



CITY OF
**PALO
ALTO**

Stormwater Management Oversight Committee

Thursday, December 2, 2021
1 pm to 3 pm
Special Meeting

*****BY IN PERSON and VIRTUAL TELECONFERENCE *****

<https://zoom.us/join> Meeting ID: 990 9847 5635 Phone: 1(669)9006833

Pursuant to the provisions of California Governor's Executive Order N-29-20, issued on March 17, 2020, to prevent the spread of Covid-19, this meeting will be held by virtual teleconference only, with no physical location.

Agenda posted in accordance Government Code Section 54954.2(a) or 54956.

PUBLIC COMMENT

Members of the public who wish to participate by computer or phone can find the instructions at the end of this agenda. To ensure participation in a particular item, we suggest calling in or connecting online 15 minutes before the item you wish to speak on.

Call to Order (5 min)

Oral Communications (5 min)

Members of the public may speak to any item NOT on the agenda. A reasonable time restriction may be imposed at the discretion of the Committee Chair.

Old Business (5 min)

1. Approval of Minutes from the October 7, 2021 Stormwater Management Oversight Committee Meeting (5 min)

New Business (75 min)

1. Adoption of a Resolution Authorizing Use of Teleconferencing for Stormwater Management Oversight Committee Meetings During Covid-19 State of Emergency (5 min)
2. Staff Update Stormwater Management Fund Financial Review (15 min)
3. Staff Update GSI Guidance and Maintenance Manual (45 min)

4. Staff Update on Rain Barrel Rebate Program (10 min)

Committee Member Comments and Announcements (10 min)

Tentative Agenda Items for Future Meetings and Review Action Items (5 min)

Adjournment

AMERICANS WITH DISABILITY ACT (ADA)

Persons with disabilities who require auxiliary aids or services in using City facilities, services or programs or who would like information on the City's compliance with the Americans with Disabilities Act (ADA) of 1990, may contact (650) 329-2550 (Voice) 24 hours in advance.

Public Comment Instructions

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2. Spoken public comments using a computer will be accepted through the teleconference meeting. To address the Council, click on the link below to access a Zoom-based meeting. Please read the following instructions carefully.
 - A. You may download the Zoom client or connect to the meeting in browser. If using your browser, make sure you are using a current, up-to-date browser: Chrome 30+, Firefox 27+, Microsoft Edge 12+, Safari 7+. Certain functionality may be disabled in older browsers including Internet Explorer.
 - B. You may be asked to enter an email address and name. We request that you identify yourself by name as this will be visible online and will be used to notify you that it is your turn to speak.
 - C. When you wish to speak on an Agenda Item, click on "raise hand." The Clerk will activate and unmute speakers in turn. Speakers will be notified shortly before they are called to speak. When called, please limit your remarks to the time limit allotted.
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Stormwater Management Oversight Committee

Minutes

Thursday, October 7, 2021
1 pm to 3 pm
Special Meeting

*****BY VIRTUAL TELECONFERENCE *****

<https://zoom.us/join> Meeting ID: 990 9847 5635 Phone: 1(669)9006833

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Agenda posted in accordance Government Code Section 54954.2(a) or 54956.

Committee Members Present: Catherine Perman, David Bower, Hal Mickelson, Dena Mossar, Marilyn Keller, Bob Wenzlau

Committee Members Absent: Ron Owes

Staff Present:

Karin North, Pam Boyle Rodriguez, Michel Jeremias, Vicki Thai, Rajeev Hada, Jamie Perez, Loretta Olmos

PUBLIC COMMENT

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Call to Order (5 min)

- Mickelson: Call to order at 1:06 PM.

Oral Communications (5 min)

Members of the public may speak to any item NOT on the agenda. A reasonable time restriction may be imposed at the discretion of the Committee Chair.

- No public comment.

Old Business (5 min)

1. Approval of Minutes from the June 3, 2021 Stormwater Management Oversight Committee Meeting (5 min)
 - A. Keller: Two minor corrections.
 - B. Mossar: Move to approve minutes with changes incorporated.
 - i. Seconded by Mickelson.
 - ii. No objections. Minutes approved.

New Business (90 min)

2. Staff Update on CIP Projects (25 min)
 - A. Jeremias: Review of current 2017 Ballot Measure CIP projects and progress on upcoming projects.
 - B. Loma Verde Ave project completed and three other projects (Corporation Way & E Bayshore, W Bayshore & Fabian Capacity Upgrades, W Bayshore & Fabian Pump Station) currently in progress. Planning and prioritization of projects affected by location and section of the storm drain system. Construction may be completed in segments for these projects. Additional outside factors include funding and construction costs.
 - a. This is a pay-as-you-go project. We believe we will be able to fund these projects but it is a matter of timing and it may extend beyond the 15 years of the ballot measure.
 - b. We have borrowed money in the past and are paying that back in the current ballot measure. Some constraints have to do with staff capacity, don't have enough staff to complete all the projects at once. Projects are staggered.
 - C. Jeremias: Overview and highlight of recurring projects are included in the Storm Drainage System Replacement and Rehabilitation Project. Projects to improve flow to outfalls, pump stations, etc. in a rainfall event.
 - D. Hada: Update on Corporation Way and West Bayshore Road Pump Stations and System Upgrades including acquiring easement from Google to install pump station facilities on their property for these projects.
 - a. Comment regarding getting easement from Google it is not that unusual, depends on the project. If project is located in

public right-of-way, no easement is required. For some infrastructure projects that affect adjacent properties, the City has acquired temporary easements in the past. It happens with Utilities more often for example with transformers located on private properties because they can't be out in the street.

- b. Pump stations, and all City systems and facilities, are designed for a 10-year storm. A 100-year storm and when we talk about sea level rise, that is beyond the capacity of the system. Since it's a wet utility, don't have to worry about flooding as much. The components of this facility will be elevated and raised to meet the elements of 100-year flood event. As far as actual pump capacity, we are adding redundancy in these pumps. For example, assuming sea level rise and/or a flooding event were to happen, these pumps would run continuously and would be alternated on and off.
 - c. Adobe Creek appears to drain into the basin that has tidal gates. With climate change and sea level rise, we're talking about a basin that is already separated or controlled against sea level rise. Could you clarify the hydraulic model of Adobe Creek given setting it drains into? It takes in a lot of flows from Palo Alto and probably Mountain View and other creeks and drains into the flood basin. There's a separate project with the Army Corps and Valley Water related to sea level rise and potential levee alternative designs to protect flood basin from flooding and therefore protecting neighbors in Palo Alto. For Adobe Creek, during typical storm event, flows drain into basin, basin has shut tide gates that keep bay waters out. When bay water recedes during low tide, tide gates naturally through gravity allow flows collected to drain into the bay.
- E. Thai: Overview of and project updates for Storm Drain Replacement and Rehabilitation, 13 different locations for pipe replacements and lining. The main purpose of project is to preserve and improve integrity of storm system and keep it running. Because project is not centrally located, planning methods for public outreach and communication. In process of approving construction contracts.
- a. Anytime you cut into the street a street cut fee is required. Based on the trench width of project.
 - b. Jeremias: For some projects with street resurfacing, we may be able to get by with a temporary asphalt pavement on top of the trench that would last up to 2-3 years, then the streets group would use the money we give to them to restore the entire width of the street versus us restoring the trench. The

street cut fee has number of factors including we might be cutting into a recently paved road or cutting into a road to be resurfaced entirely in the future, and those fees from us and other groups will go into paying for those restorations.

c. The project is funded by the stormwater fund. The Stormwater Management Fund is broken into different pieces. This is about a third of the ballot measure funding for rehab/replacement. The money accumulates and we spend it when we have enough funds or as needed for projects that are higher priority.

d. Budget review will occur in a future meeting

F. North: City Council decided all meetings could be virtual until January 1st. Potential for SWMOC to continue meeting virtually in the future.

a. Mickelson: Are there any objections to continuing to meet on a virtual basis in the future?

b. No objections.

3. Staff Update on GSI Implementation Project and Field Visit Site Findings (30 min)

A. Boyle Rodriguez: We have kicked off implementation of the GSI Plan. Overview of work with consultants and next steps for GSI Plan for next few months.

B. Havens: Introduction of Geosyntec consulting team working with the City.

C. Constantinescu: Introduction of LWA consulting team working with the City.

D. Havens: Overview of GSI types and presentation of visuals of GSI installations and inspirations.

a. Mickelson: In gray model, you are capturing the water to put it in system to be applied to gray water uses; in green stormwater it's going back into the soil and potentially back in the stormwater control system we have?

b. Havens: Yes, typically we think of gray stormwater infrastructure as the pipe network that takes water off the street that lets it flow away from areas that could flood. Typically no capture for water reuse or treatment, sometimes there will be gray storage or detention to allow for some flood management. With green stormwater infrastructure, there is vegetation and soil focusing on the water quality and benefits. The water is filtered through the process to remove oil or

other urban pollutants.

- c. Mickelson: If we made no changes to the way we thought about this 10 years ago, did we have a gray system?
 - d. Havens: May have been some GSI pre-10 years ago but there's been quite a bit more implemented over the past 10 years and hopefully still more to come.
 - e. North: Yes, previous traditional method was through gray water systems. Pipes underground with capture systems getting water out of streets to avoid flooding and ponding. Now with new regulatory requirements, we need to remove pollutants out of the water.
- E. Havens: Overview of tasks in progress as part of 3-year GSI Plan implementation project scope.
- a. Wenzlau: Hope that as deliverables can be shared in private sector projects to help/benefit commercial and residential development.
 - b. Boyle Rodriguez: Yes, we are looking at sharing handbook and maintenance monitoring manual after we're able to test it out with City projects. If it can be used it will result in more standardization of GSI measures.
- F. Havens: Overview of GSI measures visited by City staff and consultants for evaluation and lessons learned. Lessons Learned included issues related to bioretention design, other facility design such as impractical access and elevation issues, and bioretention/bioswales.
- G. Constantinescu: Maintenance done by crews that maintain other areas of the City. Recommend more training provided or that a dedicated crew established for the maintenance of GSI areas because of differences in maintenance requirements/practices for these areas. Maintenance is not a one-size-fits-all for GSI areas, working to address this in the Maintenance and Monitoring Manual.
- a. Wenzlau: Always want City to be aware of where the plumes are because of concern for groundwater pollution. For performance measures, a metric presenting how many gallons or what percentage of the stormwater we're actually accomplishing through GSI would be helpful. Encourage overall generation of GSI metrics that could be shared.
 - b. Boyle Rodriguez: Will be sharing work on GSI specifications in December. Started working on flow charts to help staff and consultants identify where GSI can be installed and what type of measure might be best implemented. Talked about

creating maps to identify different criteria about the City including where groundwater contaminated plumes are, trying to get more detailed information about soil type where we can infiltrate to groundwater. Will share that with you in December.

- c. Havens: Yes, we could develop draft maps by then.
- d. Mossar: As you evaluate sites for future GSI, knowing how much water you're retaining and getting back into the ground is an important factor. For example, a green roof is a small area that collects water but another facility may collect from a much larger drainage area. Per Bob's point, we need to know the cost associated with capturing the water to know which strategy is the most cost effective.
- e. Boyle Rodriguez: Appreciate that point. We're looking at funding opportunities and methods to track costs but no data right now. Hope to have a much better sense of that in future.

4. Staff Update MRP Permit (25 min)

- A. Boyle Rodriguez: The current permit extended and draft of new permit recently came out for public review, released to cities for comment for a 60-day period. We will be providing comments in writing in collaboration with Santa Clara County in November. Hearing in February for permit adoption, effective July 2022. Proposed requirements may have significant resource impacts.
- B. Boyle Rodriguez: Overview of progress on current requirements and draft permit requirements for new/redevelopment and impervious surface impacts, enforceable trash reduction, and PCBs and mercury reduction.
 - a. The abatement falls upon the current owners. We would look at historical records to identify areas using PCBs in the past. Start sampling on surrounding street and if PCBs found, we talk to owners to obtain permission to sample on property. Based on results, submit those findings to the regional control board as needed who would issue a notice for abatement and come up with some type of remediation plan.
- C. Boyle Rodriguez: Overview of other requirements including bacteria controls, discharges associated with unsheltered populations, cost tracking, and asset management.
 - a. Permit can change until it's adopted. Once the permit is adopted in February that's when we can have a better idea for forecasting the financial and staffing impacts.

5. Rain Barrel Program (10 minutes)

A. Boyle Rodriguez: To make the program less complicated, worked on streamlining the program with this pilot. Entered into an agreement with Rain Water Solutions (RWS), company that sells rain barrels, to reduce price. Program is open to everyone and available to employees. Distribution event is planned for December 4th. Barrel is 50 gallons and made from 100% recycled plastic and is \$80 compared to \$134 on the Wayfair site.

a. Wenzlau: Bought one on Monday. Went through the Santa Clara Valley process to get qualified for the rebate. One thing to consider in the confirmation maybe, slightly confusing as to how to apply the purchase back to the rebate.

b. Boyle Rodriguez: We are working on steps to follow for clarity and will be posting those. Those will be sent out in the email.

Committee Member Comments and Announcements (10 min)

- Wenzlau: Overview of Neighbors Abroad project on Art and Sustainability with the idea that Palo Alto and our sister cities would partner with an artist. In Oaxaca we have an artist working on a project that speaks largely to themes of water. In Palo Alto, artists would work on murals. I wanted the Committee to be aware of this initiative. This could be another channel to introduce themes of green infrastructure.
 - Mickelson: So for this Committee, the objective is for us to have the awareness of this initiative?
 - Wenzlau: Yes, there isn't an ask at the moment. Information is important to be shared with staff and the Committee.
- Bower: Over the last few months with my reintroduction to the construction world, it is astounding how costs have increased. Important to be aware of this for the future.

Tentative Agenda Items for Future Meetings and Review Action Items (5 min)

- North: The next meeting is December 2nd and we are probably going to talk about the preliminary budget.
- Mickelson: The meeting is December 2nd from 1-3 PM. You can submit or add agenda items through email.

Adjournment

- Mickelson: Motion to adjourn?

- Bower motions, Wenzlau seconds.
- Meeting adjourned at 3:11 PM.

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DRAFT

NOT YET APPROVED

Resolution No. _____

Resolution Making Findings to Allow Teleconferenced Meetings Under California Government Code Section 54953(e)

R E C I T A L S

- A. California Government Code Section 54953(e) empowers local policy bodies to convene by teleconferencing technology during a proclaimed state of emergency under the State Emergency Services Act so long as certain conditions are met; and
- B. In March 2020, the Governor of the State of California proclaimed a state of emergency in California in connection with the Coronavirus Disease 2019 (“COVID-19”) pandemic, and that state of emergency remains in effect; and
- C. In February 2020, the Santa Clara County Director of Emergency Services and the Santa Clara County Health Officer declared a local emergency, which declarations were subsequently ratified and extended by the Santa Clara County Board of Supervisors, and those declarations also remain in effect; and
- D. On September 16, 2021, the Governor signed AB 361, a bill that amends the Brown Act to allow local policy bodies to continue to meet by teleconferencing during a state of emergency without complying with restrictions in State law that would otherwise apply, provided that the policy bodies make certain findings at least once every 30 days; and
- E. While federal, State, and local health officials emphasize the critical importance of vaccination and consistent mask-wearing to prevent the spread of COVID-19, the Santa Clara County Health Officer has issued at least one order, on August 2, 2021 (available online at [here](#)), that continues to recommend measures to promote outdoor activity, physical distancing and other social distancing measures, such as masking, in certain contexts; and
- F. The California Department of Industrial Relations Division of Occupational Safety and Health (“Cal/OSHA”) has promulgated Section 3205 of Title 8 of the California Code of Regulations, which requires most employers in California, including in the City, to train and instruct employees about measures that can decrease the spread of COVID-19, including physical distancing and other social distancing measures; and
- G. The Stormwater Management Oversight Committee has met remotely during the COVID-19 pandemic and can continue to do so in a manner that allows public participation and transparency while minimizing health risks to members, staff, and the public that would be present with in-person meetings while this emergency continues; now, therefore,

NOT YET APPROVED

The Stormwater Management Oversight Committee RESOLVES as follows:

1. As described above, the State of California remains in a state of emergency due to the COVID-19 pandemic. At this meeting, the Stormwater Management Oversight Committee has considered the circumstances of the state of emergency.
2. As described above, State and County officials continue to recommend measures to promote physical distancing and other social distancing measures, in some settings.

AND BE IT FURTHER RESOLVED, That for at least the next 30 days, meetings of the Stormwater Management Oversight Committee and its committees will occur using teleconferencing technology. Such meetings of the Stormwater Management Oversight Committee and its committees that occur using teleconferencing technology will provide an opportunity for any and all members of the public who wish to address the body and its committees and will otherwise occur in a manner that protects the statutory and constitutional rights of parties and the members of the public attending the meeting via teleconferencing; and, be it

FURTHER RESOLVED, That the Stormwater Management Oversight Committee staff liaison is directed to place a resolution substantially similar to this resolution on the agenda of a future meeting of the Stormwater Management Oversight Committee within the next 30 days. If the Stormwater Management Oversight Committee does not meet within the next 30 days, the staff liaison is directed to place a such resolution on the agenda of the immediately following meeting of the Stormwater Management Oversight Committee.

INTRODUCED AND PASSED:

AYES:

NOES:

ABSENT:

ABSTENTIONS:

ATTEST:

Staff Liaison

Chair of Stormwater Management Oversight Committee

NOT YET APPROVED

APPROVED AS TO FORM:

APPROVED:

City Attorney

Department Head

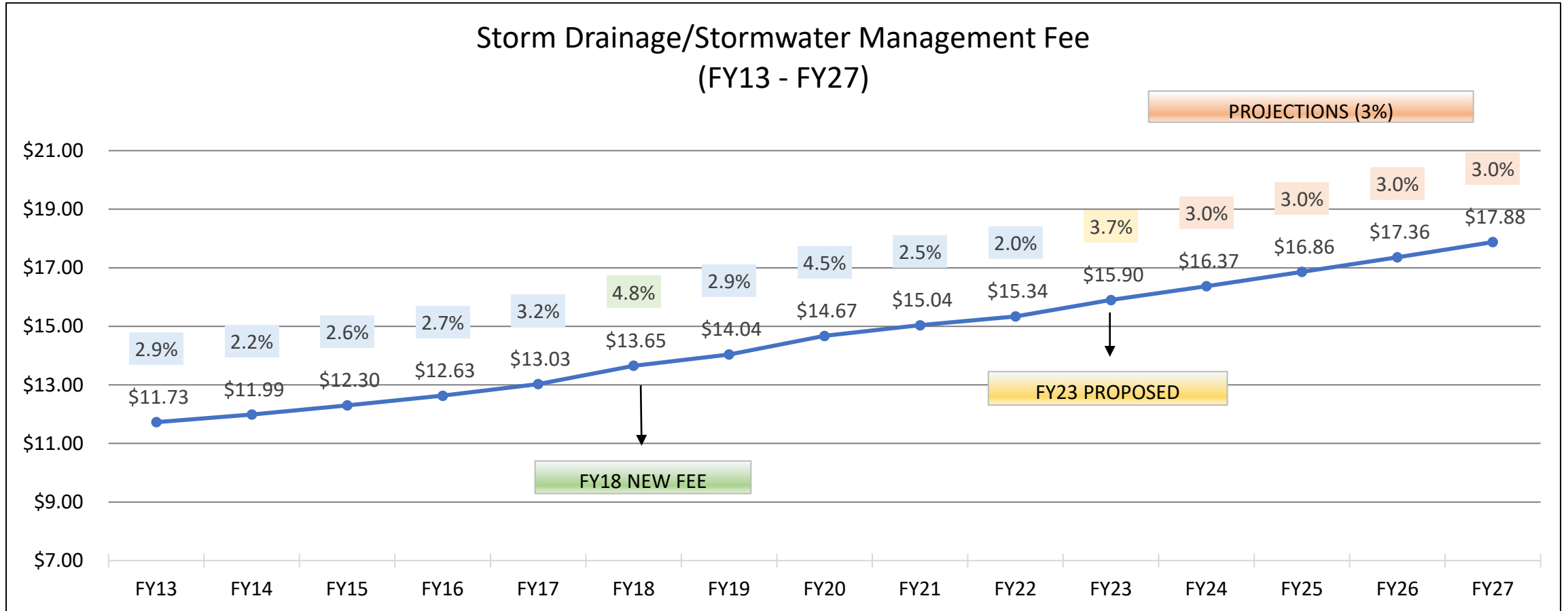


**STORMWATER
MANAGEMENT FUND**
Financial Review

DECEMBER 2, 2021

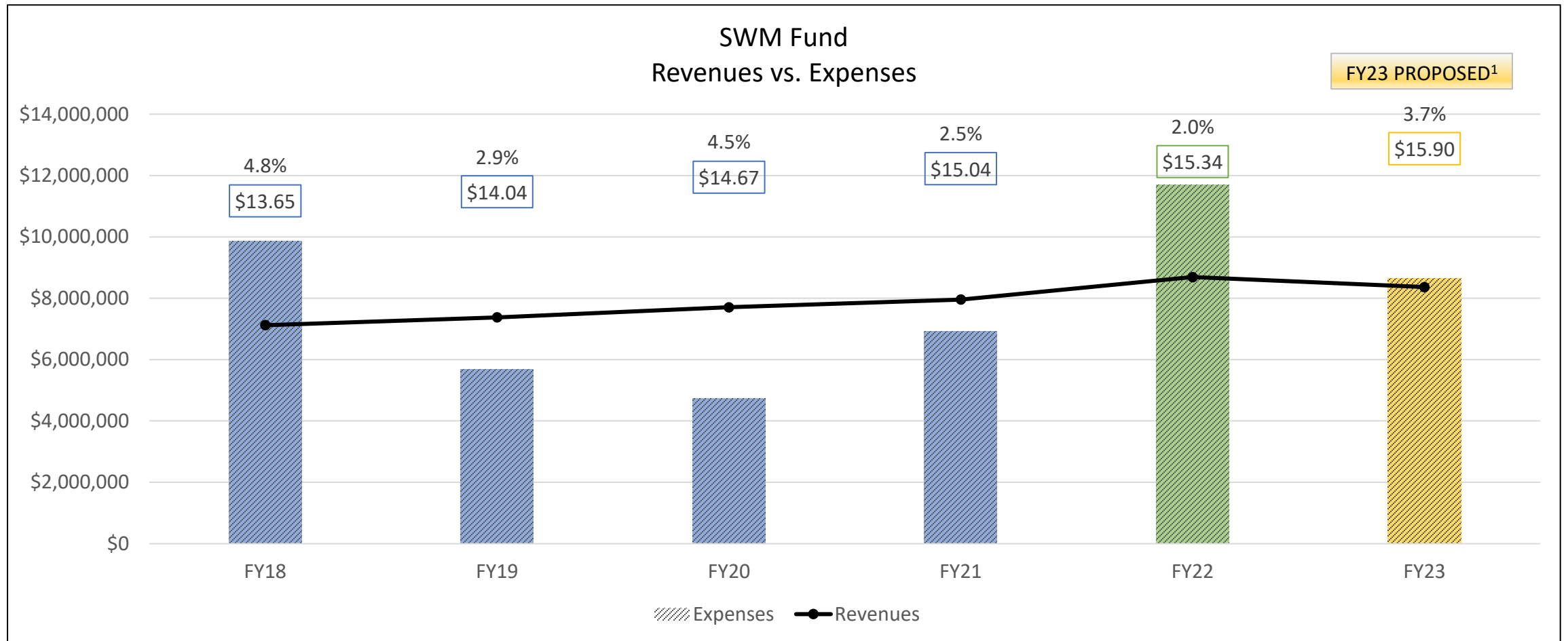
www.cityofpaloalto.org

FEE RATE HISTORY & PROJECTIONS



¹ FY23 Proposed fee rate is based on August-August 12-month CPI for SF Area and will be updated when the December-December rate is available.

REVENUES VS. EXPENSES



¹ FY23 Proposed figures are subject to change as estimates are refined and updated through the budget development process.

FY 2022 PLANNED CIP PROJECTS

Capital Improvement Project Program	FY 2021 Actuals	FY 2022 Budget
SD System Replacement & Rehabilitation (SD-06101)	375	4,798
Projects Identified from Ballot	2,844	9,179
Loma Verde Ave Trunk Line Improvements (#1, SD-19000)	2,150	2,329
Corporation Way System Upgrades & Pump Station (#2, SD-21000)	145	5,670
West Bayshore Road Pump Station (#4, SD-20000)	169	1,076
West Bayshore Road Trunk Line Improvements (#3, SD-23000)	5	104
Green Stormwater Infrastructure (SD-22001)¹		501
Trash Capture Device Installation (SD-22002)²		613

¹ Budget for subsequent years of Green Stormwater Infrastructure project (SD-22001) to be reviewed during FY23 budget process.

² Trash Capture Device Installation project (SD-22002) funded by Caltrans.



CITY OF
**PALO
ALTO**

***GSI IMPLEMENTATION
PROJECT UPDATE:
GSI HANDBOOK AND
MAINTENANCE AND MONITORING MANUAL***

Stormwater Management Oversight Committee Meeting

December 2, 2021





Agenda

1. GSI Handbook
 - a. Task Overview and Objective
 - b. Background Information
 - c. Proposed Handbook Outline
 - d. Schedule and Next Steps

2. Maintenance and Monitoring Manual
 - a. Task Overview and Objective
 - b. Background Information
 - c. Proposed Manual Outline
 - d. Schedule and Next Steps

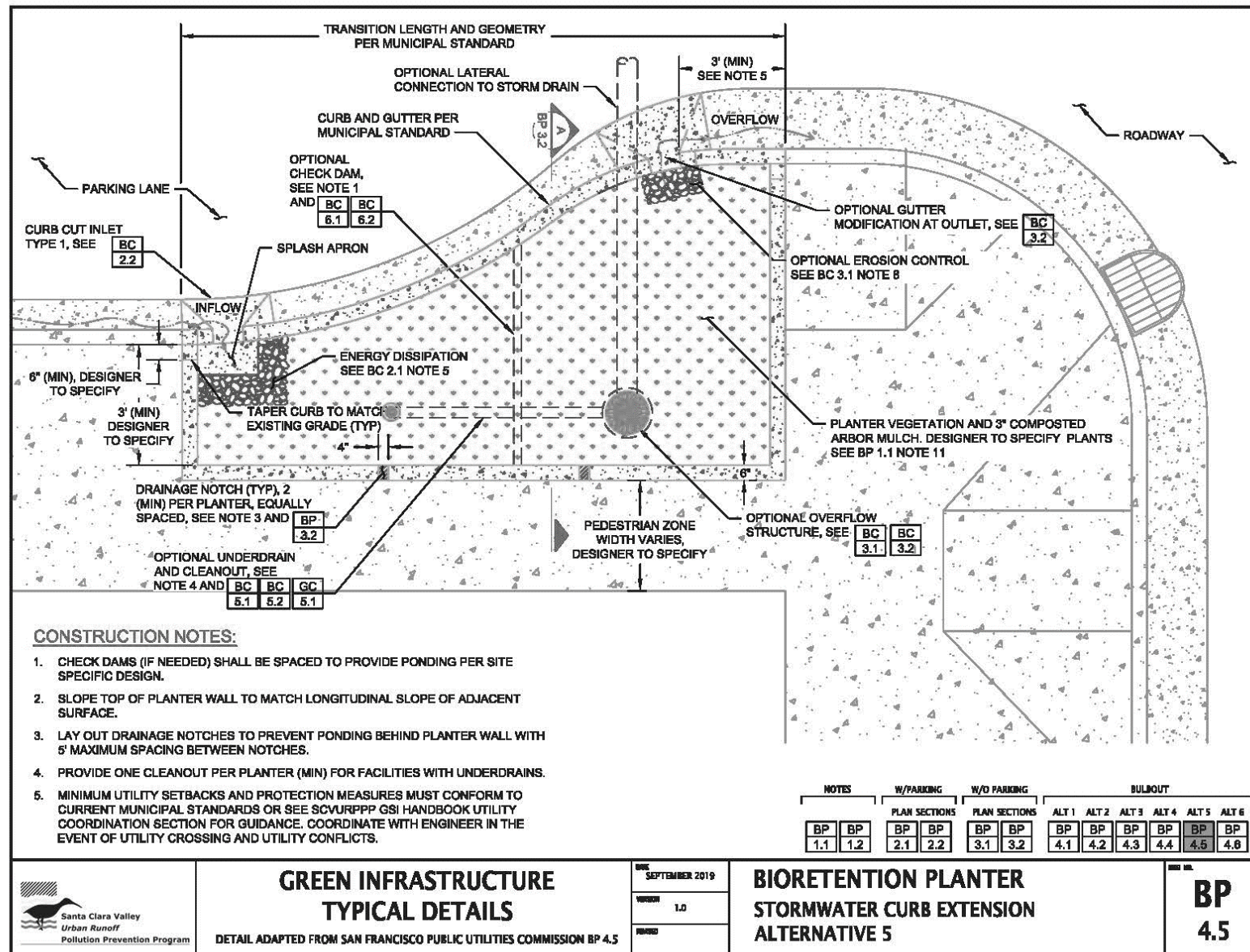


Palo Alto GSI Handbook

- GSI Measure Selection and Siting Tools
- City-specific GSI Guidance
- GSI Measure Details and Specifications
- GSI Design Checklist and Plan Check Review Checklist

Goal: Provide simplified, useable, City-specific guidance to assist City staff in GSI implementation

Typical Details



Specifications

DIVISION 32 – EXTERIOR IMPROVEMENTS

Section 32 12 43 – Porous Asphalt Concrete

- Load Slip:** Provide a load slip certified by a licensed weightmaster showing combined mixture weight for each load of porous asphalt transported to the location.
- Infiltration Rate Testing:** Perform surface infiltration tests per ASTM C1701 as described below.
 - Three (3) test locations per 10,000 square feet of porous asphalt in place.
 - One (1) additional test location per 5,000 square feet of porous asphalt, or fraction thereof, in place.

DESIGNER NOTE: Designer to specify the number and location(s) of required post-construction infiltration tests.

- Required Inspections:** Notify the Engineer at least 5 business days prior placement of porous asphalt.
- Failed Tests:** Each test shall meet the acceptance criteria as defined in this section. For any single quality characteristic except smoothness, if two consecutive quality control test results do not comply with the action limits or specifications:
 - Stop production.
 - Notify the Engineer.
 - Take corrective action.
 - Demonstrate compliance with the specifications before resuming production and placement.

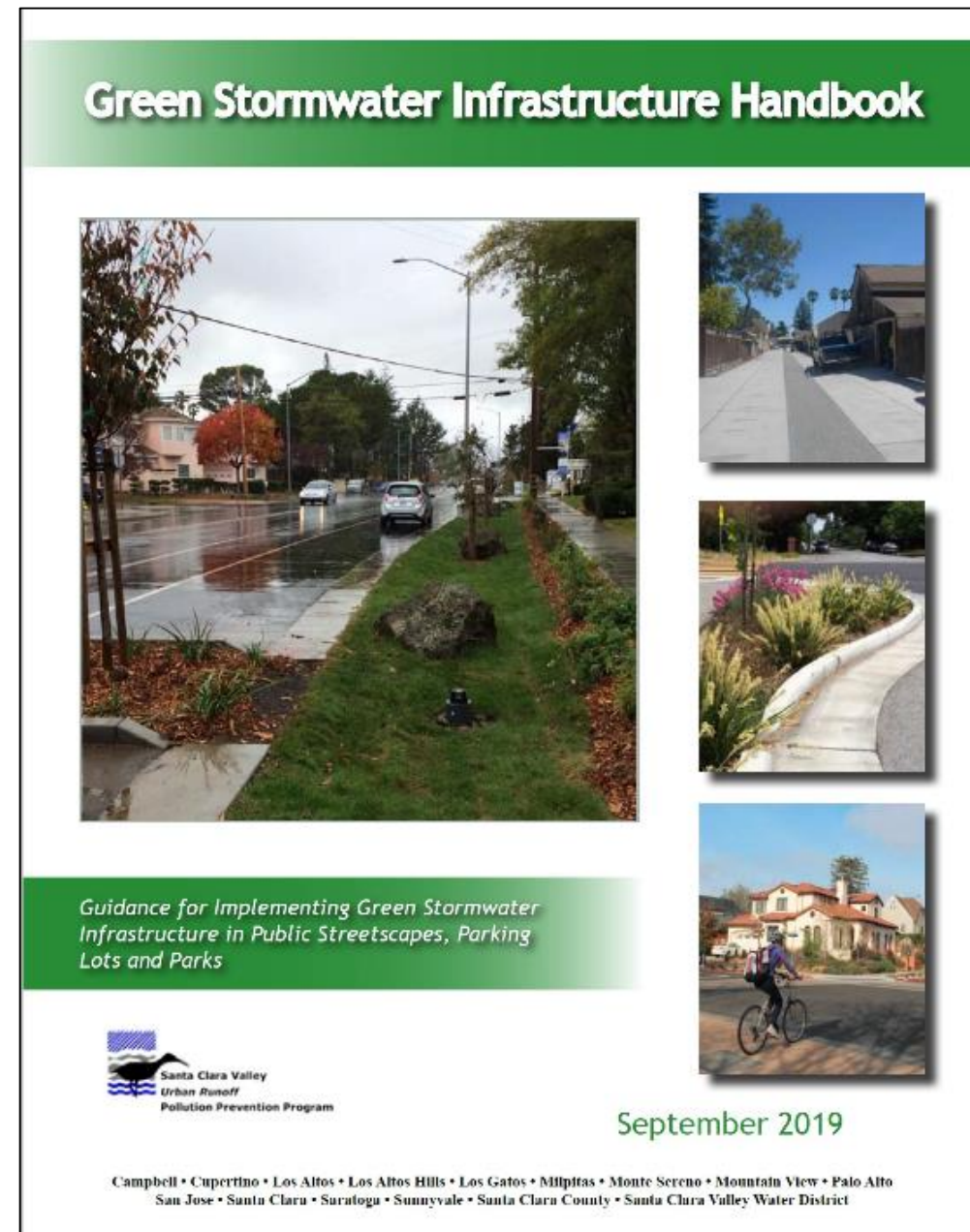
DESIGNER NOTE: The following table is a [Sample Contractor Quality Control Sampling and Testing Plan](#); it is provided to illustrate the type and frequency of testing that may be required. The Contractor will need to develop a similar table as part of their QC plan. Frequency and standard for all tests should be project specific.

NOT FOR CONSTRUCTION - NEED TO USE CURVE



SCVURPPP GSI Handbook

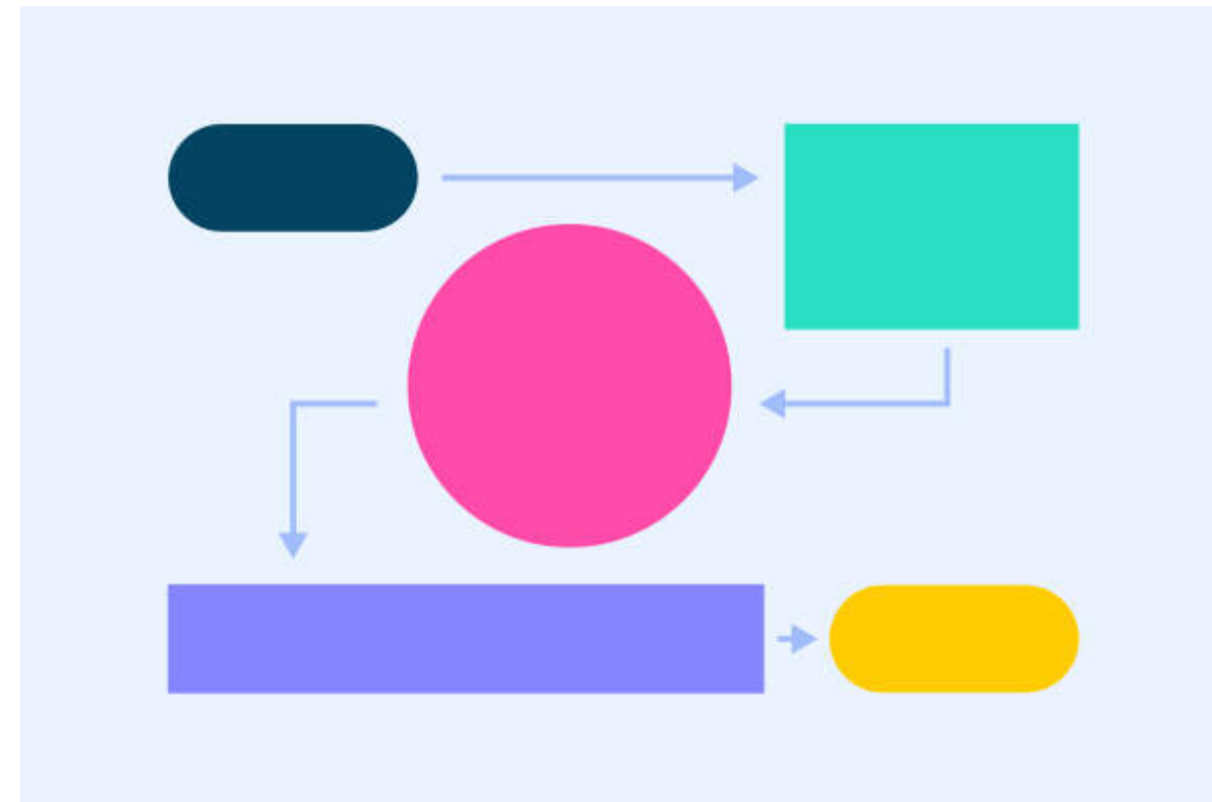
- Resource for developing City Handbook
 - 176 pages of GSI Guidance plus 180 pages of GSI details
- City Handbook will extract key GSI design details in a graphical format
- Reduction in GSI details in City Handbook to approximately 50
- Reduction of specifications





Palo Alto GSI Handbook Outline

- How to use Handbook
 - Audience
 - GSI design steps
 - Technical sources
 - Terminology
- GSI
 - Regulatory overview
 - Treatment of pollutants
 - Siting challenges
 - Sustainability features as complements (e.g., living walls)



1.3 Types of GSI (2-3 pg)

Summary, with pictures, of the main GSI measure types that are expected to be implemented in the City, bring in removal mechanisms, sizing/compliance:

1. Bioretention
2. Vegetated Bioswales
3. Planter Boxes
4. Suspended Pavement Systems
5. Green Roofs
6. Permeable Pavement
7. Infiltration GSI measures
8. Rainwater Harvesting

Non-GSI that could be used in treatment trains

9. Underground Detention
10. Cartridge Media Filters



**Vegetated
Swale**



Bioretention



**Permeable
Pavement**

Selecting and Sizing GSI Measures

2.1 Integrating GSI into Typical Urban Sites

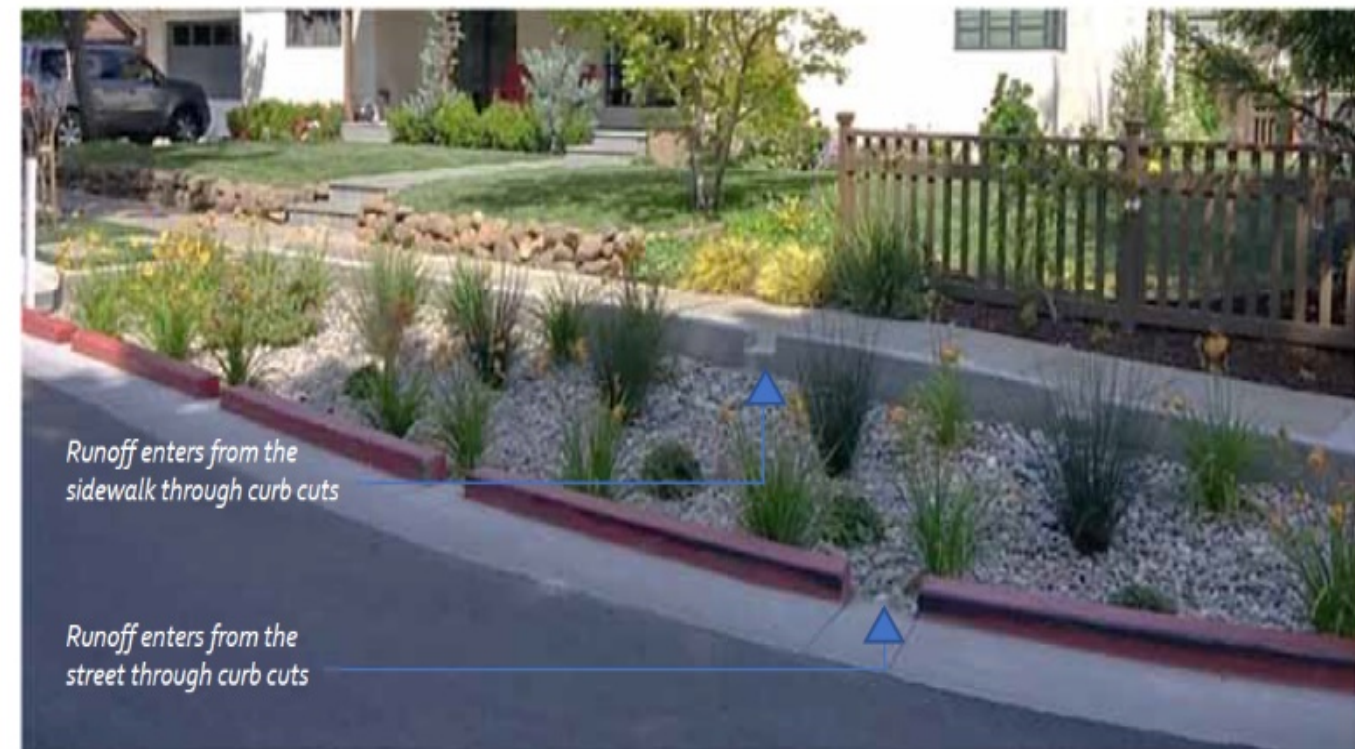
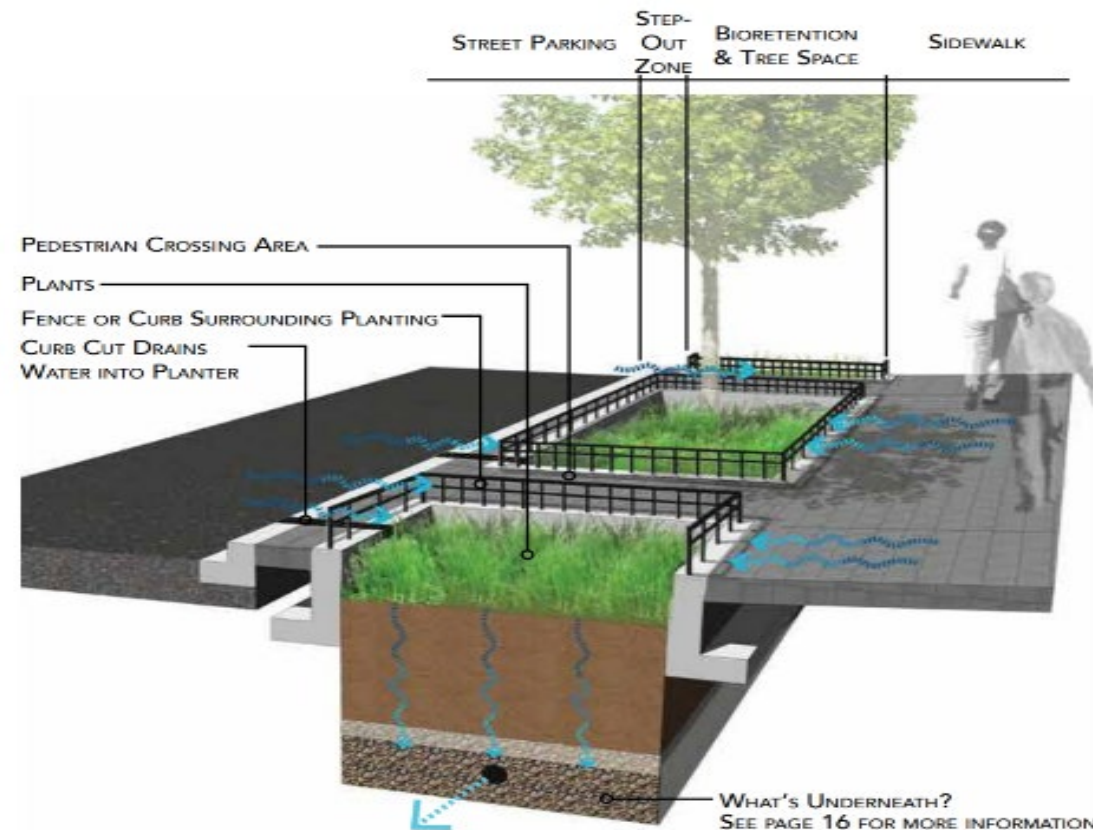


Figure 2-22. Stormwater curb extension and corner bulb-out in Southgate neighborhood, Palo Alto. (Credit: EOA)

2.2 GSI Siting and Drainage Area Calculations

Siting Requirements

- Depth to GW and contaminated plumes
- Soils
- Geotech hazards
- Utility setbacks
- Building setbacks
- Roadway considerations (e.g., street widths, clear recovery zones)
- Trees – setbacks or integration into measures
- Site Use constraints (esp. multi-modal/transportation)
- ADA requirements/ Health and Safety



3 DESIGNING GSI MEASURES

3.1 Key GSI Design Considerations

- Graphical summary of SCVURPP GSI component design and Lessons Learned Compendium images
- City-specific guidance on street sweeping radius



Figure 2-26. Effective curb radius for a street sweeper in SF. (Credit: EOA)



Figure 2-27. Ineffective curb radius for street sweeper in Emeryville. (Credit: EOA)

- How to design a treatment train and/or GSI measure with pre-treatment



Schedule and Next Steps

- **Q4 2021:** Draft Handbook Sections 1-2 (GSI Technical Guidance Sections)
- **Q1 2022:** Working meetings with City departments to identify key GSI detail modifications needed for consistency with City Standards – Draft Section 3
- **Q2 2022:** Draft GSI Handbook (estimated May 2022)
- **Q3 2022:** Review of Draft by City and SWMOC
- **Q4 2022:** Revisions and Final GSI Handbook completed



GSI Maintenance and Monitoring Manual

- Provides GSI maintenance and inspection guidance
- Describes roles and responsibilities for these tasks
- Includes effectiveness assessments with an adaptive management approach
- Guidance is intended for City parcels and ROWs, but available for private projects as well

Goal: Provides useable, specific guidance for maintenance and inspection of GSI facilities









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Existing Resources



Green Stormwater Infrastructure Handbook

Guidance for Implementing Green Stormwater Infrastructure in Public Streetscapes, Parking Lots and Parks




September 2019

Campbell • Cupertino • Los Altos • Los Altos Hills • Los Gatos • Milpitas • Monte Sereno • Mountain View • Palo Alto
San Jose • Santa Clara • Saratoga • Sunnyvale • Santa Clara County • Santa Clara Valley Water District

CITY OF SAN JOSE

**GREEN STORMWATER
INFRASTRUCTURE**

MAINTENANCE
FIELD GUIDE



**GREEN INFRASTRUCTURE
MAINTENANCE** GUIDE BOOK



San Francisco
Water
Power
Sewer

SEWER
SYSTEM
IMPROVEMENT PROGRAM
Grey. Green. Clean.



Maintenance and Monitoring Manual – Proposed Outline

1. Overview
2. Types of GSI
3. Site Visit Preparation
4. Site Condition Assessments
5. Maintenance Inspection Checklists
6. Maintenance Guidance
7. Additional Resources



Overview

- Overlap w/ GSI Handbook
- Purpose
 - Standards and guidelines
- Roles and responsibilities
- Local partnerships
- Scheduling/Implementation
 - Integration with inspections
- Adaptive management
- Site visit prep and safety



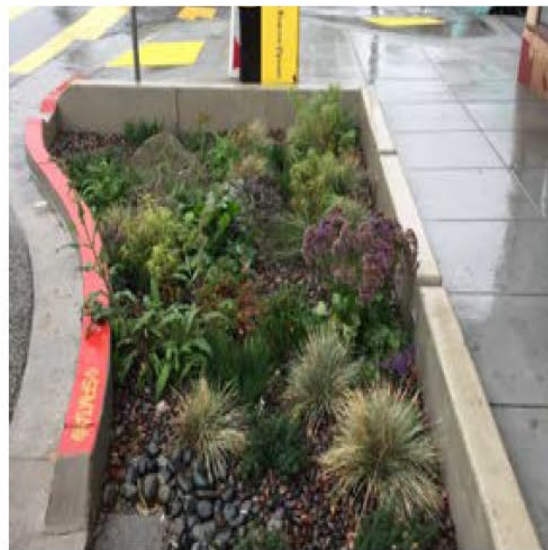
Condition Assessment

		Green Stormwater Infrastructure							
		Bioretention	Vegetated Bioswales	Planter Boxes	Suspended Pavement Systems	Green Roof	Permeable Pavement	Infiltration Measures	Rainwater Harvesting
Site Condition Assessment Characteristics	Trash & Debris	✓					✓		
	Weeds	✓					✓		
	Plant Health	✓							
	Plant Density	✓							
	Plant Growth	✓							
	Pruning	✓							
	Mulch	✓							
	Cobble & Flow Dissipation	✓							
	Erosion and Sedimentation	✓					✓		
	Standing Water & Vector Control	✓							
	Structural Damage	✓					✓		
	Irrigation Malfunction	✓							
	Contamination	✓							
	Vandalism & Graffiti	✓					✓		
	Sedimentation								
	Utility Repairs								
Routine Vacuuming						✓			
Power Washing & Restorative Vacuuming						✓			
Oil Staining & Contamination						✓			

Site Condition Assessments

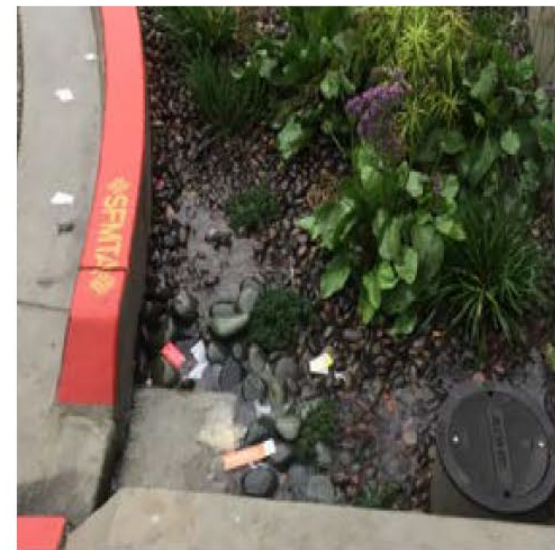
- Identification/Reporting of issues
- Maintenance standards ranking system

Trash & Debris



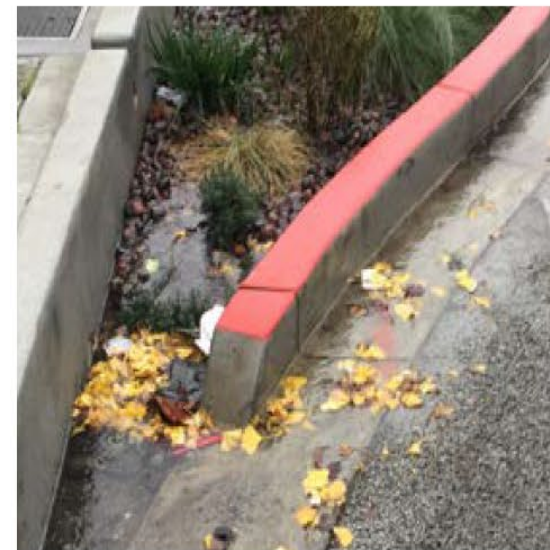
4 Excellent Condition

- » No trash or debris
- » Unobstructed inlets, outlets, and overflow structures
- » Regular trash and debris removal maintenance scheduled



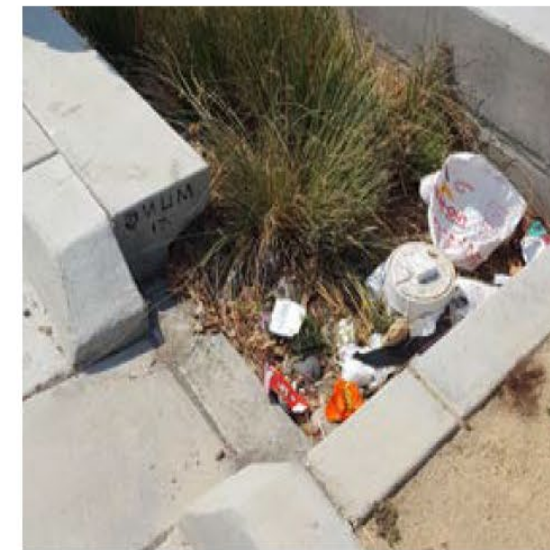
3 Good Condition

- » Minor trash or debris
- » Regular trash and debris removal maintenance scheduled
- » Unobstructed inlets, outlets, and overflow structures



2 Moderate Condition

- » Moderate trash or debris
- » Existing trash removal schedule but increased frequency needed
- » One or more partially obstructed inlets, outlets, and/or overflow structures



1 Poor Condition

- » Significant trash or debris, requires immediate trash removal
- » Ineffective or nonexistent trash removal program
- » One or more fully obstructed inlets, outlets, and/or overflow structures

Weeds



4 Excellent Condition

- » No weeds
- » Weed abatement plan in place



3 Good Condition

- » Sporadic weeds (under 5% coverage) with no invasive species present
- » Weeds have not gone to seed
- » Weed abatement plan in place



2 Moderate Condition

- » Moderate weed infestation (5-25% weed coverage)
- » Weeds have gone to seed
- » Lacking weed abatement plan



1 Poor Condition

- » Weed infestation covering 25% or more of the system and invasive species present
- » Weeds have gone to seed and new weeds have become established
- » Lacking weed abatement plan

Plant Health



4 Excellent Condition

- » All plants are healthy, thriving, and aesthetically pleasing



3 Good Condition

- » Fewer than 10% of plants are showing signs of distress



2 Moderate Condition

- » 10-25% of plants are distressed or dead



1 Poor Condition

- » More than 25% of plants are distressed or dead

Example Inspection Checklist

How to Use This Form: Facility Maintenance Staff should perform maintenance inspections by following the checklist below. Refer to the "Bioretention Standards" section on pages 18-25 for guidance on condition assessments. For guidance on performing maintenance activities, refer to the "Bioretention Maintenance Guidance" section on pages 37-60.

Date & Time: _____ Project Name or Address: _____ Bioretention/Planter/Swale Serviced: _____

Supervisor Name: _____ Agency/Department or Entity Performing Inspection: _____

No. of staff at the facility: _____ Start Time: _____ End Time: _____ Latest Rainfall: 0 - 24 hrs 24 - 48 hrs 2 - 3 days > 3 days

Can you access the facility? Yes No If not, why? _____

Trash & Debris Removal

Is trash or debris present in the treatment area? Y N N/A
 Are one or more inlets, outlets, or overflow structures obstructed? Y N N/A

Weeds

Are weeds present in the treatment area? Y N N/A
 Are invasive plants present? Y N N/A
 Are weeds about to or currently going to seed? Y N N/A

Plant Health

Are all plants healthy, thriving, and aesthetically pleasing? Y N N/A
 Are there signs of diseased or distressed plants in the treatment area? Y N N/A

Pruning, Trimming, Dead Heading, or Thinning

Is the system well-manicured and properly pruned? Y N N/A
 Are plants overpruned or overgrown in the treatment area? Y N N/A

Plant Density

Are plants overcrowded? Y N N/A
 Are there bare spots in the treatment area? Y N N/A
 Are plants obstructing one or more inlets, overflows, or irrigation system? Y N N/A

Mulch

Is there full coverage of at least 3" of composted arbor mulch? Y N N/A
 Is the mulch free of sediment and not clumped together? Y N N/A

Cobble & Flow Dissipation

Is appropriately sized cobble placed at all inlets, outlets, and splash pads? Y N N/A
 Is the cobble free of sediment, debris, and clogging? Y N N/A
 Are there signs of erosion at any inlets, outlets, or splash pads? Y N N/A

Comments / Actions Taken: _____

Erosion & Sedimentation

Are there signs of erosion or sedimentation in the treatment area? Y N N/A
 Are the treatment area and adjacent areas protected from erosion? Y N N/A
 Are there signs of erosion at any inlets, outlets, or splash pads? Y N N/A
 Are there signs of channelization and scour or loss of soil? Y N N/A

Standing Water & Vector Control

Is all water drained from the treatment system within 72 hours from last rain? Y N N/A
 Is there evidence of mosquitoes in the treatment area? Y N N/A
 Is there evidence of rodent activity in the treatment area? Y N N/A

Structural Damage

Is there structural damage to the treatment system? Y N N/A

Irrigation Malfunction

Is the irrigation system functioning properly with no leaks, breaks, etc.? Y N N/A
 Are all of the landscaped portions of the treatment area receiving proper irrigation? Y N N/A

Contamination

Is there evidence of contamination in the treatment area? Y N N/A
 Are any Best Management Practices being implemented to prevent contamination? Y N N/A

Vandalism & Graffiti

Are there any signs of vandalism or graffiti? Y N N/A

Field Measurement/Materials Used

Amount of material (trash, debris, sediment) collected: Number of bags, pounds, or gallons/bag: _____

Materials/Tools Used: _____

Example Maintenance Guidelines

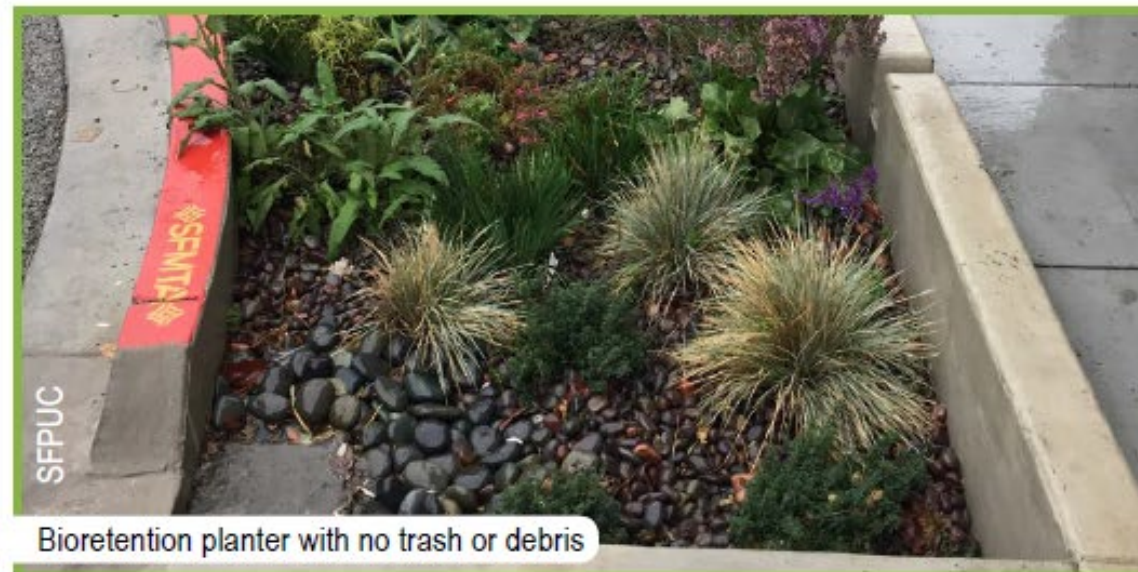
Maintenance Guidelines for Trash & Debris

WHY IS REMOVING TRASH AND DEBRIS IMPORTANT?

Trash and debris can inhibit the flow of water through the bioretention planter and diminish treatment, aesthetics, and performance. Clogging of the surface will reduce infiltration and cause more water to bypass. Debris can also obstruct the inlets and outlet of the system causing, flooding of the system and/or upstream areas.

MAINTENANCE TASKS

- » Remove by gloved hand, with a litter stick, or with a rake and a shovel during every site visit.
- » Be aware of sharp objects like needles and glass and wear appropriate personal protective equipment (PPE) when handling hazardous objects.
- » Place trash in designated receptacle. May use tarps to collect trash and debris.
- » Place vegetative debris in a compostable bag, tarp, bucket, or other receptacle and dispose of properly as green waste.
- » Rake leaves from around the facility, especially in the fall when leaves can quickly clog inlets, outlets, and overflow structures.
- » Provide garbage receptacle and ashtrays around treatment areas and facility common areas as needed.



WHAT TO DO:



SUGGESTED TOOLS

- » Dustpan and brush
- » Compostable garbage bags
- » Gloves
- » Manhole cover hook or lifter (for opening grates)
- » Push broom
- » Rakes (bow, hand, leaf, shrub, weed)
- » Shovels (drain, edging, flat, rounded, scoop)
- » Spade
- » Tarps/buckets/trash cans (to remove leaf litter/debris)
- » Litter stick
- » Wheelbarrow or push cart

WHAT NOT TO DO

- » Do not attempt to remove trash and debris with a vactor or excavator.
- » Do not dispose of leaf and plant litter in the bioretention planter.
- » Do not remove waste without PPE.
- » Limit walking within the treatment area to prevent overcompacting bioretention soil media.
- » Do not trample vegetation during routine maintenance activities.



WHAT NOT TO DO:





Maintenance and Monitoring Manual – Schedule and Next Steps

- **Q4 2021:** Finalize Manual Outline with feedback from City Departments and SWMOC
- **Q1 2022:** Draft Manual
- **Q2 2022:** Review of Draft by City and SWMOC
- **Q3 2022:** Revisions and Final Manual completed



Rain Barrel Pilot Rebate Program

SWMOC Meeting | Dec. 2, 2021



CITY OF
PALO ALTO

Goals for Rain Barrel Program

1. To provide rain barrels to residents in an easy, accessible, and cost-effective way.
2. To increase rain barrel rebate applications.






Results Thus Far

- 330 rain barrels sold
- 162 residents and business owners
- Increase of rain barrel rebates (compared to three in FY 20/21)
- Increased outreach, education, and public engagement

LIMITED TIME OFFER ON DISCOUNTED RAIN BARRELS!

\$80* (pre-tax) per barrel or
\$10 per barrel
after qualifying rebate applied
*40% savings from retail value

Why Own a Rain Barrel?

-  Save water and money by collecting rainwater as a FREE resource.
-  Provide plants with added benefits by watering with captured rainwater.
-  Reduce runoff and pollution to our local creeks and San Francisco Bay.



SALES CLOSE NOVEMBER 14, 2021.

Visit rainbarrelprogram.org/paloalto or scan the QR code to order.

**Rain Barrel Distribution Event:
Saturday, December 4, 2021
9:00 am to 12:00 pm
City of Palo Alto**

Pickup location details on rainbarrelprogram.org/paloalto.

*Barrels must be purchased online by November 14, 2021.
No purchases can be made at the distribution event.*



Outreach Efforts

- eNewsletters emailed to over 10,000 email subscribers from the GSI, Sustainability, and Utilities listserv
- Utilities bill insert mailed to all CPA customers
- News story picked up by [Palo Alto Patch](#) online news outlet
- Palo Alto featured on [NBC news clip](#) to discuss rain barrels

The screenshot shows a news article on the Patch platform. At the top, it says 'Patch' with a search bar for 'Your town or ZIP code' and 'Palo Alto, CA + Follow'. Below that, there are navigation options for '69°F', 'Nearby', 'Local News', 'Neighbor Posts', and 'Local Mark'. The article title is 'City Of Palo Alto: New Pilot Rain Barrel Program To Help Community Save Money And Water'. The text of the article states: 'The City of Palo Alto has launched a pilot rain barrel program to encourage City residents and businesses to purchase high-quality 50-ga ...'. It is attributed to 'Press Release Desk, News Partner' and posted on 'Tue, Oct 5, 2021 at 8:11 am PT'. There is a 'Reply' button. Below the article, there is a featured advertisement for Ring titled '6-Year-Old Girl Scout Sells 3K+ Boxes of Cookies With This Pitch' with a small video thumbnail showing a girl.

Outreach Efforts (con't)

- Geotargeted digital/social media posts and ads for promotional efforts
 - Facebook
 - Clicks: 699
 - Impressions: 41,150
 - Spend: \$488.90
 - Google Ads
 - Clicks: 4,639
 - Impressions: 492,081
 - Spend: \$1,000



City of Palo Alto - Public Agency

October 4 at 4:58 PM · 🌐

Get a rain barrel for only \$10!

Now through Nov. 14, 2021, Palo Alto residents and businesses have the opportunity to purchase high-quality, 50-gallon rain barrels for just \$80 each (pre-tax). Eligible applicants will also be able to receive a \$70 rebate per rain barrel bringing the rain barrel cost to just \$10!

With the ongoing drought, now is the perfect time to conserve water, save money, and prevent water pollution by installing a rain barrel today.

Get started: <https://bit.ly/3AR96oT>

<https://bit.ly/3AR96oT>

Limited Time Offer on Discounted Rain Barrels!

\$80* per barrel or

\$10 per barrel

after qualifying rebate applied



CITY OF
PALO ALTO

*40% savings from retail value

Sales close Nov. 14, 2021.



CITYOFPALOALTO.ORG

New Pilot Rain Barrel Program to Help Community Save Money and Water

The City of Palo Alto has launched a pilot rain barrel program to encourage City residents a...

👍👎 3

👍 Like

💬 Comment

➦ Share



Most Relevant ▾

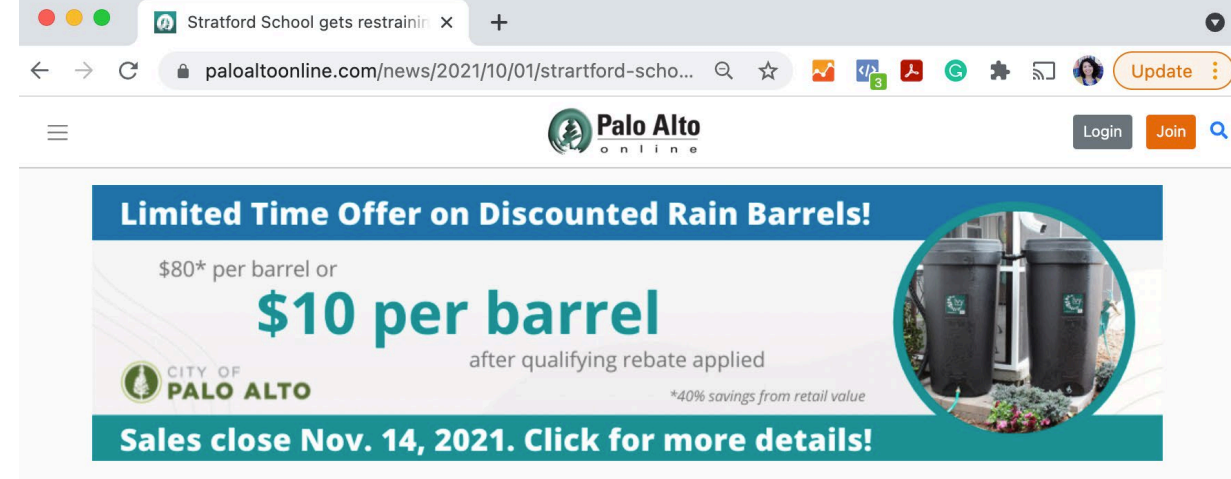


Write a comment...



Outreach Efforts (con't)

- Geotargeted digital/social media posts and ads for promotional efforts
 - PaloAltoOnline.com
 - Clicks: 195
 - Impressions: 150,411
 - Spend: \$2,475
 - Totals
 - Clicks: 5,533
 - Impressions: 533,792
 - Spend: \$3,964



News

Stratford School gets restraining order against neighbor accused of shooting air rifle at student

Man arrested last month for allegedly shooting BB at child, causing minor injuries

by Zoe Morgan / Palo Alto Weekly

Uploaded: Fri, Oct 1, 2021, 9:53 am
Time to read: about 3 minutes



Debrief

1. Residents like the easy to purchase barrels
2. Improvements needed to Valley Water website and rebate process
3. Challenges with dual-agency rebates
4. SWMOC communication to Valley Water if deemed high enough priority

