County	147,218	5.00	
Alameda	Albany	19,696	1.18	
Alameda	Berkeley	121,363	5.00	
Alameda	Dublin	64,826	3.89	
Alameda	Emeryville	12,086	0.73	
Alameda	Fremont	241,110	5.00	
Alameda	Hayward	159,203	5.00	
Alameda	Livermore	90,189	5.41	
Alameda	Newark	49,149	2.95	
Alameda	Oakland	433,031	5.00	
Alameda	Piedmont	11,135	0.67	
Alameda	Pleasanton	81,777	4.91	
Alameda	San Leandro	88,815	5.00	
Alameda	Union City	74,107	4.45	
Contra Costa	Antioch	111,502	5.00	57.32
Contra Costa	Brentwood	64,474	3.87	
Contra Costa	Clayton	12,265	0.74	
Contra Costa	Concord	129,295	5.00	

Contra Costa	Contra Costa County	185,589	5.00	
Contra Costa	Danville	44,510	2.67	
Contra Costa	El Cerrito	25,508	1.53	
Contra Costa	Hercules	26,276	1.58	
Contra Costa	Lafayette	26,638	1.60	
Contra Costa	Martinez	38,297	2.30	
Contra Costa	Moraga	17,783	1.07	
Contra Costa	Oakley	42,543	2.55	
Contra Costa	Orinda	19,926	1.20	
Contra Costa	Pinole	19,250	1.16	
Contra Costa	Pittsburg	72,588	4.36	
Contra Costa	Pleasant Hill	34,839	2.09	
Contra Costa	Richmond	110,567	5.00	
Contra Costa	San Pablo	30,990	1.86	
Contra Costa	San Ramon	75,995	4.56	
Contra Costa	Walnut Creek	70,166	4.21	
Santa Clara	Campbell	41,793	2.51	46.09
Santa Clara	Cupertino	59,276	3.56	
Santa Clara	Los Altos	30,089	1.81	
Santa Clara	Los Altos Hills	8,423	0.51	
Santa Clara	Los Gatos	30,222	1.81	
Santa Clara	Milpitas	84,196	5.00	

Santa Clara	Monte Sereno	3,427	0.21	
Santa Clara	Mountain View	82,739	4.96	
Santa Clara	Palo Alto	65,364	3.92	
Santa Clara	San Jose	1,021,795	5.00	
Santa Clara	Santa Clara	130,365	5.00	
Santa Clara	Santa Clara County	98,110	5.00	
Santa Clara	Saratoga	30,153	1.81	
Santa Clara	Sunnyvale	152,703	5.00	
San Mateo	Atherton	7,137	0.43	43.31
San Mateo	Belmont	26,941	1.62	
San Mateo	Brisbane	4,671	0.28	
San Mateo	Burlingame	30,889	1.85	
San Mateo	Colma	1,489	0.20	
San Mateo	Daly City	106,280	5.00	
San Mateo	East Palo Alto	29,314	1.76	
San Mateo	Foster City	33,901	2.03	
San Mateo	Half Moon Bay	12,932	0.78	
San Mateo	Hillsborough	11,387	0.68	
San Mateo	Menlo Park	34,698	2.08	
San Mateo	Millbrae	22,394	1.34	
San Mateo	Pacifica	38,546	2.31	
San Mateo	Portola Valley	4,568	0.27	

San Mateo	Redwood City	85,925	5.00	
San Mateo	San Bruno	42,807	2.57	
San Mateo	San Carlos	30,185	1.81	
San Mateo	San Mateo	104,430	5.00	
San Mateo	San Mateo County	64,832	3.89	
San Mateo	South San Francisco	67,789	4.07	
San Mateo	Woodside	5,458	0.33	
Solano	Fairfield	117,133	5.00	11.78
Solano	Suisun City	29,663	1.78	
Solano	Vallejo	121,692	5.00	
Total		5,917,090.00	216.92	

Table H-1. The retrofit assignment is three acres per 50,000 population, prorated, with a minimum expectation of 0.20 acres and a maximum expectation of five acres. The population data in this table is from the 2019 U.S. Census Bureau Population Estimate.

ATTACHMENT I

Applicable C.3 Requirements from Previous Permit, Order No. R2-2015-0049

C.3. New Development and Redevelopment

C.3.b. Regulated Projects

ii. Regulated Projects are defined in the following categories:

(1) **Special Land Use Categories**

(a) **New Development or redevelopment projects** that fall into one of the categories listed below and that create and/or replace 5000 square feet or more of impervious surface (collectively over the entire project site). This category includes development projects of the following four types on public or private land that fall under the planning and building authority of a Permittee:

(i) Auto service facilities, described by the following Standard Industrial Classification (SIC) Codes: 5013, 5014, 5541, 7532-7534, and 7536-7539;

(ii) Retail gasoline outlets;

(iii) Restaurants (SIC Code 5812); or

(iv) Stand-alone uncovered parking lots and uncovered parking lots that are part of a development project if the parking lot creates and/or replaces 5,000 square feet or more of impervious surface. This category includes the top uncovered portion of parking structures, unless drainage from the uncovered portion is connected to the sanitary sewer along with the covered portions of the parking structure.

(b) For redevelopment projects in the categories specified in Provision C.3.b.ii.(1)(a)(i)-(iv), specific exclusions are:

(i) Interior remodels; and

(ii) Routine maintenance or repair such as:

- roof or exterior wall surface replacement, and/or
- pavement resurfacing within the existing footprint.

(c) Where a redevelopment project in the categories specified in Provision C.3.b.ii.(1)(a)(i)-(iv) results in an alteration of **50 percent or more** of the impervious surface of a previously existing development that was not subject to Provision C.3, the entire project, consisting of all existing, new, and/or replaced impervious surfaces, must be included in the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from the entire redevelopment project).

(d) Where a redevelopment project in the categories specified in Provision C.3.b.ii.(1)(a)(i)-(iv) results in an alteration of **less than 50**

percent of the impervious surface of a previously existing development that was not subject to Provision C.3, only the new and/or replaced impervious surface of the project must be included in the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from the new and/or replaced impervious surface of the project).

(2) **Other Development Projects**

New development projects that create 10,000 square feet or more of impervious surface (collectively over the entire project site) including commercial, industrial, residential housing subdivisions (i.e., detached single-family home subdivisions, multi-family attached subdivisions (town homes), condominiums, and apartments), mixed-use, and public projects. This category includes development projects on public or private land that fall under the planning and building authority of a Permittee. Detached single-family home projects that are not part of a larger plan of development are specifically excluded.

(3) **Other Redevelopment Projects**

Redevelopment projects that create and/or replace 10,000 square feet or more of impervious surface (collectively over the entire project site) including commercial, industrial, residential housing subdivisions (i.e., detached single-family home subdivisions, multi-family attached subdivisions (town homes), condominiums, and apartments), mixed-use, and public projects. Redevelopment is any land-disturbing activity that results in the creation, addition, or replacement of exterior impervious surface area on a site on which some past development has occurred. This category includes redevelopment projects on public or private land that fall under the planning and building authority of a Permittee.

Specific exclusions to this category are:

Interior remodels; and

Routine maintenance or repair such as:

roof or exterior wall surface replacement, and/or

pavement resurfacing within the existing footprint.

(a) Where a redevelopment project results in an alteration of **50 percent or more** of the impervious surface of a previously existing development that was not subject to Provision C.3, the entire project, consisting of all existing, new, and/or replaced impervious surfaces, must be included in the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from the entire redevelopment project).

(b) Where a redevelopment results in an alteration **of less than 50 percent** of the impervious surface of a previously existing

development that was not subject to Provision C.3., only the new and/or replaced impervious surface of the project must be included in the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from the new and/or replaced impervious surface of the project).

(4) **Road Projects**

Any of the following types of road projects that create 10,000 square feet or more of newly constructed contiguous impervious surface and that fall under the building and planning authority of a Permittee:

(a) Construction of new streets or roads, including sidewalks and bicycle lanes built as part of the new streets or roads.

(b) Widening of existing streets or roads with additional traffic lanes.

(i) Where the addition of traffic lanes results in an alteration of more than 50 percent of the impervious surface of an existing street or road within the project that was not subject to Provision C.3, the entire project, consisting of all existing, new, and/or replaced impervious surfaces, shall be included in the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from the entire street or road that had additional traffic lanes added).

(ii) Where the addition of traffic lanes results in an alteration of less than 50 percent of the impervious surface of an existing street or road within the project that was not subject to Provision C.3, only the new and/or replaced impervious surface of the project must be included in the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from only the new traffic lanes). However, if the stormwater runoff from the existing traffic lanes and the added traffic lanes cannot be separated, any onsite treatment system shall be designed and sized to treat stormwater runoff from the entire street or road. If an offsite treatment system is installed or in-lieu fees paid in accordance with Provision C.3.e, the offsite treatment system or in-lieu fees must address only the stormwater runoff from the added traffic lanes.

(c) Construction of impervious trails that are greater than 10 feet wide or are creek-side (within 50 feet of the top of bank).

(d) Specific exclusions to Provisions C.3.b.ii.(4)(a)-(c) include the following:

- Sidewalks built as part of new streets or roads and built to direct stormwater runoff to adjacent vegetated areas.

- Bicycle lanes built as part of new streets or roads but are not hydraulically connected to the new streets or roads and that direct stormwater runoff to adjacent vegetated areas.
- Impervious trails built to direct stormwater runoff to adjacent vegetated areas, or other non-erodible permeable areas, preferably away from creeks or towards the outboard side of levees.
- Sidewalks, bicycle lanes, or trails constructed with permeable surfaces.[1]
- Caltrans highway projects and associated facilities.

C.3.e. Alternative or In-Lieu Compliance with Provision C.3.b.

ii. Special Projects

(1) When considered at the watershed scale, certain land development projects characterized as smart growth, high density, or transit-oriented development can either reduce existing impervious surfaces, or create less "accessory" impervious areas and automobile-related pollutant impacts. Incentive LID Treatment Reduction Credits approved by the Water Board may be applied to these Special Projects, which are Regulated Projects that meet the specific criteria listed below in Provision C.3.e.ii.(2). For any Special Project, the allowable incentive LID Treatment Reduction Credit is the maximum percentage of the amount of runoff identified in Provision C.3.d. for the Special Project's drainage area, that may be treated with one or a combination of the following two types of non-LID treatment systems:

Tree-box-type high flowrate biofilters

Vault-based high flowrate media filters

The allowed LID Treatment Reduction Credit recognizes that density and space limitations for the Special Projects identified herein may make 100% LID treatment infeasible.

(2) Prior to granting any LID Treatment Reduction Credits, Permittees must first establish all the following:

(a) The infeasibility of treating 100% of the amount of runoff identified in Provision C.3.d for the Regulated Project's drainage area with LID treatment measures onsite;

(b) The infeasibility of treating 100% of the amount of runoff identified in Provision C.3.d for the Regulated Project's drainage area with LID treatment measures offsite or paying in-lieu fees to treat 100% of the

[1] Permeable surfaces include pervious concrete, porous asphalt, unit pavers, and granular materials.

Provision C.3.d runoff with LID treatment measures at an offsite or Regional Project; and

(c) The infeasibility of treating 100% of the amount of runoff identified in Provision C.3.d for the Regulated Project's drainage area with some combination of LID treatment measures onsite, offsite, and/or paying in-lieu fees towards at an offsite or Regional Project.

For each Special Project, a Permittee shall document the basis of infeasibility used to establish technical and/or economic infeasibility.

Under Provision C.3.e.vi, each Permittee is required to report on the infeasibility of 100% LID treatment in each scenario described in Provision C.3.e.ii.(2)(a)-(c) above, for each of the Special Projects for which LID Treatment Reduction Credit was applied.

(3) Category A Special Project Criteria

(a) To be considered a Category A Special Project, a Regulated Project must meet all of the following criteria:

(i) Be built as part of a Permittee's stated objective to preserve or enhance a pedestrian-oriented type of urban design.

(ii) Be located in a Permittee's designated central business district, downtown core area or downtown core zoning district, neighborhood business district or comparable pedestrian-oriented commercial district, or historic preservation site and/or district.

(iii) Create and/or replace one half acre or less of impervious surface area.

(iv) Include no surface parking, except for incidental surface parking. Incidental surface parking is allowed only for emergency vehicle access, Americans with Disabilities Act (ADA) accessibility, and passenger and freight loading zones.

(v) Have at least 85% coverage for the entire project site by permanent structures. The remaining 15% portion of the site is to be used for safety access, parking structure entrances, trash and recycling service, utility access, pedestrian connections, public uses, landscaping, and stormwater treatment.

(b) Any Category A Special Project may qualify for 100% LID Treatment Reduction Credit, which would allow the Category A Special Project to treat up to 100% of the amount of runoff identified in Provision C.3.d. for the Project's drainage area with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.

(4) Category B Special Project Criteria

(a) To be considered a Category B Special Project, a Regulated Project must meet all of the following criteria:

(i) Be built as part of a Permittee's stated objective to preserve or enhance a pedestrian-oriented type of urban design.

(ii) Be located in a Permittee's designated central business district, downtown core area or downtown core zoning district, neighborhood business district or comparable pedestrian-oriented commercial district, or historic preservation site and/or district.

(iii) Create and/or replace greater than one-half acre but no more than 2 acres of impervious surface area.

(iv) Include no surface parking, except for incidental surface parking. Incidental surface parking is allowed only for emergency vehicle access, ADA accessibility, and passenger and freight loading zones.

(v) Have at least 85% coverage for the entire project site by permanent structures. The remaining 15% portion of the site is to be used for safety access, parking structure entrances, trash and recycling service, utility access, pedestrian connections, public uses, landscaping, and stormwater treatment.

(b) For any Category B Special Project, the maximum LID Treatment Reduction Credit allowed is determined based on the density achieved by the Project in accordance with the criteria listed below. Density is expressed in Floor Area Ratios (FARs[2]) for commercial development projects, in Dwelling Units per Acre (DU/Ac) for residential development projects, and in FARs and DU/Ac for mixed-use development projects.

(i) 50% Maximum LID Treatment Reduction Credit

- For any commercial Category B Special Project with an FAR of at least 2:1, up to 50% of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.
- For any residential Category B Special Project with a gross density[3] of at least 50 DU/Ac, up to 50% of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the

[2] **Floor Area Ratio** – The ratio of the total floor area on all floors of all buildings at a project site (except structures, floors, or floor areas dedicated to parking) to the total project site area.

[3] **Gross Density** – The total number of residential units divided by the acreage of the entire site area, including land occupied by public right-of-ways, recreational, civic, commercial and other non-residential uses.

two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.

- For any mixed use Category B Special Project with an FAR of at least 2:1 or a gross density of at least 50 DU/Ac, up to 50% of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.

(ii) 75% Maximum LID Treatment Reduction Credit

- For any commercial Category B Special Project with an FAR of at least 3:1, up to 75% of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.
- For any residential Category B Special Project with a gross density of at least 75 DU/Ac, up to 75% of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.
- For any mixed use Category B Special Project with an FAR of at least 3:1 or a gross density of at least 75 DU/Ac, up to 75% of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.

(iii) 100% Maximum LID Treatment Reduction Credit

- For any commercial Category B Special Project with an FAR of at least 4:1, up to 100% of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.
- For any residential Category B Special Project with a gross density of at least 100 DU/Ac, up to 100% of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.
- For any mixed use Category B Special Project with an FAR of at least 4:1 or a gross density of at least 100 DU/Ac, up to

100% of the amount of runoff identified in Provision C.3.d. for the Project's drainage area may be treated with either one or a combination of the two types of non-LID treatment systems listed in Provision C.3.e.ii.(1) above.

(5) Category C Special Project Criteria (Transit-Oriented Development)

(a) Transit-Oriented Development refers to the clustering of homes, jobs, shops and services in close proximity to rail stations, ferry terminals or bus stops offering access to frequent, high-quality transit services. This pattern typically involves compact development and a mixing of different land uses, along with amenities like pedestrian-friendly streets. To be considered a Category C Special Project, a Regulated Project must meet all of the following criteria:

(i) Be characterized as a non-auto-related land use project. That is, Category C specifically excludes any Regulated Project that is a stand-alone surface parking lot; car dealership; auto and truck rental facility with onsite surface storage; fast-food restaurant, bank or pharmacy with drive-through lanes; gas station, car wash, auto repair and service facility; or other auto-related project unrelated to the concept of Transit-Oriented Development.

(ii) If a commercial development project, achieve at least an FAR of 2:1.

(iii) If a residential development project, achieve at least a gross density of 25 DU/Ac.

(iv) If a mixed use development project, achieve at least an FAR of 2:1 or a gross density of 25 DU/Ac.

(b) For any Category C Special Project, the total maximum LID Treatment Reduction Credit allowed is the sum of three different types of credits that the Category C Special Project may qualify for, namely: Location, Density and Minimized Surface Parking Credits.

(c) Location Credits

(i) A Category C Special Project may qualify for the following Location Credits:

a. 50% Location Credit: Located within a ¼ mile radius of an existing or planned transit hub.

b. 25% Location Credit: Located within a ½ mile radius of an existing or planned transit hub.

c. 25% Location Credit: Located within a planned Priority Development Area (PDA), which is an infill development area formally designated by the Association of Bay Area

Government's / Metropolitan Transportation Commission's FOCUS regional planning program. FOCUS is a regional incentive-based development and conservation strategy for the San Francisco Bay Area.

(ii) Only one Location Credit may be used by an individual Category C Special Project, even if the project qualifies for multiple Location Credits.

(iii) At least 50% or more of a Category C Special Project's site must be located within the ¼ or ½ mile radius of an existing or planned transit hub to qualify for the corresponding Location Credits listed above. One hundred percent of a Category C Special Project's site must be located within a PDA to qualify for the corresponding Location Credit listed above.

(iv) Transit hub is defined as a rail, light rail, or commuter rail station, ferry terminal, or bus transfer station served by three or more bus routes (i.e., a bus stop with no supporting services does not qualify). A planned transit hub is a station on the MTC's Regional Transit Expansion Program list, per MTC's Resolution 3434 (revised April 2006), which is a regional priority funding plan for future transit stations in the San Francisco Bay Area.

(d) Density Credits: To qualify for any Density Credits, a Category C Special Project must first qualify for one of the Location Credits listed in Provision C.3.e.ii.(5)(c) above.

(i) A Category C Special Project that is a commercial or mixed-use development project may qualify for the following Density Credits:

a. 10% Density Credit: Achieve an FAR of at least 2:1.

b. 20% Density Credit: Achieve an FAR of at least 4:1.

c. 30% Density Credit: Achieve an FAR of at least 6:1.

(ii) A Category C Special Project that is a residential or mixed-use development project may qualify for the following Density Credits:

a. 10% Density Credit: Achieve a gross density of at least 30 DU/Ac.

b. 20% Density Credit: Achieve a gross density of at least 60 DU/Ac.

c. 30% Density Credit: Achieve a gross density of at least 100 DU/Ac.

(iii) Commercial Category C Projects do not qualify for Density Credits based on DU/Ac and residential Category C Projects do not qualify for Density Credits based on FAR. Mixed use Category C Projects may use Density Credits based on either DU/Ac or FAR, but not both.

(iv) Only one Density Credit may be used by an individual Category C Special Project, even if the project qualifies for multiple Density Credits.

(e) Minimized Surface Parking Credits: To qualify for any Minimized Surface Parking Credits, a Category C Special Project must first qualify for one of the Location Credits listed in Provision C.3.e.ii.(5)(c) above.

(i) A Category C Special Project may qualify for the following Minimized Surface Parking Credits:

a. 10% Minimized Surface Parking Credit: Have 10% or less of the total post-project impervious surface area dedicated to at-grade surface parking. The at-grade surface parking must be treated with LID treatment measures.

b. 20% Minimized Surface Parking Credit: Have no surface parking except for incidental surface parking. Incidental surface parking is allowed only for emergency vehicle access, ADA accessibility, and passenger and freight loading zones.

(ii) Only one Minimized Surface Parking Credit may be used by an individual Category C Special Project, even if the project qualifies for multiple Minimized Surface Parking Credits.

(6) Any Regulated Project that meets all the criteria for multiple Special Projects Categories (i.e., a Regulated Project that may be characterized as a Category B or C Special Project) may only use the LID Treatment Reduction Credit allowed under one of the Special Projects Categories (i.e., a Regulated Project that may be characterized as a Category B or C Special Project may use the LID Treatment Reduction Credit allowed under Category B or Category C, but not the sum of both.).

iii. Implementation Level

(1) Provisions C.3.e.i-ii supersede any Alternative Compliance Policies previously approved by the Executive Officer.

(2) The definitions of FAR and gross density applicable to Provisions C.3.e.ii.(4) and (5) are effective July 1, 2022, and shall apply to all Special Projects granted final discretionary approval on or after July 1, 2022.

(3) For all offsite projects and Regional Projects installed in accordance with Provision C.3.e.i-ii, the Permittees shall meet the Operation & Maintenance (O&M) requirements of Provision C.3.h.

iv. Reporting – Annual reporting shall be done in conjunction with reporting requirements under Provision C.3.b.iv.(2).

Any Permittee choosing to require 100% LID treatment onsite for all Regulated Projects and not allow alternative compliance under Provision C.3.e, shall include a statement to that effect in each Annual Report.

v. Reporting on Special Projects

(1) Permittees shall track any identified potential Special Projects, including those projects that have submitted planning applications but that have not received final discretionary approval.

(2) In each Annual Report, Permittees shall report to the Water Board on these tracked potential Special Projects using Table 3.1 found at the end of Provision C.3. All the required column entry information listed in Table 3.1 shall be reported for each potential Special Project. Any Permittee with no Special Projects shall so state.

For each Special Project listed in Table 3.1, Permittees shall include a narrative discussion of the feasibility or infeasibility of 100% LID treatment onsite, offsite, and at a Regional Project. The narrative discussion shall address each of the following:

(a) The infeasibility of treating 100% of the amount of runoff identified in Provision C.3.d for the Regulated Project's drainage area with LID treatment measures onsite.

(b) The infeasibility of treating 100% of the amount of runoff identified in Provision C.3.d for the Regulated Project's drainage area with LID treatment measures offsite or paying in-lieu fees to treat 100% of the Provision C.3.d runoff with LID treatment measures at a Regional Project.

(c) The infeasibility of treating 100% of the amount of runoff identified in Provision C.3.d for the Regulated Project's drainage area with some combination of LID treatment measures onsite, offsite, and/or paying in-lieu fees towards a Regional Project.

Both technical and economic feasibility or infeasibility shall be discussed, as applicable. The discussion shall also contain enough technical and/or economic detail to document the basis of infeasibility used.

(3) Once a Special Project has final discretionary approval, it shall be reported in the Provision C.3.b. Reporting Table in the same reporting year that the project was approved. In addition to the column entries contained in the Provision C.3.b. Reporting Table, the Permittees shall provide the following supplemental information for each approved Special Project:

(a) Submittal Date: Date that a planning application for the Special Project was submitted.

(b) Description: Type of project, number of floors, number of units (commercial, mixed-use, residential), type of parking, and other relevant information.

(c) Site Acreage: Total site area in acres.

(d) Gross Density in DU/Ac: Number of dwelling units per acre.

(e) Density in FAR: Floor Area Ratio.

(f) Special Project Category: For each applicable Special Project Category, list the specific criteria applied to determine applicability. For each non-applicable Special Project Category, indicate n/a.

(g) LID Treatment Reduction Credit: For each applicable Special Project Category, state the maximum total LID Treatment Reduction Credit applied. For Category C Special Projects also list the individual Location, Density, and Minimized Surface Parking Credits applied.

(h) Stormwater Treatment Systems: List all proposed stormwater treatment systems and the corresponding percentage of the total amount of runoff runoff identified in Provision C.3.d. for the Project's drainage area that will be treated by each treatment system.

(i) List of Non-LID Stormwater Treatment Systems: List all non-LID stormwater treatment systems approved. For each type of non-LID treatment system, indicate: (1) the percentage of the total amount of runoff identified in Provision C.3.d. for the Special Project's drainage area, and (2) whether the treatment system either meets minimum design criteria published by a government agency or received certification issued by a government agency, and reference the applicable criteria or certification.

C.3.i. Required Site Design Measures for Small Projects and Detached Single-Family Home Projects

i. Task Description – The Permittees shall require all development projects, which create and/or replace $\geq$ 2,500 ft^2 to < 10,000 ft^2 of impervious surface, and detached single-family home projects,[4] which create and/or replace 2,500 square feet or more of impervious surface, to install one or more of the following site design measures:

- Direct roof runoff into cisterns or rain barrels for reuse.

[4] **Detached single-family home project** – The building of one single new house or the addition and/or replacement of impervious surface to one single existing house, which is not part of a larger plan of development.

- Direct roof runoff onto vegetated areas.
- Direct runoff from sidewalks, walkways, and/or patios onto vegetated areas.
- Direct runoff from driveways and/or uncovered parking lots onto vegetated areas.
- Construct sidewalks, walkways, and/or patios with permeable surfaces.[1]
- Construct bike lanes, driveways, and/or uncovered parking lots with permeable surfaces.[1]

This provision applies to all development projects that require approvals and/or permits issued under the Permittees' planning, building, or other comparable authority.

ii. Reporting – On an annual basis, discuss the implementation of the requirements of Provision C.3.i, including ordinance revisions, permit conditions, development of standard specifications and/or guidance materials, and staff training.

STAFF REPORT

Meeting Date:	July 26, 2022
Agency:	City of Belmont
Staff Contact:	Nima Mazhari, Public Works, nmazhari@belmont.gov, (650) 730-5706
Agenda Title:	Task Orders for CCN 579 – San Juan Pump Station Slope Repair Project
Agenda Action:	Resolution

Recommendation

Adopt a resolution 1) authorizing the City Manager to execute a Task Order with Atlas Technical Consultants LLC (Atlas) to provide geotechnical and structural construction support services for the San Juan Pump Station Slope Repair Project for an amount not to exceed $15,000, and 2) authorizing the City Manager to execute a Task Order with Moore Iacofano Goltsman, Inc. (MIG) to provide environmental construction support services for the San Juan Pump Station Slope Repair Project for an amount not to exceed $38,880.

Strategic Focus Area

Infrastructure and Mobility

Background

On February 2019, during a period of prolonged and intense rainfall, 1,200 square feet of the East Laurel Creek bank below the San Juan Pump Station failed. The bank became saturated and one tree that was helping to stabilize the slope was uprooted. The slope has been tarped since the incident to avoid further slippage. The creek bank adjacent to the pump station is steeply sloped along the edge of the pump station.

Subsequent to the slope failure, staff had negotiated a task order with Atlas and another task order with MIG to develop the plans and specifications for the project. The plans and specifications were recently approved and coordinated with the Regional Water Quality Control Board, Army Corps of Engineers and the California Department of Fish and Wildlife for the slope stabilization.

In February 2022, Council authorized the City Manager to execute a contract to the lowest responsible bidder for an amount not to exceed $275,000 plus a 15% contingency. This council action was only for the construction related costs and did not include construction management consultant costs during the construction period, thus the need for council to approve these added task orders as the original authorized costs will be exceeded. After this project is awarded to the lowest responsible bidder, City staff recommends using the design geotechnical engineering consultant (Atlas) to provide assistance for the geotechnical and structural construction activities. City staff also recommends using the design biological resources consultant (MIG) to provide monitoring and reporting assistance before, during, and after construction related environmental work per the permit requirements.

Analysis

The proposed slope stabilization project includes shoring and restoration of an approximately 60-foot-long section of the East Laurel Creek bank/slope adjacent to the San Juan Sewer Pump Station. To stabilize the bank and protect the pump station site, the project will install a retaining wall, recontour the bank, and the asphalt surface will be configured to drain away from the bank to the existing catch basins.

Staff has negotiated a task order with (1) Atlas to provide construction support for geotechnical services during the course of construction for the San Juan Pump Station Slope Repair Project. The scope of work includes the following major items:

- Bid and Construction Support Services;
  - Preparation of any needed addendums
  - Attendance at meetings, site inspections
  - Review of contractor submittals and request for information and preparation of any needed changes orders.
- Preparation of As-Built record drawings in AutoCAD

Additionally, staff has negotiated a task order with (2) MIG, Inc. to provide construction support for environmental services during the course of construction for the San Juan Pump Station Slope Repair Project. The scope of work includes the following major items:

- Prepare and Conduct Biological Training Program
- Preparation of Wildlife Exclusion Fencing Plan
- Perform pre-construction survey and habitat assessment of protected species
- Perform Biological and Archeological Construction Monitoring
- Preparation of Post-Construction and As-Built Reports

Alternatives

1. Take no action.
2. Refer back to staff for more information.

Attachments

A. Resolution

Fiscal Impact

☐ No Fiscal Impact

☒ Funding Source Confirmed: The two task orders, totaling an amount not to exceed $53,880, have been budgeted in the Sewer Collections Fund, Project 7036, Account 503-3-730-7036-8331 San Juan Pump Station Slide Repair.

Source:	Purpose:	Public Outreach:
Staff	Statutory/Contractual Requirement	Posting of Agenda

RESOLUTION NO. 2022 –

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BELMONT 1) AUTHORIZING THE CITY MANAGER TO EXECUTE A TASK ORDER WITH ATLAS TECHNICAL CONSULTANTS LLC TO PROVIDE GEOTECHNICAL AND STRUCTURAL CONSTRUCTION SUPPORT SERVICES FOR AN AMOUNT NOT TO EXCEED $15,000, AND 2) AUTHORIZING THE CITY MANAGER TO EXECUTE A TASK ORDER WITH MOORE IACOFANO GOLTSMAN, INC. TO PROVIDE CONSTRUCTION SUPPORT SERVICES FOR THE SAN JUAN PUMP STATION SLOPE REPAIR PROJECT FOR AN AMOUNT NOT TO EXCEED $38,880

WHEREAS, Atlas Technical Consultants LLC was selected to provide the City with on-call geotechnical design services; and,

WHEREAS, Moore Iacofano Goltsman Inc., was selected to provide the City with on-call environmental services; and,

WHEREAS, it is recommended to install a retaining wall, recontour the bank, and plant native, riparian vegetation in the repair area; and,

WHEREAS, the total estimate for the construction support services is $53,880 and will be funded from Account 503-3-730-7036-8331 San Juan Pump Station Slide Repair.

NOW, THEREFORE, the City Council of the City of Belmont resolves as follows:

SECTION 1. The City Manager is authorized to negotiate and execute a Task Order with Atlas Technical Consultants LLC for the construction support services for the San Juan Pump Station Slope Repair Project for an amount not to exceed $15,000.

SECTION 2. The City Manager is authorized to negotiate and execute a Task Order with Moore Iacofano Goltsman Inc. for the construction support services for the San Juan Pump Station Slope Repair Project for an amount not to exceed $38,880.

* * *

ADOPTED July 26, 2022 by the City of Belmont City Council by the following vote:

Ayes:
Noes:
Absent:
Abstain:

ATTEST:

City Clerk

Mayor

APPROVED AS TO FORM:

City Attorney

STAFF REPORT

Meeting Date: July 26, 2022

Agency: City of Belmont

Staff Contact: Laura Kirby, Acting Human Resources Director, lkirby@belmont.gov

Agenda Title: Labor Relations Consulting Services

Agenda Action: Resolution

Recommendation

Adopt a resolution authorizing the City Manager to execute an amendment to Task Order No. 2 with Renne Public Law Group (RPLG) to provide labor relations consulting services in an amount of $80,000 for a total not-to-exceed amount of $130,000.

Strategic Focus Area

Fiscal and Organizational Sustainability

Background

The City issued Task Order No. 2 to Renne Public Law Group (RPLG) to provide advice and assistance with labor negotiations in fiscal years 2021 and 2022 and associated employer-employee relations in an amount not-to-exceed $50,000.

Analysis

RPLG served as the City's lead negotiator in the labor contract negotiations that concluded in fiscal year 2022 with the Belmont Police Officer's Association (BPOA), American Federation of State, County and Municipal Employees (AFSCME), and Mid Management Confidential Employees Association (MMCEA). The negotiation services needed to successfully complete these labor contract negotiations exceeded the amount initially executed by approximately $40,000.

Additional services are anticipated to implement the negotiated Memorandum of Understandings (MOU's) between the City and the labor unions. Staff is requesting that the City Council authorize an amendment to Task Order No. 2 in an amount of $80,000, for a total not-to-exceed amount of $130,000, which will encompass work to date as well as any additional services needed to implement the MOU's.

Alternatives

1. Solicit services from an alternative firm.
2. Take no action.

Attachments

A. Scope of Services

Fiscal Impact

☐ No Fiscal Impact

☒ Funding Source Confirmed: There are funds available in the General Fund under the Human Resources department (Account 101-1-401-8351) in the current fiscal year budget that is anticipated to be sufficient for this purpose.

Source:	**Purpose:**	**Public Outreach:**
Staff	Discretionary Action	Posting of Agenda

RESOLUTION NO. 2022 –

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BELMONT AUTHORIZING THE CITY MANAGER TO EXECUTE AN AMENDMENT TO TASK ORDER NO. 2 OF THE MASTER LEGAL SERVICE AGREEMENT WITH RENNE PUBLIC LAW GROUP (RPLG) FOR $80,000, FOR A TOTAL NOT-TO-EXCEED AMOUNT OF $130,000

WHEREAS, The City initiated a task order to its Master Services Agreement with Renne Public Law Group for employer-employee relations in April 2022; and,

WHEREAS, Additional consultation services are required of RPLG to facilitate negotiated contract provisions and ongoing labor relations issues; and,

WHEREAS, City Council approval is required to encumber additional funds necessary to utilize the RPLG consulting services.

NOW, THEREFORE, the City Council of the City of Belmont resolves as follows:

SECTION 1. The City Manager is authorized to execute an amendment to Task Order No. 2 with RPLG in amount not to exceed $130,000.

* * *

ADOPTED July 26, 2022 by the City of Belmont City Council by the following vote:

Ayes:

Noes:

Absent:

Abstain:

ATTEST:

City Clerk

Mayor

APPROVED AS TO FORM:

City Attorney

STAFF REPORT

Meeting Date:	July 26, 2022
Agency:	City of Belmont
Staff Contact:	Elizabeth Wada, Public Works, (650) 595-7486, ewada@belmont.gov
Agenda Title:	Recommended Parking Changes at Various Locations
Agenda Action:	Resolution

Recommendation

Adopt a resolution approving the establishment of 1) no parking zones (red zones) along Academy Avenue and Court and 2) passenger pick up and drop off zone (white zone) in front of 1314 Old County Road.

Strategic Focus Area

Infrastructure and Mobility

Background

The Parking and Traffic Safety Committee (PTSC) received the following requests from the members of the community:

Academy Ave: The upper portion Academy Ave and Court consists of one-way streets and hairpin turns. A request was received to paint red curb in front of 1312 Academy Ave so that emergency vehicles have safer traffic flow and access to the properties along Academy at the tight turns.

1314 Old County Road: There is limited parking and no pedestrian crosswalks to access the business (San Carlos Children's Theatre) located at 1314 Old County Road. The theatre offers morning and afterschool programs, therefore triggering a request for a passenger (white curb) loading zone for the safety of the children being dropped off to attend classes.

Residents and businesses within a 300-foot radius of the requests were notified of and invited to the PTSC meeting held on June 23, 2022. No objections were received before or at the meeting to the proposed changes.

Analysis

Staff performed an investigation and reviewed existing traffic and parking pattern in the subject neighborhoods. The main concerns were to balance elimination of the parking with traffic safety and parking needs for the neighborhoods. It was determined that the establishment of a "No Parking" zone along Academy Ave. and Ct. will be sufficient to ensure that emergency vehicle access is improved and at the same time providing spaces for neighbors to park. Additionally, the creation of the passenger loading zone provides a safe drop off zone for the activities at the fronting business. The PTSC recommends approval of the parking changes per below exhibits.

Academy Ave: Paint red curb along Academy Ave at the locations shown in **Figure 1** below.

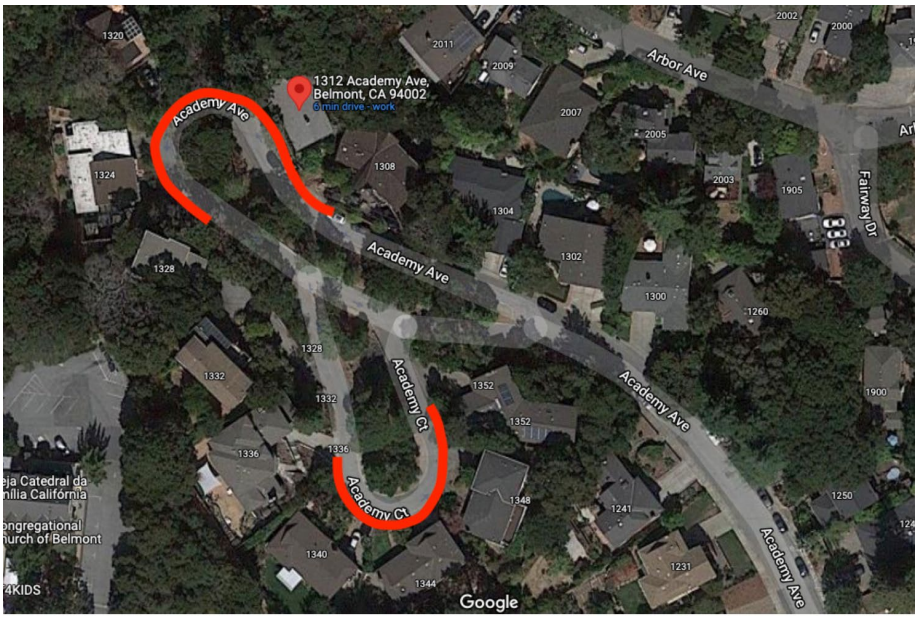


Figure 1: Academy Ave red curb locations

1314 Old County Road: Paint white curb (loading zone) and install signage at the red boxed location shown in **Figure 2** below.



Figure 2: Location of new white curb (loading zone)

The Public Works Department has an operational budget for these types of requests, so no additional funds

are needed for the work that would be completed by the City forces.

Alternatives

1. Take no action
2. Refer to staff for further information

Attachments

A. Resolution

Fiscal Impact

☐ No Fiscal Impact

☒ Funding Source Confirmed: Expenditures have been incorporated in the Street Maintenance Fund for the PTSC recommended improvements.

Source:	**Purpose:**	**Public Outreach:**
Staff	Discretionary Action	Other*

*Notices were sent out to residents and businesses within a 300' radius of the proposed changes regarding the items being on the PTSC agenda. The public PTSC meeting was also listed on the City's website Calendar events and City Manager's Weekly Update.

RESOLUTION NO. 2022 –

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BELMONT APPROVING ESTABLISHMENT OF NO PARKING ZONES ALONG ACADEMY AVENUE AND PAINTING WHITE CURB (LOADING ZONE) AND INSTALLING SIGNAGE IN FRONT OF 1314 OLD COUNTY ROAD (SAN CARLOS CHILDREN'S THEATRE).

WHEREAS, the Parking and Traffic Safety Committee (PTSC) received a request to establish no parking zones along Academy Ave; and,

WHEREAS, the PTSC received a request to establish loading zone (white curb) and install signage in front of 1314 Old County Road; and,

WHEREAS, residents and businesses within a 300-foot radius of the requests were notified of and invited to the PTSC meeting held on June 23, 2022.

WHEREAS, the PTSC recommends to establish no parking zones along Academy Ave; and,

WHEREAS, the PTSC recommends to paint white curb and install signage in front of 1314 Old County Road; and,

NOW, THEREFORE, the City Council of the City of Belmont resolves as follows:

SECTION 1. Approves establishment of a no parking zones along Academy Ave as shown in Figure 1 of the staff report.

SECTION 2. Approves painting the existing curb white and installing signage in front of 1314 Old County Road as shown in Figure 2 of the staff report.

* * *

ADOPTED July 26, 2022 by the City of Belmont City Council by the following vote:

Ayes:

Noes:

Absent:

Abstain:

ATTEST:

City Clerk

Mayor

APPROVED AS TO FORM:

City Attorney

STAFF REPORT

Meeting Date:	July 26, 2022
Agency:	City of Belmont
Staff Contact:	Grace Castaneda, Finance Director, gcastaneda@belmont.gov Jennifer Rose, Housing, Economic Development, Finance Manager, jrose@belmont.gov Karen Clark, Administrative Assistant, kclark@belmont.gov
Agenda Title:	Locally Controlled Hotel Guest Tax Measure
Agenda Action:	Resolution

Recommendation

1. Adopt a resolution calling a municipal election on a measure increasing the hotel room tax by updating the rate to 14% of the rent paid by the guest; and,
2. Designate by motion a subcommittee of two council members to prepare the written argument in favor and rebuttal.

Strategic Focus Area

Fiscal and Organizational Sustainability

Background

The Belmont City Council has identified long-term financial stability as a City-wide strategic focus area. The City continues to evaluate existing revenue sources and explore opportunities to diversify new potential sources of locally-controlled revenue that can support critical City services such as fixing potholes, repairing streets and sidewalks, maintaining 9-1-1 emergency response times, keeping public areas healthy safe and clean, and maintaining senior services.

Over the last year, the City has engaged over 1,000 residents through Your Voice, Your Belmont and residents have told us they want more local control over local funds so Belmont can be self-reliant into the future and keep tax dollars here in Belmont. The funding from this proposed hotel tax could not be taken by Sacramento.

Residents also identified funding priorities including fixing potholes and repairing streets and sidewalks, maintaining 9-1-1 emergency response times, keeping public areas healthy safe and clean and maintaining senior services including health, nutrition and transportation programs.

Due to recent changes in state law, Belmont lost nearly $2 million and delays to Ralston Road improvements, other street repairs and fixing potholes will need to be delayed without additional local funding.

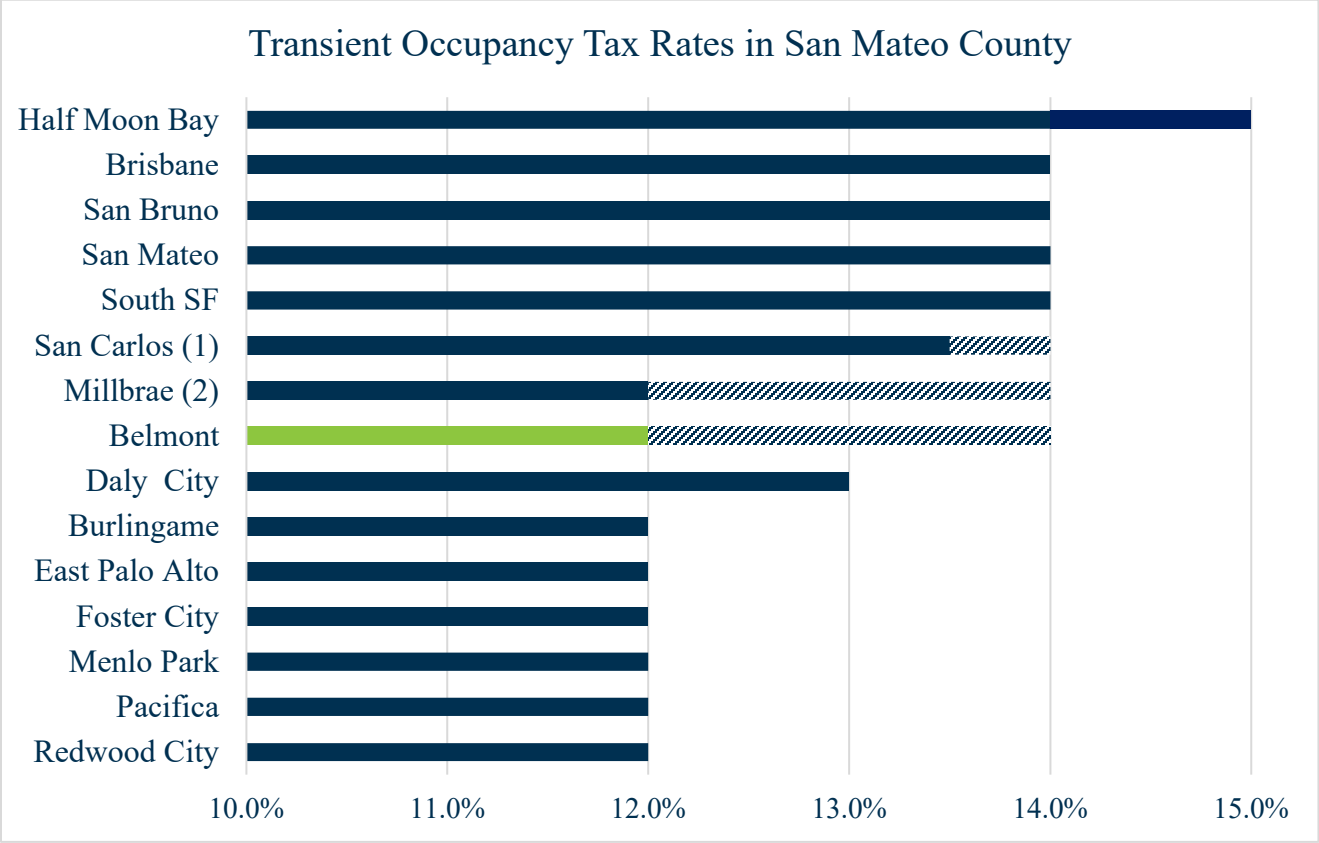
A local hotel tax is also part of the City's design and plan to reduce the impact on local taxpayers and allows visitors to Belmont to pay their fair share for City services so that residents do not have to shoulder

all of the costs.

Belmont City Code Section 23-65 requires hotel guests and individuals renting all or portions of private residents for less than 30 days (e.g. short-term rentals through AirBnB, VRBO, etc.) to pay a transient occupancy tax (TOT) equal to 12% of the rent paid by the guest. The current TOT rate was approved by 75% of Belmont voters in the November 2018 general election. As a general tax, the rate can only be increased via a ballot measure approved by a majority of Belmont voters.

Before the COVID-19 pandemic, TOT generated nearly $4 million in locally controlled General Fund revenue annually, with 99% coming from Belmont's ten hotels and the remainder coming from private residences renting out properties.

TOT rates in San Mateo County currently range from 12% to a high of 15%. Belmont and at least one other city in San Mateo County is currently considering a ballot measure for November that would increase their TOT rates to 14%. The table below shows current and proposed rates in San Mateo County:



(1) San Carlos rate will automatically increase to 14% on 1/1/2023
(2) Millbrae considering a municipal election November 2022 to increase from 12% to 14%

The City Council conducted a study session on May 10, 2022, to consider the proposed rate and fiscal impact of a TOT update and directed staff to proceed with implementation of a tax measure pending completion of a community opinion survey. The City engaged Godbe Research to conduct a public opinion survey to gauge local resident receptivity to increasing the TOT rates charged to visitors to the City of

Belmont. The survey was conducted in June 2022 using a sample of likely November 2022 voters and, among other things, asked respondents about their potential interest in a 2% TOT increase and local priorities. Overall, the survey results indicated solid community support at 72%, above the margin of error, of a general-purpose transient occupancy tax increase to 14%. A report of the key survey findings can be found on the City website at www.belmont.gov/TOTupdate.

Analysis

The proposed ballot measure includes the following key components:

- Increase the local transient occupancy tax from 12% of the amount paid by the hotel guest to 14%.
- All funds generated by the increase would be placed in the City's General fund to be used for unrestricted general revenue purposes, including street, sidewalk and pothole repairs, 9-1-1 emergency response times and crime prevention, keeping public areas healthy, safe and clean, and maintaining senior services.
- This measure would give Belmont local control over local funds for local needs – requiring local tax dollars to be spent for Belmont residents and not taken by Sacramento.
- This tax is only paid by hotel and other lodging facility guests, not Belmont residents who are not staying in hotels or short-term rentals, which reduces the impact on local taxpayers, so they do not shoulder all of the cost and allows visitors to pay their fair share for services.

While Belmont's TOT generated nearly $4 million in General Fund revenue before the COVID-19 pandemic, the pandemic continues to impact the travel and tourism industry and corresponding TOT revenue. As reflected in the FY 2023 budget, the General Fund balance is projected to fall by $4.3 million over the next five years, representing a 25% reduction in available fund balance. Increasing the rate to 14% would generate an anticipated $0.6 million annually in additional General Fund revenue based on pre-pandemic TOT collection levels.

Public Outreach

At the direction of the City Council, staff has provided information pertaining to the TOT update directly to hotel operators and has shared information with the Belmont and San Mateo County Chambers of Commerce. After the municipal election is scheduled, the City will conduct a public information effort that will likely include informational materials, website updates, and communications.

Next Steps

In order to proceed, Council must adopt a resolution calling for an election on the measure and approving the submission of the proposed ordinance. The adoption of the proposed resolution would accomplish this and will direct the City Attorney to prepare the impartial analysis. The resolution also calls on the Council to designate a subcommittee of two Councilmembers to oversee preparation of the argument in favor of the measure and a rebuttal if necessary. The key steps include:

DATE	ACTION
July 26th	Adopt a resolution calling municipal election and introduce ordinance for ballot measure
NO MUNICIPAL ADVOCACY AFTER CALLING ELECTION	
August 29th	Ballot measure arguments (for and against) due to County Election
November 8th	
December 8th	Certification of election results within 30 days

The analysis and arguments (for/against) do not require City Council action.

Election Costs
The City is required to hold a municipal election in November 2022 that will include a mayoral race and two council seats. The San Mateo County Elections Office has quoted a municipal election cost that includes the mayor race, two council seats an up to two ballot measures, ranging from $69,700 to $83,600. The cost of adding a ballot measure to the November 2022 election is already projected in this quote and included in the fiscal year 2023 adopted budget.

Environmental Determination
In accordance with CEQA Guidelines Sec. 15378(b)(4), submission of the tax to the voters is categorically exempt from CEQA because it involves the creation of a government funding mechanism which does not involve any commitment to any specific project.

Alternatives
1. Direct staff to develop an alternative revenue measure.
2. Take no action.

Attachments
A. Resolution
B. Draft Ordinance
C. Presentation

Fiscal Impact
☐ No Fiscal Impact

☒ Funding Source Confirmed: Funding for the November 2022 municipal election, which includes the mayoral election and two City Council district elections, is included in the City Clerk's election budget for fiscal year 2023.

Source:	Purpose:	Public Outreach:
Staff	Discretionary Action	Posting of Agenda

RESOLUTION NO. 2022-

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BELMONT CALLING A MUNICIPAL ELECTION ON A MEASURE INCREASING THE HOTEL ROOM TAX BY SETTING THE RATE AT FOURTEEN PERCENT OF THE RENT PAID BY THE GUEST

WHEREAS, the City of Belmont continues to have millions of dollars in unmet infrastructure needs, including streets, storm drains, parks and community facilities; and,

WHEREAS, Belmont needs reliable sources of local revenue where local control is exercised over local funds to help the City to be self-reliant, requiring that all funds be spent for Belmont residents, and no funds can be taken by Sacramento; and,

WHEREAS, recent changes to state law have cost the City of Belmont nearly two million dollars and will delay improvements to Ralston Avenue and delay repairing potholes throughout the City if this measure is not approved; and,

WHEREAS, the City has a plan designed to reduce the impact on local taxpayers so they do not shoulder all of the cost and allows visitors to pay their fair share for services; and,

WHEREAS, resident identified City service funding priorities including fixing potholes and repairing streets and sidewalks, maintaining 9-1-1 emergency response times, keeping public areas healthy safe and clean and maintaining senior services including health, nutrition and transportation programs; and,

WHEREAS, State actions continue to negatively affect city property tax revenues by delaying or diverting payments; and,

WHEREAS, General Fund balance reserves are currently being used to replace revenue shortfalls and maintain City services and quality of life, but the long-term use of fund balance to maintain services is not sustainable; and,

WHEREAS, current and projected City revenues are insufficient to consistently maintain the City's general fund at or above the City's General Fund policy target of 33% and minimum balance policy of $5 million over a ten-year forecast; and,

WHEREAS, the General Fund balance is projected to fall by $4.3 million over the next five years, representing a 25% reduction in available fund balance; and,

WHEREAS, the City has implemented a number of cost saving strategies, however, the magnitude of the revenue shortfall greatly exceeds any additional savings that could practically be achieved through further cost cutting measures while maintaining City services and quality of life; and,

WHEREAS, Belmont citizens expect and deserve essential services including 9-1-1 emergency response, pothole and road repair, maintenance of parks, open space, and sports fields, senior and youth programs, and maintenance of police patrols and crime prevention at a level

sufficient to protect and promote public health, safety, and welfare, and provide residents with a high quality of life; and,

WHEREAS, the City of Belmont, with the help and support of its citizens, has made significant progress in improving its financial position, but continues to need reliable sources of local revenue where local control is exercised over local funds that cannot be taken by Sacramento; and,

WHEREAS, hotel guests use City services, including roads, 9-1-1 emergency response and parks; and,

WHEREAS, the City of Belmont currently requires persons renting rooms or structures for 30 consecutive days or less for dwelling, lodging or sleeping purposes ("hotel guests") to pay a transient occupancy tax ("hotel room tax") of twelve percent of the amount charged by the operator; and,

WHEREAS, on June 8, 2021, the City Council adopted Resolution No. 2021-055 finding among other things that maintaining city services and continuing to invest in infrastructure is critical to protecting public safety and welfare and enabling Belmont residents to have a high quality of life, and that the continuing volatility and decline of state administered revenues imperils the General Fund's ability to maintain city services and basic infrastructure which if not adequately addressed in the immediate future will place the public at increasingly greater risk of harm and increase the exposure of the City to potential liability; and,

WHEREAS, on June 14, 2022, the City Council adopted Resolution No. 2022-057 finding among other things that diversification of the city's revenue sources, expansion of the city's revenue base, and greater local control over revenue is urgently needed to provide a back stop against further state takeaways and achieving long term fiscal and organizational stability, and, to maintain city services and infrastructure at an adequate and sustainable level and thereby protect the public from harm and the City from overwhelming potential liability; and,

WHEREAS, the City Council has determined to submit to the citizens of Belmont for their approval a ballot measure setting the City's hotel room tax rate at fourteen percent of the amount paid by the hotel guest; and,

WHEREAS, Revenue and Taxation Code Section 7280 and California Constitution Article XIIIC authorize the City to levy a transient occupancy tax for unrestricted general revenue purposes if the ordinance proposing that tax is approved by the voters of the City; and,

WHEREAS, under California Constitution Article XIIIC and Belmont's current general municipal election cycle at which councilmembers are elected, Belmont voters may only vote on a general tax measure proposed by the Council once every two years in November of even-numbered years unless the City Council unanimously declares an emergency.

NOW, THEREFORE, the City Council of the City of Belmont resolves as follows:

SECTION 1. Resolutions No. 2021-055 and No. 2022-057 are incorporated herein by reference.

SECTION 2. Call for Municipal Election.

(a) A municipal election in the City of Belmont is called for November 8, 2022 for the purpose of submitting to the electorate a ballot measure approving an ordinance increasing the City's transient occupancy tax by setting the rate at fourteen percent of the rent paid by the transient, to continue from the effective date until changed, and to be used for unrestricted general revenue purposes of the City.

(b) The polls for the election shall be open at 7:00 a.m. on the day of the election and shall remain open continuously from that time until 8:00 p.m. that same day, when the polls shall be closed, except as provided in Elections Code Section 14401. The City Clerk is authorized to give further notice of the election, as required by law.

SECTION 3. Consolidation with Statewide General Election

(a) The City Council orders the municipal election consolidated with the statewide general election on Tuesday, November 8, 2022.

(b) In accordance with Elections Code Section 10403, the City Council requests the County of San Mateo Board of Supervisors consolidate the municipal election with the statewide election.

(c) The question to be presented to the voters is as follows:

<table>
<tr><td colspan="2">City of Belmont Hotel Room Tax Measure</td></tr>
<tr><td rowspan="2">Shall a City of Belmont ordinance providing funding, that cannot be taken by the State, for general city services including:
Fixing potholes, repairing streets and sidewalks;
Maintaining 9-1-1 emergency response times;
Keeping infrastructure projects/ upgrades on-time/ on-budget;
Maintaining senior services, and
Keeping public areas healthy, safe and clean;
by raising the transient occupancy ("hotel") tax to 14%, paid only by guests, until ended by voters, providing an additional $600,000 annually, with independent audits, be adopted?</td><td>YES</td></tr>
<tr><td>NO</td></tr>
</table>

This question requires the approval of the majority of qualified electors casting votes.

(d) The City Council acknowledges that the consolidated election will be held and conducted in the manner prescribed in Election Code Section 10418.

SECTION 4. Conduct of Election

In accordance with Elections Code Section 10002, the City Council requests the County of San Mateo Board of Supervisors authorize the County Clerk to render all services necessary for the conduct of the election regarding the general tax measure and agrees to reimburse the County of San Mateo for the costs of conducting this election.

SECTION 5. Proposed Ordinance

(a) The ordinance authorizing the transient occupancy tax to be approved by the voters is as set forth in Attachment 1 hereto.

(b) The City Council hereby approves the ordinance, the form thereof, and its submission to the voters of the City at the November 8, 2022 election.

(c) The ordinance increases the transient occupancy tax rate to fourteen percent of the rent paid by the transient. The City of Belmont will collect the tax from operators. The proposed tax is for general city purposes and will be deposited in the city's general fund.

(d) The City Council requests the County of San Mateo Board of Supervisors to order the County Clerk to set forth in the voter information portion of all sample ballots to be mailed to the qualified electors of the City the full text of the Ordinance and to mail with the sample ballots to the electors printed copies of the full text of the Ordinance, together with the primary arguments for and against the measure, and to provide absent voter ballots for the election for use by qualified electors of the City who are entitled thereto in the manner provided by law.

SECTION 6. Publication of Synopsis

The City Clerk is directed to publish a synopsis of the measure in the manner required by Elections Code Section 12111 at least one week before the election.

SECTION 7. Submission to County Officials

The City Clerk is directed to file a certified copy of this Resolution, with Attachments, with the County of San Mateo Board of Supervisors and the County Elections Official no later than close of business on August 12, 2022.

SECTION 8. Impartial Analysis

The City Clerk is directed to transmit a copy of the measure to the City Attorney who is directed to prepare an impartial analysis of the measure in accordance with Elections Code Section 9280.

SECTION 9. Ballot Arguments

(a) Ballot arguments for or against the measure may be submitted in accordance with this resolution and applicable provisions of the law.

(b) The City Council will designate by motion a subcommittee of two councilmembers to prepare a written argument not exceeding 300 words in favor of the measure. If a qualified argument against measure is submitted, the subcommittee may prepare a rebuttal argument not exceeding 250 words. At the discretion of the subcommittee, the argument in favor and rebuttal, if any, may also be signed by other members of the City Council, bona fide associations of citizens, or by individual voters who are eligible to vote. Arguments and rebuttals shall otherwise conform to and comply with all applicable provisions of the Elections Code and be submitted by the deadline required by the County of San Mateo Elections Official.

* * *

ADOPTED July 26, 2022, by the City of Belmont City Council by the following vote:

Ayes:

Noes:

Absent:

Abstain:

ATTEST:

_____
City Clerk

_____
Mayor

APPROVED AS TO FORM:

_____
City Attorney

Attachment 1

To Resolution 2022-

An Ordinance of the City of Belmont Increasing the Hotel Room Tax by Setting the Rate at Fourteen Percent of Rent Paid by Hotel Guests

ORDINANCE NO. _____

AN ORDINANCE OF THE CITY OF BELMONT INCREASING THE HOTEL ROOM TAX BY SETTING THE RATE AT FOURTEEN PERCENT OF RENT PAID BY GUESTS

WHEREAS, the Citizens of Belmont find that maintaining essential services such as pothole and road repair, 9-1-1 emergency response, parks, open space, and sports fields maintenance, senior and youth programs, and neighborhood police patrols and crime prevention are critical to protecting the safety and welfare of Belmont residents and to providing residents with a high quality of life, and,

WHEREAS, the City of Belmont has millions of dollars in unmet infrastructure needs, including streets, storm drains, parks and community facilities; and,

WHEREAS, the City of Belmont, with the help and support of its citizens, has made significant progress in improving its financial position, but continues to need reliable sources of local revenue where local control is exercised over local funds that cannot be taken by Sacramento; and,

WHEREAS, hotel guests use City services, including roads, 9-1-1 emergency response and parks; and,

WHEREAS, the City of Belmont currently requires persons renting rooms or structures for 30 consecutive days or less for dwelling, lodging or sleeping purposes ("hotel guests") to pay a transient occupancy tax ("hotel room tax") of twelve percent of the rent paid by the transient; and,

WHEREAS, Belmont needs a reliable source of revenue where local control is exercised over local funds that cannot be taken by Sacramento and can only be spent for Belmont; and,

WHEREAS, Belmont needs reliable sources of local revenue where local control is exercised over local funds to help the City to be self-reliant; and,

WHEREAS, recent changes to state law have cost the City of Belmont nearly two million dollars and will delay improvements to Ralston Avenue and delay repairing potholes throughout the City; and,

WHEREAS, the City has a plan designed to reduce the impact on local taxpayers so they do not shoulder all of the cost and allows visitors to pay their fair share for services; and,

WHEREAS, resident identified City service funding priorities including fixing potholes and repairing streets and sidewalks, maintaining 9-1-1 emergency response times, keeping public areas healthy safe and clean and maintaining senior services including health, nutrition and transportation programs; and,

WHEREAS, this ordinance will increase the hotel room tax rate by setting the rate at fourteen percent of the amount paid by the hotel guest, which will remain in effect until changed and will be collected by the City, and cannot be taken by Sacramento.

NOW, THEREFORE, THE PEOPLE OF THE CITY OF BELMONT DO ORDAIN AS

FOLLOWS:

SECTION 1. RECITALS

The People of the City of Belmont find that all Recitals contained in this ordinance are true and correct.

SECTION 2. CITY COUNCIL APPROVAL.

The City Council of the City of Belmont approved this ordinance for placement on the November 8, 2022 ballot by Resolution 2022-____.

SECTION 3. BCC CHAPTER 23, ARTICLE IV, SECTION 23-65 AMENDED

Belmont City Code Chapter 23 (Taxation), Article IV (Transient Occupancy Tax), Section 23-65 (Imposition; amount; where payable) is amended to read:

Sec. 23-65 Imposition; amount; where payable.

For the privilege of occupancy in any hotel, each transient is subject to and shall pay a tax in the amount of fourteen percent of the rent paid by the transient. Said tax constitutes a debt owed by the transient to the city which is extinguished only by payment to the operator or to the city or to a rental agent in accordance with Section 23-83. The transient shall pay the tax to the operator of the hotel at the time the rent is paid. If the rent is paid in installments, a proportionate share of the tax shall be paid with each installment. The unpaid tax shall be due upon the transient's ceasing to occupy space in the hotel. If for any reason the tax due is not paid to the operator of the hotel, the tax administrator may require that such tax shall be paid directly to the tax administrator.

SECTION 4. SEVERABILITY.

If any section, subsection, sentence, clause or phrase of this Ordinance is for any reason held by a court of competent jurisdiction to be invalid, such a decision shall not affect the validity of the remaining portions of this Ordinance. The People of the City of Belmont hereby declare that they would have passed this Ordinance and each section or subsection, sentence, clause and phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases be declared invalid.

SECTION 5. EXPENDITURE OF REVENUES

(a) The revenues from the increase in the transient occupancy tax imposed by this ordinance may be spent for unrestricted general purposes of the City of Belmont.

(b) The revenues from the portion of the transient occupancy tax imposed before the effective date this ordinance may be spent for unrestricted general revenue purposes of the City of Belmont.

SECTION 6. AMENDMENT

(a) The tax adopted herein may be extended or increased only by a vote of the people of the City

of Belmont in accordance with California Constitution Article XIIIC, Section 2(b).

(b) Except as provided in subsection (a), the provisions herein may amended by ordinance adopted by the City Council.

SECTION 7. EFFECTIVE.

(a) This ordinance relates to the levying and collecting of the City transient occupancy tax and shall be in full force and effect 10 days after the certification by the City Council of the election returns indicating passage of the ordinance in the election of November 8, 2022, by the margin of votes required by California Constitution Article XIIIC, Section 2(b) for general tax measures.

(b) Notwithstanding Section 7(a), Section 3 of this ordinance becomes operative no earlier than January 1, 2023.

* * *

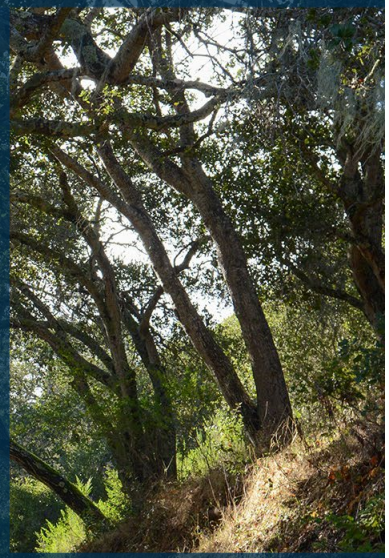
This ordinance was submitted to the People of the City of Belmont at the November 8, 2022 election and was adopted by the following vote of the People:

YES:

NO:

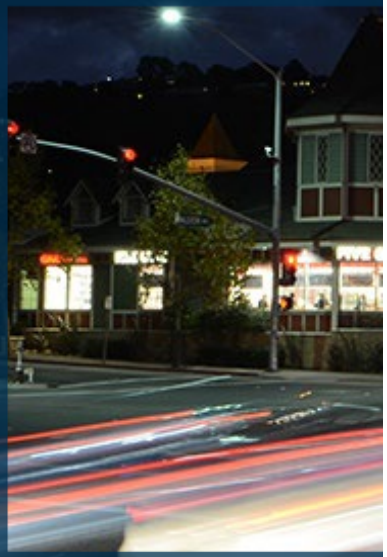
ATTEST:

City Clerk	Mayor

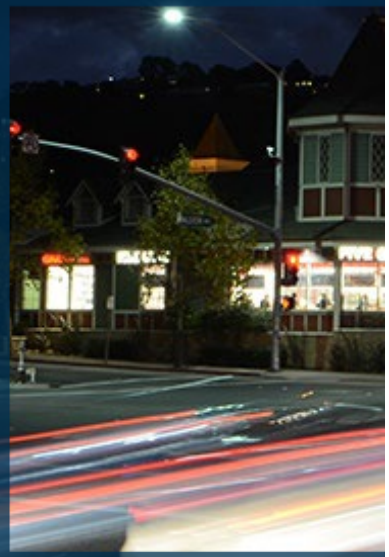


CITY OF BELMONT

Hotel Guest Tax Measure
July 26, 2022



- BACKGROUND
- BALLOT MEASURE REVIEW
- NEXT STEPS
- QUESTIONS & COMMENTS

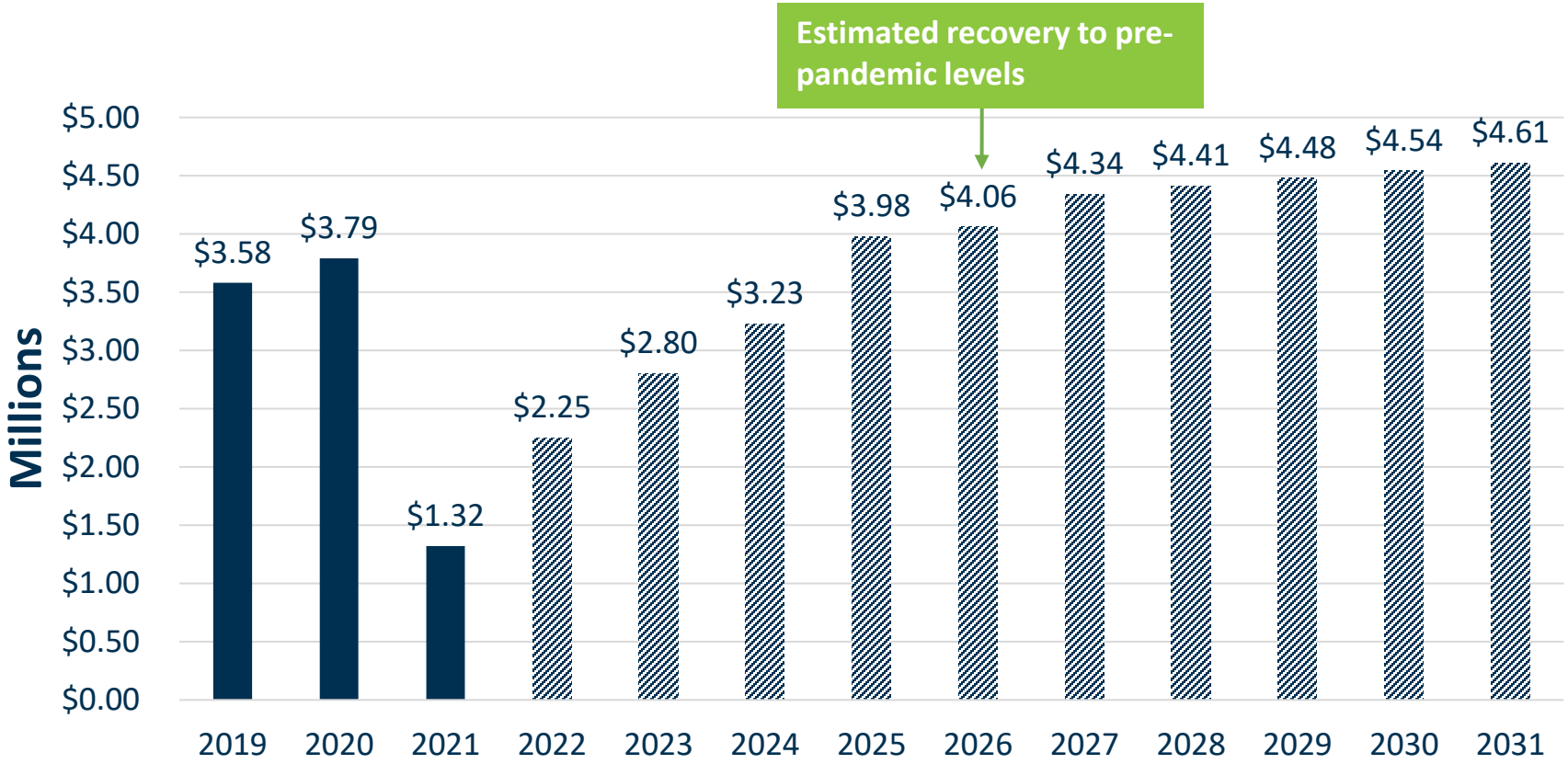


TRANSIENT OCCUPANCY (HOTEL ROOM GUEST) TAX BACKGROUND & ANALYSIS

TRANSIENT OCCUPANCY TAX REVENUES

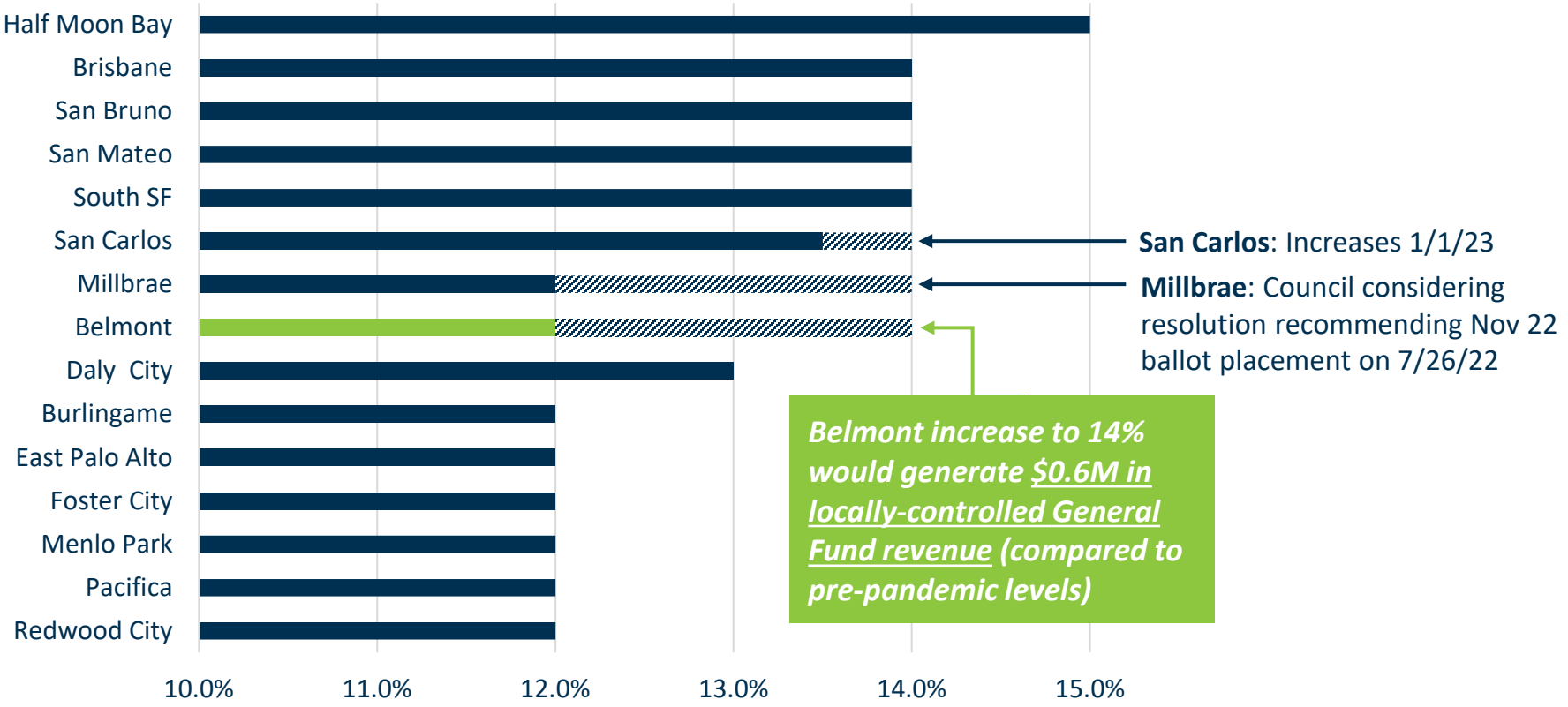
FY 2018-21 (ACTUAL) & FY 2022-31 (PROJECTED)





TRANSIENT OCCUPANCY TAX RATES IN SAN MATEO COUNTY





TRANSIENT OCCUPANCY TAX BALLOT MEASURE

YOUR VOICE, YOUR BELMONT



Community Feedback on City Service Needs & Priorities

- Over the last year, through **Your Voice, Your Belmont** the City engaged over 1,000 residents on local City service needs and priorities.
- Residents identified the following City service funding priorities:
  - fixing potholes and repairing streets and sidewalks;
  - maintaining 9-1-1 emergency response times;
  - keeping public areas healthy safe and clean;
  - maintaining senior services including health, nutrition and transportation programs.

TRANSIENT OCCUPANCY TAX BALLOT MEASURE

LOCALLY-CONROLLED FUNDING NEEDS



- The State continues to threaten to take away property tax revenues, the General Fund's top revenue source.
- Residents told us that they want local control over local funding to allow the City to be self-reliant for the services Belmont residents rely on that cannot be taken by the State.
- Residents continue to prioritize maintaining our local streets and roads and ensuring that these capital projects can be completed on time.

TRANSIENT OCCUPANCY TAX BALLOT MEASURE

PROPOSED ELEMENTS



- Update the TOT rate from **12% to 14%;**
- This would be a **locally-controlled general tax**, all revenues go to the General fund to be used for general City services, including **street and pothole repairs, 9-1-1 emergency response times and crime prevention, keeping public areas healthy, safe and clean, and maintaining senior services**;
- All revenue would be kept local and **cannot be taken by Sacramento**;
- TOT revenues would be paid by hotel and other lodging facility guests, **not by Belmont residents** who are not typically staying in such lodging facilities.

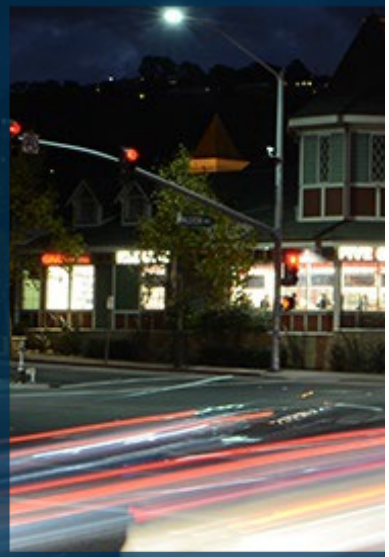
TRANSIENT OCCUPANCY TAX BALLOT MEASURE

COUNCIL ACTIONS



- Resolution calling for a municipal election on a measure increasing the hotel room tax (TOT) by setting the rate at fourteen percent of the rent paid by the guest

- Draft Ordinance increasing the hotel room tax (TOT) by setting the rate at fourteen percent of rent paid by hotel guests

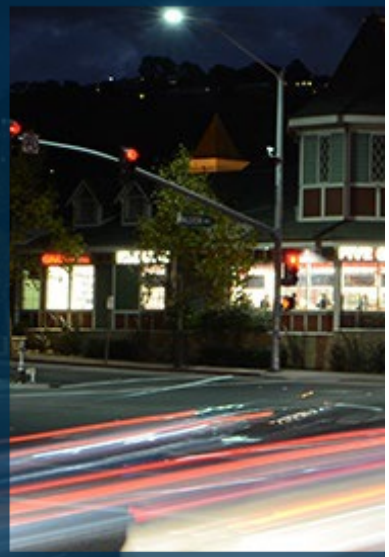


NEXT STEPS

TRANSIET OCCUPANCY TAX NEXT STEPS



- **July 2022**: City Council Consideration of Draft TOT Ordinances; Call for Election on Ordinances
- **August-September 2022**: Council Committee to oversee prep of written argument in favor of ballot measure, along with rebuttals to any written arguments filed
- **Fall 2022**: Outreach and Education to business community, hotel representatives and Chamber of Commerce
- **November 8, 2022**: Voter Election



QUESTIONS & COMMENTS

STAFF REPORT

Meeting Date:	July 26, 2022
Agency:	City of Belmont
Staff Contact:	Jennifer Rose, Housing & Economic Development Manager, jrose@belmont.gov
Agenda Title:	Review of Draft General Plan Housing Element 2023-2030 and Draft Environmental Impact Report
Agenda Action:	Discussion & Direction

Recommendation

Receive presentation introducing the Draft General Plan Housing Element 2023-2030 and Draft Environmental Impact Report, consider Planning Commission recommendations and public comments, and provide direction for submittal to the State Department of Housing and Community Development (HCD).

Strategic Focus Area

Economic Development and Housing

Background

Since 1969, California has required that all local governments (cities and counties) adequately plan to meet the housing needs of everyone in the community. State law requires California's local governments to adopt a housing element as part of their "general plan" that demonstrates how the local government will meet state mandated housing planning requirements. The Belmont General Plan, last comprehensively updated in 2017, serves as a local "blueprint" for how Belmont will grow and develop and includes the following required elements: land use; housing; circulation; parks, recreation and open space; conservation; safety; and noise. The Housing Element must be updated on a regular schedule and is subject to specific regulatory requirements and process established by the state Housing Element Law (Government Code Sections 65580-65589.11). Belmont's Housing Element was last updated/adopted in 2015 as part of the Housing Element Law's 5th housing element planning cycle covering the period from January 1, 2015 through December 31, 2022. The 6th housing element planning cycle covers the period from January 1, 2023, through December 31, 2030.

California's Housing Element Law acknowledges that in order for the private market to adequately address the housing needs and demand of Californians, local governments must adopt plans and regulatory systems that provide opportunities for—and do not unduly constrain—housing development. As a result, housing policy in California rests largely on the effective implementation of local general plans and, in particular, local housing elements. In addition, the State Department of Housing and Community Development (HCD) must review and certify that each jurisdiction's housing element meets all the requirements of the law.

This Housing Element update for the 6th housing element planning cycle is more challenging that previous cycles for several reasons:

1) Belmont's Regional Housing Needs Allocation (RHNA) is significantly higher than the previous cycle, requiring the City to plan for 1,785 new housing units compared to 468 units in the previous housing cycle.
2) The housing element of the general plan must include a detailed inventory of land suitable and available for residential development to meet Belmont's regional housing need by income level. Changes in state law governing the selection of housing inventory sites make it harder to identify sites that can count towards meeting the RHNA. Additional analysis and justification is required for smaller or non-vacant sites, or sites that were identified in previous housing elements that have not yet been developed with new housing units.
3) Federal and State Law requires all public agencies, including the City of Belmont, to demonstrate that general plan housing elements "affirmatively furthers fair housing" (AFFH). New statutory obligations require the housing element to include detailed analysis of existing and future policies, plans, programs, rules, and practices, to ensure Belmont is taking meaningful action to combat discrimination, overcome patterns of segregation, and foster inclusive communities. This is a significant new requirement that was not a part of past housing elements.

Belmont has been able to collaborate with other jurisdictions in San Mateo County to complete our Housing Element through the *21 Elements* regional collaborative, with additional support from a Housing Element Project Manager and an environmental consulting firm preparing a Programmatic Environmental Impact Report pursuant to the California Environmental Quality Act (CEQA).

Analysis

The proposed Housing Element update covers the period 2023-2030 and includes the following components:

1. **Housing Needs Assessment**: Analyze demographic and housing trends and conditions in both Belmont and all of San Mateo County.
2. **Housing Constraints Analysis**: Analyze and address existing and potential governmental and nongovernmental constraints to the development of housing.
3. **Goals, Policies and Programs**: Establish policies and programs to address the identified housing needs. Each proposed program or policy action much have a quantified housing objective and specific implementation timeline.
4. **Evaluation of Past Performance**: Assess progress in implementing the policies and programs from the prior Housing Element.
5. **Housing Resources, Sites Inventory, and Methodology**: Present information on resources and funding available to support the creation of housing, especially affordable housing; identify a detailed inventory of housing sites available for development of new housing units, ensuring that there is sufficient capacity to address the RHNA for all housing income levels.
6. **Affirmatively Further Fair Housing (AFFH):** New to this housing cycle, housing element law now requires the housing element to include an analysis of fair housing outreach and capacity, integration and segregation, access to opportunity, disparate housing needs, and current fair housing practices.

7. **Community Outreach and Engagement**: Demonstrate implementation of a thorough community engagement effort, with a particular focus on outreach to traditionally underrepresented groups.

Full drafts of the Housing Element 2023-2030 and CEQA Environmental Impact Report can be found on the City's website (www.belmont.gov/housingelement). The following is a summary of key findings identified in the draft documents.

Summary of Housing Needs

- Population Growth. Belmont's population continues to steadily grow, increasing by 6.7% from 2000-2020. Belmont's population includes an increasing number of seniors over the age of 65, and an increasing number of youths under 18. People of color comprise a proportion of Belmont's population that is lower than the overall proportion in San Mateo County.
- Housing Demand is High. While the number of new homes in Belmont has increased 0.6% from 2010 to 2020, that increase is below the growth rate for San Mateo County. The number of new homes has not kept pace with demand, resulting in longer commutes, high housing prices, and increased displacement or homelessness.
- Housing is Expensive. Home prices increased 123.6% from 2010 to 2020, with a majority of homes valued above $1 million. Rental housing prices increased by 76.8% from 2009 to 2019. A typical apartment rent requires a household salary minimum of $90,040 per year.
- Residents are Cost Burdened. In Belmont, 18% of households are cost burdened, spending more than 30% of their income on housing, and 15% of households are severely cost burdened, spending more than 50% of their income on housing.
- Special Housing Needs. In Belmont, 9.0% of residents have a disability of some kind and may require accessible housing. Additionally, 5.2% of Belmont households are larger households with five or more people, who likely need larger housing units with three bedrooms or more. 6.7% of households are female-headed families, which are often at greater risk of housing insecurity.

Summary of Housing Constraints Analysis

- High Cost of Housing Development. This biggest constraint concerning the development of housing – especially that which is affordable – is the very high cost of development, and the lack of financing to support that development. While these nongovernmental constraints are generally out of the City's control, they can be partially mitigated in Belmont by leveraging local financial resources and assets towards development and preservation of affordable and special needs housing units.
- Governmental Constraints. Potential government constraints to housing include zoning regulations, development standards, infrastructure requirements, permit and development impact fees, and the development approval processes. While government policies and regulations are intended to serve public objectives and further the public good, the City recognizes that its actions can potentially constrain the availability and affordability of housing to meet the community's future needs.
- Development Review Process. Helping developers to utilize various streamlined development review opportunities can also help reduce development timelines and costs, and the City has identified an action to enhance information and outreach related to SB 35 streamlined ministerial review.

- Constraints for Special Needs Housing. The Housing Element includes policies and programs that address potential constraints to provision of housing for special needs groups and ensure there is opportunity for more special needs housing to be created.

Summary of AFFH Findings

- Fair Housing. Nine fair housing inquiries and two fair housing complaints were made by Belmont residents between 2017 and 2021, including refusal to rent based on national origin and a complaint based on disability for failure to make reasonable accommodations. The Housing element includes a program to conduct education and outreach to both landlords and tenants about fair housing requirements and enforcement options.
- Demographics. Racial and ethnic minority populations in Belmont—with the exception of Asians—are more likely to be living in poverty and be housing cost burdened compared to the non-Hispanic White population. They are also slightly more likely to be denied a mortgage loan. On the positive side, residents living Belmont—regardless of race and ethnicity—have strong access to highly resourced neighborhoods.
- Special Needs. Nine percent of Belmont's residents have a disability, which is on par with the county and the Bay area overall.
- Access to Education. According to TCAC's educational opportunity map, all census tracts in Belmont have schools with the most positive educational outcomes. Belmont offers a strong educational environment citywide. Students with disabilities in the Belmont-Redwood Shores district score comparatively well compared to students with disabilities in other districts. Educational outcomes vary for some racial and ethnic groups, and the school district could improve proficiency gaps and differences in suspension rates.
- Cost of Housing. Belmont's largest challenge lies in housing affordability. In two census tracts, between 40% and 60% of renter households face housing burden. Yet compared to surrounding cities, Belmont offers better rental affordability, according to the HCD Location Affordability Index. Just 18% of Belmont's owner-occupied units are priced below $1 million, compared to 44% for the county and 65% for the Bay area overall.

Summary of Resources and Housing Sites Methodology

- Financial Resources. The draft housing element identifies potential City and County funding resources that can support development of new affordable housing. The housing element also includes an extensive list of various Federal and State resources for affordable housing activities, including but not limited to new construction, acquisition, rehabilitation, and homebuyer assistance.
- Housing Opportunity Sites. A key component of the housing element is identification of sites suitable and available for residential development, including vacant sites and sites having potential for redevelopment, and providing analysis of the development capacity that could potentially be achieved for each site. Several new housing laws have modified the requirements for the sites inventory. Examples of recent changes include:
    - Sites included in previous housing elements must now allow development of affordable housing by-right (AB 879 and AB 1379).

- Jurisdictions must conduct an assessment of fair housing and prepare the sites inventory through the lens of affirmatively furthering fair housing, ensuring housing units have reasonable access to community resources, transportation, education, and jobs (AB 686).
- The sites inventory must include sufficient sites to accommodate no-net loss of affordable units required by RHNA (SB 166). When a housing site is developed at income levels higher than identified in the Housing Element, the City must either identify and rezone an alternative site, or demonstrate that the sites inventory contains an alternative site to meet the RHNA. This requirement is commonly referred to as a housing sites "buffer".
- The Safety Element of the General Plan must now be updated to include analysis of the housing sites inventory to include new information related to fire hazards, evacuation routes, flood hazards, and climate adaptation (SB 1035). While the sites inventory includes vacant single-family residential lots that were identified in previous housing elements, no new housing sites have been identified adjacent to wildland urban interface (WUI) hazard areas.
- Sites that allow multi-family housing must now allow transitional or supportive housing by-right, as well as low-barrier navigation centers (AB 2162 and AB 101).

Additional draft housing opportunity sites considerations:

- The sites inventory does not include any housing opportunity sites that are currently developed with residential units so as not to encourage housing displacement.
- In 2017, the City completed a comprehensive update of the Belmont General Plan, and also adopted the Belmont Village Specific Plan (BVSP) and created the new Corridor Mixed Use (CMU) zoning district, all of which have greatly expanded the availability of sites suitable for new housing development. A majority of the identified housing opportunity sites currently allow residential development.
- Belmont has a development pipeline of more than 900 units either under construction or in development review; the sites inventory includes and specifically identifies these pipeline project sites. These housing developments are all eligible to count towards the next RHNA planning cycle.
- Analysis of completed or pipeline projects demonstrates that sites less than one half acre in size can typically be developed using an average of 59 dwelling units per acre, and sites larger than one half acre will typically develop at 113 dwelling units per acre.
- Nearly all pipeline projects have relied on local and State density bonuses. Elimination of a maximum density metric in the village zoning districts has proven to be an effective strategy for provision of housing units.
- To support development of housing sites along the El Camino Real and Old County Road corridors, the City has identified several zoning ordinance amendments that would extend certain zoning regulations from the Village Corridor Mixed Use (VCMU) district to both the Village Station Core (VSC) and Corridor Mixed Use (CMU) zoning districts. Further discussion of the proposed zoning amendments can be found below.

Summary of CEQA Draft Environmental Impact Report (EIR) Findings:

- The Draft Programmatic EIR completed an analysis of the proposed project, which requires analysis of the maximum possible buildout of housing on all housing opportunity sites. Maximum building assumes up to 3,300 new dwelling units and 8,250 new residents. It is extremely unlikely that all housing sites will be built out to maximum capacity during the eight-year planning period.

- The Draft EIR identified three areas of resource analysis as having potential impacts where mitigation measures would be appropriate:

    - Aesthetics. Recommended mitigation requiring transitional heights for sites on El Camino Real and Old County Road adjacent to neighborhoods.
    - Air Quality. Mitigation addresses construction emissions and roadway health risks.
    - Noise. Mitigation addresses ground-borne vibrations during project construction activities.

- Resources determined to have l*ess than significant* impacts include biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, population and housing, public services and recreation, transportation, tribal cultural resources, utilities and service systems, and wildfire.

Summary of Proposed Land Use and Zoning Changes

Belmont's updated regulatory framework (General Plan, BVSP, and CMU zoning, adopted in 2017), has been instrumental in facilitating increased housing development activity. Belmont has permitted 700 new housing units thus far during the current housing cycle, exceeding the current RHNA of 468 units (note that the City has not yet met the RHNA for very-low or moderate income units). These permitted housing units are eligible to count towards the next RHNA cycle and are included on this sites inventory.

A majority of the identified housing opportunity sites (124 of the total 144) currently allow development of housing – inclusion of these sites on the housing element inventory does not change their permitted land use. The City is only proposing a land use change for the 20 parcels currently zoned Service Commercial which currently do not allow housing.

Given the significant RHNA increase, housing staff identified several zoning amendments that could 1) help facilitate increased housing development; 2) create a buffer of housing sites to ensure the City is not required to take actions to comply with the "no net loss" statutory requirements; and 3) demonstrate the City's commitment to eliminate potential barriers to development of housing. The proposed amendments are summarized below, and further policy discussion of these zoning amendments can be found in the "policy considerations" section of this report.

- General plan and zoning ordinance amendments to rezone a total of 20 parcels from Service Commercial (SC) to Corridor Mixed Use (CMU), to allow housing development on these sites. These parcels are located in two project site clusters located along Old County Road – one at Dale View Avenue, and one at Mountain View Avenue/Marine View Avenue.

- Proposed amendments to the Corridor Mixed Use district (CMU) to align with the Village Corridor Mixed Use (VCMU) district:

Zoning Requirement	***Current***	***Proposed***
Building Height	45 feet; up to 55 feet with community benefits	50 feet; up to 65 feet with community benefits
Floor Area Ratio	1.75; up to 2.2 with community benefits	2.0; up to 2.5 with community benefits
Maximum Density	45 du/acre; up to 60 du/acre with community benefits	Eliminate maximum density

- Proposed amendments to the Village Station Core district (VSC) to align with the Village Corridor Mixed Use (VCMU) district:

Zoning Requirement	***Current***	***Proposed***
Building Height	45 feet; up to 60 feet with community benefits	50 feet; up to 65 feet with community benefits
Floor Area Ratio	1.5 FAR; up to 2.0 with community benefits	2.0 FAR; up to 2.5 with community benefits

- The proposed Housing Element update would also trigger amendments to the Belmont General Plan and BVSP to ensure consistency in growth forecasts and population. These updates will be required based on Belmont's regional housing needs allocation (RHNA).

City Council Policy Considerations

In response to comments received from the community, the City analyzed potential amendments to the identified land use and zoning amendments, and assessed potential impacts on the sites inventory and RHNA compliance. Staff presented these policy considerations to the Planning Commission at a study session on July 19, 2022 for discussion and direction, and has included their recommendations in the analysis below. Staff is seeking City Council input on these policy considerations to include as amendments to the draft housing element.

1. Building Height. The most common concern expressed by community members relates to the maximum building height changes proposed in the Corridor Mixed Use (CMU) and Village Station Core (VSC) zoning districts, which were intended to align these districts with the zoning regulations in the Village Corridor Mixed Use (VCMU) where the City has seen successful housing development activity.

   Staff Recommendation: Staff supported removing the proposed height modifications from the housing element work plan. Analysis of completed or pipeline development projects demonstrates that projects have been able to achieve necessary building heights either utilizing the City's community benefits zoning, or via the State density bonus. Removing this action from the Housing Element programs is not likely to have a significant impact on the proposed sites inventory and City's ability to meet the RHNA obligation.

   Planning Commission Recommendation: After receiving over 40 public comments during the study session, the Planning Commission was unified in recommending that the City eliminate the proposal to increase allowable building heights in the CMU and VSC zoning districts.

2. Service Commercial Sites. The Housing Element identifies two housing site clusters along Old County Road that could be rezoned from Service Commercial (SC) to Corridor Mixed Use (CMU) to allow multi-family residential development. Old County Road currently has a mix of both commercial/industrial uses and higher density multi-family residential uses. Allowing new multi-family or mixed-use development would be a compatible and appropriate land use.

Staff Recommendation: Rezoning the housing sites cluster at Old County Road and Dale View Avenue (3 parcels) creates capacity for up to 45 new housing units. Rezoning the larger housing sites cluster at Mountain View Avenue/Marine View Street (17 parcels) would create capacity for up to 584 new housing units. The maximum capacity for these housing sites is projected using average densities, and staff notes that it is unlikely all of these sites would be developed with housing. While staff supported removal of the three Dale View Avenue parcels from the housing sites inventory, the remaining parcels at Mountain View Avenue/Marine View Avenue are a known potential housing site based on discussions with the property owner and potential housing developers. Staff recommended keeping these known potential housing sites on the inventory, and keeping the program/action to rezone these sites to Corridor Mixed Use.

Planning Commission Recommendation: The public testimony received during the Planning Commission study session was heavily focused on this zoning amendment and the community concerns about adding new housing development to the Old County Road corridor. A majority of the Planning Commissioners recommended that all of the Service Commercial zoned properties be removed from the draft housing sites inventory.

Removal of all twenty Service Commercial zoned sites from the draft sites inventory would reduce the housing sites inventory capacity by 629 units. The following tables show a comparison of the housing sites capacity with and without the Service Commercial zoned parcels:

Draft Housing Sites Inventory (proposed)

	Total Units*	Very Low	Low	Moderate	Above Moderate	Pipeline
Proposed	3072	635	497	439	1501	935
RHNA	1785	488	281	283	733	n/a
Buffer	1,287 42%	147 23%	216 43%	156 36%	768 51%	

*Total unit capacity was lower that the rounded EIR estimate 3,300 because the sites inventory has been revised to reflect actual pipeline development activity (less that the estimated maximum capacity on several sites).

Draft Housing Sites Inventory with Removal of Service Commercial Zoned Parcels

	Total Units	Very Low	Low	Moderate	Above Moderate	Pipeline
Totals	2443	470	398	342	1233	935
RHNA	1785	488	281	283	733	n/a
Buffer	658 27%	-18 -4%	117 29%	59 17%	500 41%	

Staff notes that elimination of the SC zoned parcels reduces the very-low unit capacity to below the required RHNA allocation. The draft sites inventory could be revised to increase the very-low unit allocation and decrease other income allocations on remaining sites in order to meet the required RHNA income levels. The proposed housing sites methodology allocated very-low and low-income units based on the total RHNA allocation, meaning all sites are targeted to provide

27% very-low and 16% low-income units. Staff has two concerns about this scenario: 1) increasing the very-low-income unit requirement on remaining draft housing sites may be seen by HCD as a constraint to development; and, 2) it is very unlikely that development sites would meet the very-low-income allocations, meaning the City will still need to provide a sufficient low-income unit buffer to ensure ongoing compliance with the "no net loss" housing law provisions.

If it is the direction of the City Council to remove the service commercial sites, the remaining sites inventory methodology could be revised to increase the very-low-income unit allocation, and decrease the low- and moderate-income unit allocation.

3. Floor Area Ratio (FAR) and Maximum Density. In order to estimate the maximum development capacity of the draft housing sites inventory, staff relied on actual completed or pipeline development projects to determine the average project densities being built in Belmont. The draft sites inventory assumes that sites smaller than ½ acre could develop at an average density of 59 units per acre, and sites greater than ½ acre could develop at an average density of 113 units per acre. Many of these existing projects have relied on State and local density bonus programs to achieve higher units counts and zoning ordinance exceptions/waivers. A key component of the proposed sites inventory methodology and RHNA compliance is demonstrating that future development activity in Belmont will continue to occur consistent with existing housing development activity. Removal of government constraints to the development of housing is also a critical required component of the Housing Element, and making it feasible for developers of projects in the CMU and VSC zoning districts to achieve similar densities and FAR as current development activity (i.e., not requiring zoning exceptions/waivers) would qualify as removal of a potential housing constraint.

   Staff Recommendation: As described above, elimination of the maximum density metric in the CMU zone and increased FAR in both the CMU and VSC districts are a critical component of the housing sites methodology that demonstrate Belmont's ability to meet its RHNA obligation, and provide a sufficient buffer of available housing sites to comply with the "no net loss" requirements. The proposed modifications would facilitate development of housing projects that are consistent with current pipeline development activity. Projects in the CMU and VSC zoning districts will still be required to comply with other zoning regulations that ensure high quality site and building design (form-based zoning standards). Staff strongly recommends maintaining the housing element program/action to increase the FAR in the CMU and VSC districts and eliminate the density metric in the CMU district.

   Planning Commission Recommendation: The Planning Commission was unanimously supportive of the proposal to eliminate the maximum density metric in the CMU and increased the FAR in the CMU and VSC zoning districts, acknowledging the high-quality design of housing projects recently approved by the City that utilized those increased zoning metrics. The Planning Commission and several community members strongly encouraged the City to amend the CMU zoning regulations to incorporate the form-based urban design standards currently required by the Belmont Village Specific Plan for all of the village zoning districts to ensure that higher density development activity in the CMU district would be subject to the same standards. Staff supports this recommendation and with City Council concurrence can amend the housing element rezoning program to include this action.

4. Buffer Sites. Staff has received several inquiries related to the number of "buffer sites" identified on the draft housing sites inventory. As described above, 124 of the identified 144 draft housing opportunity sites already allow residential development. Identifying these existing sites and locations where housing development can occur does not change the underlying land use or zoning designation, nor does it increase the capacity of units that could be built, it simply complies with the Housing Element requirements to demonstrate where and how housing units could be built in Belmont. The City used existing residential development projects to calculate typical or average development densities (59 units/acre on sites less than ½ acre, and 113 units/acre on sites larger than ½ acre). Those average densities were used to forecast residential development capacity in the City and demonstrate that Belmont's existing land use and zoning regulations can accommodate a sufficient number of housing units to meet its RHNA obligation.

   Staff Recommendation: Staff did not recommend modifying the projected development capacity identified in the draft housing sites inventory. It is extremely unlikely that all housing opportunity sites would be developed with housing during the planning period, and that not all projects achieve the maximum possible densities due to site specific constraints like access and circulation. If the City Council recommends removal of the Service Commercial zoned properties, that would reduce the number of potential buffer units (see this analysis in item #3 above). If residents or housing stakeholders have concerns about a specific housing opportunity site, the City has created an interactive housing sites map on the City's website where those comments and concerns can be submitted.

   Planning Commission Recommendation: The Planning Commission had mixed feedback on the proposed sites buffer analysis. While they generally supported staff's proposed sites methodology and acknowledged that most of the draft housing sites already allow the housing development, several commissioners still expressed concerned about the large number of buffer units. During discussion it was acknowledged that removal of the Service Commercial zoned parcels would reduce the total unit capacity and reduce the corresponding sites buffer; the Commission recommended removal of the Service Commercial sites.

Timeline for Housing Element Adoption

Public Comment Period for Draft Housing Element and CEQA EIR (45 Days)	June 30th through August 15th 2022
HCD Review of Draft Housing Element (90 days)	August 16th through November 15th 2022
Receive and Respond to HCD Comments (30 days)	December 2022
Planning Commission and City Council Public Hearings to Consider Revised Housing Element and Final EIR	January 2023
Statutory Deadline for Housing Element Adoption	January 31, 2023

Alternatives

1. Recommend modifications to the draft housing element or EIR, and direct staff to submit the draft documents to HCD for the required 90-day review.

Attachments

All attachments are available on the city website www.belmont.gov/housingelement, and are directly linked below. If you need assistance or would like to review a copy of the draft documents at City Hall, please contact housing@belmont.gov.

Draft Housing Element 2023-2030

- Housing Needs (Belmont)
- Housing Needs (San Mateo County)
- Housing Constraints
- Goals, Policies, & Programs
- Review of 2015-2023 Housing Element Performance
- Resources & Methodology
  - Appendix SITES – Draft Housing Opportunity Sites Table
- AFFH Fair Housing Assessment
  - Appendix 1 - Resident Survey
  - Appendix 2 - Disparate Access to Educational Opportunities
  - Appendix 3 - Segregation Report
  - Appendix 4 - State Fair Housing Laws & Regulations
  - Appendix 5 - Fair Housing Enforcement & Outreach Capacity
  - Appendix 6 - Sites Inventory AFFH Supplement
  - Appendix 7 - Fair Housing Action Plan
- Community Outreach Summary

Draft CEQA Environmental Impact Report

- Belmont Housing Element Draft Environmental Impact Report (DEIR)
- Appendix AQ - California Emissions Estimator Model Outputs
- Appendix BIO - Special-Status Plant Species Table
- Appendix NOP - Notice of Preparation and Comment Letters
- Appendix NRG - Energy Fuel Consumption Calculations
- Appendix PS - Public Services and Recreation Contact Log
- Appendix SITE - Draft Housing Opportunity Sites Table
- Appendix TRA - VMT Impact Assessment Memorandum

Fiscal Impact

☒ No Fiscal Impact

☐ Funding Source Confirmed:

Source:	Purpose:	Public Outreach:
Staff	Statutory/Contractual Requirement	Posting of Agenda*

*Additional community engagement activities included a Fair Housing workshop held in March 2022, a community workshop held on June 27, 2022, and a Housing Element information flyer mailed to every residential property in Belmont in early June 2022.