

COMMISSION ON COMMUNITY INVESTMENT AND INFRASTRUCTURE

RESOLUTION NO. 32-2018

AUTHORIZING A MEMORANDUM OF UNDERSTANDING WITH THE SAN FRANCISCO PUBLIC UTILITIES COMMISSION FOR THE MAINTENANCE OF STORMWATER CONTROLS IN MISSION BAY SOUTH OPEN SPACE; MISSION BAY SOUTH REDEVELOPMENT PROJECT AREA

- WHEREAS, On September 17, 1998, the Redevelopment Agency of the City and County of San Francisco (“Redevelopment Agency”) approved, by Resolution No. 190-98, the Redevelopment Plan for the Mission Bay South Redevelopment Project Area (“Plan”). On the same date, the Redevelopment Agency conditionally approved, by Resolution No. 193-98, an Owner Participation Agreement (“South OPA”) with Catellus Development Corporation, a Delaware corporation (“Catellus”), and conditionally approved, by Resolution No. 191-1998, the Design for Development for the Mission Bay South Redevelopment Project Area (“Design for Development”), subject to the final approval of the Plan by the Board of Supervisors of the City and County of San Francisco (“Board of Supervisors”); and,
- WHEREAS, On November 2, 1998, the Board of Supervisors adopted, by Ordinance No. 335-98, the Plan; and,
- WHEREAS, On February 1, 2012, state law dissolved all redevelopment agencies, including the Redevelopment Agency, and established successor agencies to assume certain rights and obligations of the former redevelopment agencies. California Health and Safety Code §§ 34170 et seq. (“Redevelopment Dissolution Law”); and,
- WHEREAS, Under Redevelopment Dissolution Law, the Successor Agency of the City and County of San Francisco, commonly known as the Office of Community Investment and Infrastructure, (“Successor Agency” or “OCII”) is a separate public entity from the City and County of San Francisco (“City”); and,
- WHEREAS, On October 2, 2012, the Board of Supervisors, acting as the legislative body of the Successor Agency, adopted Ordinance No. 215-12, which, among other matters: established the Successor Agency Commission and delegated to it the authority to (i) act in place of the Redevelopment Agency Commission to, among other matters, implement, modify, enforce and complete the Redevelopment Agency’s enforceable obligations, (ii) approve all contracts and actions related to the assets transferred to or retained by the Successor Agency, including, without limitation, the authority to exercise land use, development, and design approval, consistent with applicable enforceable obligations, and (iii) take any action that the Redevelopment Dissolution Law requires or authorizes on behalf of the Successor Agency and any other action that this Commission deems appropriate, consistent with the Redevelopment Dissolution Law, to comply with such obligations; and,

- WHEREAS, Under the South OPA, FOCIL is required, among other things, to develop Open Space Parcels (as defined in the South OPA) and convey the Open Space Parcels, once improved, to the City acting through either the City's Department of Real Estate or the San Francisco Port Commission, depending on the particular Open Space Parcel; and,
- WHEREAS, Pursuant to the OPA, the Redevelopment Agency, now OCII, is required to form and administer a community facilities district to fund maintenance of the Open Space Parcels ("Maintenance CFD"), and to lease the Open Space Parcels from the City, once transferred from FOCIL, to administer the maintenance of the Open Space Parcels. The Redevelopment Agency formed the Maintenance CFD in 1999 and entered into the lease with the City in 2001, which is scheduled to terminate in 2045, to implement the Redevelopment Agency's maintenance obligations ("**2001 Ground Lease**"); and,
- WHEREAS, In April 2010 the City amended its Public Works Code and adopted Article 4.2 (the "**Stormwater Management Ordinance**") to require property owners and developers of certain development projects to install and maintain permanent stormwater quantity and/or quality protection measures in accordance with the San Francisco Public Utilities Commission's ("**SFPUC**") Stormwater Management and Design Guidelines(the "**Guidelines**"); and,
- WHEREAS, The South OPA, which includes the Mission Bay South Infrastructure Plan, was executed before the Stormwater Management Ordinance was enacted so the South OPA did not originally include stormwater controls consistent with the Guidelines ("Stormwater Controls") to treat the public rights-of-way; and,
- WHEREAS, Portions of Mission Bay South right-of way were permitted and constructed after the effective date of the Stormwater Management Ordinance and must meet the new requirements of the Guidelines; and,
- WHEREAS, To comply with the Stormwater Management Ordinance and the Guidelines for the public rights-of-way in Mission Bay South, FOCIL has constructed or is constructing Stormwater Controls in the Designated Open Spaces that will treat stormwater from the public right-of-way; and,
- WHEREAS, Under the South OPA and the 2001 Ground Lease, OCII manages and maintains the Designated Open Spaces after FOCIL completes construction and conveyance to the City; and,
- WHEREAS, OCII and SFPUC staff have prepared an Memorandum of Understanding ("MOU") to define maintenance responsibilities of the Stormwater Controls; and,
- WHEREAS, The Maintenance CFD does not contemplate maintaining Stormwater Controls within the Open Space Parcels. OCII and its maintenance contractor have determined that certain routine maintenance activities, as further specified in the Memorandum of Understanding ("MOU"), can be performed together with OCII's ongoing maintenance of the Open Space Parcels, at no additional cost; and,

WHEREAS, The MOU will result in minor alterations in the condition of land, water and vegetation, and, therefore, is categorically exempt from environmental review pursuant to California Environmental Quality Act Guidelines Section 15304; and,

WHEREAS, OCII staff finds the MOU acceptable and recommends approval thereof; and, now, therefore, be it

RESOLVED, That the Executive Director is hereby authorized to execute the MOU between OCII and SFPUC.

I hereby certify that the foregoing resolution was adopted by the Commission at its meeting of August 7, 2018.

Commission Secretary

Exhibit A: Memorandum of Understanding

**MEMORANDUM OF UNDERSTANDING BETWEEN
THE SAN FRANCISCO PUBLIC UTILITIES COMMISSION
AND
THE OFFICE OF COMMUNITY INVESTMENT AND INFRASTRUCTURE**

This Memorandum of Understanding (“**MOU**”) is entered into as of the ___ day of _____ 2018 by and between the San Francisco Public Utilities Commission (“**SFPUC**”) and the Successor Agency to the Redevelopment Agency of the City and County of San Francisco, commonly referred to as the Office of Community Investment and Infrastructure (“**OCII**”), with respect to certain real property more particularly described in Exhibit A hereto (the “**Designated Open Spaces**”), based on the following facts, understandings, and intentions.

RECITALS

- A. The purpose of this MOU is to establish a framework for achieving the following goals within the existing legal capacity of OCII: (i) support San Francisco’s compliance with State permits, (ii) protect water quality, and (iii) protect City assets.
- B. In order for the City to achieve compliance with its National Pollutant Discharge Elimination System (NPDES) permits issued by the California State Water Resources Control Board, under Mandate from the United States Environmental Protection Agency, in April 2010 the City amended its Public Works Code and adopted Article 4.2 (the “**Stormwater Management Ordinance**”) to require property owners and developers of certain development projects to install and maintain permanent stormwater quantity and/or quality protection measures in accordance with the SFPUC’s Stormwater Management and Design Guidelines(the “**Guidelines**”).
- C. In accordance with the Community Redevelopment Law of California (Cal. Health & Safety Code Section 33000 et seq.), the City, acting through its Board of Supervisors and Mayor, approved a Redevelopment Plan for the Mission Bay South Redevelopment Project by Ordinance No. 335-98, adopted on November 2, 1998.
- D. To implement the Redevelopment Plan, The Redevelopment Agency of the City and County of San Francisco (“**Redevelopment Agency**”) and Catellus Development Corporation, a Delaware corporation, now FOCIL-MB, LLC (“**FOCIL**”), entered into that certain Mission Bay South Owner Participation Agreement (the “**OPA**”) dated as of November 16, 1998.
- E. Under the OPA, FOCIL is required, among other things, to develop Open Space Parcels (as defined in the OPA) and convey the Open Space Parcels, once improved, to the City acting through either the City’s Department of Real Estate or the San Francisco Port Commission, depending on the particular Open Space Parcel.
- F. Also pursuant to the OPA, the Redevelopment Agency, now OCII, is required to form and administer a community facilities district to fund maintenance of the Open Space

Parcels (“Maintenance CFD”), and to lease the Open Space Parcels from the City, once transferred from FOCIL, to administer the maintenance of the Open Space Parcels . The Redevelopment Agency formed the Maintenance CFD in 1999 and entered into the lease with the City in 2001, which is scheduled to terminate in 2045, to implement the Redevelopment Agency’s maintenance obligations (“**2001 Ground Lease**”).

- G. The OPA, which includes the Mission Bay South Infrastructure Plan, was executed before the Stormwater Management Ordinance was enacted so the OPA did not originally include Stormwater Controls to treat the public rights-of-way. However, portions of Mission Bay South right-of way were permitted and constructed after the effective date of the Stormwater Management Ordinance and must meet the new requirements of the Guidelines.
- H. To comply with the Stormwater Management Ordinance and the Guidelines for the public rights-of-way in Mission Bay South, FOCIL has constructed or is constructing Stormwater Controls in the Designated Open Spaces that will treat stormwater from the public right-of-way, as such Stormwater Controls are more particularly described in the Mission Bay Green Infrastructure Manual attached as Exhibit B to this MOU.
- I. Pursuant to California Health and Safety Code §§ 34161 *et seq.* (the “Redevelopment Dissolution Law”), the State of California dissolved all redevelopment agencies as of February 1, 2012, and OCII is completing enforceable obligations of the Redevelopment Agency, including the OPA and Maintenance CFD, under the authority of the CRL as amended by the Redevelopment Dissolution Law, and under San Francisco Ordinance No. 215-12 (establishing the Successor Agency Commission (“Commission”) and delegating to it state authority under the Redevelopment Dissolution Law);
- J. Under the OPA and the 2001 Ground Lease, OCII manages and maintains the Designated Open Spaces after FOCIL completes construction and conveyance to the City. However, in accordance with the Redevelopment Dissolution Law, OCII may not expend funds, or enter into agreements to expend funds, that are not approved by DOF as an enforceable obligation. Therefore, OCII’s obligation to maintain the Designated Open Spaces is limited to those activities contemplated under the OPA and funded by the Maintenance CFD.
- K. Although the Maintenance CFD does not contemplate maintaining Stormwater Controls within the Open Space Parcels, OCII and its maintenance contractor have determined that certain routine maintenance activities, as further specified herein, can be performed together with OCII’s ongoing maintenance of the Open Space Parcels, at no additional cost.
- L. For the above reasons, the SFPUC and OCII have agreed to the following shared roles of responsibilities for maintenance of the Stormwater Controls located in Mission Bay South Designated Open Spaces.

NOW, THEREFORE, IT IS AGREED AS FOLLOWS:

Agreement

1. **Recitals.** The foregoing recitals are true and correct and incorporated here by reference.
2. **Definitions.** Whenever used herein, including all appendices hereto, the following terms, when initially capitalized, shall for the purpose of this MOU have the following respective meanings. The singular of a term shall include the plural and the plural shall include the singular.
 - a. **Corrective Maintenance (CM)** is the maintenance that is required when a portion or component of an installation begins to fail or has failed. Corrective Maintenance keeps the installation in working order, or corrects a failure of a component of the installation that has occurred or is in the process of occurring. This activity may consist of repair, restoration or replacement of individual components of the installation, but not replacement of the entire installation. Corrective Maintenance will fall under SFPUC's responsibilities pursuant to this MOU.
 - b. **Designated Open Spaces** are portions of Open Space Parcels within the Mission Bay South Redevelopment Plan area that contain Stormwater Controls.
 - c. **Preventative Maintenance (PM)** is a set of landscape maintenance activities performed at predetermined intervals or according to prescribed criteria before the occurrence of a failure. These activities are intended to protect the installation, reduce the probability of failure and prevent or eliminate the degradation of the functions of the installation. Non-scheduled Preventative Maintenance shall generally be performed within 30 days of discovery of the condition necessitating such Maintenance, unless otherwise mutually determined by the Parties. Preventative Maintenance will fall under OCII's responsibilities in accordance with this MOU.
 - d. **Remedial Maintenance (RM)** is a set of landscape maintenance activities that are performed as required, on a scheduled or unscheduled basis in order to keep the installation in proper operating condition. Remedial Maintenance consists of a set of activities that are performed to eliminate an identified source of potential failure before that failure occurs. Non-scheduled Remedial Maintenance shall generally be performed within 30 days of discovery of the condition necessitating such Maintenance, unless otherwise mutually determined by the Parties. Remedial Maintenance will fall under OCII's responsibilities in accordance with this MOU.
 - e. **Replacement and Rehabilitation (R&R)** is the reconstruction and replacement action performed on an installation after the occurrence of

a failure of the entire installation. The goal of R&R is to rebuild the installation to its original condition and reestablish the designed performance levels of the installation. A type of R&R is breakdown maintenance, which is maintenance performed after the occurrence of an advanced catastrophic failure of the entire installation. R&R is different from Corrective Maintenance in that its activities affect the entire installation, not just components of the installation. Replacement and Rehabilitation will fall under the SFPUC responsibilities pursuant to this MOU.

- f. **Specialized Components** are components of Stormwater Controls that are not commonly included in the design and construction of Stormwater Controls but that are included in some of the Stormwater Controls in Mission Bay South. Specialized Components of the Stormwater Controls include, but are not limited to, treatment pumps, inlet piping, distribution valves, outlet piping, and stormwater lift stations. Specialized Components are further defined in Exhibit B.
- g. **Stormwater Controls** are planted or structural facilities, measures, or programs intended to reduce pollution in stormwater runoff and maximize the performance of the collection system by managing the quantity and/or improving the quality of stormwater runoff in accordance with the Guidelines and applicable state and federal regulatory requirements. Stormwater Controls in Designated Open Spaces treat stormwater from the public right-of-way as more particularly described and depicted in Exhibit B.
- h. **Typical Components** are components of Stormwater Controls that are commonly included in the design and construction of Stormwater Controls. Typical Components of the Stormwater Controls include planting, mulch, soil media, check dams, aggregate rock storage layers, drain rock, impermeable liner/membranes, under drains and clean outs, inlet structures or grates, splash pads of fore bays, overflow structures, overflow pipes, sand traps, low flow channels, structural curbs, and/or proprietary Best Management Practices (BMPs) that are associated with the Stormwater Controls. Typical Components and Specialized Components are further defined in Exhibit B.

3. **Maintenance of Stormwater Controls.**

- a. Subject to full compliance with its existing ongoing maintenance obligations under the OPA and Maintenance CFD, OCII shall perform the following activities concerning the Stormwater Controls:
 - Preventative Maintenance and Remedial Maintenance on the Typical Components of the Stormwater Controls in accordance with the

Maintenance Schedule included in Exhibit B, or in the event of non-scheduled Preventative or Remedial Maintenance, within 30 days of discovering the conditions necessitating such Maintenance;

- Preventative, Remedial, and Corrective Maintenance as well as Replacement and Rehabilitation specifically for the decorative glass on the outside of the Stormwater Pump Station number 6, including: removal of graffiti, wiping down on a regular basis and replacement of glass;
 - Comply with the Maintenance Schedule and perform the Annual Self-Inspection Checklist specified in Exhibit B for the Stormwater Controls.
- b. OCII shall not demolish, modify or remove the Stormwater Controls located in Designated Open Spaces in a manner that lessens their effectiveness. *Prior written consent from the SFPUC is required for any material change to the Stormwater Controls.*
- c. The SFPUC shall, in accordance with the Maintenance Schedule included in Exhibit B and at no cost to OCII, perform Corrective Maintenance and Replacement and Rehabilitation on the Typical Components of the Stormwater Controls to ensure they are in good and working order so that these Stormwater Controls continue to function as originally designed and approved.
- d. The SFPUC shall, at no cost to OCII, perform all Preventative, Remedial, and Corrective Maintenance as well as Replacement and Rehabilitation of Specialized Components of the Stormwater Controls.
- e. The SFPUC will not spend funds on any maintenance of roads, sidewalks, medians, sidewalk planters, street trees or any other feature in Designated Open Spaces that are not designed to manage stormwater runoff.
- f. As new Designated Open Spaces are constructed, SFPUC and OCII will update Exhibit B as necessary to include such additional Designated Open Spaces and their Stormwater Controls, and OCII and SFPUC shall perform their respective maintenance obligations within these additional Designated Open Spaces in accordance with this MOU.

4. Inspections.

- a. OCII hereby grants permission to the SFPUC (including its authorized agents and employees) to enter on the Designated Open Spaces at reasonable times and in a reasonable manner to inspect, assess, observe or maintain the Stormwater Controls to ensure that the Stormwater Controls are being maintained in accordance with this MOU; provided that such entry shall occur: (i) for the initial post-construction inspection; or (ii) for the City inspections that occur once every three years; or (iii) to monitor the performance of the

Stormwater Controls. For any entry under this section, the SFPUC shall, to the extent practical, provide at least fourteen (14) business days' advance notice to OCII before entering a Designated Open Space; provided, however, that in the event of an emergency, as reasonably determined by the SFPUC, SFPUC has the right to immediate access without notice but shall provide notice as soon as reasonably possible under the circumstances.

5. **Notification of Need of Maintenance.**

- a. If OCII becomes aware of any deficiencies or conditions where the Typical Components of the Stormwater Controls require non-scheduled Preventative Maintenance or Remedial Maintenance, OCII shall notify the SFPUC of such deficiencies or conditions in addition to its obligation as set out in Section 3, above, to perform such Maintenance.
- b. In the event OCII cannot perform its Maintenance obligations hereunder due to a lack of available funding under the Maintenance CFD, OCII shall immediately notify the SFPUC and the City of such condition.
- c. If SFPUC becomes aware that the Specialized Components of the Stormwater Controls are in need of any Preventative, Remedial, Corrective Maintain or Replacement and Rehabilitation, SFPUC shall notify OCII in writing at least ten (10) days in advance of such work and shall provide OCII with a proposed schedule of such maintenance or repairs, unless the SFPUC determines that it is an emergency or a public health risk.

6. **Failure to Maintain Controls.** In the event OCII fails to maintain the Stormwater Controls as required by this MOU for a reason other than lack of available funds under the Maintenance CFD, and such failure continues for a period of ninety (90) days following written notice thereof from SFPUC to OCII, then SFPUC may enter the Designated Open Space and take such reasonable steps that SFPUC deems necessary and appropriate to return the Stormwater Controls to the condition required under this MOU, at OCII's cost in accordance with Section 7 of this MOU; provided that such advance notice shall not be required in the event of an emergency as set forth above. OCII understands and agrees that SFPUC has the right, but not the obligation to perform any maintenance or repair as set forth above, and nothing in this MOU shall be construed to impose any such maintenance or repair obligation on SFPUC.

7. **Reimbursement.** In the event SFPUC takes action to to maintain the Stormwater Controls as set forth in Section 6 above, OCII shall reimburse SFPUC for the actual cost of such work including, but not limited to, re-inspections, labor, use of equipment, supplies, or materials, no later than one hundred twenty (120) days after OCII's receipt of an invoice for such work and expenditures. Notwithstanding any other provisions in this section, OCII shall have a right to contest the costs and expenses of SFPUC if and to the extent such costs and expenses exceed the amounts permitted under this provision.

8. **No Additional Liability.** It is the Parties' intent by entering into this MOU to ensure the proper maintenance of the Stormwater Controls by OCII and the SFPUC; provided, however, that this MOU shall not be deemed to create or affect any additional liability not otherwise provided by law of any party for damage alleged to result from or caused by stormwater runoff.
9. **Severability.** If any provision of this MOU or the application thereof to any person, entity or circumstance shall, to any extent, be invalid or unenforceable, the remainder of this MOU, or the application of such provision to persons, entities or circumstances other than those as to which it is invalid or unenforceable, shall not be affected thereby, and each other provision of this MOU shall be valid and be enforceable to the fullest extent permitted by law.
10. **Notices.** Except as otherwise expressly provided herein, any notices given under this MOU shall be effective only if in writing and given by delivering the notice in person, by sending it first class mail or certified mail with a return receipt requested or overnight courier, return receipt requested, with postage prepaid, addressed as follows:

SFPUC: San Francisco Public
Utilities Commission
Wastewater Enterprise,
PRCD
525 Golden Gate
Avenue, 11th Floor San
Francisco, CA 94102
Attn: Stormwater Project Review

OCII: Office of Community Investment and Infrastructure
One South Van Ness Avenue, 5th Floor
San Francisco, CA 94103
Attn: Executive Director

With a copy to: Office of Community Investment and Infrastructure
One South Van Ness Avenue, 5th Floor
San Francisco, CA 94103
Attn: Mission Bay Project Manager

The foregoing addresses may be changed by written notice. Notices herein shall be deemed given two (2) days after the date when they shall have been mailed if sent by first class, certified or overnight courier, or upon the date personal delivery is made.

11. Miscellaneous.

- (a) This MOU may be amended or modified only in writing signed by SFPUC and OCIL.
- (b) No waiver by any party of any of the provisions of this MOU shall be effective unless in writing and signed by an officer or other authorized representative, and only to the extent expressly provided in such written waiver.
- (c) All approvals and determinations of SFPUC requested, required, or permitted hereunder may be made by the General Manager, or their designee, of SFPUC.
- (d) This instrument (including the attached Exhibits and the documents referenced herein) contains the entire MOU between the Parties and all prior written or oral negotiations, discussions, understandings, and MOUs are merged herein.
- (e) This MOU shall be governed by and construed in accordance with California law, and to the extent applicable, federal law.

12. **Interpretation.** Where the context requires in this MOU, the singular shall be construed as the plural, and neuter pronouns shall be construed as masculine and feminine pronouns, and vice versa. Unless otherwise specified, whenever in this MOU, including its Exhibits, reference is made to any Recital, Article, Section, Exhibit, or any defined term, the reference shall be deemed to refer to the Recital, Article, Section, Exhibit or defined term of this MOU. Any reference to a Recital, an Article or a Section includes all subsections and subparagraphs of that Recital, Article or Section. Section and other headings are for the purpose of convenience of reference only and are not intended to, nor shall they, modify or be used to interpret the provisions of this MOU. References in this MOU to days shall be to calendar days, unless otherwise specified. If the last day of any period to give or reply to a notice, meet a deadline or undertake any other action occurs on a day that is not a Business Day, then the last day for giving or replying to such notice, meeting such deadline or undertaking any such other action shall be the next succeeding Business Day. As used in this MOU, "Business Day" shall mean any day of the week other than a Saturday or Sunday on which offices of the City are open to the public for carrying on substantially all City functions. The use in this MOU of the words "including", "such as" or words of similar import when used with reference to any general term, statement or matter shall not be construed to limit such statement, term or matter to the specific statements, terms or matters, unless language of limitation, such as "and limited to" or words of similar import are used with reference thereto. In the event of a conflict between the Recitals and the remaining provisions of this MOU, the remaining provisions shall prevail. Any reference to this MOU includes any modification made in accordance with the terms hereof. In the event of a conflict between the provisions of this MOU and those of Exhibit B, this MOU shall prevail.

[signatures on the following page]

IN WITNESS WHEREOF, SFPUC and OCII have each caused this MOU to be executed by their respective duly authorized representatives as of the Effective Date.

SFPUC: San Francisco Public Utilities Commission _____ Harlan L. Kelly, Jr. General Manager	OCII: Office of Community Investment and Infrastructure _____ Nadia Sesay Executive Director
APPROVED AS TO FORM: Dennis Herrera, City Attorney By: _____ Deputy City Attorney	APPROVED AS TO FORM: James B. Morales, General Counsel By: _____

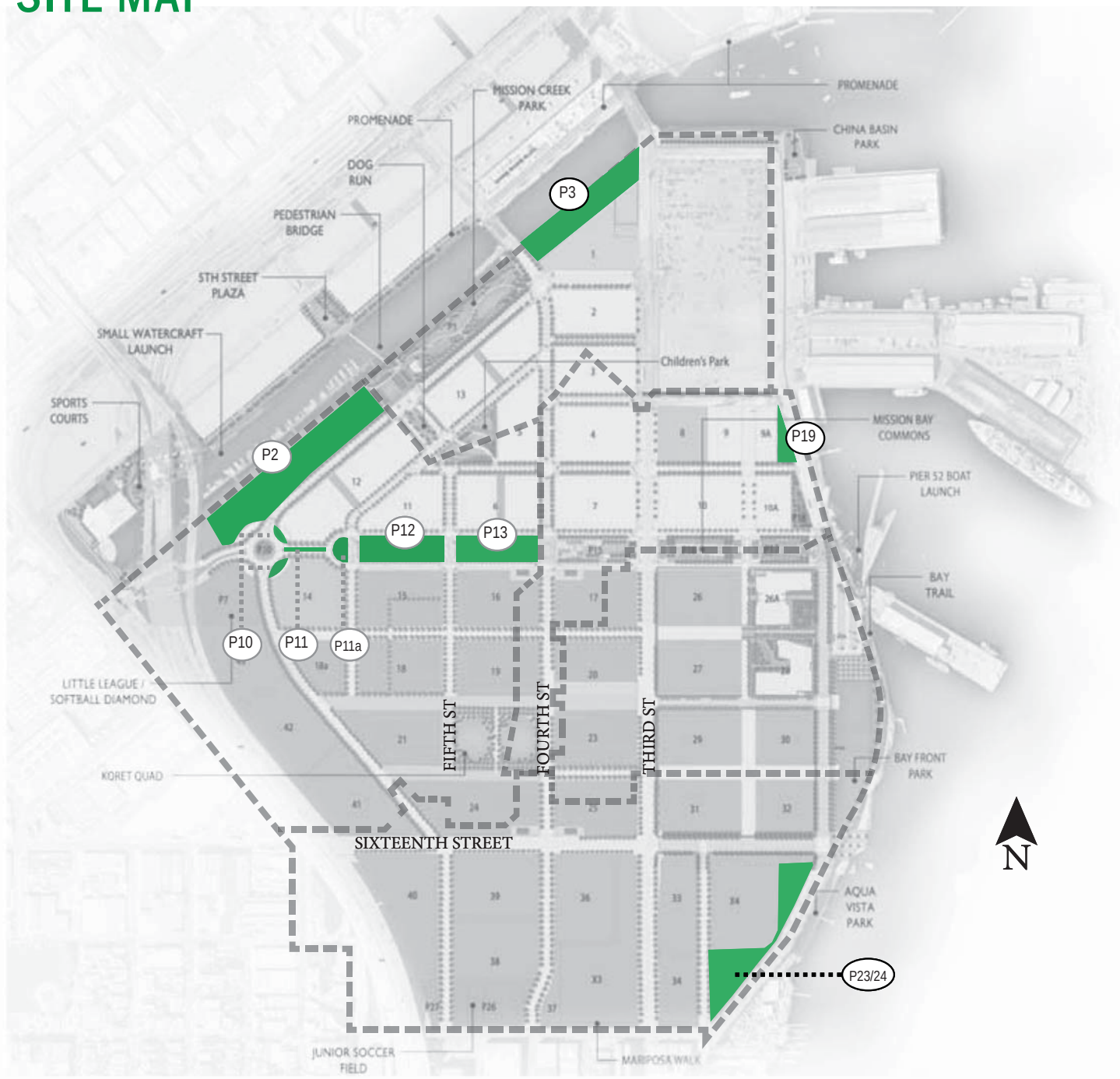
Exhibits:

- A Designated Open Spaces
- B Mission Bay Green Infrastructure Maintenance Manual

Mission Bay:

GREEN INFRASTRUCTURE

SITE MAP



Mission Bay Green Infrastructure Maintenance Manual

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Introduction

Green Infrastructure facilities must be regularly maintained to ensure that they operate and perform as designed, continue to provide effective treatment and do not harbor pests, cause flooding, or otherwise create a nuisance. Routine inspection can reveal potential problems with BMP operations and help to ensure the highest level of pollutant removal. Routine maintenance conducted on a regular basis will help keep BMPs in good working order, help maintain the facility's effectiveness and extend the installation's life span.

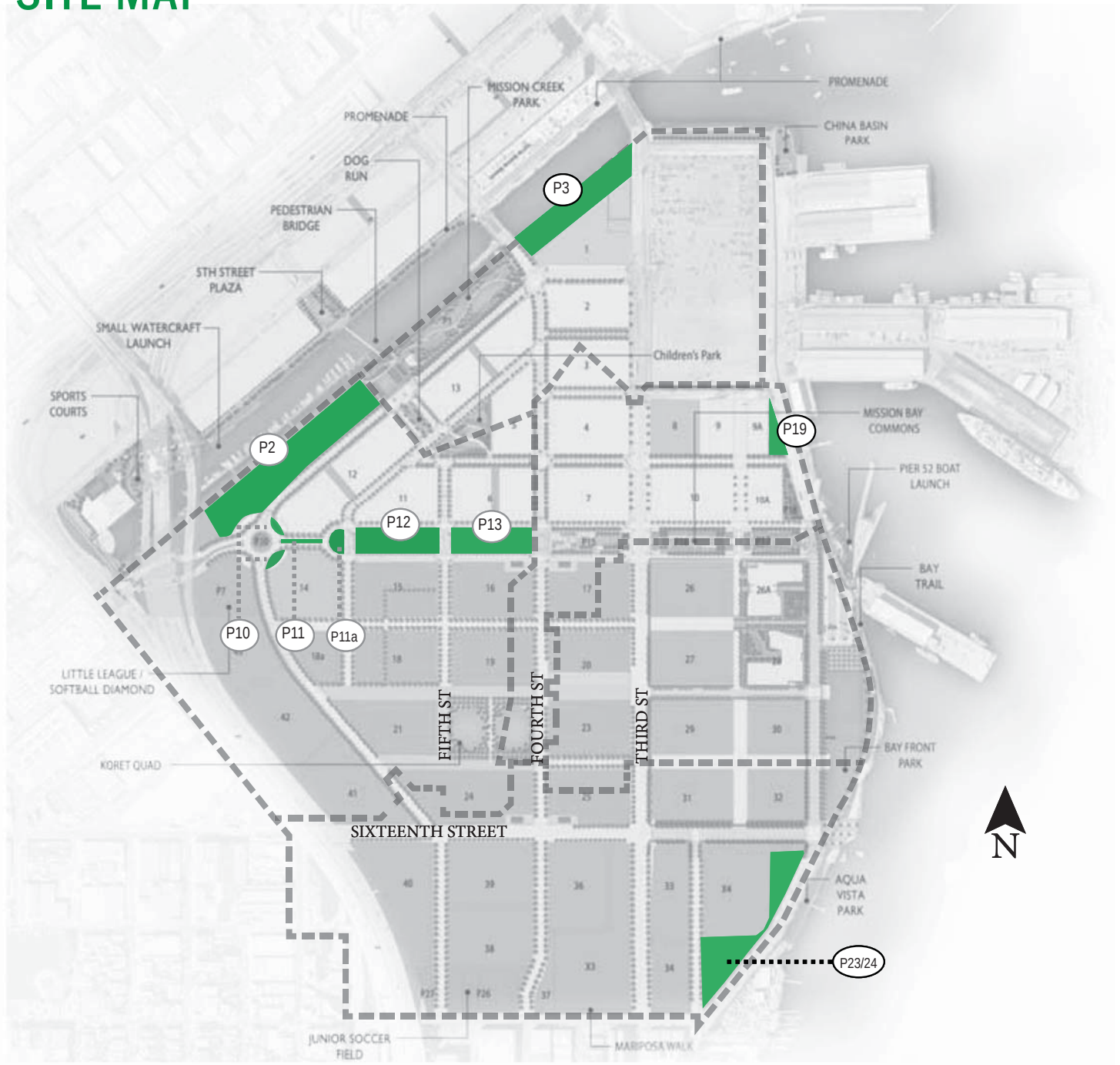
This manual is intended to be the repository for all maintenance materials for current and future BMPs that are built to provide post-construction stormwater control for the public right-of-way in Designated Open Space within the Mission Bay South Redevelopment Area (Development Zone). The materials contained herein will set forth the areas of maintenance responsibility for both the San Francisco Public Utilities Commission (SFPUC) and the San Francisco Office of Community Investment and Infrastructure (OCII), the Successor Agency to the San Francisco Redevelopment Agency. Additionally, these materials will be considered the guiding documents describing the types and intervals of inspection and maintenance required.

As new facilities are proposed and constructed within the Development Zone the SFPUC's Urban Watershed Management Program (UWMP) staff will develop the appropriate maintenance materials required for each new Green Infrastructure facility, tailored to the specific design and characteristics of each installation. These new materials will be added to this manual as they become available.

Mission Bay:

GREEN INFRASTRUCTURE

SITE MAP



Maintenance Responsibility Table for Typical BMP Components

Responsible Party	Maintenance Category	Frequency	Maintenance Activities	BMP Component
Successor Agency	<u>(PM) Typical / Preventative Maintenance</u> <i>PM is a set of maintenance activities performed on Green Infrastructure at predetermined intervals or according to prescribed criteria before the occurrence of a failure. These activities are intended to protect the installation, reduce the probability of failure and prevent or eliminate the degradation of the functions of the installation.</i>	Monthly	Irrigate, Prune &Trim	Planting
			Remove Weeds and Litter	Planting and Mulch
			Spot Mulch	Mulch
		Semi-Annually	Clean obstructing debris & sediment	Underdrain and cleanouts
				Inlet structure
				Splash pad / forebay
				Overflow structure
				Overflow pipe
				Sand trap
				Low flow channel
	<u>(RM) Remedial Maintenance</u> <i>RM is performed as required, on a scheduled or unscheduled basis in order to keep the installation in proper operating condition. This maintenance consists of a set of activities that are performed to eliminate an identified source of potential failure before that failure occurs. A type of remedial maintenance is condition-based predictive maintenance, which depends on continuous or periodic condition monitoring of the installation to detect and identify the signs of potential failure.</i>	Annually	Replace periodic dead plants	Planting
			Re-mulch	Mulch
			Shallow Aeration / Tilling	Soil media
			Snake or jet pipe	Underdrain, cleanouts & overflow
			Deep aeration	Soil media
			Replace missing or eroded material	Soil media and mulch
			Re-level if unwanted ponding occurs	Low flow channel and Splash pad / forebay
SFPUC	<u>(CM) Corrective Maintenance</u> <i>CM can be defined as the maintenance which is required when a portion or component of an installation begins to fail or has failed. Corrective maintenance keeps the installation in working order, or corrects a failure of a component of the installation that has occurred or is in the process of occurring. This activity may consist of repair, restoration or replacement of individual components of the installation, not the entire installation. A type of corrective maintenance is Emergency Maintenance- corrective maintenance carried out as fast as possible in order to bring failed components of an installation back to a safe and operationally efficient condition.</i>	As-Needed	Repair broken pipe	Overflow pipe and Underdrain and cleanouts
			Repair damaged frame and/or grate	Inlet structure and sand trap
				Overflow structure
			Repair concrete chips and cracks	Inlet structure
				Overflow structure
				Sand trap and Check dam
			Remove & replace clogged material	Aggregate rock storage layer
			Repair tears, cracks or holes	Impermeable liner
	<u>(R&R) Replacement and Rehabilitation</u> <i>R&R is the reconstruction and replacement action performed on an installation after the occurrence of a failure of the entire installation. The goal of R&R is to rebuild the installation to its original condition and reestablish the designed performance levels of the installation. A type of R&R is breakdown maintenance, which is maintenance performed after the occurrence of an advanced catastrophic failure of the entire installation. R&R is different from Corrective Maintenance in that its activities affect the entire installation, not just components of the installation.</i>	As-Needed	Re-level channel	Low flow channel
			Re-level concrete pad	Splash pad / forebay
			Replant entire system	Planting
			Excavate & replace entire component	Soil media
				Check dam
				Aggregate rock storage layer
				Impermeable liner
				Underdrain and cleanouts
				Inlet structure
				Overflow structure
				Overflow pipe
				Sand trap

Mission Bay - TYPICAL BMP Components (see Diagram 1)

BMP Component	Definition	Maintenance Activities
Planting	Location specific native plant species that are selected for their resistance to inundation and drought conditions and provide evapotranspiration and pollutant uptake to improve the quality and reduce the quantity of stormwater discharged to nearby receiving waters.	Irrigate, trim, prune, replace dead plants, replant if system failure
Mulch	A layer of organic or inorganic materials applied to the surface of a BMP to maintain soil moisture, reduce weed growth and reduce soil compaction. Organic mulches have the ability to remove pollutants and add nutrients to the soil as the mulch decomposes.	Spot mulch, re-mulch
Soil media	An engineered soil material designed to provide a long-term permeability rate capable of infiltrating 5" of runoff per hour and maintain sufficient moisture content to promote healthy plant growth. This media consists of approximately 60-70% sand and 30-40% compost.	Shallow aeration and tilling, deep aeration, excavate and replace media,
Check dam (concrete, stone, earthen, etc.)	Structures built perpendicular to the flow path in a BMP that are designed to slow water traveling through the BMP and encourage ponding. Check dams are also used in areas with steep grades to promote infiltration.	Repair chips & cracks (concrete), re-grade (stone or soil), remove & replace failed structure
Aggregate rock storage layer / drain rock	A layer of crushed rock located under the soil media that provides drainage or storage space for infiltrated runoff. This component usually consists of multiple layers of progressively smaller aggregate size to inhibit clogging and the migration of fines from the soil media layer above.	Remove & replace clogged surface, excavate & replace entire layer
Impermeable liner (membrane)	A waterproof plastic sheeting material that is used to seal off the bottom of a BMP to inhibit infiltration. Impermeable liners are required for areas of known soil contamination to eliminate migration of contaminants into groundwater or adjacent waterways.	Repair tears, cracks or holes, excavate & replace entire liner
Underdrain and cleanouts	A perforated piping system that collects treated stormwater that has percolated through the BMP soil media and aggregate layers and conveys this water to a nearby outlet structure. Clean outs are vertical pipes that provide a location to access the undrain for maintenance.	Clear obstructing debris & snake or jet pipe, repair broken pipe, excavate & replace entire underdrain system
Inlet structure / grates	For the BMPs that are receiving concentrated flows from the pump stations or piping collection systems, this is the structure that delivers those flows to the BMP. This structure can take the form of a bubbler or riser type structure.	Clean debris & sediment from grates & sump, repair damaged grate & frame, replace damaged grate & frame, repair chips & cracks, excavate and replace structure
Splash pad / forebay (stone or concrete)	These structures prevent erosion to the soil at the point where water enters the BMP and help to distribute concentrated flows. These structures are located directly adjacent to the inlet point- whether a curb cut or an inlet structure.	Clear obstructing debris & sediment, replace missing or eroded rip rap, re-level concrete pad
Overflow structure (w/hood) / grates	These structures collect stormwater that rises above the designed ponding depth and directs it to the storm drain system. Hoods and grates prevent debris from entering the structure an associated piping system.	Clean obstructing debris & sediment from grates & sump, clean hood, repair or replace damaged grate & frame, repair chips & cracks, excavate and replace structure
Overflow pipe	This is the pipe between the overflow structure and the sand trap. It is analogous to the "lateral" in a sanitary sewer system.	snake or jet pipe, clear obstructing debris, repair broken pipe, excavate & replace pipe
Sand trap	Sand traps and sediment interceptors are designed to separate and retain sand, gravel and similar materials through the principle of gravity and flotation separation. The sand trap is required before any drain from a landscaped area connects to the sewer system.	Clean debris & sediment from grates & sump, repair damaged grate & frame, repair chips & cracks, excavate and replace structure
Low flow channel	An armored channel at low point of BMP with erosion mat, gravel, or rip rap that prevents soil erosion.	Clear obstructing debris & sediment, replace missing or eroded materials, re-level channel if unwanted ponding occurs
Structural curb for BMP only (gabion, concrete wall, etc.)	This is a wall that forms edge of BMP and supports adjacent structures such as paving or landscaping planters.	Repair chips & cracks, remove & replace failed structure
Proprietary BMPs (Filterra, etc.)	These are also known as high-rate filtration devices or tree-boxe filters that capture runoff from a street or other paved area and treat it through a pre-packaged, proprietary, engineered BMP.	Repair chips & cracks, remove & replace failed structure

Mission Bay - SPECIALIZED BMP Components (see Diagram 2)

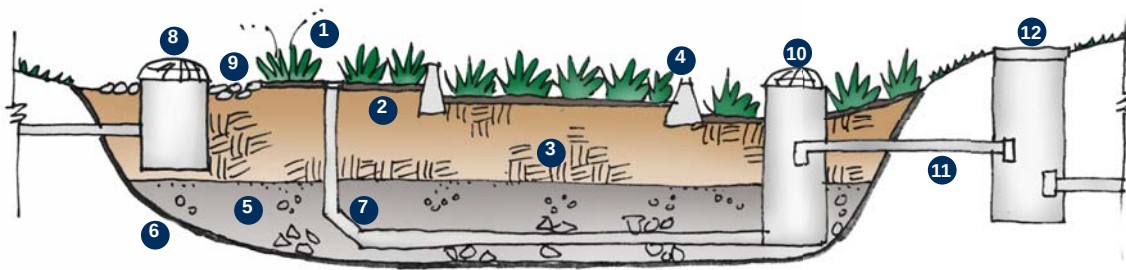
BMP Component	Definition	Maintenance Activities
Treatment Pump(s) (w/in PS)	Within PS#3 and #5 area treatment pumps sized to direct the treatment storm flow to the centralized BMPs located in adjacent parks. Access to these pumps is limited to the SFPUC.	Follow manufacturer maintenance protocols, check and adjust float switches, adjust pump flows, clear sediment & debris from intake, rebuild or replace pump
Inlet piping (Force main, distribution, or gravity)	This is an underground pipe network that directs water from the treatment pumps in the pumps stations to the BMPs.	Repair broken pipe, clear obstructing debris & snake or jet pipe, excavate & replace entire piping system
Distribution Vaults and Valving	These vaults and valves determine the quantity of stormwater directed to each BMP from the distribution force main.	Repair chips & cracks, check & adjust valve settings, replace or rehabilitate valves, repair damaged lid
Outlet piping (Collection, overflow, discharge, etc.)	This piping system collects treated overflow and directs it to the stormwater drainage system or outfall via gravity.	Repair broken pipe, clear obstructing debris & snake or jet pipe, excavate & replace entire piping system
Lift Station (separate structure)	This is a small pump located in a manhole structure in the ROW that pumps stormwater collected by the stormwdrains up to a BMP.	Follow manufacturer maintenance protocols, check and adjust float switches, clear sediment & debris from wet well, rebuild or replace pump

Mission Bay:

TYPICAL AND SPECIALIZED BMP COMPONENTS

DIAGRAM 1

Typical Bio-Retention Schematic

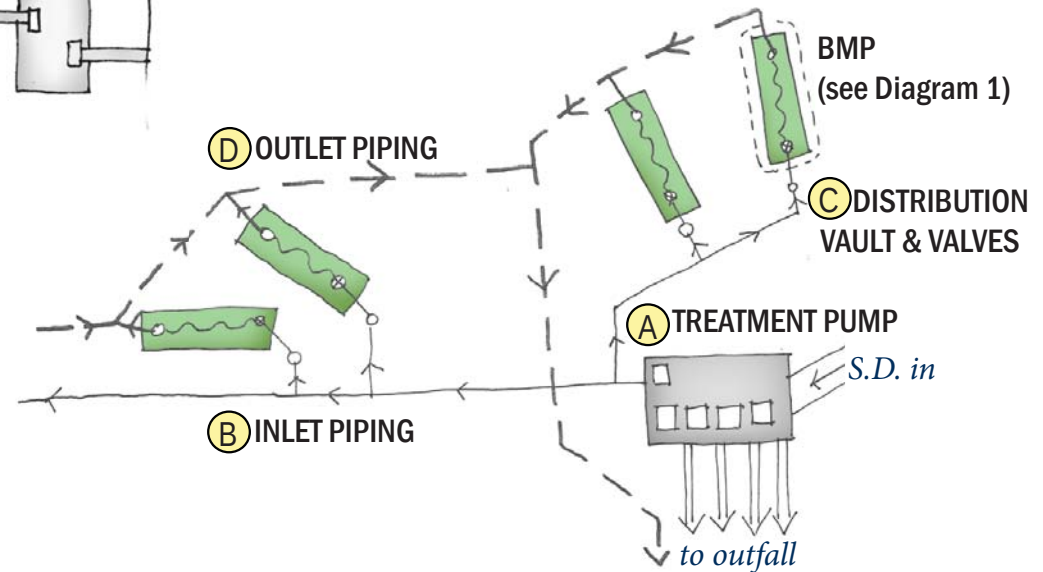


Typical BMP Components

- | | |
|-----------------|-----------------------|
| 1 Planting | 7 Underdrain |
| 2 Mulch | 8 Inlet structure |
| 3 Soil media | 9 Splash pad |
| 4 Check dam | 10 Overflow structure |
| 5 Storage layer | 11 Overflow pipe |
| 6 Liner | 12 Sand trap |

DIAGRAM 2

Specialized Bio-retention Schematic



Landscape Maintenance Task Characterization

Typical / Preventative Maintenance (PM) Proactive

PM is a set of maintenance activities performed on Green Infrastructure at predetermined intervals or according to prescribed criteria **before** the occurrence of a failure. These activities are intended to protect the installation, reduce the probability of failure and prevent or eliminate the degradation of the functions of the installation.

Examples of Typical PM Maintenance Tasks

- Regularly water during the first three months as vegetation establishes roots.
- Develop and follow an Integrated Pest Management plan.
- Trim vegetation as needed to maintain desired appearance.
- Prune vegetation that inhibits line of sight at intersections.
- Remove and dispose of trash and debris from planter area.
- Remove invasive/noxious weeds.
- Remove and dispose of any pollutants that accumulate (identify and control pollutant source).
- Remove debris and sediment from inlets and outlets to avoid clogging.
- Add mulch to bare areas (spot mulching).

Remedial Maintenance Proactive

Remedial maintenance is performed as required, on a scheduled or unscheduled basis in order to keep the installation in proper operating condition. This maintenance consists of a set of activities that are performed to eliminate an identified source of potential failure **before** that failure occurs. A type of remedial maintenance is condition-based predictive maintenance, which depends on continuous or periodic condition monitoring of the installation to detect and identify the signs of potential failure.

Examples of Remedial Maintenance Tasks

- Replace individual dead or diseased plants.
- Minor re-grading of soil if erosion, scouring or significant settling has occurred.
- Re-mulch planter.
- Prune or remove vegetation that interferes with facility O&M.
- Remove sediment and silt accumulations.
- Test and ensure proper irrigation system function and sprinkler head adjustment (at end of rainy season).
- Repair minor irrigation system defects.
- Repair any rodent borrowing damage and eradicate rodents.
- Surface aeration of soil to improve drainage and reduce ponding if drain times extend beyond 48 hours.
- Snake underdrain to clear blockages and/or improve drain time.

Corrective Maintenance Reactive

Corrective maintenance can be defined as the maintenance which is required when a portion or component of an installation begins to fail or has failed. Corrective maintenance keeps the installation in working order, or corrects a failure of a component of the installation that has occurred or is in the process of occurring. This activity may consist of repair, restoration or replacement of individual components of the installation, not the entire installation. A type of corrective maintenance is Emergency Maintenance- corrective maintenance carried out as fast as possible in order to bring failed components of an installation back to a safe and operationally efficient condition.

In this type of maintenance, actions such as repair, replacement, or restoration of a component will be carried out **after** the occurrence of a failure or in order to eliminate the source of this failure or reduce the frequency of its occurrence and put an installation into a state in which it can continue to perform its required function.

Examples of Corrective Maintenance Tasks

- Repair or correct any initial drainage, erosion and inlet/outlet problems.
- Replace large areas of dead or diseased plants.
- Major re-grading of soil if erosion, scouring or significant settling has occurred.
- Full depth aeration to improve drainage and reduce ponding if drain times extend beyond 72 hours, or if repeated surface aeration fails to solve ponding issues.
- Amend soil, till and replant if drainage failure continues after previous full depth aeration attempts.

Reconstruction and Replacement (R&R) Reactive

R&R is the reconstruction and replacement action performed on an installation after the occurrence of a failure of the entire installation. The goal of R&R is to rebuild the installation to its original condition and reestablish the designed performance levels of the installation. A type of R&R is breakdown maintenance, which is maintenance performed after the occurrence of an advanced catastrophic failure of the entire installation. R&R is different from Corrective Maintenance in that its activities affect the entire installation, not just components of the installation.

Examples of R&R Tasks

Reconstruct Entire Installation, including:

- Excavate, remove and dispose of all soil medium and plantings (unless plants are in good condition and can be transplanted).
- Remove and replace underdrain piping and drain rock.
- Remove and replace irrigation system that interferes with reconstruction.
- Place and grade new soil medium.
- Install new plantings (or reinstall transplanted plants).
- Install new mulch.

Mission Bay Parks with Green Infrastructure Components

Directions for Adding New Parks to This Agreement

As new parks with Green Infrastructure are developed throughout Mission Bay, the appropriate maintenance documents pertaining to those new parks must be created and memorialized in this manual.

Each park will require a custom designed maintenance plan and an inspection checklist to ensure proper function and long-term performance of the Green Infrastructure components. Once these materials have been developed, they must be added to this manual. Each park that is added will require the following materials:

- a cover sheet clearly identifying the park by number,
- a site plan of the installation with the limit of the BMP clearly shown,
- cross section details of the major BMP components (unless those details are included on the site plan),
- a maintenance plan and schedule
- a maintenance inspection checklist

Park P10

Mission Bay Park P10 Suggested Maintenance Plan:

Typical Inspection Activities for Biofiltration Planters

Activity	Schedule
- After first storm event, inspect for proper drainage, erosion, and proper inlet and outlet functioning. - Monitor vegetation to ensure successful root establishment.	Post-construction
- Monitor trash accumulation. - Monitor for proper drainage time (in basin and cleanouts). - Monitor for signs of pollutants. - Inspect for weed growth.	Monthly
- Inspect for erosion and significant settling that changes design grades. - Inspect for clogging of inlet and outlet structures. - Inspect for vandalism and vegetation damage. - Monitor for sediment accumulation in planter and outlet structure. - Inspect for bare soil spots/mulching needs.	Semi-annually (beginning and end of rainy season)
- Inspect for vegetation interference with facility O&M. - Monitor vegetation growth so it does not inhibit visibility at intersections (Line of sight). - Inspect irrigation system for proper operation and broken/missing components (at end of rainy season). - Inspect for rodent burrowing and related damage.	Annually

Typical Maintenance Activities for Biofiltration Planters

Activity	Schedule
- Repair or correct any initial drainage, erosion and inlet/outlet problems. - Regularly water during the first three months as vegetation establishes roots. - Develop and follow an IPM program. (Integrated Pest Management)	Post-construction
- Trim vegetation as needed to maintain desired appearance. - Remove and dispose of trash and debris from planter area. - Remove invasive/noxious weeds. - Remove and dispose of any pollutants that accumulate (identify and control pollutant source).	Monthly or as needed
- Remove debris and sediment from inlets and outlets to avoid clogging. - Add mulch to bare areas.	Semi-annually (beginning and end of rainy season)
- Replace dead or diseased plants. - Re-grade or replace soil surface if erosion, scouring or significant settling has occurred. - Re-grade or re-level forebay if settlement and unwanted ponding occurs. - Prune vegetation that inhibits line of sight at intersections. - Prune or remove vegetation that interferes with facility O&M. - Remove sediment and silt accumulations. - Re-Mulch (may be extended beyond annually to as-needed) - Test and ensure proper irrigation system function and sprinkler head adjustment (at end of rainy season). - Repair any rodent borrowing damage and eradicate rodents.	Annually
- Till soil and/or aerate soil if the system does not drain within the designed drain time. (Shallow tilling/aeration) - Snake u-drain to clear blockages and/or improve drain time.	As-needed (expected to be 3 to 5 years)
- Full depth aeration if the system continues to fail to drain within the designed drain time after shallow aeration. (Deep aeration) - Excavate and replace soil media and replant if the system becomes clogged and chronically fails to drain.	As-needed (expected to be 5 to 15 years)



Submit completed form to: Urban Watershed Management Program
 ATTN: Sarah Minick
 525 Golden Gate Ave, 11th Floor
 SAN FRANCISCO, CA 94102

Maintenance Inspection Checklist

BIOFILTRATION

Inspection date: _____ Address: _____ Block/Lot # _____ Installation date: _____

Inspected by: Name: _____ Phone: _____ ☐ Property owner ☐ Site manager ☐ Contractor ☐ Other: _____

INSTRUCTIONS: Mark all boxes that are not X'd out with S or U, where S = satisfactory (no maintenance required), U = unsatisfactory (maintenance required). See Maintenance Plan for more detailed descriptions of condition requiring maintenance and action required.

	Condition requiring maintenance	Inspection schedule			If U: indicate action taken / action planned (and include date) (Use A, B, or C to indicate to which inspection comments refer)
		(A) Before rainy season (Aug 15-Sep 15)	(B) During rainy season (Oct 15-Apr 15)	(C) End of rainy season (Apr 15-May 15)	
1	Unpleasant odors	X			
2	Drain time > 48 hrs (ponded water)	X	~ 48 hrs after storm	X	
3	Excessive trash / debris, dumping				
4	Visible surface contaminants / pollution				
5	Vandalism				
6	Unauthorized Modifications		X	X	
7	Excessive Weed Growth		X		

	Condition requiring maintenance	Inspection schedule			If U: indicate action taken / action planned (and include date) (Use A, B, or C to indicate to which inspection comments refer)
		(A) Before rainy season (Aug 15-Sep 15)	(B) During rainy season (Oct 15-Apr 15)	(C) End of rainy season (Apr 15-May 15)	
8	Sediment accumulation at curb cut / forebay	If surrounding areas are irrigated			
9	Erosion at inlet, outlet or overflow	If surrounding areas are irrigated			
10	Inlet, outlet or overflow debris blockage	If surrounding areas are irrigated			
11	Irrigation system (if applicable)		X	X	
12	Dead or diseased plants / bare patches		X		
13	Mulch – large bare spots / eroded mulch areas		X		
14	Vegetation blocking line of sight at roadway		X	X	
15	Vegetation blocking in-flow at curb cut		X	X	
16	Vegetation blocking O&M of other components		X	X	
17	Structural damage (planter or outlet structure)		X	X	
18	Rodent Damage / Borrowing		X	X	
19	Mosquitoes / larvae observed*	X			

*If mosquitos or mosquito larvae are observed, please contact the San Francisco Environmental Health Vector Control Program at (415) 252-3806, or email EnvHealth.DPH@sfdph.org.