POLLUTION PREVENTION REPORT

CLEAN BAY PLAN 2024

City of Palo Alto Regional Water Quality Control Plant
2501 Embarcadero Way, Palo Alto, CA 94303

Operated by the City of Palo Alto for the East Palo Alto Sanitary District and cities of Los Altos, Los Altos Hills, Mountain View, Palo Alto, and Stanford.

FOR MORE INFORMATION

Additional program information is available at the City of Palo Alto Public Works–Watershed Protection Group website: www.cleanbay.org.

Questions about this document or requests for specific reports mentioned in this document should be directed to the Regional Water Quality Control Plant, 2501 Embarcadero Way, Palo Alto, CA 94303, (650) 329-2122, cleanbay@cityofpaloalto.org.

ACKNOWLEDGEMENTS

The Clean Bay Plan is produced by the City of Palo Alto Public Works–Watershed Protection Group and describes its pollution prevention accomplishments.

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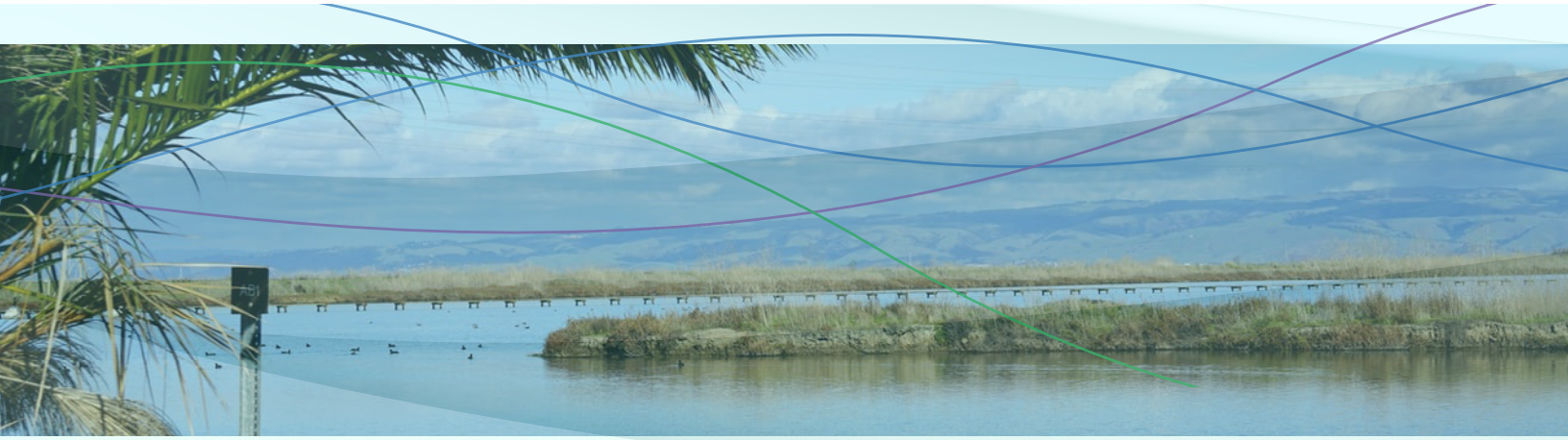
EXECUTIVE SUMMARY



The City of Palo Alto owns and operates the Regional Water Quality Control Plant (RWQCP), which treats wastewater from the East Palo Alto Sanitary District, Los Altos, Los Altos Hills, Mountain View, Palo Alto, and Stanford University prior to discharging it to the San Francisco Bay. The RWQCP has operated a comprehensive Pollution Prevention Program since 1989 and maintains six permits associated with preventing water and air pollution:

1. RWQCP Main NPDES Permit (Order No. R2-2019-0015, NPDES No. CA0037834);
2. Mercury & PCB Watershed NPDES Permit (Order No. R2-2023-0038, NPDES No. CA0038849);
3. Nutrient Watershed NPDES Permit (Order No. R2-2019-0017, NPDES No. CA0038873);
4. RWQCP's Recycled Water NPDES Permit (Order No. 93-160);
5. RWQCP's Air Permit; and
6. SF Bay Region Municipal Regional Stormwater NPDES Permit (Order No. R2-2023-0018, NPDES No. CAS612008).

The 2024 Clean Bay Plan is organized by the RWQCP's permit requirements. Sections I-III of this report describe permit details, environmental concerns related to the permit, RWQCP program updates for the past year, and key goals and priorities for the program in the future.

Although stormwater pollution prevention and air quality are key elements of the City of Palo Alto's environmental programs, they are only mentioned in the summary of this report. Stormwater permit reporting is captured in the Stormwater Annual Report located at cleanbay.org. Air pollution will also only be mentioned in the summary of this report, although the City of Palo Alto does take actions to reduce air pollution during the RWQCP treatment process. The City of Palo Alto's Permit-to-Operate issued by the Bay Area Air Quality Management District can be found at cleanbay.org. In addition, Sections IV and V of this report discuss outreach and additional sustainability initiatives that support or exceed permit requirements.

Table 1 presents an overview of the City of Palo Alto's Pollution Prevention Plan, describing pollutant sources, program priorities, pollution prevention progress made in 2023, and plans for the coming year.

Table 1: CITY OF PALO ALTO POLLUTION PREVENTION PLAN AND ACCOMPLISHMENTS

This table is not comprehensive of all pollution prevention or sustainability programs that the RWQCP leads. See report sections for more information.

Pollutant of Concern	Source(s)	2023 Highlights	2023 Outreach Highlights	2024 Main Goals	Program Evaluation Metrics
Mercury and PCB Watershed NPDES Permit					
Mercury	• Scrap amalgam, chair-side trap waste, filter waste, and amalgam sludge from dental offices • Fluorescent lights • Mercury-containing thermostats and thermometers • Legacy pollution from gold-mining	• RWQCP Staff revamped the Dental Amalgam Discharge Program to match the federal regulation and obtained one-time compliance reports for all 145 facilities • Inspected 29 dental offices and found no major findings • The City continued to recycle spent fluorescent bulbs and purchase low mercury replacement bulbs and LED lights when available • Collected and recycled thermometers, thermostats, and fluorescent lamps through the City's Household Hazardous Waste (HHW) Program	**Public Outreach** • See 2023 BAPPG Annual Report for public outreach. Palo Alto staff participate in the steering and general committees to help with outreach planning and implementation • Created and distributed new Dental Amalgam Management Requirements factsheet • Staff developed a new Dental Mailer to educate businesses on dental amalgam program requirements and how to reduce mercury in the Bay. A total of 140 facilities received the mailer	• Continue to track new dental offices and annually inspect approximately 20% of offices in the RWQCP service area • Update Sewer Use Ordinance to maintain consistency with new pretreatment standards for dental offices • Continue to educate dental assistant and hygienist students on mercury pollution prevention via BAPPG • Continue to collect mercury- and PCB-containing waste through the City's Household Hazardous Waste Program	• Percentage of dental offices in compliance with amalgam separator maintenance and best management practices (BMPs) • Confirmation of amalgam separator maintenance and BMP compliance through inspections • Tracking of treatment plant mercury data • Quantity of thermometers, thermostats, fluorescent lights, and other mercury-containing products collected at HHW events
Polychlo-rinated Biphenyls (PCBs)	• Legacy contaminants from industrial sources			• Continued monitoring for permit compliance	• Tracking of treatment plant PCB data
Nutrient Watershed NPDES Permit					
Nutrients	• Human and pet waste • Food waste • Industrial discharges	• Began construction of the Secondary Treatment Upgrades project • Participated in the San Francisco Bay Nutrient Management Strategy	**Public Outreach** • Zero Waste conducts community outreach to promote food waste reduction and composting services	• Continue participation in San Francisco Bay Nutrient Management Strategy • Construct Secondary Treatment Upgrades Project • Explore participation in Regional Nitrogen Public Education TAC discussions for possible outreach messages	• Completion of evaluations and studies • Collection of data • Communication of results from evaluations and data collection to publicly owned treatment works (POTW) community and regulators • Participation in regional collaboration efforts

Table 1: CITY OF PALO ALTO POLLUTION PREVENTION PLAN AND ACCOMPLISHMENTS (continued)

Pollutant of Concern	Source(s)	2023 Highlights	2023 Outreach Highlights	2024 Main Goals	Program Evaluation Metrics
Recycled Water Permit					
Salinity	• Human waste • Inflow and infiltration of saline groundwater into broken sewer pipelines	• Progressed design of salt removal facility (i.e., Advanced Water Purification System) • Completed design and went out to bid for rehabilitation of the 72-inch trunkline sewer that is currently a large source of saline groundwater to the RWQCP	**Public Outreach** • Shared salt removal project and 72-inch trunkline rehabilitation project information with the Parks and Recreation Commission	• Complete design of salt removal facility • Begin construction on the 72-inch trunkline rehabilitation project	• Completion of evaluations and studies • Reduction of salinity (TDS) in recycled water • Increased use of recycled water • Locate salt water inflow and infiltration into sewers • Completion of pipeline repairs
Air Regulations					
Ozone Precursors	• Emergency generators • Landfill flare	• Remained below limits for NOx		• Continue to operate equipment to remain below emission limits • Track generator usage	• Emissions below limits

Table 1: CITY OF PALO ALTO POLLUTION PREVENTION PLAN AND ACCOMPLISHMENTS (continued)

Pollutant of Concern	Source(s)	2023 Highlights	2023 Outreach Highlights	2024 Main Goals	Program Evaluation Metrics
Air Regulations					
Green-house Gases	• RWQCP office heating • RWQCP emergency generators • Wastewater treatment tanks	• Reduced anthropogenic emissions by >70% since 1990	**Outreach to City Staff** • Presented findings from Sea Level Rise Vulnerability Asssessment and engaged various departments on sea level and groundwater rise GIS maps.	• Track, calculate, and report the RWQCP's emission inventory through the City's Sustainability and Climate Action Plan programs	• Accurately quantify and report emission inventory
SF Bay Municipal Regional Stormwater NPDES Permit					
Pesticides	• Use on golf courses, parks, and municipal facilities • Application by hired pest control operators • Application in residential homes	• Continued regional outreach and regulatory tracking/ lobbying efforts through participation in *Our Water Our World* (OWOW) and BAPPG • Continued Integrated Pest Management (IPM) outreach with SCVURPPP, including point-of-sale educational materials at hardware stores and training program for store employees • Residents received utility bill inserts about IPM strategies • Continued to maintain 21 pesticide-free parks and facilities within Palo Alto • Continued co-funding consultant assistance in wastewater pesticide pollution sources and outreach (funding beyond contributions to BACWA)	**Public Outreach** • Print and electronic outreach about ant control, fleas/ticks and rodent control • Participated in BACWA Pesticides Committee. See BAPPG Annual Report for details • Collaborated with Pets in Need on a brochure containing information for pet owners on less-toxic flea and tick control for distribution at their Palo Alto and Redwood City locations **Outreach to City Staff** • Gave two presentations on the connection between topical flea/ tick control products (e.g., Fipronil, Imidacloprid) and impacts to Bay water quality to medical and non-medical staff members of Pets in Need, the organization contracted to run the City's Animal Services Center	• Continue participation in regional outreach and regulatory tracking/lobbying via BAPPG • Continue to provide outreach about IPM strategies and promote EcoWise Certified pest control companies • Continue to work closely with Pets in Need • Collaborate through BAPPG to begin discussions and partnerships with American Veterinary Medicine Association (AVMA) as well as local vets, shelters, and pet supply stores on flea & tick control messaging	• Correspondence with regulatory agencies via BAPPG and associated regulation changes • Number of stores participating in OWOW program • Estimated impressions for IPM outreach

Table 1: CITY OF PALO ALTO POLLUTION PREVENTION PLAN AND ACCOMPLISHMENTS (continued)

Pollutant of Concern	Source(s)	2023 Highlights	2023 Outreach Highlights	2024 Main Goals	Program Evaluation Metrics
Fats, Oil, Grease (FOG)	• Grease from food handling at residences and businesses	• Reviewed 23 plan sets for compliance with FOG pollution prevention and best management practices • Conducted 48 inspections at 41 food facilities for FOG requirement compliance	**Public Outreach** • Utility bill inserts with FOG disposal information • Handed out approximately 80 Best Management Practice Factsheets to FFs that included best management practices on grease management • Conducted door-to-door outreach about FOG requirements and inspections to 80 food facilities	• Inspect one-third of Palo Alto food facilities • Conduct plan checks for FFs that are being built or remodeled to ensure grease control devices are installed and appropriate fixtures connected • Distribute FOG fact sheet on GCD best management practices and other outreach materials • Create a City webpage where residents and businesses can find fact sheets and outreach materials for best management practices, including FOG • Enroll food facilities in new digital reporting system allowing for compliance tracking of GCD maintenance	• Number of restaurants inspected • Percent compliance with ordinance requirements • Number of plan checks
Statewide Sanitary Sewer Systems General Order					
Polychlo-rinated Biphenyl (PCBs)	• Caulk • Thermal insulation • Fiberglass insulation • Adhesive mastics • Rubber window gaskets • Commercial, public, institutional, and industrial structures constructed or remodeled between 1950 – 1980 • Electrical Utility equipment	• Continued implementation of the PCBs in Priority Building Materials Program • Continued identification of source properties contributing PCBs to the storm drain system • Adoption of updated Spill Response Standard Operating Procedures for Municipal Utilities	**Public Outreach** • Updated webpage to provide clear information to businesses about program requirements	• Continue providing training and outreach materials to City staff, developers, and consultants regarding the PCBs in Priority Building Materials Program requirements • Track submitted demolition packets and lab results for reporting • Continue to identify and remediate PCB source properties in Old Industrial Areas	• Number of applicable complete demolition packets submitted • Lab results from PCBs sampling

Table 1: CITY OF PALO ALTO POLLUTION PREVENTION PLAN AND ACCOMPLISHMENTS (continued)

Pollutant of Concern	Source(s)	2023 Highlights	2023 Outreach Highlights	2024 Main Goals	Program Evaluation Metrics
Other Emerging Contaminants					
Pharmaceuticals and personal care products	• Over-the-counter and prescribed medicines • Hospitals and other medical facilities • Personal care products	• Continued agreement with MED - Project which provides pharmaceutical collection sites for the RWQCP service area • Continued collection of pharmaceuticals through the City's HHW Program	**Public Outreach** • "Dispose of Your Medicines and Sharps Safely" Utility Bill Insert • "Pharms and Sharps Campaign" using Facebook Display and Video Ads, Google Display Ads, Google Responsive Display Ads, and Google Video Ads. The campaign generated a total of 420,949 impressions and 3,164 clicks. The campaign achieved our goal in terms of clicks and impressions, receiving 247% more impressions compared to last year's numbers	• Continue participation in regional outreach, regulatory tracking/ lobbying, and research via BAPPG and the SFEI • Educate residents about proper pharmaceutical disposal using Google advertisements, utility bill inserts, and Cleanbay.org website • Continue work with Santa Clara County and MED-Project to maintain pharmaceutical collection sites for the RWQCP service area • Continue to offer disposal of medications through the City's Household Hazardous Waste collection program	• Number of disposal locations • Number of outreach pieces
Per-and Polyfluoroalkyl Substances (PFAS)	• Consumer products • Industrial processes such as manufacture of organic chemicals, plastics and synthetic fibers, metal finishing, electroplating, electric and electronic components • Landfills	• Participated in BACWA Regional PFAS Evaluations • Conducted initial PFAS source survey for service area	**Outreach to City Staff** • Presented on PFAS problem and research at Watershed Protection Group Meeting	• City staff will continue to monitor PFAS research and legislation • Continue to support and leverage regional (BACWA's) outreach efforts	• Evaluations completed • Participation in BACWA PFAS Regional Studies

SECTION

BACKGROUND

The Clean Bay Plan has been prepared to meet the pollution prevention (P2) reporting requirements of the Palo Alto Regional Water Quality Control Plant's (RWQCP) National Pollutant Discharge Elimination System (NPDES) permits. The 2024 Clean Bay Plan describes permit requirements, program priorities for the coming year and summarizes 2023 efforts to reduce pollution from:

- wastewater sources associated with the RWQCP's main NPDES Permit (Order No. R2-2019-0015, Section VI.C.3);
- mercury and PCBs (NPDES Permit Order No. R2-2023-0038, NPDES No. CA0038849);
- nutrients (NPDES Permit Order No. R2-2019-0017, NPDES No. CA0038873); and
- air pollution associated with the RWQCP's wastewater treatment.

The 2024 Clean Bay Plan also discusses progress on:

- recycled water generation and distribution (NPDES Permit Order No. 93-160);
- outreach and education to residents, employees, industry and commercial businesses; and
- sustainability projects and programs which, while not regulated, support permit requirements and other environmental priorities.

Progress on stormwater permit requirements are captured in the Stormwater Annual Report located at cleanbay.org.

A. CITY OF PALO ALTO: REGIONAL WATER QUALITY CONTROL PLANT

The City of Palo Alto operates the Regional Water Quality Control Plant (RWQCP), a wastewater treatment facility located on the shore of the San Francisco Bay. The service area includes the East Palo Alto Sanitary District, Los Altos, Los Altos Hills, Mountain View, Palo Alto, and Stanford University. The RWQCP treats wastewater from these communities prior to discharging to the Lower South San Francisco Bay (**Figure I-1**).

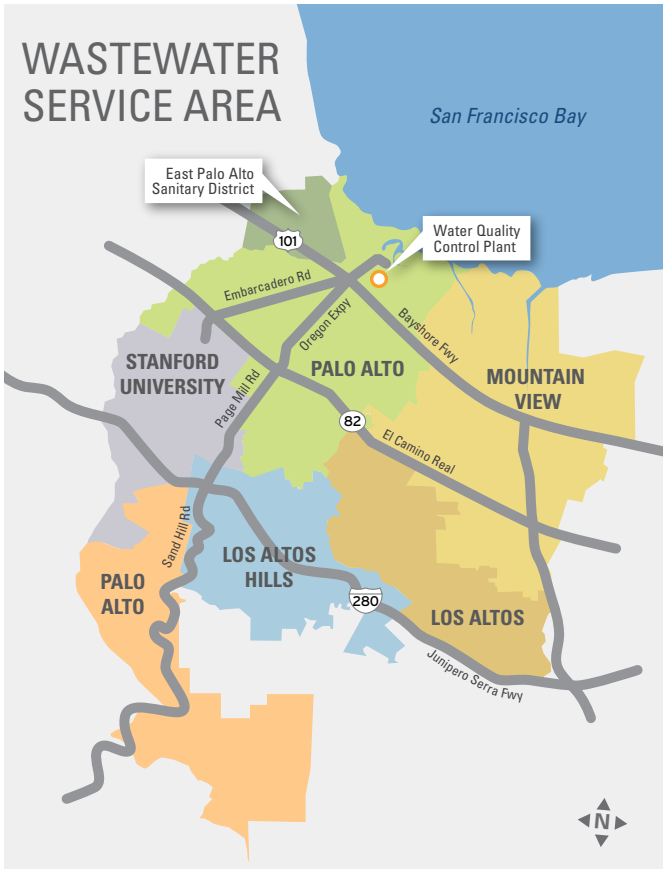


Figure I-1. RWQCP Service Area

Approximately 236,000 people live in this service area. In 2023, the plant treated an average of 19.97 million gallons per day (MGD) of wastewater (**Figure I-2**).

The RWQCP, also known as the Plant, uses physical, biological, and chemical treatment to remove about 99 percent of the solids and organic materials from influent wastewater. Despite the Plant's excellent

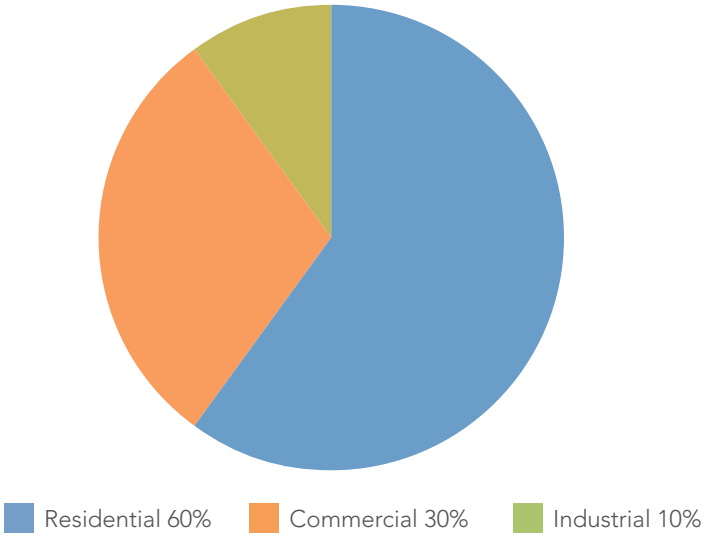


Figure I-2. Wastewater Sources to RWQCP

performance in removing most pollutants from the wastewater, increasing scrutiny is given to the discharge of nutrients and contaminants of emerging concern. While the Plant's treatment steps remove most of the metals found in wastewater prior to discharge, the RWQCP, like other municipal wastewater treatment plants, was not specifically designed to remove nutrients or contaminants of emerging concern from wastewater.

Stormwater runoff in this service area, as well as in the Santa Clara Valley, flows untreated to the Bay. Runoff not absorbed through unpaved surfaces can potentially carry pollutants directly into the Bay.

B. CAPITAL IMPROVEMENT PROJECTS

The RWQCP has been in operation since 1934, and requires on-going equipment upgrades, rehabilitation and new process technologies to continue meeting regulatory requirements and sustainability goals. These upgrades are addressed as capital improvement projects. **Table I-1** summarizes the upcoming capital improvement projects, and a map of project locations is on **Figure I-3**.

Table I-1. RWQCP CAPITAL IMPROVEMENT PROJECTS

Project Name	Description	Figure I-3 Location Number
Primary Sedimentation Tank Rehabilitation	Structural/concrete repair for the primary sedimentation tank. Replace drive units, plastic chain and sludge scrapers, and scum skimmers.	1
New Outfall Line	Installation of new parallel pipeline and rehabilitation of existing line.	2
Lab/Environmental Services Building	Construction of an Operation Center with new laboratory and offices for staff at the Plant.	3
Secondary Treatment Upgrades	Reconstruction of the activated sludge process and rehabilitation of the activated sludge aeration basins, allowing for the elimination of the fixed film reactors.	4
Gravity Thickener Mechanism Replacement	Replace center column and rotating mechanism with stainless steel. Repair and coat the thickener tank interior concrete surfaces.	5
Headworks Replacement	New headworks facility will replace the New and Old Pumping Plant.	6
Recycled Water Local Salt Removal Facility (Advanced Water Purification System)	A new treatment facility (membrane filtration coupled with reversed osmosis technology) that further treats a portion of the Plant's tertiary treated recycled water to improve its overall quality (Note: The project is partly funded by the City of Mountain View and Santa Clara Valley Water District).	7
Medium Voltage Electrical Distribution Network Rehabilitation	Rehabilitates Plant's 12kV electrical loop, replaces transformers, switches and related electrical components.	Location not listed (various buried ductbank and switchgear inside the plant)
72-Inch Diameter Joint Intercepting Sewer Rehabilitation (Phase 1)	Install a new lining on the interior surfaces of the aging and most deteriorated portions of the sewer pipeline to extend its life for another 50 years.	Location not listed (pipe is underground)

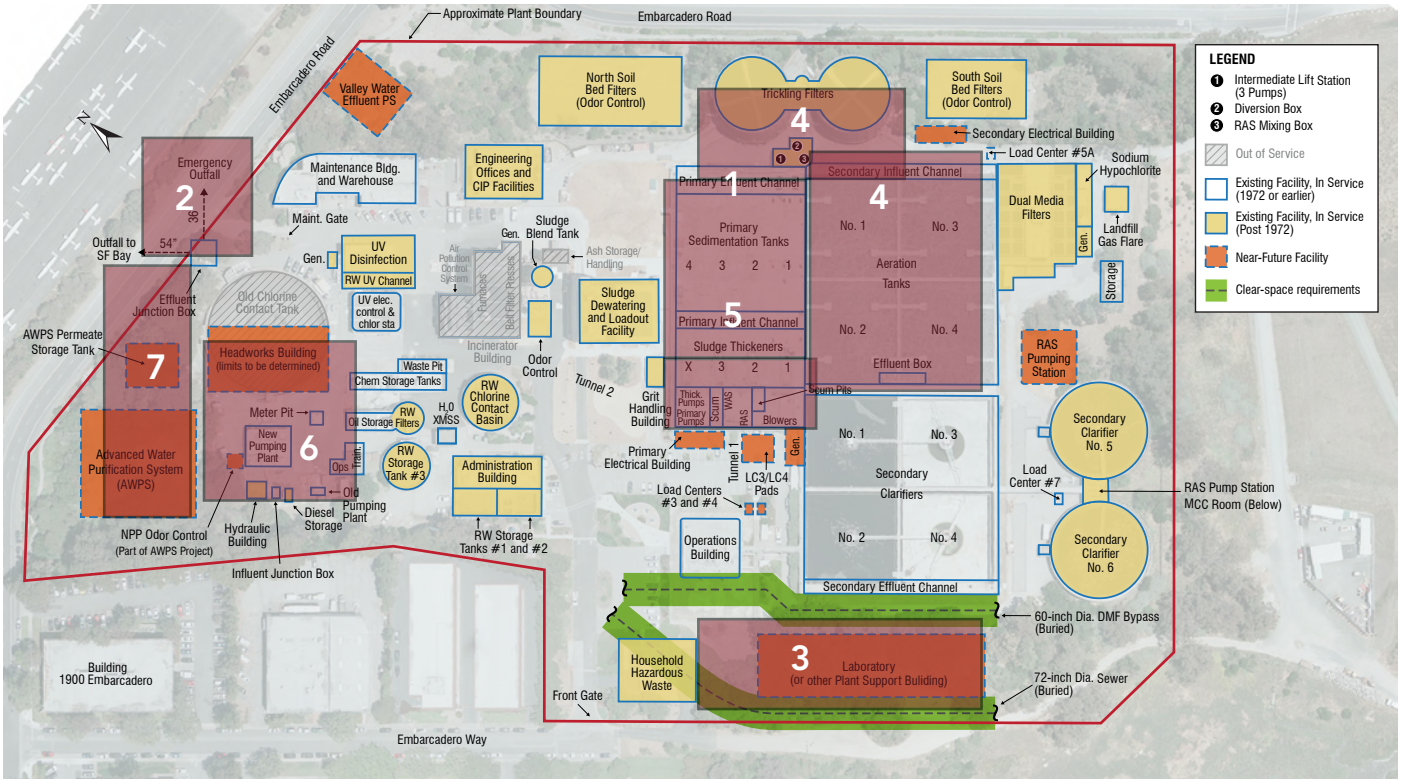


Figure I-3. Aerial Map of Locations of RWQCP Capital Improvement Projects

C. REGULATIONS REQUIRING RWQCP WASTEWATER AND STORMWATER PERMITS

The City of Palo Alto treats wastewater and manages stormwater to meet the standards and requirements contained in six permits that reflect requirements of the Federal Clean Water Act (CWA), the California Porter-Cologne Water Quality Control Act, and the Clean Air Act:

1. **RWQCP (main) NPDES Permit** (Order No. R2-2019-0015, NPDES No. CA0037834)

   Summary: This permit governs the majority of the wastewater discharge limitations and other requirements for the RWQCP. The permit includes reporting and monitoring requirements as well as effluent limitations for conventional and toxic pollutants and effluent toxicity.

2. **Nutrient Watershed NPDES Permit** (Order No. R2-2019-0017, NPDES No. CA0038873)

   Summary: The Nutrient Watershed Permit requires treatment plants discharging to the Bay to routinely monitor and report their effluent for key nutrient parameters, financially support scientific research into this topic, and conduct special studies evaluating the consequences of increased nutrient removal.

3. **Mercury & PCB Watershed NPDES Permit** (Order No. R2-2023-0038, NPDES No. CA0038849)

   Summary: The Mercury & PCB Watershed NPDES Permit covers industrial and municipal wastewater discharges of mercury and PCBs to the Bay. The Watershed Permit is an NPDES permit that implements the waste load allocations for these two source categories. It also implements other provisions of the TMDL requiring pollution prevention, special studies, and risk reduction actions to be conducted by the permittees.

4. **San Francisco Bay Municipal Regional Stormwater NPDES Permit** (Order No. R2-2023-0018, NPDES No. CAS612008)

Table I-2. RWQCP POLLUTANTS OF CONCERN

Pollutant	Reason for Selection
Copper	Effluent limitation; sludge management limits
Selenium	Proposed water quality criteria for South San Francisco Bay
Cyanide	Effluent limitation
Mercury	U.S. EPA 303(d) listing; effluent limitation; air emissions
Polychlorinated Biphenyls (PCBs)	U.S. EPA 303(d) listing
Nutrients	Progression of Nutrient Watershed NPDES permits
Salinity	Recycled water program expansion
Greenhouse Gases	State & Federal reporting regulations; climate change
Ozone Precursors	Bay Area in nonattainment for ozone; smog; respiratory and cardiopulmonary problems
Pesticides	U.S. EPA 303(d) listing
Trash	U.S. EPA 303(d) listing
Fats, Oils and Grease	Sanitary Sewer System Management Plan; sanitary sewer overflows
Contaminants of Emerging Concern	Contaminants of Emerging Concern

Summary: The Municipal Regional Stormwater NPDES Permit covers the discharge of stormwater to the Bay. The Permit requires the RWQCP to carry out various activities and programs to prevent trash, pesticides, mercury, and other pollutants from entering local creeks, and ultimately the Bay. Progress on permit objectives is captured in the Stormwater Annual Report (cleanbay.org) which has a different reporting cycle.

5. **Recycled Water Permit** (Order No. 93-160)

Summary: The Recycled Water Permit ensures that the quality of recycled water produced by the RWQCP meets strict standards for reuse in non-potable applications. The permit also restricts the use of recycled water to appropriate applications such as landscape irrigation, industrial cooling water, decorative fountains, and toilet flushing.

6. **Air Permit**

Summary: The RWQCP maintains a Permit-to-Operate (PTO) that governs the operation, maintenance, and reporting of specific equipment to minimize air pollution that is emitted during its daily treatment of wastewater. The RWQCP does not currently have a USEPA Title V Major Facility Review Permit (Title V Permit).

The RWQCP has led a comprehensive Pollution Prevention Program since 1989 to meet these strict regulatory requirements. **Appendix-A** summarizes the historical highlights of the program.

HOW REGULATORY REQUIREMENTS ARE DEVELOPED

The Regional Water Board adopts and implements water quality criteria that apply to both wastewater and stormwater for the San Francisco Bay based on state and federal requirements. The water quality criteria are contained in the San Francisco Bay Water Quality Control Plan (Basin Plan). Additional water quality criteria may be required by the U.S. Environmental Protection Agency (EPA) or the California Toxics Rule (May 18, 2000). Similarly, the Regional Air District adopts and implements air quality criteria for the San Francisco Bay Area based on state and federal requirements and the specific issues facing this region.

POLLUTANTS OF CONCERN

Section 303(d) of the CWA requires states to identify those water bodies that do not meet water quality standards. The states must rank these impaired water bodies by priority, taking into account the severity of the pollution and how the

body of water is used. Lists of prioritized impaired water bodies are known as the "303(d)" lists and must be submitted to EPA every two years.

The San Francisco Bay is listed as impaired by several pollutants, therefore all dischargers to the Bay are required to obtain and adhere to NPDES permits that are issued by the Regional Water Quality Control Board. **Table I-2** presents the 303(d) pollutants of concern for wastewater and stormwater in the RWQCP service area. While the list is primarily based on listings for Lower South San Francisco Bay and local urban creeks, the RWQCP has three additional reasons for prioritizing pollutants in wastewater:

- Sludge Management Limits—The pollutant is subject to limits for the land application of biosolids derived from sludge;
- Air Emissions—The pollutant is a significant contributor to the air emissions from the RWQCP or is an air pollutant recognized by the U.S. EPA as impairing a local creek or the Bay;
- Recycled Water—The pollutant interferes with the use of or lowers the quality of the RWQCP's recycled water.

D. SUSTAINABILITY PROGRAMS

The City of Palo Alto strives to go beyond permit compliance to be a leader in environmental protection and in so doing maintains an Office of Sustainability. The City has committed to reach Zero Waste by 2030. It also maintains a carbon neutral electric and natural gas portfolio for the public utilities it owns and operates, and green building requirements for new developments or construction projects. Palo Alto is also a designated Tree City-USA, a League of American Bicyclists silver-ranked Bicycle Friendly Community, and has award-winning programs for the watershed protection services it provides to the RWQCP service area. The Office of Sustainability and RWQCP collaborate on efforts related to Climate Protection, Green Purchasing, Extended Producer Responsibility (discussed in Section IV) and Sea Level Rise.

E. REGIONAL COLLABORATIONS

The RWQCP strives to create and implement an effective pollution prevention program to benefit its member agencies and residents, commerce and industry within the service area. Collaborative working groups are effective at furthering these goals and creating solutions for regional pollutants. Therefore the RWQCP participates in several regional collaborations, and funds a selection of nonprofit organizations that further pollution prevention goals, including (but not limited to):

- Aquatic Science Center/San Francisco Estuary Institute Board (SFEI)
- Bay Area Clean Water Agencies (BACWA)
- Bay Area Climate Adaption Network (BayCAN)
- Bay Area Pollution Prevention Group (BAPPG)
- California Association of Sanitation Agencies (CASA)
- Product Stewardship Institute
- Regional Monitoring Program Steering Committee and Working Group Committees
- ReNUWIt (Reinventing the Nation's Urban Water Infrastructure)
- SCVURPPP (Santa Clara Valley Urban Runoff Pollution Prevention Program) and Workgroups/Ad-Hoc Groups
- Santa Clara Basin Watershed Management Initiative (SCBWMI)
- Santa Clara County Climate Collaborative
- Water Environment Federation (WEF)
- Water Environment Research Foundation (WERF)

Details of staff participation in these groups can be found in **Appendix-B.** Please refer to the 2023 BAPPG report, for regional coordination efforts on pollutants of concern.

Table I-3. CURRENT AND ANTICIPATED MANAGEMENT DECISIONS, POLICIES, AND ACTIONS BY THE REGULATORY AGENCIES THAT MANAGE BAY WATER QUALITY[1]

Decisions, Policies, and Actions	Timing
BAYWATERSHED PERMITS (CURRENT & NEXT RENEWAL)	
Municipal Regional Stormwater Permit	2027
Mercury and PCBs Watershed Permit for Municipal and Industrial Wastewater	2027
Nutrient Watershed Permit for Municipal Wastewater	2024
CURRENT HIGH PRIORITY DRIVERS BY TOPIC	
Determination of Wastewater Permit Limits California Toxics Rules	Ongoing
303(d) List and 305(b) Report Current listings and next cycle	2024 2026*/2030
Beneficial Reuse of Dredged Sediment Review sediment guidelines and testing criteria Evaluate the effectiveness of strategic placement	Ongoing
Contaminants of Emerging Concern Updates to CEC Tiered Risk-Based Framework Opportunities to inform regional actions and state and federal regulations	Annual and Ongoing
PCBs Review existing TMDL and inform revisions	Complete by 2028
Mercury Review existing TMDL and inform revisions	Complete by 2026
Nutrients Inform Nutrient Management Strategy	Ongoing
OTHER DRIVERS BY TOPIC	
Dredging Permits Bioaccumulation testing triggers and in-Bay disposal thresholds+	Ongoing
Copper Site specific objectives triggers+	Ongoing
Cyanide Site specific objectives triggers+	Ongoing

*This has been delayed.

Table I-3. CURRENT AND ANTICIPATED MANAGEMENT DECISIONS, POLICIES, AND ACTIONS BY THE REGULATORY AGENCIES THAT MANAGE BAY WATER QUALITY[1] (*CONTINUED*)

Decisions, Policies, and Actions	Timing
OTHER DRIVERS BY TOPIC	
Beneficial uses Fish exposure (PCBs, Hg, and PFAS) and tribal uses	Ongoing
Current Use Pesticides EPA Registration Review of fipronil and imidacloprid DPR fipronil mitigation measures	Ongoing
Legacy Pesticides (DDT, Dieldrin, Chlordane) Monitoring recovery (biota)	Ongoing
Dioxins Review 303(d) listings and establish TMDL development plan or alternative	Ongoing
Sediment Hot Spots Review 303(d) listings and establish TMDL development plan or alternative	Ongoing
POTENTIAL FUTURE DRIVERS	
Specific CECs, e.g., PFAS	TBD
Effects of reverse osmosis concentrate discharge to the Bay	TBD
South Bay Standards-related selenium assessment	TBD
Sea level rise adaptation and changes in salinity, pH, temperature, and dissolved oxygen due to climate change	TBD
Tribal and subsistence use as beneficial uses	TBD
Wetland Restoration Permits Regional wetland monitoring	TBD
Trash and Microplastics	TBD
Effects of Reduced Wastewater and Stormwater Inputs to the Bay	TBD

[1] SFEI. 2024. Regional Monitoring Program for Water Quality in San Francisco Bay: 2024 Annual Update
[+] Triggers will be updated on the RMP sampling frequency (every 5 years for sediment, every 2 years for water).
[*] Data for 2029 Integrated Report needed by 2026.

SECTION II

POLLUTANTS WITH PERMIT REQUIREMENTS

A. RWQCP MAIN NPDES PERMIT

PERMIT DETAILS

In 2019, the San Francisco Bay Regional Water Quality Control Board (Regional Board) reissued the Regional Water Quality Control Plant's (RWQCP) National Pollutant Discharge Elimination System (NPDES) permit (Order No. R2-2019-0015, NPDES No. CA0037834) which covers the discharge of treated wastewater to the Bay. The permit became effective on June 1, 2019 and is valid through May 31, 2024. The permit includes reporting and monitoring requirements as well as effluent limitations for conventional pollutants (e.g. biochemical oxygen demand, ammonia, suspended solids, chlorine residual, enterococci), effluent toxicity, and toxic pollutants (e.g., metals, cyanide, and dioxin). **Appendix C** lists the effluent limits in the permit.

The discharge of mercury, ammonia, and pesticides are regulated by this permit and also by regional watershed and municipal permits. Refer to Chapters II.B, II.C, and III.2 for details on the RWQCP mercury, ammonia, and pesticide pollution prevention programs.

The permit also requires a Pretreatment Program that reduces pollutants entering the sanitary sewer system by regulating industrial and commercial discharges within the RWQCP service area. Since its inception in 1981, the RWQCP Pretreatment Program has resulted in significant reductions in metals and other pollutants in the RWQCP influent, therefore making it easier for the RWQCP to meet the Permit effluent discharge limits. See the 2023 Pretreatment Program Annual Report for more information on this program.

ENVIRONMENTAL CONCERNS

In order to protect human health and the environment, the permit includes effluent limitations for RWQCP discharges to the San Francisco Bay. Each pollutant is limited based on different environmental concerns. Heavy metals such as copper and silver can have detrimental effects to aquatic organisms, including but not limited to: reduced growth and reproduction rates, developmental abnormalities, bioaccumulation, paralysis and death. Inorganic pollutants such as selenium have been observed to cause neurological disorders, liver damage, reproductive failure, reduced growth rates, and bioaccumulate in aquatic life such as white sturgeon. The San Francisco Bay is listed under section 303(d) of the Clean Water Act as impaired by selenium due to bioaccumulation in diving ducks, leading to health advisories on their consumption by hunters. Similarly, fish are extremely susceptible to cyanide toxicity in aquatic environments, exhibiting reduced reproductive capacity and mortality at low concentrations. Inorganic cyanides, which possess the polyatomic cyanide ion (CN^-), such as sodium or potassium cyanide, are highly toxic. Industrial operations are the primary contributor of cyanide to the RWQCP.

2023 PROGRAM UPDATES

1. COPPER

The Permit requires the RWQCP to have a Copper Contingency Plan and Control Program to reduce the amount of copper entering the Bay (**Appendices D and E**). RWQCP influent and effluent loadings are tracked to evaluate the overall success of the Copper Control Program. Estimated contributions of copper sources

to the RWQCP are presented in **Figures II.A-1** and **II.A-2**. **Figure II.A-3** presents the annual copper mass loadings in the RWQCP's influent and effluent from 1989 through 2023. Influent and effluent copper mass loadings decreased steadily from 1989 until 1994 when copper mass loadings reached a low plateau and have remained relatively stable since. The decrease in copper effluent during this time period may be attributed to a decrease in copper coming into the Plant and/or an increase in Plant performance. In 2023 there was a decrease in copper influent concentrations and mass loadings when compared to 2022. Residential outreach for copper pollution prevention in pools, spas and fountains was posted on the City's cleanbay.org website and baywise.org.

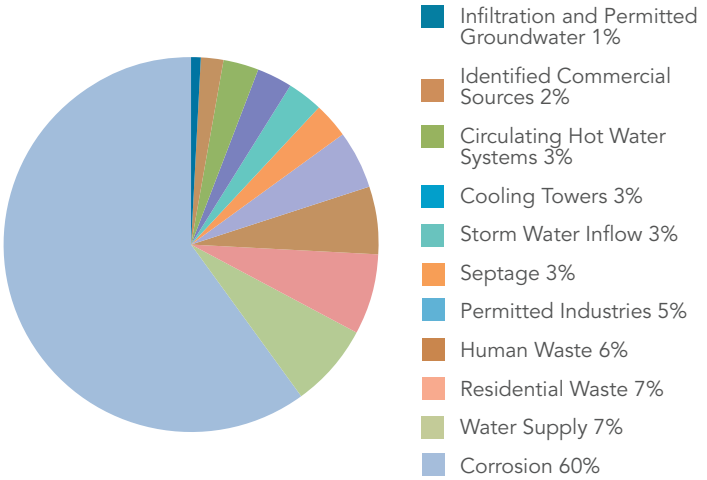


Figure II.A-1. Estimated Contributions of Copper Sources to the RWQCP[1]

2. SILVER

The RWQCP Silver Hauling Program has regulated the disposal of used silver-bearing photoprocessing solutions since 1992. Businesses that collect their silver-bearing photoprocessing solutions for offsite disposal as hazardous waste are required to submit annual reports certifying that all such solutions were properly hauled offsite for disposal. Businesses that elect to treat their silver-bearing photoprocessing solutions and discharge them to the sanitary sewer are issued discharge permits and are required to conduct monthly sampling to verify that they meet silver discharge standards. In 2023, no businesses were treating their silver-bearing photoprocessing waste on-site and discharging to the sanitary sewer. In 2023, 5 businesses participated in the RWQCP Silver Hauling Program. These facilities are expected to continue to switch to digital imaging for photographic, medical, and dental operations, which does not involve the use of chemicals.

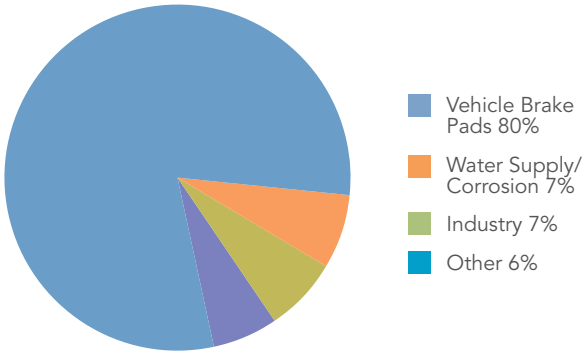


Figure II.A-2. Copper Sources in Urban Stormwater Runoff[2]

[1] Palo Alto Regional Water Quality Control Plant, *Copper Source Identification*, 2002

[2] Santa Clara Valley Runoff Pollution Prevention Program, *Metals Control Measures Plan and Evaluation of Nine Metals of Concern*, February 1997

RWQCP COPPER POLLUTION PREVENTION HISTORY*

1990

- RWQCP develops Copper Contingency Plan (Appendix D)

1994

- RWQCP service area adopts more stringent Sewer Use Ordinance requirements for metal finishers and printed circuit board manufacturers
- Influent and effluent copper mass loading decreases by about 50% from 1989 to 1994

1996

- The City of Palo Alto co-founds the Brake Pad Partnership, working with stakeholders to address copper water pollution from vehicle brake pads

2003

- The City of Palo Alto prohibits the use of copper roofing

2006

- Elevated copper levels are found in RWQCP incinerator ash

2007

- The RWQCP begins to send incinerator ash to a hazardous waste landfill due to elevated copper

2009

- The EPA approves Copper Site Specific Objectives and Copper Action Plan applicable to all of San Francisco Bay dischargers
- RWQCP assesses plastic alternatives to copper piping and determines them unsuitable as a pollution prevention alternative

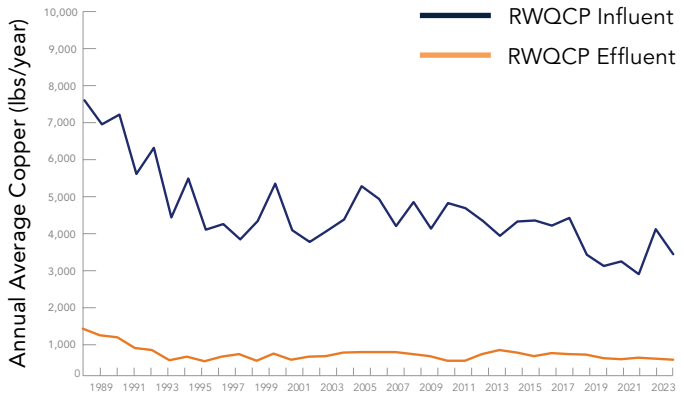


Figure II.A-3. RWQCP Copper Influent and Effluent Loading: 1989-2023

3. CYANIDE

The permit requires the RWQCP to have a Cyanide Action Plan and Control Program to reduce the amount of cyanide entering the Bay (**Appendix F, G**). The Cyanide Control Program requires that contributing sources be included in the control program, inspected at least annually, and provided with cyanide pollution prevention educational materials. During inspections, RWQCP staff stress the importance of proper cyanide control and confirm that appropriate cyanide control measures are being implemented. The RWQCP issues discharge permits with cyanide limits to contributing sources. These permits require contributing sources to properly store, segregate and pretreat all cyanide-bearing wastestreams prior to combination with other non-cyanide-bearing wastestreams before sanitary sewer discharge. The permits also require contributing sources to perform sampling of process wastestreams to verify compliance with cyanide discharge standards. The RWQCP performs sampling of these wastestreams to verify compliance with cyanide discharge standards. In 2023, the Cyanide Sampling and Response Plan was updated to align with the requirements of the current NPDES Permit. High influent cyanide concentrations (5.5 - 15 ug/L) were observed since the RWQCP switched its commercial laboratory in late 2022. This suggests a possible positive interference in the analytical method although no evidence support invalidation of the data. An investigation including surveillance monitoring and split sampling supports the theory of a positive interference. Despite the elevated concentrations, no significant cyanide discharge occurred in 2023 as defined by the main NPDES Permit. To be conservative, cyanide samples will be analyzed by the in-house laboratory, instead of the commercial laboratory, moving forward. Additional information about this determination and the industrial facilities that are listed as potential contributing sources in the Cyanide Control Program is available in the 2023 Pretreatment Program Annual Report.

4. FATS, OILS and GREASE (FOG)

FOG discharges cause or contribute to sanitary sewer system blockages that may result in discharges of untreated wastewater to the City's storm drain system, creeks and the Bay. Sanitary Sewer Overflows (SSOs) pose a risk to human health, aquatic life and the environment. Consequently, the City's FOG program aims to reduce the severity and frequency of SSOs linked to FOG, as well as the cleanup costs and liability to the City associated with cleanups. The Utilities

2010

- 1994 Sewer Use Ordinance is updated
- The Brake Pad Partnership sponsors California law SB 346 to implement programs for elimination of copper in brake pads
- RWQCP begins funding copper pollution prevention outreach through BAPPG
- RWQCP develops Copper Control Program per NPDES Permit (Appendix E)

2014

- The first requirement of SB 346, to label brake pad copper content and eliminate lead, asbestos and toxic metals from all brake pads, takes effect
- BAPPG re-evaluates plastic alternatives to copper piping and finds PEX as a pollution prevention alternative

2015

- BAPPG conducts four copper pollution prevention presentations to a total of 300 plumbers and apprentices

2016

- DTSC finalizes California Brake Pad Law requiring copper content reductions beginning in 2023
- BAPPG supports a presentation at Laney Community College about flux and flushing BMPs

2017

- BAPPG supports one presentation at Laney Community College, Oakland (15 students) about flux and flushing BMPs
- SEPA requires users to contact local agencies and follow their instructions for draining copper-treated swimming pools and spas to avoid copper pollution and collection system backups

2018

- Submitted Report of Waste Discharge for permit reissuance

2019

- Reissued NPDES Permit

2023

- Motor Vehicle Brake Friction Materials statute prohibits motor vehicle brake friction materials containing more than 5% copper by weight from being sold in California

**Refer to the previous Clean Bay Plan reports for more information.*

Department prioritizes this work in its Sewer System Management Plan and tracks SSOs and their cause (**Table II.A-1**).
In addition, the Public Works Department has a full-time FOG Inspector who focuses on reducing these pollutants to creeks and the Bay.

The primary sources of FOG entering the RWQCP are from commercial and residential sectors, while multi-family housing developments also contribute significant FOG. Commercial businesses that contribute to FOG are food facilities that include restaurants, grocery stores, food courts and cafeterias. The City has several high density and high volume restaurant areas including Downtown, Midtown, Town and Country Village, Stanford Shopping Center and the California Avenue Business Districts. These areas have been the primary targets for increased inspection, enforcement, and preventative sewer line cleaning.

The City's FOG Program Staff reviews plans and specifications for proposed new and remodeled food facilities to ensure optimal design for FOG control and pollution prevention. Requirements for new construction and remodels include:

- all grease-generating drainage fixtures must be plumbed to an approved and properly-sized Grease Control Device (GCD);
- all non-grease generating drainage fixtures, including high temperature discharges, shall be plumbed directly to the sanitary sewer system; and
- new buildings constructed to house food facilities must include a covered refuse enclosure large enough to accommodate all garbage, recycling, compost and waste oil containers.

Table II.A-2 provides a 2023 summary of FOG inspections and associated enforcement and SSO data as related to food facilities. Types of enforceable actions included:

- excessive FOG on and around outdoor waste oil bins;
- storm drain discharges, or threatened storm drain discharges, such as washing kitchen equipment outside, allowing wastewater to flow to the storm drain system, or dumping mop wastewater in outside areas;
- failure to keep a maintenance log that documents GCD clean-out activities;
- failure to have an adequate and/or properly functioning GCD;
- contribution to at least one SSO; and
- the presence of food waste grinders that were to be removed by January 1, 2007.

The City is currently updating its FOG ordinance.

Table II.A-1: ANNUAL SANITARY SEWER OVERFLOWS (SSOs)

	SSOs				
	COMMERCIAL		RESIDENTIAL		TOTAL
	SSO CAUSED ONLY BY FOG	FOG RELATED SSO	SSO CAUSED ONLY BY FOG	FOG RELATED SSO	
2013	1	4	3	7	15
2014	2	2	-	6	10
2015	2	1	3	4	10
2016	1	1	2	2	6
2017	1	0	1	1	3
2018	0	0	0	2	2
2019	0	0	0	1	1
2020	1	1	7	0	9
2021	0	0	3	2	5
2022	1	1	0	5	7
2023	0	3	2	5	10

LOOKING FORWARD

In 2024, the RWQCP will:

- continue to focus on copper pollution prevention activities;
- continue to implement the Cyanide Action Plan and Control Program;
- inspect any businesses that generate FOG that have not yet been inspected;
- improve communication between Environmental Services and the City of Palo Alto's Building Department to ensure that any new/remodeled food facilities are inspected for FOG-related issues during early construction phases; and
- distribute mailers to all food facilities prior to the holiday season reminding them to properly maintain all GCDs as outlined in the City's Sewer Use Ordinance.

Table II.A-2: SUMMARY OF FOG INSPECTION PROGRAM – 2023 EVALUATION

Evaluation Criteria	2023 Evaluation (number inspected)
Facilities Inspected	35
Inspections	42
Verbal Warnings	12
Warning Letters	9
Notices of Violation	1
Compliance Agreements	0
Percent Compliance related to Total Inspections	55%
Plan Sets Reviewed	23
Number of Grease related SSOs in Residential Areas	7
Number of Grease related SSOs in Commercial Areas	3

B. MERCURY AND POLYCHLORINATED BIPHENYL (PCB) NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT

PERMIT DETAILS

In 2006, due to the high levels of mercury and PCBs in the Bay, the State identified the San Francisco Bay as "impaired" for both pollutants and listed it on the 303(d) List–California's list of impaired waters per the Federal Clean Water Act (CWA). Per CWA requirements, the Regional Water Quality Control Board (Regional Board) developed total maximum daily load (TMDL) documents for both pollutants. A TMDL is the maximum amount of a pollutant that a body of water (e.g., San Francisco Bay) can receive while still meeting water quality standards. TMDLs generally describe what must be done by the permittee(s) in order to meet wasteload allocation (the pollutant load allocated to current and future point sources) requirements. TMDLs were adopted for both mercury and PCBs in 2006 and 2008, respectively. In turn, the Mercury and Polychlorinated Biphenyl (PCB) National Pollutant Discharge Elimination System (NPDES) Permit identifies the wasteload allocations and describes the implementation requirements of both TMDLs.

The City of Palo Alto, along with other municipal and industrial dischargers in the San Francisco Bay Area (e.g., wastewater treatment plants and particular industrial facilities) must adhere to the requirements of this permit, which regulates point source discharges of mercury and PCBs from dischargers' facilities to surface waters (e.g., San Francisco Bay). Therefore, the Mercury and PCB Permit describes what actions the City must carry out in order to minimize discharges of these two pollutants, including source control and risk reduction programs.

ENVIRONMENTAL CONCERNS

Mercury and PCBs are pollutants known to bioaccumulate. Contamination of these pollutants also affects existing beneficial uses of water bodies for things like sport fishing, preservation of rare and endangered species, and wildlife habitat.

RWQCP MERCURY POLLUTION PREVENTION HISTORY*

1997

- Mercury loading evaluation is conducted using local sampling information, data from other wastewater treatment plants, and scientific literature to quantify the relative importance of sources

1998

- RWQCP begins thermometer and thermostat takeback program

2000

- RWQCP partners with the MidPeninsula Dental Society (MPDS) to educate dentists on preventing mercury contamination in San Francisco Bay
- The City starts the Residential Fluorescent Lamp Recycling Program (transferred to the county in 2004). The RWQCP continues to accept mercury containing lights at its Household Hazardous Waste Station

2002-03

- Conducts a thorough investigation of the uses of mercury at RWQCP
- Removes/Replaces 84 mercury switches (approximately 4 pounds) from the RWQCP

2004

- Adopts a new ordinance language requiring all owners and operators of dental vacuum suction systems to install ISO 11143 certified amalgam separators designed to remove at least 95% of amalgam by March 31, 2005

2006

- The Regional Water Quality Control Board adopts the mercury total maximum daily loads (TMDL) on August 9

2009

- RWQCP begins participation in the Bay Area Pollution Prevention Group (BAPPG) outreach efforts for mercury pollution prevention

In addition, elevated mercury concentrations have been linked to certain shorebird eggs failing to hatch. Point sources for mercury discharged to the RWQCP include laboratory, hospital, and dental office wastewater; human and food waste; and stormwater inflow.

While PCB point sources are unknown, they may be associated with human waste and wastewater generated from old industrial equipment which may contain PCBs. Mercury is present in both wastewater and stormwater discharges to the Bay. Mercury in South Bay stormwater discharges comes from mobile combustion, stationary combustion, erosion (construction and naturally occurring), and abandoned mercury mine drainage. The estimated contributions of mercury to the San Francisco Bay are shown in **Figure II.B-1.**

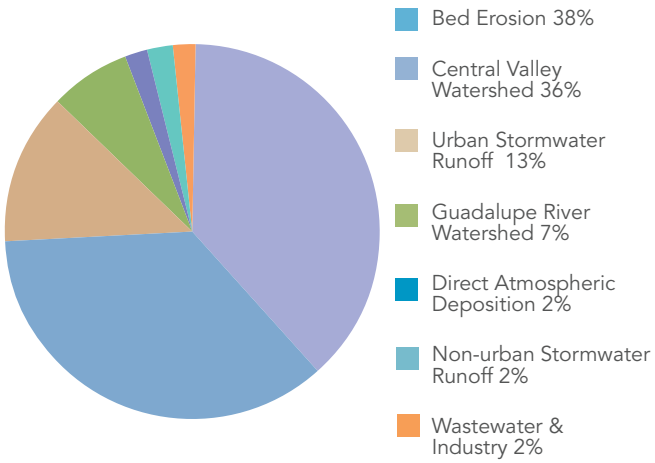


Figure II.B-1. Estimated Contributions of Mercury to the San Francisco Bay

2023 PROGRAM UPDATES

1. MERCURY

In 2023, the Palo Alto Regional Water Quality Control Plant (RWQCP) revamped its Dental Amalgam Discharge Program to better capture new facilities and align with the federal requirements. In 2023, there were 145 dental offices within the service area that were monitored by the Dental Amalgam Discharge Program. Thirty dental offices were inspected and confirmed that the required best management practices (BMPs) were being implemented and that the self-certification forms accurately described operations.

SECTION II

2010

- The cities of Palo Alto, Los Altos, Mountain View, East Palo Alto and Stanford conduct a second mercury takeback campaign

2011

- City staff educates heating, ventilation, and air conditioning (HVAC) contractors and suppliers about the Thermostat Recycling Coalition, which collects mercury containing thermostats

2012

- RWQCP pilots the Clean Bay Business Program with dental offices

2014

- RWQCP staff confirms the majority of dentists comply with amalgam separator maintenance through a combination of annual reports and inspections
- Palo Alto educates two classes of dental hygienists at Foothill College about minimizing mercury pollution from dental offices
- BAPPG educates over 272 students throughout the Bay Area about mercury pollution prevention

2015

- BAPPG educates over 297 dental assistant and hygienist students at 7 different colleges throughout the Bay Area on mercury pollution prevention

2017

- RWQCP discontinued pilot dental office Clean Bay Business Program
- US Environmental Protection Agency promulgates technology-based pretreatment standard to reduce discharges of mercury from dental offices into publicly owned treatment works
- BAPPG educated 150 dental assistant and hygienist students at 4 different colleges throughout the Bay Area on mercury pollution prevention

2021

- BAPPG continues dental mercury pollution prevention outreach reaching 68 students at two schools

2023

- City staff worked with the California Environmental Reporting System database to ensure that all dental offices in Palo Alto were captured during inspections and self-certification form process

**Refer to previous Clean Bay Plan reports for more information.*

2. POLYCHLORINATED BIPHENYLS (PCBS)

RWQCP staff is required to routinely identify controllable sources of polychlorinated biphenyls (PCBs) according to the Mercury and PCB Watershed Permit, Section 6.3.3. As of this writing, there are no controllable sources of PCBs to the sanitary sewer. RWQCP staff continues to evaluate potential sources of PCBs to the storm drain system. Refer to the 2023 Stormwater Annual Report for more details on those efforts.

LOOKING FORWARD

RWQCP staff will continue to carry out mercury and PCB projects to meet the Mercury and Polychlorinated Biphenyl (PCB) National Pollutant Discharge Elimination System (NPDES) Permit requirements. In 2024, the City will:

- continue to track new dental offices and annually inspect approximately 20% of offices in the RWQCP service area;
- continue to educate dental assistant and hygienist students on mercury pollution prevention via BAPPG;
- obtain one-time compliance reports from new/change in ownership facilities;
- create outreach material reminders for dental offices on Program requirements;
- work with partner agencies to ensure all dental facilities are captured; and
- participate in the regional efforts regarding PCB load reduction efforts.

C. NUTRIENT WATERSHED NPDES PERMIT

PERMIT DETAILS

The San Francisco Bay Regional Water Quality Control Board (Regional Board) adopted the second Nutrient Watershed Permit on May 8, 2019 that covers discharge of nutrients from wastewater treatment plants, Order No. R2-2019-0017, National Pollutant Discharge Elimination System Permit (NPDES) No. CA0038873. The Nutrient Watershed Permit became effective July 1, 2019. It requires treatment plants discharging to the Bay to routinely monitor and report their effluent for key nutrient parameters, financially support scientific research on this topic, and conduct special studies that evaluate using Recycled Water Programs in natural systems to reduce nutrient discharges to the Bay. The RWQCP actively participates in regional collaborations on this topic organized by the Bay Area Clean Water Agencies (BACWA) and led by the San Francisco Estuary Institute (SFEI). The RWQCP has a discharge limit for ammonia under the main RWQCP NPDES Permit due to toxicity concerns. It is expected that all future nutrient limits will fall under the Nutrient Watershed Permit.

Nutrient discharge limits may be in the 2024 permit reissuance, depending on the Nutrient Science Plan conclusions.

ENVIRONMENTAL CONCERNS

Nutrients, such as nitrogen and phosphorus, are essential elements for plant, animal, and microorganism growth. The San Francisco Bay is nutrient-enriched, and the Lower South San Francisco Bay in particular has had near constant or decreasing nutrient loads discharged from wastewater treatment plants since the 1990s.[1] However, a 2014 study found that wastewater treatment plants are the major nutrient source to the Lower South San Francisco Bay and that stormwater does not substantially contribute nutrients to the subembayment on an annual scale.[2] Despite this, the Bay has historically exhibited resistance to typical environmental problems associated with nutrient enrichment, specifically large algal (phytoplankton) blooms which can lead to low dissolved oxygen conditions and fish kills. A large part of the scientific research required under the current Nutrient Watershed Permit tries to identify why the Bay's assimilative capacity for nutrients appears to be decreasing. Contributing factors may include: loss of the benthic bivalves (clams) that

[1]Crauder, J. Downing-Kunz, M.A., Hobbs, J.A., Manning, A.J., Novick, E., Parchaseo, F., Wu, J., Schoelhamer, D.H., Senn, D.B., Shellenbarger, G.G., Thompson, J. and D. Yee, *Lower South Bay Nutrient Synthesis*, Contribution No. 732, San Francisco Estuary Institute & Aquatic Science Center, 2016.

[2]Novick, E. and Senn, D.B., *External Nutrient Loads to San Francisco Bay*, Contribution No. 704, San Francisco Estuary Institute, 2014.

RWQCP NUTRIENTS POLLUTION PREVENTION HISTORY*

1980

- RWQCP constructs nitrification processes to transform ammonia to nitrate prior to discharge

2011

- RWQCP completes Ammonia Characterization Study indicating receiving waters meet water quality objectives for ammonia

2012

- San Francisco Bay Regional Water Quality Control Board (Regional Board) implements Water Code Section 13267 Technical Report Order and requires municipal wastewater dischargers to collect and report nutrient concentrations and mass loadings
- RWQCP completes Long Range Facilities Plan

2014

- Regional Board adopts the Nutrient Watershed Permit
- RWQCP completes trunkline analysis of ammonia that found no significant industrial dischargers despite a 17% increase in ammonia load between 2005 and 2014
- RWQCP constructs magnesium hydroxide addition system to counter insufficient alkalinity in nitrification process and subsequent pH decreases
- BAPPG publishes Source Reduction and Related Strategies to Reduce Nutrient Loading to San Francisco Bay report

2015

- RWQCP completes optimization evaluation of belt press filtrate, septage, and Renzel Marsh for nutrient removal indicating that 21% of phosphorus and 40% of nitrogen incidentally removed in current process and Renzel Marsh may be optimized but needs further study
- RWQCP completes optimization evaluation of Recycled Water Program and Phase II of Renzel Marsh identifying the Recycled Water Program as possible optimization option over Renzel Marsh due to size and maintenance constraints
- BACWA begins publishing Group Annual Reports summarizing nutrient discharges to the Bay from the 34 wastewater treatment plants

2016

- RWQCP completes the Phosphorus Evaluation: Regional Comparison and Projections
- San Francisco Estuary Institute (SFEI) publishes the Lower South Bay Nutrient Synthesis summarizing known nutrient interactions within the subembayment

2017

- RWQCP completes the Total Nitrogen Removal Study indicating that the 43% total nitrogen removal through the plant is mainly from settling of particulate-bound organic nitrogen in the primary sedimentation tanks and the secondary clarifiers
- RWQCP completes the Nutrient Load Reduction Alternatives Cost Comparison suggesting that process upgrades is the most cost effective nutrient removal alternative when compared to expanded recycled water use and marsh expansion

2018

- RWQCP completes the Secondary Treatment Process Evaluation technical memorandum recommending reconfiguration to Modified Ludzack-Ettinger process
- BACWA publishes the Nutrient Reduction Study evaluating nutrient removal upgrades for all Bay Area wastewater treatment plants

2019

- Nutrient Watershed Permit reissued

2022

- Harmful algal bloom throughout San Francisco Bay results in fish die-off

2023

- Harmful algal bloom throughout San Francisco Bay results in fish die-off
- Secondary Treatment Upgrades Project begins construction

Refer to previous Clean Bay Plan reports for more information.

had previously regulated the phytoplankton biomass through grazing; decreased suspended sediment concentrations that have resulted in increased light penetration; new sources of phytoplankton to the Bay from exchange with the highly-productive, recently restored salt ponds in the South Bay; and/or mixing between low dissolved oxygen water from margin habitats (such as sloughs) with the open-Bay.[1] Most recently a harmful algal bloom occurred in San Francisco Bay in late July 2022 and again in September 2023 that resulted in fish die-off at multiple locations around the Bay. These blooms suggest that nitrogen from municipal wastewater treatment plants, like the RWQCP, could contribute toward exceeding the Bay's narrative objective for biostimulatory substances. A previous study indicated that the majority of nitrogen discharged by municipal wastewater treatment plants stems from human urine and feces, not from other, preventable sources.[1] Therefore, it is critical that municipal wastewater treatment plants prepare now for future discharge limits on total inorganic nitrogen to ensure continued compliance.

2023 PROGRAM UPDATES

The Nutrient Watershed Permit requires the RWQCP and other wastewater treatment plants to evaluate options for increased nutrient removal by optimization of current treatment processes. As part of this on-going effort, in 2023 the RWQCP began construction of the Secondary Treatment Upgrades Project; a multi-year construction project that once finished will significantly reduce the amount of nitrogen discharged by the RWQCP.

The 2023 average total inorganic nitrogen effluent concentrations was 28 milligrams per liter (mg/L) (**Figure II.C-1**). The 2023 average total phosphorus influent and effluent concentrations were 6 and 4 mg/L respectively (**Figure II.C-2**).

LOOKING FORWARD

In 2024, the RWQCP will continue to work with BACWA, SFEI, and the Regional Board to continue research and fully inform the next versions of the Nutrient Watershed Permit. As part of this ongoing effort, the RWQCP will continue to:

- collect nutrient data;
- participate in the San Francisco Bay Nutrient Management Strategy; and
- construct secondary process retrofits and improvements for nutrient removal.

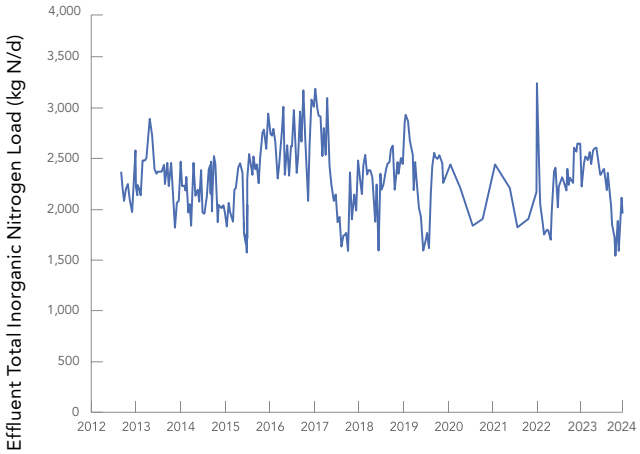


Figure II.C-1: Historical RWQCP total inorganic nitrogen effluent loads.

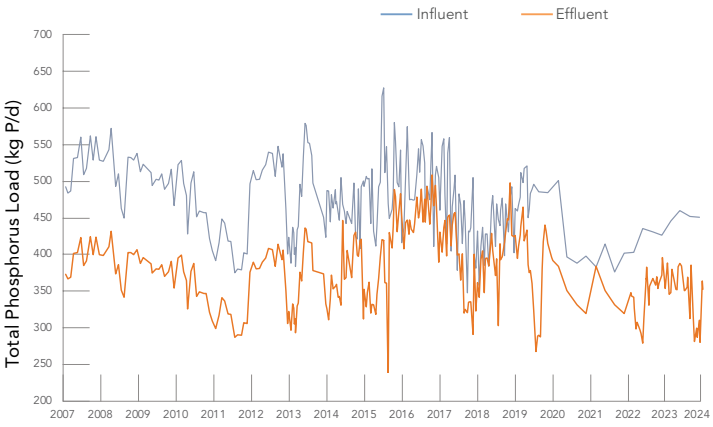


Figure II.C-2: Historical RWQCP total phosphorus mass influent and effluent loads (influent data from 2007 – July 2013 are estimated total phosphorus loads based on effluent concentrations and estimated RWQCP percent removal).

[1]Hughes, S., *Source Reduction and Related Strategies to Reduce Nutrient Loading to San Francisco Bay*, prepared for the Bay Area Pollution Prevention Group, 2014.

D. RWQCP'S RECYCLED WATER NPDES PERMIT

PERMIT DETAILS

The San Francisco Bay Regional Water Quality Control Board (Regional Board) adopted the Water Reclamation Requirements for the Regional Water Quality Control Plant (RWQCP), Order No. 93-160, otherwise referred to as the Recycled Water Permit, in 1993. The Recycled Water Permit ensures that the quality of the recycled water produced by the RWQCP meets strict standards for biochemical oxygen demand, dissolved oxygen, dissolved sulfide, turbidity, total coliform bacteria and chlorine residual. The Recycled Water Permit also restricts the use of recycled water to appropriate applications such as landscape irrigation, industrial cooling water, decorative fountains, and toilet flushing. Applications for the use of recycled water are reviewed by the RWQCP, and sometimes by the State Water Resources Control Board Division of Drinking Water, for appropriateness.

In addition to the permit, the City of Palo Alto adopted a Recycled Water Salinity Reduction Policy in 2010 with the ultimate goal of reducing salinity below 600 milligrams per liter (mg/L) of total dissolved solids (TDS).

ENVIRONMENTAL CONCERNS

Recycled water is a safe, environmentally sustainable alternative to potable (drinking) water for non-potable applications. Recycled water contains salinity, for which TDS is a surrogate parameter. Salinity sources are mainly from human waste and from saline groundwater inflow and infiltration (I&I) into broken and aging sewer pipelines. At elevated levels, salinity can negatively impact salt-sensitive vegetation as well as limit the use of recycled water in industrial cooling towers. Recycled water also contains chlorine from the disinfection process which can be harmful to aquatic life if misapplied or accidentally spilled in to a stormdrain or creek. As such, the application of recycled water is highly regulated and spills are reported immediately to regulators.

2023 PROGRAM UPDATES

1. RECYCLED WATER USE

In 2023, the RWQCP produced 240 million gallons of recycled water, a 13 percent decrease from the previous year (**Figure II.D-1**). RWQCP staff conducted 6 inspections in 2023 and observed no major findings. Refer to the 2023 Annual Recycled Water Report for further information.

Although not reflected in the current recycled water use statistics, RWQCP staff continued to make progress in Recycled Water Program expansion planning efforts in 2023. In particular, RWQCP worked closely with the City of Mountain View and Valley Water to evaluate regional expansion opportunities.

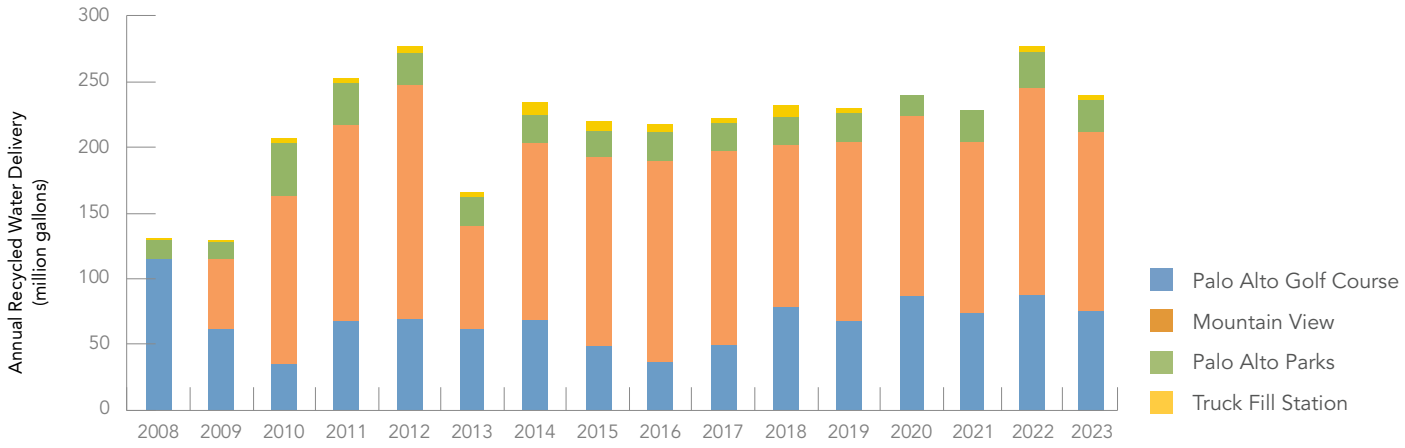


Figure II.D-1: Historical RWQCP Recycled Water Use.

RWQCP RECYCLED WATER PROGRAM HISTORY*

1975

- Santa Clara Valley Water District builds recycled water facility at the RWQCP which produces highly treated water for groundwater recharge and lesser treated water for landscape irrigation

1986

- Beginning of Palo Alto's Recycled Water Program
- Santa Clara Valley Water District decommissions advanced treatment system and sells recycled water treatment facility to Palo Alto; Palo Alto continues to operate recycling facilities for landscape irrigation in Mountain View

1990

- Recycled water extends to Greer Park (Phase 1)

1992

- Water Reclamation Master Plan is completed

1993

- Recycled water pipeline extends to the Palo Alto Golf Course and Palo Alto's Municipal Services Center yard (Phase 1)

1995

- City Council certifies the Programmatic Environmental Impact Report for the Master Plan projects

2005

- Recycled Water Market Survey is completed

2007

- Facility Plan for Recycled Water Pipeline Expansion to Stanford Research Park (Phase 3) is completed

2008

- City of Palo Alto passes Recycled Water Ordinance
- Initial Study and Mitigated Negative Declaration for the Recycled Water Pipeline Expansion to Stanford Research Park (Phase 3) is completed
- Recycled Water Pump Station is upgraded with the goal to deliver 489 million gallons of recycled water

2009

- New recycled water pipeline to Mountain View is constructed (Phase 2)
- Redwood Tree Monitoring Study starts to monitor the effects of recycled water irrigation on redwood trees in the Mountain View Shoreline area
- Infiltration and Inflow Conductivity Study of the wastewater collection system is started

2010

- City of Palo Alto passes a Recycled Water Salinity Reduction Policy, with goal of lowering TDS to less than 600 ppm
- RWQCP completes 1st reverse osmosis pilot project that evaluates TDS reduction ability of reverse osmosis

2013

- City of Mountain View Shoreline Sewer Rehabilitation Project repairs sewer lines with known infiltration of saline groundwater

**Refer to previous Clean Bay Plan reports for more information.*

2014

- City of Mountain View Landfill Barrier Extraction Well Removal Project removes two wells that previously discharged saline water into the sewer
- EPASD replaces sewer mains on several streets to address saline groundwater intrusion problem and repairs leak at the bottom of a manhole on their main trunkline, which was allowing saline groundwater to enter the sewer
- City of Los Altos Trunk 101 to Meter Station sewer rehabilitation
- RWQCP completes 2nd reverse osmosis pilot project that evaluates hydrogen peroxide as a biofouling control agent

2015

- RWQCP completes Environmental Impact Report for Recycled Water Pipeline Expansion to Stanford Research Park (Phase 3)

2016

- RWQCP completes analysis of 72" Trunkline conductivity testing and provides information to Engineering department to facilitate repair of identified infiltration
- Redwood Tree Monitoring Study is completed and indicates that redwood trees irrigated with recycled water show signs of salt damage
- RWQCP starts 3rd reverse osmosis pilot project to evaluate pretreatment options
- State Water Resources Control Board approved Statewide General Order for Non-potable Recycled Water (WQ 2016-0068-DDW)

2017

- RWQCP, in collaboration with the City of Mountain View and the Santa Clara Valley Water District, completes the following:
  - Advanced Water Purification System Feasibility Study that recommended reverse osmosis for TDS reduction
  - Advanced Water Purification System Preliminary/Conceptual Design Report for a 1 MGD facility expandable to 2 MGD
  - White Paper on future use of Site 4 (Measure E Site) for an Advanced Water Purification System

2018

- RWQCP completes the 3rd reverse osmosis pilot identifying ultrafiltration as recommended reverse osmosis pretreatment option
- RWQCP completes the Reverse Osmosis Concentrate Toxicity Study finding no toxicity for reverse osmosis facilities smaller than 3.9 MGD permeate capacity
- RWQCP in collaboration with the Santa Clara Valley Water District, completes the following:
  - Preliminary Design for Phase 3 Recycled Water Distribution System,
  - Business Plan for Phase 3 Expansion Project, and
  - Groundwater Assessment and Indirect Potable Reuse Feasibility Evaluation and Implementation Strategy

2019

- Signed deal with Valley Water & City of Mountain View for regional water reuse and local salt removal facility
- Completed Northwest County Recycled Water Strategic Plan

2022

- Updated Title 22 Engineering Report submitted
- Truckfill Station tracking system installed

2. SALINITY

Since 2010, the RWQCP and its partner cities have repaired and replaced sewer pipelines to decrease the amount of salts entering via infiltration and inflow. Cumulatively, these efforts reduced recycled water salinity by roughly 15 percent (**Figure II.D-2**). Unfortunately, reductions from infiltration and inflow repairs have not been sufficient to meet the City-wide goal of 600 mg/L. As such, in 2023 the RWQCP continued to progress a local salt-removal project by finalizing the design and securing construction funding.

3. TITLE 22 ENGINEERING REPORT

The RWQCP's Recycled Water Program was approved prior to the State's 2001 guidelines. A new Title 22 Engineering Report that covers production, distribution and administration of recycled water was submitted in August 2022 to the Division of Drinking Water. As of this writing, the RWQCP has not received any comments or determination of the draft report.

LOOKING FORWARD

In 2024, the RWQCP will continue to plan for expansion of the Recycled Water Program and will:

- prepare for the transition from Order 93-160 to the Statewide General Order;
- continue to collaborate with other municipalities and Valley Water on regional expansion opportunities;
- finalize the permitting and begin construction of the salt removal facility;
- continue to promote and run the Recycled Water Truck-Fill Station; and
- inspect recycled water permittees for appropriate use.

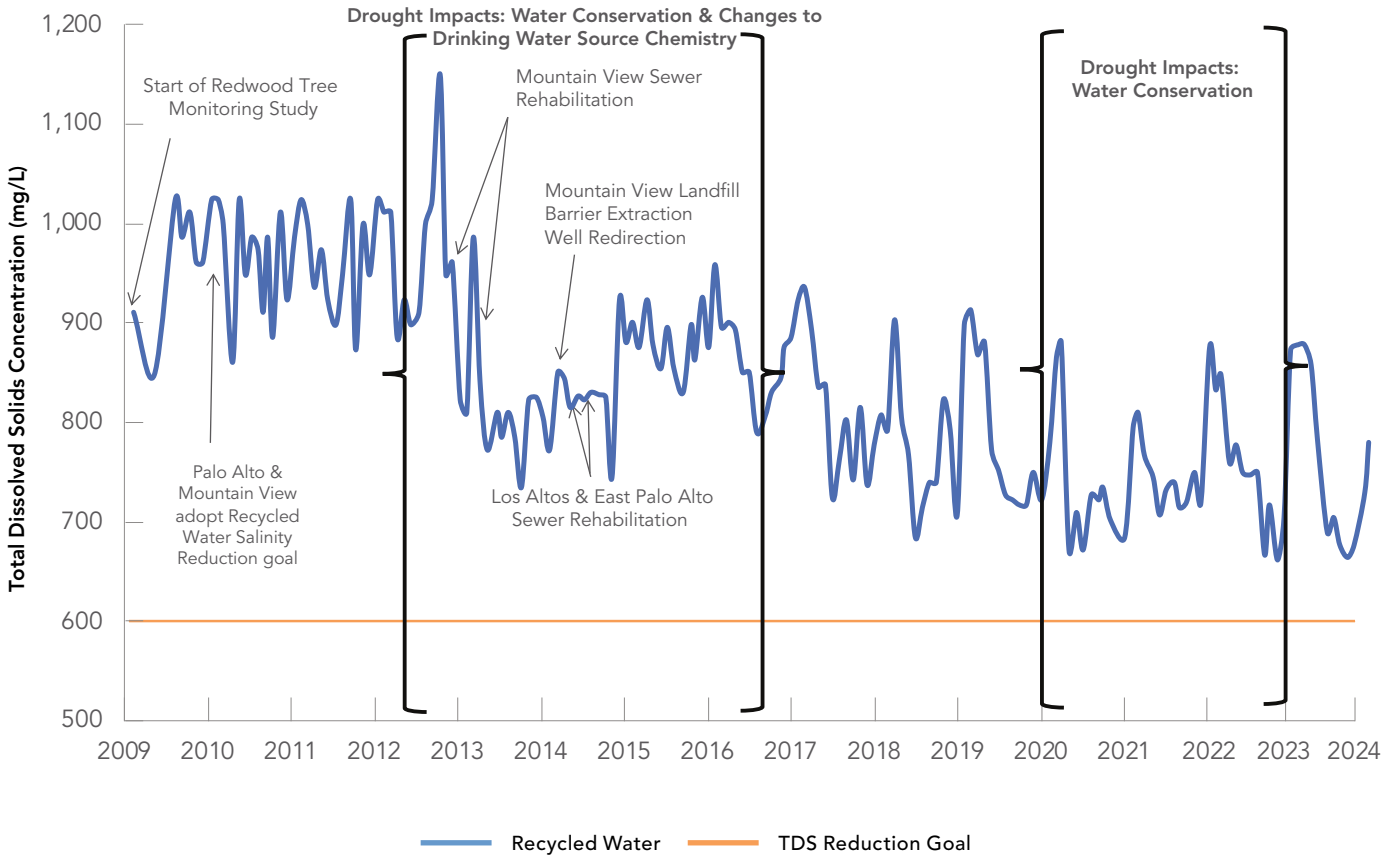


Figure II.D-2: Historical RWQCP recycled water TDS concentrations.

Photo by Don DeBold, via Flickr
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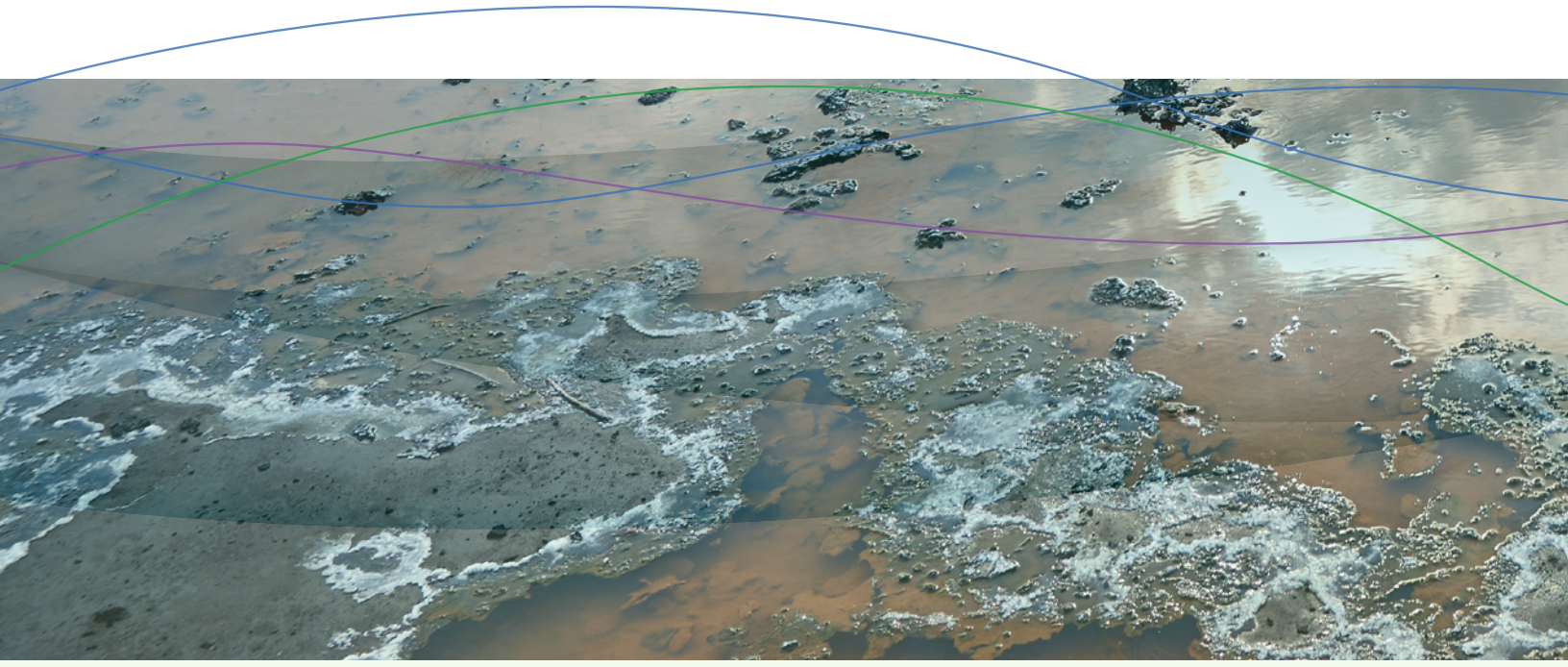
SECTION III

CONTAMINANTS OF EMERGING CONCERN



PERMIT DETAILS

Contaminants of emerging concern (CECs) are currently not regulated by the San Francisco Bay Regional Water Quality Control Board (Regional Board). However, the Regional Board is concerned with emerging contaminants entering local waterbodies and recycled water.

The City of Palo Alto's Regional Water Quality Control Plant (RWQCP) participates in the Regional Monitoring Program (RMP). The RMP conducts research on emerging contaminants, analyzes potential risks to San Francisco Bay from CECs, and has developed a management strategy. A summary of RMP's priority pollutants, management options, and future monitoring recommendations are included in **Table III-1**.

ENVIRONMENTAL CONCERNS

A CEC is defined by the San Francisco Estuary Institute (SFEI) as an unregulated or unmonitored chemical with the potential to enter the environment and harm people or wildlife. When present in aquatic ecosystems, CECs may pose a risk to human health due to their bioaccumulation in fish and shellfish that might later be consumed. CEC detection is increasing in urban water bodies such as the San Francisco Bay.

Table III-1: TIERS, MANAGEMENT, AND MONITORING FOR EMERGING POLLUTANTS FROM THE *CONTAMINANTS OF EMERGING CONCERN IN SAN FRANCISCO BAY: A STRATEGY FOR FUTURE INVESTIGATIONS 2020 UPDATE*

LEVEL	TIER ASSIGNMENTS	MANAGEMENT	MONITORING
High Concern	No CECs currently in this tier	303(d) listing TMDL for alternative management plan Aggressive control actions for all controllable sources	Studies to support TMDL or an alternative management plan
Moderate Concern	PFOS Fipronil PFOA Long-Chain Perfluorocarboxylates Imidacloprid Alkylphenols Alkylphenol Ethoxylates Bisphenols Organophosphate Esters Microplastics	Action plan for strategy Aggressive pollution prevention Low cost control actions	Consider including in Status and Trends monitoring Special studies of fate, effects, sources, pathways, and loadings
Low Concern	PBDEs HBCD Pyrethroids* Pharmaceuticals Personal Care Products PBDDs and PBDFs	Low cost source identification and control Low level pollution prevention Track product use and market trends	Conduct periodic screening in water, sediment, or biota, or discontinue monitoring Periodic screening in wastewater or urban runoff to track trends
Possible Concern	Alternative Flame Retardants Pesticides PFAs Plastic additives Siloxanes SDPAs UV-BZTs 4-methylphenol Indole PCB 11 Roadway Contaminants Rare Earth Elements Single-walled Carbon Nanotubes Short-chain Chlorinated Paraffins QACs Polyhalogenated Carbazoles	Identify and prioritize contaminants of potential concern, track international efforts Develop targeted and non-targeted analytical methods	Screening in water sediment, biota, wastewater effluent, urban runoff

**Pyrethroids are low concern in the Bay, but high concern in urban creeks.*

Understanding the CECs that the RWQCP discharges into the Bay is the first step towards identifying source control measures that protect aquatic organisms.

2023 PROGRAM UPDATES

In 2023, RWQCP staff continued to participate in regional and national groups that study and analyze emerging contaminants.

1. PHARMACEUTICALS

Med-Project provides pharmaceutical collection services for the RWQCP service area since 2017. Collection kiosks are provided at retail pharmacies, hospitals, clinics, and law enforcement agencies. The RWQCP continues to provide outreach support to this program through advertisements, cleanbay.org, utility bill inserts and other printed materials.

2. FLEA AND TICK TREATMENTS

FIPRONIL, IMIDACLOPRID, INDOXACARB AND PYRETHROIDS

Fipronil, imidacloprid, indoxacarb and pyrethroids (e.g., bifenthrin, deltametrin, permethrin) are broad-spectrum insecticides that pose possible low or moderate concerns due to increased urban uses and its detection in wastewater, Bay sediment and urban creeks.

Fipronil, imidacloprid and pyrethroids have limited registered uses in residential and urban settings, including flea and tick treatments for pets, gels for crack and crevice treatment, ant and cockroach baits, outdoor perimeter sprays for ant control, and outdoor subsurface/soil injection for termite control. Their application in pest treatments usually requires people and pets to wash the products off after application and/or laundry, resulting in these active ingredients entering the sanitary sewer system. See **Figure III-1** "Flea Control Chemicals Pathway to Bay" infographic.

Due to the importance of this topic, RWQCP has been a regional co-leader on this issue for many years, serving on the Pesticides Workgroup for the Bay Area Clean Water Agencies (BACWA). The workgroup addresses pesticide pollution by engaging in pesticide registration reviews by both the US Environmental Protection Agency (USEPA) and Department of Pesticide Regulation (DPR). These registration review process includes opportunities for public comment. Typical annual activities include:

- tracking and prioritizing USEPA and DPR re-registration reviews;
- educating staff from DPR and USEPA about local pesticide pollution data and concerns;
- engaging in scientific and management conversations with EPA and DPR regarding new scientific evidence linking pet flea control treatments and fipronil and imidacloprid in POTW effluent; and
- submitting comment letters during the pesticide re-registration process through BACWA.

In 2023, the workgroup and their consultant team:

- continued communications with the American Veterinary Medical Association (AVMA) Committee on Environmental Issues (CEI);
- continued to develop a national veterinarian survey in collaboration with the AVMA CEI to gauge knowledge of pesticide ecosystem impacts as well as their messages and recommendations to clients;
- successfully engaged with the Veterinary Information Network (VIN), as they furthered developed the veterinary survey and agreed to be the outlet for the veterinary survey;
- prepared an abstract and was invited to speak to the AVMA's national conference Austin, TX, in June 2024;

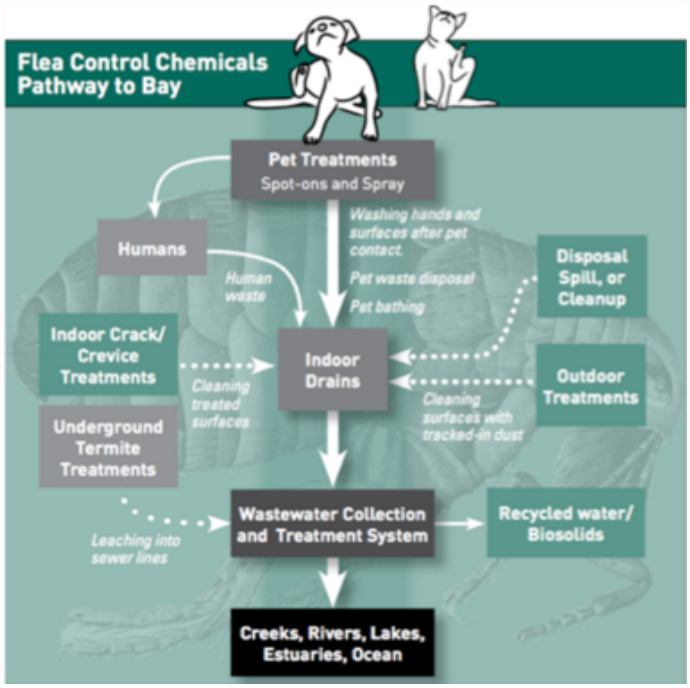


Figure III-1. How flea control chemicals enter the Bay.

- was invited to be the speaker for a one-hour VIN presentation in February 2024;
- convened a Zoom meeting with multiple staff from EPA headquarters to describe the need to include indoor uses in ecological risk assessments; and the linkages between urban uses and endangered species;
- submitted comment letters to the USEPA regarding two priority pesticides with indoor uses and pathways to the sewer, etofenprox and cyantraniliprole;
- submitted two letters to EPA regarding the importance of incorporating then pesticide transport route to the sanitary sewer when assessing impacts to downstream endangered species;
- submitted a letter to EPA describing our concerns with the proposal to change the regulatory jurisdiction of all on-pet pesticides from EPA to FDA;
- tracked scientific literature to inform future comments to DPR and EPA; and
- met with DPR technical staff to obtain updates regarding their scientific studies and modeling updates.

In 2023, RWQCP staff distributed a utility bill insert that educated residents about the dangers of pesticides found in flea and tick products. The content was also distributed through online advertisements to the rest of the RWQCP service area.

In 2022, RWQCP staff reached out to the non-profit, Pets in Need (PIN), with whom the City contracts with to operate the Palo Alto Animal Shelter. In the Fall 2023, RWQCP staff gave an educational Zoom presentation to 10 medical staff members and 12 non-medical staff members at PIN on fipronil's detrimental environmental impacts, exposure to people and safer alternatives. Following the presentation, RWQCP staff worked closely with PIN to develop a brochure to be displayed at both the Palo Alto and Redwood City PIN facilities and placed in adoption folder. In the Fall 2023, RWQCP printed 2,500 brochures on flea and tick prevention and alternatives. As of November 2023, the brochure is on display at the City of Palo Alto and Redwood City PIN facilities.

Next Steps

The RWQCP continues to partner with DPR via BAPPG and BACWA to urge EPA to incorporate indoor uses in the re-registration of pesticides. The RWQCP will also seek to support DPR's anticipated request for additional funding, particularly for urban pest management. The BACWA Pesticides Workgroup will give presentations to wide veterinary audiences through VIN and AVMA, and seek to complete the veterinary survey. The workgroup will also provide a presentation to the BAPPG in February 2024, providing a road map and toolkit so that other agencies can engage with shelters and veterinary staff in their communities. The information and materials will be based on the tools and insights developed by RWQCP in our engagement with PIN. The workgroup will also continue to track and comment on the USEPA and DPR re-registration process. RWQCP will continue to provide staff to support the workgroup. RWQCP will continue their partnership with PIN and will do quarterly check-ups with PIN staff to provide feedback on the brochures. RWQCP will share the flea and tick brochure with the BACWA Pesticide Workshop to be used at regional scale and will offer to act as a consultant for those agencies interested in conducting similar outreach.

OTHER HOUSEHOLD HAZARDOUS WASTE (HHW)

Several options are available for residents and businesses in the RWQCP service area to safely dispose of household hazardous waste (HHW). These include:

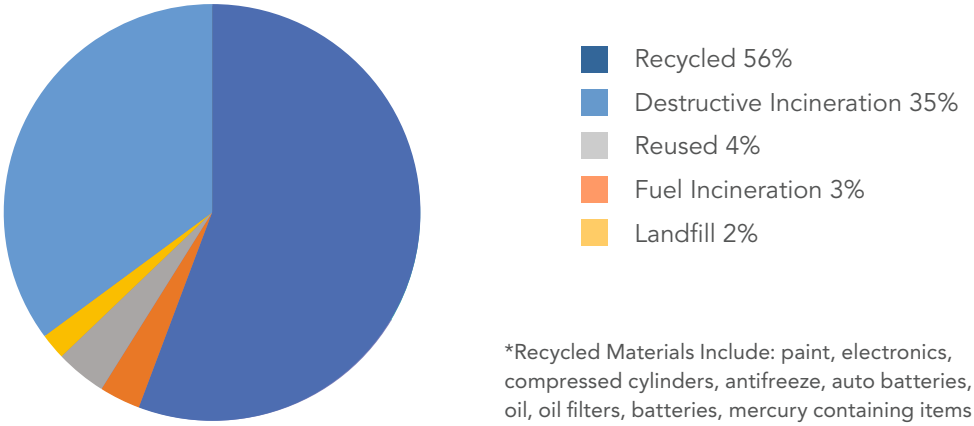
- **County HHW Programs:** Santa Clara and San Mateo Counties both operate household hazardous waste drop off programs serving most residents and businesses in their respective counties. The San Mateo County program serves the East Palo Alto Sanitary District, while the Santa Clara County program serves Los Altos, Los Altos Hills, Mountain View, and Stanford. The Santa Clara County program does not serve Palo Alto residents because the City of Palo Alto funds its own HHW program.
- **City of Palo Alto HHW Program:** Drop-off events for Palo Alto residents occur every Saturday during the hours of 9 am – 11 am and on the first Friday of

the month between 3 pm – 5 pm. Businesses and non-profit organizations located in the RWQCP service area that generate less than 220 pounds of hazardous waste per month can participate in Palo Alto's Very Small Quantity Generator (VSQG) Program. A registration and disposal fee is required based on the type and quantity of waste being disposed. Appointments take place on Saturdays following the residential HHW drop-off hours.

- **Curbside Collection:** Palo Alto offers limited curbside collection of household hazardous wastes including batteries, electronic waste, used oil, and oil filters.

Palo Alto's HHW program submits an annual report to the Department of Resources Recycling and Recovery detailing the amounts of waste collected and how each waste type was managed. These reports cover fiscal year periods that span from July through June. **Figure III-2** summarizes the amount of waste types collected, in pounds, for fiscal year 2022-2023. The Palo Alto HHW program collected 200,468 pounds of hazardous waste from its permanent collection facility and curbside collection program. More details of hazardous waste collection and disposal are available in the City of Palo Alto's CalRecycle "Form 303" Household Hazardous Waste Collection Report.

Figure III-2. City of Palo Alto Household Hazardous Waste Disposal Fate (200,468 lbs collected curbside and through the HHW Station FY22-23)



*Recycled Materials Include: paint, electronics, compressed cylinders, antifreeze, auto batteries, motor oil, oil filters, batteries, mercury containing items

RWQCP CONTAMINANTS OF EMERGING CONCERN POLLUTION PREVENTION HISTORY*

2002

- RWQCP establishes an interim pharmaceutical waste collection infrastructure
- RWQCP begins accepting pharmaceuticals in its Household Hazardous Waste Program and establishes six additional "drop off" locations in its service area

2003

- RWQCP staff begins effort to reduce pharmaceuticals from hospitals

2004

- RWQCP participates in a WaterReuse study "Removal and Destruction of N-nitrosodimethylamine (NDMA) and NDMA Precursors during Wastewater Treatment

2005

- The disinfectant for most of the potable water supplied throughout the RWQCP's service area is changed from free chlorine to chloramine

2006

- Santa Clara Basin Watershed Management Emerging Contaminants Workgroup, chaired by RWQCP staff, finalizes a whitepaper titled *Environmental Emergence of Triclosan*
- Palo Alto adopts a policy to no longer purchase triclosan-containing hand soaps

2007

- RWQCP hires contractor to annually educate teachers about triclosan

2010

- The RWQCP switches from chlorine disinfection to ultra-violet light disinfection

2011

- Palo Alto Medical Foundation (PAMF) agrees to pay for its own pharmaceutical disposal program after RWQCP paid for a 3-year pilot that disposed of 12,000 pounds

2013

- RWQCP receives the Dr. Teng Chung Wu Pollution Prevention Award for emerging contaminants pollution prevention programs
- Polybrominated diphenyl ethers (PBDEs) were featured in Pulse of the Bay

**Refer to previous Clean Bay Plan reports for more information*

3. MICROPLASTICS

Microplastic contamination (plastic fragments that are five millimeters or smaller) in aquatic ecosystems is associated with a number of potential concerns. Due to the hydrophobic properties of the plastic material, persistent organic chemicals including polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), polybrominated diphenyl ethers (PBDEs), dioxins, and pesticides such as DDT preferentially sorb to microplastics[1]. Lower trophic organisms can mistake microplastics for food; ingestion can lead to physical harm, exposure to sorbed contaminants, and bioaccumulation of microplastics in higher trophic organisms.[2,3] However, no clear toxicity thresholds yet exists for this contaminant, leading to its assignment as a possible concern (Tier I contaminant) for the San Francisco Bay.

In 2014, the RWQCP participated in a RMP Emerging Contaminant Workgroup study analyzing wastewater treatment plant effluent for microbead (type of microplastic) concentrations and found microplastics present in wastewater discharges from wastewater treatment plants around the Bay.

In 2017, the RWQCP participated in the regional microplastic sampling effort and helped design the sampler. The preliminary data indicates that approximately 300 times more microplastics are in stormwater than wastewater. The majority of the microplastics appear to be from tire fragments.

4. PER- AND POLYFLUOROALKYL (PFAS) SUBSTANCES

In 2020, the RWQCP was selected as one of 14 Bay Area treatment plants to provide samples for a Regional Monitoring Program study on PFAS. Data from this study is meant to inform a subsequent monitoring strategy and program decisions for the Regional Monitoring Program.

[1] *Seltenrich, N. 2015. New Link in the food chain? Marine plastic pollution and seafood safety. Environmental Health Perspectives 123(2):A34-41.*
[2] Fendall, L. S., Sewell, M. A. 2009. Contributing to marine pollution by washing your face: Microplastics in facial cleansers. Marine Pollution Bulletin 58, 1225-1228.
[3] Desforges, J. W., Galbraith M., Ross, P. S. 2015. Ingestion of microplastics by zooplankton in the North Pacific Ocean. Archives of Environmental Contamination and Toxicology.

2014

- RWQCP participates in an RMP Emerging Contaminant Workgroup study of perfluorinated organic compounds in final effluent
- RWQCP participates in an RMP Emerging Contaminant Workgroup study of microbead concentrations in final effluent
- Results from an RMP study of PBDEs in the San Francisco Bay after the PBDE ban is submitted to a peer-reviewed journal and publishes in early 2015 in the journal, *Environmental Science and Technology*

2015

- 17 hospice and wastewater professionals participate in a one hour webinar funded by the Bay Area Pollution Prevention Group (BAPPG) and Sac Regional through statewide training through the California Hospice and Palliative Care Association (CHAPCA)
- RWQCP partners with San Francisco Estuary Institute (SFEI) to analyze fipronil in wastewater
- RWQCP works with the United States Consumer Product Safety Commission (CPSC) and the Palo Alto Police Department to install a new medicines drop-off bin in the lobby of the Police Station
- Results from an RMP study of PBDEs in the San Francisco Bay are published in the journal, *Environmental Science and Technology*

2016

- RWQCP data indicate significant decreases in triclosan (65%) and triclocarban (95%) per capita influent loads between 2009 and 2016. This data attributed to the US Food and Drug Administration (FDA) ban of 19 common antibacterial agents, including triclosan and triclocarban
- RWQCP completed work and released study on perfluorinated organic compounds with an RMP Emerging Contaminant Workgroup

2017

- MED-Project Product Stewardship Plan is approved by the Santa Clara County. Pharmaceutical collection program expands as MED-Project brings additional kiosks and mailback envelope collection sites to RWQCP service area RWQCP participated in the regional microplastic sampling effort.

2018

- CVS and Walgreens pharmacies bring additional kiosks to the RWQCP service area
- Watershed Protection retires City-funded pharmaceutical take-back program
- RWQCP completes Pharmaceuticals Screening Study
- RWQCP participates in regional Screening of Pharmaceuticals in San Francisco Bay Wastewater study by the Regional Monitoring Program

2019

- RWQCP retires pharmaceutical collection program upon roll-out of the MED-Project programs in the RWQCP service area
- SFEI/ Moore Foundation completed their initial microplastics study

2020

- RWQCP creates new outreach pieces for microplastics and fipronil

2022

- Palo Alto discontinues use of PFAS-containing firefighting foam

2023

- Education and outreach to local animal shelter staff on the down-the-drain pathway of topical flea and trick treatments and their impact on Bay water quality. Brochures on flea and tick prevention and alternatives are developed and distributed at the City of Palo Alto and Redwood City Pets in Need shelters

Analyte Abbrev.	DDW Drinking Water Response level (ppt or ng/L)	Median Observed in Effluent (ng/L)	Max Observed in Effluent (ng/L)
PFOS	40	5.6	9.7
PFOA	10	6.3	9.1
PFBS	5,000	4.1	4.8

Figure III-3. Bay Area POTW concentrations compared to drinking water response levels (taken from BACWA PFAS Fact Sheet San Francisco Bay Region Phase I Study Results, 8/17/21)

Phase I of the study consisted of study design development, coordination of sample collection, data quality assurance, and data reporting to the State Regional Water Quality Control Board. Phase I data showed that PFAS levels were generally comparable across all agencies treating municipal wastewater suggesting that future studies can be conducted using a representative selection of wastewater treatment plants. Maximum concentrations of individual PFAS in effluent were well below the State Water Board's Division of Drinking Water's drinking water response levels. Figure III-3 summarizes Phase I results. The RWQCP was not selected for the targeted sampling conducted for Phase II of the Regional PFAS Study. Refer to the final reports prepared by the San Francisco Estuary Institute for more details.

LOOKING FORWARD

In 2024, the RWQCP will:

- continue partnership with the San Francisco Estuary Institute's Regional Monitoring Program– Emerging Contaminants Group;
- advocate for regulations that place the burden on manufactures to create products that do not pollute;
- conduct a survey to identify potential industrial sources of PFAS in the service area;
- work closely with the MED-Project and Santa Clara County Household Hazardous Waste Program to ensure pharmaceutical collection sites for the RWQCP service area;
- participate in studies of emerging pollutants issues focusing on pharmaceutically active compounds and pesticides such as fipronil;
- continue to work with Pets in Need and provide outreach material to the City of Palo Alto and Redwood City facilities;
- explore opportunities to expand flea and tick outreach throughout the region;
- continue to collect household hazardous waste from the RWQCP service area;
- provide HHW information via the City's Zero Waste outreach program (utility bills, advertisements, etc.), the RWQCP cleanbay.org website;
- partner with the San Francisco Estuary Partnership and California State University Channel Islands on community-based monitoring of microplastics in Harbor Marsh as part of the City's Horizontal Levee Pilot Project; and
- continue to partner with SFEI and Ocean Protection Council on efforts to identify sources of microplastics.

SECTION III

SECTION IV

SUSTAINABILITY

PROGRAM OVERVIEW

The City of Palo Alto is a leader in environmental sustainability. Its commitment to environmental protection includes a plan to reach Zero Waste by 2030 (95% diversion of materials); a Sustainability and Climate Action Plan which seeks to reduce Palo Alto's greenhouse gas emissions by 80% and achieve carbon neutrality by 2030; a carbon neutral electric and natural gas portfolio for the public utilities it owns; and green building requirements for municipal and residential buildings. Palo Alto is also a designated Tree City-USA, a League of American Bicyclists silver-ranked Bicycle Friendly Community, and has award-winning programs for the watershed protection services it provides to the Regional Water Quality Control Plant (RWQCP) service area. While there are no permit requirements for the RWQCP to maintain broader sustainability programs, most of the City of Palo Alto's Office of Sustainability goals and the RWQCP permit requirements are mutually supportive. More information about Palo Alto's sustainability programs is available at cityofpaloalto.org/climateaction.

ENVIRONMENTAL CONCERNS

Palo Alto's Sustainability Programs primarily address environmental concerns, which are inextricable from quality-of-life, the economy, and social equity issues. While they do not fall under specific permit requirements, the sustainability programs discussed below intersect with the RWQCP responsibilities of climate protection, sea level rise adaptation, extended producer responsibility, and green purchasing.

2023 PROGRAM UPDATES

1. CLIMATE ACTION PLAN

The RWQCP was once the City's largest source of municipally-generated greenhouse gas (GHG) emissions, which made its efforts to reduce Palo Alto's GHG emissions essential. In 2019, the RWQCP replaced the sewage sludge incinerators—the City facility with the largest energy use—with a more energy-efficient Sludge Dewatering and Truck Loadout Facility. The updated treatment process has reduced climate-warming GHG emissions by approximately 15,000 metric tons of carbon dioxide equivalent per year– which approximates the carbon dioxide emissions of 3,000 passenger cars. The replacement technologies dewater the sludge and send it to farming areas to produce agricultural soil supplements.

RWQCP also helps lead and implement the City's Sustainability and Climate Action Plan (S/CAP). The overarching goal of the S/CAP is to reduce GHGs 80% below 1990 levels by 2030 (known as "80x30") and achieve carbon neutrality by

2030. The S/CAP also has additional sustainability and climate goals.

The City launched an update to the S/CAP to develop the strategies needed to meet our sustainability goals, including 80 x 30. In June 2023, City Council adopted the 2022 Sustainability and Climate Action Plan and accepted the 2023 - 2025 S/CAP Workplan. The S/CAP is a roadmap to reduce the City's and community's GHG emissions, while also guiding land and natural resource use to ensure quality of life for future generations. The S/CAP addresses eight focus areas: Climate Action, Energy, Mobility, Electric Vehicles, Water, Climate Adaptation and Sea Level Rise, Natural Environment, and Zero Waste.

S/CAP Programs underway include: a full service heat pump water heater pilot program to help residents replace old gas powered water heaters with electric heat pump water heaters, the launch of Palo Alto Link - the City's new affordable and eco-friendly rideshare service, the launch of a new Zero Waste Living outreach campaign to educate residents on how to reduce waste, the design and finance plan for a salt removal facility for the RWQCP to help improve the quality of the recycled water produced at the plant, design of the first grid modernization project, and the addition of 13 electric vehicles to the city fleet.

Palo Alto earned a spot on environmental impact non-profit, CDP's 2023 Cities A List for our bold leadership on climate action, ambition, and transparency. Of the almost 1,000 local governments across the globe that were scored, just 119 received an A.

2. PRODUCER RESPONSIBILITY

The RWQCP contributes financial support to the California Product Stewardship Council (CPSC) and the Product Stewardship Institute (PSI) to expand extended producer responsibility (EPR) partnerships and legislation. EPR places the primary responsibility for ethical end-of-life disposal of goods and related packaging on the manufacturer who profits from their sale. This reduces the financial and operational burden of collecting products such as electronic, pharmaceutical, and other wastes on local government.

3. SEA LEVEL RISE ADAPTATION

In 2019, Palo Alto City Council adopted a Sea Level Rise Adaptation Policy (**Appendix H**), which established goals and objectives for the Sea Level Rise Vulnerability Assessment (completed in 2022), and for a Sea Level Rise Adaptation Plan. The Plan will set short-term and long-term goals and recommend phased projects to protect Palo Alto's neighborhoods, economy and Baylands habitat from higher San Francisco Bay tides, and will include protection plans for critical infrastructure such as the RWQCP. Plan development started but was paused in early 2023 pending uncertainties about the U.S. Army Corps of Engineers (USACE) intent to fund shoreline levee improvements. This should be determined in early 2024. In addition, SB272: Sea Level Rise Planning and Adaptation was signed in late 2023 which requires a Bay Area Sea Level Rise Adaptation Plan, and aligned subregional plans. Subregions and Plan contents will be defined by the San Fransisco Bay Conservation and Development Commission (BCDC) in 2024. The outcome of both the USACE and SB272 requirements could significantly alter the scope of work for Palo Alto's Sea Level Rise Adaptation Plan development. City of Palo Alto staff are engaging in these regional conversations and identifying next steps for its own planning efforts to align with of these regional requirements.

In addition to the Sea Level Rise Adaptation Plan, other adaptation projects are already underway:

- **Regional Water Quality Control Plant Improvements.** Iterative improvements to the RWQCP, include raising equipment for flood protection and adding a secondary outfall pipe to convey effluent in consideration of future sea level rise scenarios.
- **Horizontal Levee Pilot Project at the former Palo Alto Baylands Yacht Harbor.** Final design was completed in 2023 and construction is scheduled for summer of 2024. This work is a collaboration between the San Francisco Estuary Partnership, City of Palo Alto, and Environmental Science Associates. It is funded by a grant from the Coastal Conservancy;
- **San Franciscquito Creek Flood Protection, Ecosystem Restoration and Recreation Project.** This project was completed in 2018 and will help protect East Palo Alto and Palo Alto from flooding due to high creek flows, particularly during high tides and a two-foot sea level rise. The improvements to this lower reach of San Franciscquito Creek are a necessary first step in a broader plan to provide flood protection to more than 5,700 homes and businesses;
- **SAFER Bay Draft Feasibility Report (Strategy to Advance Flood Protection, Ecosystems and Recreation along the Bay).** A draft feasibility study was completed by the San Francisquito Creek Joint Powers Authority in 2019. The study examines possible reaches for improved levees, horizontal levees and habitat restoration in anticipation of projected mid-century sea level rise levels. Work

completed for this report is being leveraged by the South San Francisco Bay Shoreline Phase II Feasibility Study discussed below.

- **South San Francisco Bay Shoreline Phase II Feasibility Study (Shoreline Study).** The Shoreline Study is led by the U.S. Army Corps of Engineers (USACE) with Valley Water and the California State Coastal Conservancy participating as the cost-sharing partners. The full Shoreline Study area extends from San Francisquito Creek in Palo Alto to Guadalupe River in San José, and is divided into ten economic impact areas (EIAs). Palo Alto makes up EIAs 1-3.

  The Shoreline Feasibility Study used the SAFER Feasibility Study to further the evaluation of funding opportunities and potential levee alignments, horizontal levee sites, and expanded recreational opportunities. The USACE has initially stated that there is not a sufficient cost benefit to fund Palo Alto's shoreline levee improvements. Valley Water and partner agencies are coordinating to see if this determination can be reexamined. A final determination from USACE should be issued in early 2024.

- **Palo Alto Baylands Vulnerability Assessment.** Funded by the City of Palo Alto Community Services Division, this project assesses likely impacts to the Palo Alto Baylands from sea level rise.

- **Sea level rise planning requirements included in City planning documents** such as the City's Comprehensive Plan, Sustainability and Climate Action Plan, Baylands Comprehensive Conservation Plan, Local Hazard Mitigation Plan, Threat and Hazard Identification Risk Assessment, and other key documents.

- **Palo Alto Flood Basin Tide Gate Seismic Retrofit and Rehabilitation Project.** Valley Water owns and maintains the tide gate in the Palo Alto Flood Basin. The tide gate regulates water between San Francisco Bay and stormwater from Matadero, Adobe and Barron Creeks. Design plans to retrofit the aging structure were completed to 60% definition in 2023.

LOOKING FORWARD

Palo Alto will proceed to develop its Sea Level Rise Adaptation Plan in 2024 once new SB272 requirements and subregional plan partners are known. This effort will also be informed by the anticipated USACE determination about federal interest in funding shoreline levee improvements.

RWQCP SUSTAINABILITY PROGRAMS HISTORY*

1990s

- Recycled content paper and policies is adopted

2001

- City of Palo Alto adopts Sustainability Policy

2006

- RWQCP helps form California Product Stewardship Council

2007

- City Adopts Climate Action Plan and pledges to reduce GHG emissions (City and Community) by 15% below 2005 levels by 2020
- Green Purchasing Policy is adopted

2011

- The City receives the Green California Summit and Exposition Award for its Green Purchasing Program

2015

- City of Palo Alto receives Acterra (nonprofit) Business Environmental Award for Sustainability Leadership

2016

- Palo Alto achieves 37% reduction in GHG from 1990 levels
- Participates in regional and local sea level rise planning
- Palo Alto City Council adopts new goal to reduce GHG emissions 80% below 1990 levels by 2030

2017

- Council approved the 2018-2020 Sustainability Implementation Plan (SIP) which focusing first on CO_2 emissions and water resources
- City converts copy paper to 100% recycled content and increases recycled content for custodial products

2018

- Office paper policy is revised

2019

- Sea Level Rise Adaptation Policy adopted by City Council
- RWQCP greenhouse gas emissions reduced by 15,000 MT CO_2e with the retirement of the Sludge Incinerators and replacement with a new Sludge Dewatering and Truck Loadout Facility

2020

- City launches S/CAP webinar series

2022

- City Council approves Carbon Neutral by 2030 goal, and Sustainability and Climate Action Plan Goals and Key Actions
- Sea Level Rise Vulnerability Assessment completed

2023

- City Council adopts the Sustainability and Climate Action Plan and accepts the 2023-2025 S/CAP Workplan

**Refer to previous Clean Bay Plan reports for more information.*

SECTION V

OUTREACH

PERMIT DETAILS

The City of Palo Alto's Regional Water Quality Control Plant (RWQCP) is required to provide public outreach for wastewater pollutants as part of its National Pollutant Discharge Elimination System (NPDES) Permit, and for stormwater pollutants as part of the Municipal Regional Stormwater (MRP) Permit. The objectives of these Permits are to increase pollution prevention best practices in residential, business, school and other target communities, and to inspire an understanding of how daily activities at home, work or school can protect the Bay. Outreach activities include: community events, school outreach programs, and education campaigns, and may include best practices that address multiple pollutants (e.g., household hazardous waste and pharmaceutical disposal), and topics related to local watershed protection and enhancement such as the expansion of recycled water services.

ENVIRONMENTAL CONCERNS

Stormwater education programs aim to reduce pollutants such as trash, pesticides and automobile fluids, while wastewater pollution prevention education strives to prevent sanitary sewer overflows from FOG and wipes, and the disposal of hazardous materials into the sanitary sewer.

2023 PROGRAM UPDATES

The RWQCP provided outreach in 2023 to residents, businesses, and employees.

1. SCHOOL PROGRAMS

ELEMENTARY AND MIDDLE SCHOOL PROGRAMS

The RWQCP has provided elementary and middle school classroom programs since 2000. Since 2016 this service has been provided by Grassroots Ecology, a local nonprofit. While this program historically reaches more than 3,400 students each year through in-person classroom presentations, the COVID pandemic required the program to pivot to distance-learning science curriculum. At the beginning of the pandemic, Grassroots Ecology quickly developed curricula that could be downloaded by teachers. All lessons aligned with Next Generation Science Standards and could be completed by students on their own time or led by a teacher. In addition, three sea level rise curricula for grades K-2, 4th grade and 5th grade were developed and remain online for teachers to download. RWQCP staff intend to restart this program within the next year as staffing and resources allow. School curricula descriptions are available in previous years' reports.

2. RESIDENTIAL AND BUSINESS OUTREACH

In 2023, the RWQCP continued to provide wastewater outreach to its service area as listed below:

- **Utility bills inserts, utility announcements, digital and print media.** Palo Alto residents received 11 utility bill inserts in 2023 related to watershed protection, with two of the utility bill inserts accompanied by a parallel digital and print ad campaign. Palo Alto businesses received three utility bill inserts. Topics included: less toxic pest control, pharmaceutical and hazardous waste disposal, what not to flush down drains and toilets, properly draining pools, green stormwater infrastructure, storrmwater

rebates, King Tide information, the City's No Smoking Ordinance, and Fats, Oil and Grease (FOG). In addition, utility announcements (short messages printed on the top of the utility bills) ran monthly. Utility bills and inserts reach 26,000 residents each month. See **Appendix I** for a list of all digital and print materials created in 2023.

- **Cleanbay.org website.** The RWQCP website provides pollution prevention and watershed protection information for residents, businesses, industry and schools. The site features a video of the RWQCP wastewater treatment process, and information about whom to call for illegal spills, hazardous waste disposal and other information and resources for residents and businesses on pollution prevention and best management practices. In 2023, cleanbay.org was updated to improve the user experience and site content is now offered in Spanish and Vietnamese translation. The language drop down menu was also updated to be more user friendly. In 2023, RWQCP staff began a full audit of the Cleanbay.org site to improve user experience, site structure, and content.
- **Pesticide Outreach**

  Regional participation in the Our Water, Our World program. The Our Water, Our World (OWOW) program is a consortium of local water pollution prevention agencies working to protect local creeks and San Francisco Bay from pesticide pollution. Established in 1997, OWOW raises awareness about the connection between residential pesticide use and water quality. The program provides consumers with:

  - Sixteen pest and gardening fact sheets in English and
  - three in Spanish that are annually updated for product changes;
  - A state-wide network of hardware and garden supply stores that carry pest management fact sheets, "shelf talker" tags that identify less-toxic products for sale, and OWOW-trained staff trained to answer common customer pest control questions; and
  - A comprehensive ourwaterourworld.org website.

  OWOW is promoted by participating agencies at special events, workshops and participating stores.

  Local participation in the Our Water, Our World program.

  - Six stores within the RWQCP service area participate in the OWOW program. The RWQCP continues to contribute both monetary and staff support to OWOW.

In 2023 staff also:

- Updated two utility bill inserts and one online advertisement with integrated pest management information;
- Maintained cleanbay.org with current OWOW program information; and
- Provided pest management advice to RWQCP residents.

Pet Flea and Tick Treatments

RWQCP has made efforts to highlight Topical Flea and Tick Treatment pesticide concerns and encourage the use of chewable medications as an alternative where feasible. In 2022 the RWQCP created a rack card to educate vets and pet owners on flea and tick prevention and alternatives. The rack card is currently displayed at two local shelters (Pets in Need). The brochure is two-sided, with one side in English and one side in Spanish. The brochure was shared with BAPPG members for use.

Fats, Oil and Grease

City staff promoted proper disposal of kitchen FOG in November through a utility

bill insert and a utility community announcement for both residents and businesses. The RWQCP also participated in additional FOG outreach through BAPPG.

SCVURPPP and BAPPG

The RWQCP continues to participate in regional outreach efforts with SCVURPPP, BAPPG, and other work groups that benefit the RWQCP service area.

Special Events and Workshops

In 2023, RWQCP staff attended three public events to conduct outreach: the Earth Day Resource Fair and Pollinator Garden Tour, May Fete Parade, and City Services or "MSC" Day. Table topics at the events included stormwater rebates, sewer backups, what not to flush, pesticides and integrated pest management, and stormwater best management practices for residents. At MSC Day RWQCP staff also introduced a new beanbag toss-style game called Toilet Toss. The game educates residents on what not flush down the toilet.

Horizontal Levee Project

As part of the Palo Alto Horizontal Levee Pilot Project, the City held one "bioblitz" at the site location in the Palo Alto Baylands. Bioblitzes are public events in which attendees document a diversity of species, learn about sea level rise and nature-based solutions, and collect data that will contribute to the project. Additionally, the City held a King Tide Walk at the Baylands, where attendees of the event learned about king tides, sea level rise, and local shoreline conditions, and two photo monitoring stations were set up at the project site to capture the images for a project timeline.

New Outreach Material for Businesses

In 2023, the RWQCP staff created three new outreach flyers and mailers for businesses. The first flyer was created to educate vehicle maintenance facilities on best management practices to reduce the amount of chemicals and metals introduced into the Palo Alto Regional Water Quality Control Plant and ultimately the Bay. The flyer was handed out to a total of 100 facilities. The second flyer was created to educate food facilities on grease management and best practices to prevent spills. Approximately 80 food facilities received the flyer. The third new outreach piece created for businesses was a mailer to educate dental offices in the RWQCP service area on dental amalgam requirements and best management practices to reduce mercury pollution. The mailer was sent to approximatively 150 facilities.

3. EMPLOYEE OUTREACH

Employee outreach was conducted quarterly through an internal newsletter provided by technical staff and presentations during monthly staff meetings. Topics for employee outreach included Pretreatment and FOG Program coordination and improvements, Per- and Polyfluoroalkyl Substances (PFAS), sea level rise planning, trash capture device installation updates, and horizontal levee pilot project development.

LOOKING FORWARD

In 2024, the RWQCP will continue most of its current outreach efforts. Priorities are to:

- ensure that permit requirements for outreach are met;
- leverage and supplement BAPPG and SCVURPP regional outreach efforts to enhance reach in the RWQCP service area;
- continue public outreach for FOG, non-flushable products, pharmaceutical disposal, outreach that supports RWQCP projects such as the Palo Alto Horizontal Levee Pilot Project and sea level rise adaptation planning, (as well as the City's stormwater pollution prevention program outreach needs);
- obtain a new school outreach contract as staffing and funding allow targeting calendar year 2024; and
- provide employee outreach about regulatory updates, pollution prevention, and FOG coordination needs (conducted in partnership with City of Palo Alto Utilities Department).

RWQCP OUTREACH POLLUTION PREVENTION HISTORY*

1992
- RWQCP launches Vehicle Inspection Program
- Clean Bay Business Recognition Program is launched

1995
- Clean Bay Auto Recognition Program starts

1998
- The City of Palo Alto initiates *Our Water, Our World* program funding

2000
- Elementary School Program Begins
- Watershed Watch Program is developed

2001
- Sewer Science program is developed

2007
- RWQCP receives Friends of the Estuary Comprehensive Conservation and Management Plan (CCMP) Award for Clean Bay Campaign

2015
- Video about RWQCP wastewater treatment processes is filmed

2016
- RWQCP launches new website, www.cleanbay.org

2017
- MOU with Ravenswood School District established to provide Microbes in Sewage lab to all sixth grade students

2018
- School Program realigned to Next Generation Science Standards and teaching materials and programs updated

2019
- RWQCP video and brochure are updated

2020
- Six virtual lesson plans are created to adapt to COVID-19 school program needs, including online videos of microbes for lab programs
- Two new webinars were developed about sea level rise impacts on San Francisco Bay

2022
- Updated cleanbay.org website to include additional language translations to increase user experience
- Three curricula about sea level rise were developed for grades K-5

2023
- Public outreach events resume after COVID-19. RWQCP staff attended a total of three in-person tabling events.
- A rack card created to educate vets and pet owners on flea and tick prevention and alternatives to topical pest treatments is displayed at two local shelters.

**Refer to previous Clean Bay Plan reports for more information.*

SECTION VI

APPENDIX

APPENDIX A: SUMMARY OF RWQCP POLLUTION PREVENTION PROGRAM

YEAR	ACTIONS
1989	• Pollution Prevention Program initiated
1990	• Storm drain permit issuance-began to direct wastewater discharges to sewer • Increased industrial enforcement • Large dischargers required to prepare pollution prevention plans
1991	• Silver reduction program initiated • Community outreach on copper-based root control products
1992	• Launched Clean Bay Business Program for vehicle service facilities • Local ban on sale and use of copper-based root control products
1993	• Cooling water systems program • Laboratory program • Education on selenium toner • Clean Bay Business Program for hardware stores and plumbers started • Sewer line through superfund site begins to receive high levels of arsenic
1994	• Regional outreach on copper-based root control products • Pool, spa and fountain outreach program • Machine shop program started • Automobile parts stores Clean Bay Business Program initiated
1995	• Reduced local discharge limit for nickel • Expanded cooling water systems efforts • Regional mobile cleaner outreach • Hospital and medical facility program • Sewer line through superfund site repaired • Copper dumping incident • Final ban on sale of lead-containing gasoline takes effect • Intensive enforcement on silver program, vehicle service facility program
1996	• Regional ban on copper-based root control products • Regional mobile cleaner certification • Metal finishing program • Vehicle Clean Bay Business program five-year anniversary; 88% participation
1997	• Auto body shop BMPs distributed • School program enhanced • Record 92% of vehicle service facilities become Clean Bay Businesses
1998	• Laboratory improves mercury analysis • IPM Partnership launched • Began collection of mercury thermometers and other products; collected 34 pounds mercury • Printers and dentists receive BMPs
1999	• Launched mercury thermostat drop-off program • Began education campaign regarding residential woodsmoke pollution • Expanded the IPM Partnership program • Sewage sludge incinerator rehabilitation for enhanced pollution prevention

APPENDIX A: SUMMARY OF RWQCP POLLUTION PREVENTION PROGRAM (CONTINUED)

YEAR	ACTIONS
2000	• City of Palo Alto adopts a Mercury and Dioxin Elimination Policy; participating in and funding the Association of Bay Area Governments (ABAG) dioxin group • Initiated dental stakeholder group regarding amalgam management • Mercury product legislation drafted • Piloted a residential drop-off program for fluorescent lamps • City of Palo Alto adopts fireplace ordinance • Sewage sludge incinerator rehabilitated for enhanced pollution prevention
2001	• Initiated and drafted SB 633, the CA Mercury Reduction Act • Conducted mercury audits at three local hospitals • Successful expansion of pilot residential recycling of fluorescent lamps at 5 hardware stores and at RWQCP • Led BAPPG in creation of an inspection checklist for dental offices and a set of PowerPoint presentations for dental community outreach • Began using 20% biodiesel in City's diesel landfill and golf course equipment • Began purchasing process-chlorine-free office paper and letterhead and unbleached paper towels • Completed the City pesticide policy and implementation plan • Assisted the Palo Alto Unified School District (PAUSD) with the "Healthy Schools Act" compliance

2002	• The Mercury Elimination Policy resulted in new City purchasing specifications to require low-mercury lamps
	• Created first annual report of City pesticide use
	• Initiated copper pollution prevention program, educating local plumbers and designers about copper pipe corrosion
	• New Sewer Use Ordinance passed that:
	  • Lowered the mercury limit for industrial dischargers
	  • Prohibited sewer disposal of zinc-containing floor waxes
	  • Banned new and replaced copper roofs
	  • Required covered carwash facility for new and remodeled buildings with 25 units or more
	  • Added boilers and heat exchangers to the requirement of wastewater collection and analysis if one is doing scouring and cleaning
	• Led Emerging Contaminants Workgroup of the Watershed Management Initiative to compile and finalize an Endocrine Disrupting Compounds Information Sheet
	• Distributed a "drug free sewers" utility bill insert to describe proper disposal of expired prescriptions
	• Initiated chemical root control applicator permitting program

2003	• Completed work plan for an advanced mercury source control study that focuses on (1) improving amalgam collection and pretreatment at dental offices and (2) continuing identification of on-site RWQCP mercury uses and alternatives • Palo Alto has developed seven IPM plans and extensive training for weeds, gophers, ground squirrels, yellow jackets, ants, rats, and mice • From inception through 2003, the fluorescent lamp program collected over 7,575 lamps at four drop off sites in our service area • In the 2002/2003 school year, RWQCP school program visited 151 classrooms which reached approximately 3,682 students. This was a 41% increase over the previous year • Palo Alto staff educated approximately 350 people regarding Endocrine Disruptor Compounds by presenting at seven different conferences/ meetings throughout California
2004	• Palo Alto and Mountain View adopted dental amalgam pretreatment ordinances requiring dentists to install amalgam separators by March 31, 2005 • City of Palo Alto fluorescent lamp collection program was expanded throughout Santa Clara County and is now operated by the Santa Clara County Household Hazardous Waste Program • Implemented two new successful, non-chemical ground squirrel control strategies: the use of shade cloth along the municipal golf course fence line to deter ground squirrel population expansion, and a new trap design which captures up to four ground squirrels per trap. The traps have proven immediately successful • Published: *Tracking the Fate of Polybrominated Diphenyl Ethers releases in a Wastewater Treatment Plant Effluent*[2], concluding that the RWQCP discharges 2 pounds per year of PBDEs to the Bay

[1]Association of Bay Area Governments, *Bay Area Dioxins Project*, February 2004.

APPENDIX A: SUMMARY OF RWQCP POLLUTION PREVENTION PROGRAM (CONTINUED)

YEAR	ACTIONS
2005	• Dentists required to install amalgam separators in service area by March 31, 2005; 98% of dentists complied • City of Palo Alto collected 8,481 pounds of fluorescent lights at the recycling center • Analyzed City pesticide use; designed a prioritization process for annual workplan; drafted IPM Scope of Services for structural pest control contract • Made pesticide use reporting system for City staff available electronically and integrated database with GIS to map pesticide use • Served as chair of the Emerging Contaminants Workgroup of the Santa Clara Basin Watershed Management Initiative, which in 2005 produced two white papers titled "Discussion of Pharmaceutical Disposal to Sewer Systems" and "Environmental Emergence of Triclosan" • In 2004/2005 school years, RWQCP school program visited 151 classrooms, which reached approximately 4025 students
2006	• City of Palo Alto led a BAPPG/CWEA Dental Amalgam Training that was attended by approximately 90 people • Inspected 113 of 300 food service facilities within the first 6 months of the program • Co-led a regional pharmaceutical disposal event at 39 locations throughout the Bay Area that diverted over 3,500 lbs of pharmaceutical waste. In Palo Alto, collected approximately 960 lbs of pharmaceuticals at pharmacies, local senior centers, and the wastewater treatment plant within the RWQCP service area. Authored a report titled "Report on the San Francisco Bay Area's Safe Medicine Disposal Days"
2007	• In 2006-2007 fiscal year collected 270 pounds of thermometers and thermostats and 13,498 lbs of fluorescent lights • Hired and began using and EcoWise Certified IPM contractor for City facilities to ensure reduced dependence on pesticide use and discontinued use of structural pesticides associated with water quality impacts and ecotoxicity • In 2006/2007 school years, RWQCP school program visited 163 classrooms, which reached approximately 3,961 students at twenty-six schools. Expanded our microbes in sewage program to educate all seventh graders in our service area
2008	• Updated Mercury Loading Estimate (previous Estimate was for 2000) to reflect new loadings after full implementation of Dental Amalgam Program. Dental office mercury loading, as a percentage of the total, decreased from 56% to 29%, and it is estimated that 11 pounds per year of mercury that would have been discharged to the sanitary sewer is now captured by amalgam separators • Completed analysis of salinity (total dissolved solids, sodium, and chloride) in RWQCP partner trunklines, influent, and recycled water • Expanded food service facility program to include expanded stormwater, polystyrene activities in addition to more rigorous enforcement of grease control device maintenance and sizing requirements
2009	• Adopted and implemented an ordinance restricting single-use plastic checkout bags at large grocery stores, which became effective on September 18, 2009 • Performed annual evaluation of City's pest management and pesticide use, which demonstrated that the City's ecotoxic pesticide use has decreased to the lowest levels since the program's inception • Adopted ordinance provision restricting molybdenum use in cooling systems and developed a brochure on cooling system additive restrictions in the RWQCP service area
2010	• In 2010, the Brake Pad Partnership was instrumental in passing the California Brake Pad Reformulation Bill (SB 346) which requires brake manufacturers to reduce the amount of copper in brake pads to no greater than 5 percent by 2023, then to no greater than 0.5 percent 2055 • Adopted and implemented an ordinance that restricts the use of expanded polystyrene disposable food service containers by Food Vendors • Implemented energy efficiency projects for the activated sludge aeration basins and trickling filter lift pumps that resulted in an 11% reduction in electricity use in 2010 compared to the average of the previous four years
2011	• Received the Department of Pesticide Regulation 2011 IPM Innovator Award • Led and coordinated 2011 Plastic Reduction Summit attended by multiple Bay Area public agencies and nonprofits • City staff determined the locations of saline groundwater infiltration to the sewer trunklines by using continuous monitoring equipment • Expanded number of pharmaceutical collection sites to five permanent collection locations
2012	• Reduced mercury entering the environment by more than 50 percent since installation of amalgam separators in 2005 • Palo Alto has a combined total of 12 pesticide free parks and facilities, in addition there was no pesticides used for rodent control • Completed EIR to expand plastic checkout bag ordinance to include all retailers including food service establishments • RWQCP's 2011 CO2 emissions are 13% lower than the 2005 emissions

[2]North, K.D., *Environmental Science and Technology*, 2004: 38, 4484-4488

APPENDIX A: SUMMARY OF RWQCP POLLUTION PREVENTION PROGRAM (CONTINUED)

YEAR	ACTIONS
2013	• Single use plastic bag ban was expanded to include all retail and food service establishments, which has reduced the amount of plastic bag sightings throughout the City • Installed trash booms in both Matadero and Adobe Creeks which capture a significant amount of trash prior to the flood basin • Received the 2013 Teng-Chung Wu Pollution Prevention Award from the Water Board for the City's work on reducing emerging contaminants at the source
2014	• Phil Bobel, the Assistant Director for Public Works–Environmental Services receives Dr. Teng-Chung Wu Pollution Prevention Award for Lifetime Achievement
2015	• City approved expansion of existing Plastic Foam Ordinance to prohibit retail sale/distribution of plastic foam ice chests, packaging materials, foodware, and egg cartons • RWQCP reduced greenhouse gas emissions by 41% since 2005, maintaining compliance with the City's emission reduction goals • Release request for proposals on the Advanced Water Purification System Feasibility Study
2016	• RWQCP began 3rd reverse osmosis pilot plant to evaluate pretreatment options • New regulation became effective with new reporting and testing requirements for Federal Sewage Sludge Incinerator Pollutants • Adopted new City goal to reduce community and municipal emissions 80% from 1990 levels by 2030 • RWQCP reduced greenhouse gas emissions by 60% since 1990 • Completed design of the sludge dewater and haul facility to allow for incinerator scheduled for 2019 • The City worked with Palo Alto Unified School District to expand water bottle filling stations
2017	• RWQCP Watershed Protection Manager receives Dr. Teng Chung Wu Pollution Prevention Award for leadership in BAPPG and pharmaceutical disposal leadership • Completed the 2016 Integrated Pest Management Report which showed 93% average reduction in ecotoxic pesticide use from baseline years • Conducted incinerator emissions test to prove compliance with emission limits and set operating parameter limits to maximize operational flexibility • RWQCP hosts Sludge Dewatering and Truck Loadout Facility Construction Project Groundbreaking Ceremony • Four businesses completed the ReThink program: Kirk's Steakburgers, New York Pizza, Gelataio, and Sprout's Café
2018	• Worked with Girl Scout Troop 60016 to make the month of May "Drinking Straw Awareness Month" • Completed the 3rd reverse osmosis pilot project that evaluated pretreatment options • Led Fall 2018 Regional IPM Coordinators Meeting which focused on glyphosate alternatives and IPM tracking software
2019	• Completed Northwest County Recycled Water Strategic Plan • Decommissioned incinerators • Retired City pharmaceutical takeback program and began working with MedProject to takeback pharmaceuticals in RWQCP service area • Implemented PCBs in Priority Building Demolition Program • Valley Water awards Watershed Protection with Volunteer Recognition Award for participation in creek cleanups
2020	• COVID-19 pandemic forces either a pause or transition to virtual programs in March 2020 • Developed internal City Staff webpages for Integrated Pest Management Program to provide resources and directions for pest treatment at City facilities • Palo Alto City Council expands Smoking Ordinance restrictions • RWQCP repaired 72-inch trunkline
2021	• Reduced anthropogenic emissions by >70% since 1990 • Used 100% green (carbon neutral) natural gas that has fewer associated greenhouse gas emissions when combusted • Entered into a $613,000 agreement with CA Department of Transportation to install a large trash capture device
2022	• In-person outreach returned since COVID-19 • Completed the City's Sea Level Rise Vulnerability Assessment • Completed the Secondary Treatment Upgrade Project Design and progressed the design of the Advanced Water Purification System.
2023	• See Table 1 in Executive Summary

APPENDIX B: RWQCP REGIONAL MEETINGS & PARTNERSHIPS

GROUP	BRIEF DESCRIPTION	RWQCP ROLE
Aquatic Science Center/San Francisco Estuary Institute Board	Provides water quality science support and information management for governments and nonprofits	Support financially
BACWA - Air Committee	Shares information about air regulations that impact wastewater	Participant
BACWA - Lab Committee	Shares information about lab requirements	Participant
BACWA - Nutrient Strategy Committee	Shares information about nutrients in the San Francisco Bay	Participant
BACWA - Permits Committee	Shares information on NPDES permitting and pollutant issues	Participant
BACWA - Pretreatment Committee	Shares information about pretreatment issues	Participant
BACWA - Recycled Water Committee	Shares information about recycled water regulations	Participant
BACWA - Pesticide Subcommittee	Leads regional planning and strategy efforts for pesticide pollution prevention	Participant
Bay Area Clean Water Agencies (BACWA) - Executive Board	Regional planning discussions	Participant, support financially
Bay Area Pollution Prevention Group	Regional coordination about pollution prevention outreach	Steering committee, participant
Bay Area Climate Adaption Network (BayCAN)	Shares information about nutrients in the San Francisco Bay	Participant, Support financially
California Association of Sanitation Agencies (CASA)	State-level voice for public wastewater agencies regarding regulatory, legislative, and legal issues	Member, Support financially
CASA - Regulatory Subgroup	CASA focus on regulatory requirements	Participant
CASA - Water Quality Fees Subgroup	CASA focus on water quality fees	Participant
CASA - PFAS	CASA focus on PFAS	Participant

APPENDIX B: RWQCP REGIONAL MEETINGS & PARTNERSHIPS (CONTINUED)

GROUP	BRIEF DESCRIPTION	RWQCP ROLE
Lower South Bay Dischargers	Discusses regional and lower south bay-specific regulatory issues	Participant
Product Stewardship Institute	A national organization that works with state and local government agencies, manufacturers, retailers, environmental groups, federal agencies, and other stakeholders to reduce the health and environmental impacts of consumer products	Participant, Support financially
Regional Monitoring Emerging Contaminants Meeting	Shares information about emerging contaminants in the San Francisco Bay and possible solutions	Participant
Regional Monitoring Micropastics Workgroup	Shares information about microplastics in the San Francisco Bay and possible solutions	Participant
Regional Monitoring Program Steering Committee	Regional Monitoring Program is run and operated by San Francisco Estuary Institute	Vice Chair, Support financially
Santa Clara County Climate Collaborative	County collaboration on climate protection and adaptation	Participant
Santa Clara County Retailers Recycled Water Subcommittee	Santa Clara County Retailers Recycled Water Subcommittee	Participant
Santa Clara Valley Water District: Salt and Nutrient Planning Stakeholders	For salt and nutrient planning stakeholders	Participant
WateReuse - Northern California Chapter	Forcuses on advancing laws, policy, funding, and public acceptance of recycled water	Participant

APPENDIX C: EFFLUENT LIMITATIONS

Desire to comply with the RWQCP's toxic pollutant effluent limitations provide significant motivation for the programs described in this plan. The RWQCP's NPDES permit issued in April 2019 (Order No. R2-2019-0015) has both concentration limits (**Tables A-1**) and the Mercury and PCB Watershed Permit (Order No. R2-2017-0041) has mass limits (**Table A-2**).

Table A-I: EFFLUENT LIMITS

CONSTITUENT	UNITS	MONTHLY AVERAGE	DAILY MINIMUM	AVER-AGE WEEK-LY	INSTANTANEOUS MINIMUM	INSTANTANEOUS MAXIMUM
Biochemical Oxygen Demand	mg/L	10	20	--	--	--
Total Suspended Solids	mg/L	10	20	--	--	--
pH	Standard units	--	--	--	6.5	8.5
Oil and Grease	mg/L	5	10	--	--	--
Turbidity	NTU	--	--	--	--	10
Total Ammonia	mg/L as nitrogen	2.7	9.5	--	--	--
Copper, Total Recoverable	µg/L	21	32	--	--	--
Mercury	µg/L	0.025	--	0.027	--	--
Nickel, Total Recoverable	µg/L	25	31	--	--	--
Cyanide, Total	µg/L	6.2	11	--	--	--
Dioxin - TEQ	µg/L	1.4×10^{-8}	2.8×10^{-8}	--	--	--
PCBs	µg/L	0.00039	0.00049	--	--	--

Table A-2: TOXIC POLLUTANT EFFLUENT MASS LIMITS

CONSTITUENT	AVERAGE ANNUAL LIMIT (KG/YR)
Mercury	0.31

SECTION VI: APPENDIX 57

APPENDIX D: COPPER CONTINGENCY PLAN

CONTINGENCY ACTION	DISCHARGE REDUCTION
Add corrosion inhibitor to local drinking water supplies	Reduce copper piping corrosion by an estimated 30% if inhibitor addition was implemented in all SFPUC water supplies in the RWQCP service area
Create financial incentives for implementation of copper pollution prevention measures at private businesses, emphasizing measures for largest copper dischargers	Reduce copper wastewater discharge from industrial copper use, from cooling towers, and from circulating hot water systems. Some additional reductions in industrial process copper discharge (In 2002, about 5% of RWQCP influent copper), cooling water copper corrosion discharges (currently 3% of influent copper) and circulating hot water system discharges (which may be as much of 3% of influent copper) are possible
Advocate use of CPVC piping and/or restrict use of copper piping in new construction and remodeling	Reduce copper discharges from corrosion of copper piping. Rate of reduction is uncertain as the current pipe replacement rate in the service area is unknown. Since replacement rate is probably slow, significant reductions would probably not be achieved for 5 to 10 years
Implement regional training and certification program for plumbers. Require use of recommended fluxes and solders and adherence to IAPMO best management practices during all copper plumbing installation	Reduce copper discharges from corrosion of copper piping due to poor installation practices. The amount of reduction that would be achieved is unknown. Reduction would slowly increase as piping is replaced
Adopt copper pipe flow velocity restrictions as part of city building codes	Reduce copper discharges from corrosion and erosion of copper piping. The amount of discharge reduction is unknown, but could be measurable depending on current average flow velocities. Reduction would slowly phase in as piping is replaced
Recommend lower operating temperatures for home and business hot water systems (while maintaining user safety and sanitation)	Reduce copper discharges from corrosion of hot water piping (which occurs at an accelerated rate). The amount of discharge reduction is unknown
Prohibit installation of open cooling towers and prohibit towers with copper piping and parts	Reduce copper discharges from cooling towers (3% of RWQCP copper influent) as the restriction phased in. Preliminary data suggest that at least half of the cooling water systems in the service area are open systems or contain copper, and that copper discharge reductions of more than 50% are possible if such systems are replaced with copper-free closed systems
Expand wastewater recycling programs	Reduce the amount (but not the concentration) of copper discharged to San Francisco Bay by an amount proportional to the amount of wastewater diverted from Bay discharge
Investigate and consider implementing chemical addition to increase copper removal at the RWQCP	Increase copper removal efficiency at the RWQCP, decreasing copper discharge concentration. Copper discharge reduction (if any) is unknown. (Full-scale testing would be required to determine the potential reductions)
Expand water conservation education and incentive programs	Reduce copper discharges associated with water use, primarily from water supply and corrosion. The amount of reduction would be proportional to the decrease in indoor water use achieved

APPENDIX E: COPPER CONTROL PROGRAM

COPPER CONTROL PROGRAM ITEM NUMBER	ITEM DESCRIPTION	IMPLEMENTATION PLAN	IMPLEMENTATION DATE
i.	Provide education and outreach to the public (e.g., focus on proper pool and spa maintenance and plumbers' roles in reducing corrosion)	The RWQCP will conduct public outreach on pool and spa maintenance, and plumbers' roles in reducing corrosion, via a new web page on the baywise.org website. The RWQCP will continue to distribute the SCVURPPP pool brochure to residents upon request or in response to illicit discharges. The RWQCP will also participate in any copper public education and outreach efforts initiated by the Bay Area Pollution Prevention Group	7/1/2010 and ongoing
ii.	If corrosion is determined to be a significant copper source, work cooperatively with local water purveyors to reduce and control water corrosivity as appropriate, and ensure that local plumbing contractors implement best management practices to reduce corrosion in pipes	RWQCP staff has met with San Francisco Public Utilities Commission (SFPUC) staff to discuss SFPUC's corrosion control strategy, which was approved by the California Department of Public Health. RWQCP staff will continue to monitor influent copper concentration on a monthly basis to assess whether any significant increases in influent copper concentrations are caused by potable water corrosivity	Ongoing
iii.	Educate plumbers, designers, and maintenance contractors for pools and spas to encourage best management practices that minimize copper discharges	A detailed description of the RWQCP's efforts to educate plumbers and designers about best management practices to minimize copper is provided the 2016 Clean Bay Plan. This effort, which is now a regional program of BAPPG, was initiated by the RWQCP in 2001. RWQCP staff will continue to support BAPPG's efforts to reach plumbers' and designers' groups. An effort is also planned by BAPPG to work with the California State Licensing Board to direct plumbing contractors to the baywise.org website for information on copper corrosion	Ongoing

APPENDIX F: CYANIDE CONTROL PROGRAM IMPLEMENTATION PLAN

CYANIDE CONTROL PROGRAM ITEM NUMBER	ITEM DESCRIPTION	IMPLEMENTATION PLAN	IMPLEMENTATION DATE
i.	Inspect each potential cyanide contributing source to assess the need to include that contributing source in the control program	The following three facilities were identified as potential contributors of cyanide to the RWQCP: Communications and Power Industries, and Hammon Plating Corporation. Each of these facilities were inspected by the RWQCP's Pretreatment Program, and all three are included in the cyanide control program	Complete
ii.	Inspect potential cyanide contributors included in the control program at least annually. Inspection elements may be based on USEPA guidance, such as Industrial User Inspection and Sampling Manual for POTWs	The potential cyanide contributors identified above will be inspected at least annually. Communications and Power Industries, and Hammon Plating Corporation are typically inspected semi-annually, with compliance monitoring, including cyanide analysis, conducted by the RWQCP	Ongoing
iii.	Develop and distribute educational materials to potential cyanide contributing sources regarding the need to prevent cyanide discharges	The RWQCP will utilize the educational materials developed by the Bay Area Pollution Prevention Group. Distribution of educational materials began in 2011. Pretreatment program inspectors regularly stress the importance of proper cyanide control during industrial facility inspections	Complete
iv.	Prepare an emergency monitoring and response plan to be implemented if a significant cyanide discharge occurs	The emergency monitoring and response plan is located in Appendix G	Complete
v.	If ambient monitoring shows cyanide concentrations of 1.0 µg/L or higher in the main body of the San Francisco Bay, undertake actions to identify and abate cyanide sources responsible for the elevated ambient concentrations	Monitoring of San Francisco Bay is conducted through the Regional Monitoring Program. The RWQCP will identify necessary actions if cyanide concentrations reach 1.0 µg/L or greater	On hold

SECTION VI: APPENDIX 60

Public Works Department
Water Quality Control Plant

Environmental Compliance Division

Date: **08/13/10 (Updated 07/10/23)**
To: **File, Pollution Prevention Plan**
From: **Samantha Engelage, Pretreatment Program Manager**
RE: **Cyanide Emergency Monitoring and Response Plan**

Influent and effluent monitoring are conducted per the requirements of the Palo Alto Regional Water Quality Control Plant's NPDES permit. This plan sets out sampling and investigative measures to be taken in any instance of Plant influent sampling analysis results that indicate a significant cyanide discharge is occuring per Table 6 of the NPDES Permit.

Case 1. Influent sample results greater than 10 ug/L CN

a. Re-sample influent (grab) within 5 days of becoming aware of the laboratory results. If the follow-up sample also exceeds 10 ug/L, then a "significant cyanide discharge" is occurring and triggers Case 2 - surveillance monitoring and source evaluation.
b. Contact each of the identified and potential cyanide contributors (IU dischargers); discuss any recent activities that could have caused a high value.
    i. Hammon Plating Corporation
    ii. Communications and Power Industries, LL
c. Standard follow-up sampling and enforcement response will be implemented for non-compliant activities or IU discharges above the applicable Federal and/or local limits.

Case 2. Surveillance Monitoring and Source Evaluation (Follow-up Influent Sample Results Greater than 10 ug/L)

d. Evaluate monthly Partner Agency trunk line data for potential source of CN increase. Collect grab samples (and consider investigative composite samples despite noncompliant with sample method) identified area suspected of CN source and try to identify source. If source identified, evaluate facility for permitting requirements and best management practices. If no source is identified, consider outreach efforts to identified area regarding CN BMPs.

All findings will be reported in the Pollution Prevention Report per Table 6 of the NPDES Permit.

SECTION VI: APPENDIX 61

APPENDIX H: SEA LEVEL RISE ADAPTATION POLICY

SEA LEVEL RISE ADAPTATION

OVERVIEW

The State of California anticipates that relative sea level rise (SLR) projections stemming from greenhouse gas emissions and related climate change pose significant economic, environmental and social risks to communities along the San Francisco Bay Shoreline, including the City of Palo Alto. Research shows that these projections may worsen if greenhouse gas emission trajectories continue unabated.[1]

Sea level rise in San Francisco Bay is anticipated to range between three feet to more than ten feet by 2100 with rising tides likely thereafter.[2] In Palo Alto, many City services and infrastructure that are essential to the City's public health, safety and economy are located within areas that are predicted to be inundated by Bay water if adaptation measures are not implemented.[3]

PURPOSE OF POLICY

The purpose of this policy is to plan for rising tides that could impact Palo Alto's neighborhoods, economy and the Baylands habitat, and to ensure consistency and integration with the range of City plans that call for SLR planning such as the City's 2030 Comprehensive Plan (adopted November 2017), the Sustainability and Climate Action Plan (S/CAP) (November 2016) and related Sustainability Implementation Plans (SIPs), the Local Hazard Mitigation and Adaptation Plan (March 2017), the Baylands Master Plan (2008), Baylands Comprehensive Conservation Plan (in development), and the Urban Forest Master Plan (February 2019), and other key planning documents that are produced. This policy will serve as a blueprint for the development of a Sea Level Rise Adaptation Plan, and is not intended to establish requirements on new development for implementation prior to Plan adoption; however, projects may be encouraged in advance to consider sea level rise as part of the development process. Definitions and terminology relevant to this policy are listed in Appendix 1– Policy Definitions and Related Terminology.

POLICY SUMMARY

The City recognizes that the best way to avoid long-term impacts from the worst SLR predictions and to minimize adaption response costs is to reduce greenhouse gas (GHG) contributions locally and to support regional, state and national initiatives that reduce GHGs.

Palo Alto will lead by example and coordinate on SLR studies and planning efforts with East Palo Alto, Mountain View, and other cities and public agencies, including counties, as well as utilities, and public-private partnerships, as needed. Palo Alto will establish interdepartmental SLR Planning responsibilities into City

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[1] Ocean Protection Council. (2018). *State of California Sea-Level Rise Guidance 2018 Update.* Retrieved from http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf. Page 12.

[2] Reference [1], page 18.

[3] San Francisco Bay Conservation and Development Commission Adapting to Rising Tides Program (2018). *Adapting to Rising Tides Bay Shoreline Flood Explorer* online tool. Retrieved from https://explorer.adaptingtorisingtides.org/home.

procedures and planning (see, e.g., Appendix 2–Departmental Responsibilities for Sea Level Rise Planning).

Palo Alto will use the *Ocean Protection Council (OPC) 2018 Probabilistic SLR Projections* published by the State of California (Appendix 3) for proposed development projects, renovations and possible property acquisitions and other City planning unless a more suitable reference is identified and agreed upon by local agencies tasked with SLR preparedness. City of Palo Alto, business and residential investments in new property, development, and infrastructure should be designed based on OPC SLR projections for the useful life of the asset to avoid flooding or erosion. To that end, the forthcoming Sea Level Rise Adaptation Plan should consider the following best practices:

1. Upgrades to existing property or infrastructure that are considered less-critical (not essential to immediate public health and safety, e.g. trails or playing fields) should consider the impacts of SLR beyond 2050 using the Low Risk Aversion or Medium-high Risk Aversion Projection listed in Table 1;

2. For critical development and infrastructure (e.g., wastewater treatment facility or utilities that are essential to public health and safety), a risk assessment should be completed based on the SLR projections to 2100 and to include the lifetime of the building using the Medium-high or Extreme Risk Aversion Projections;

3. All designs and engineering strategies, where possible and financially feasible, should be adaptable to changing climate predictions. Each new development should be required to develop and maintain an individual "adaptation pathway plan" to prepare for changes in rising sea level, and related groundwater intrusion. In all sea level rise assessments, and where data are available, the City will consider Base Flood Elevations, storm surge, groundwater table changes due to rising sea levels, and wave runup, where appropriate.

BACKGROUND

Greenhouse gases trap the earth's heat which warms land and oceans. This causes both thermal expansion of the oceans and Antarctic and Greenland ice melt which together are the primary sources of SLR globally and in San Francisco Bay.

SLR threatens the operational integrity of critical services and facilities, e.g., Palo Alto's electrical, gas, water and wastewater utilities, the Municipal Service Center, the Palo Alto Airport, Highway 101 and surrounding roads. Business districts and residential neighborhoods within the projected SLR area are vulnerable to a rising Bay and potential future FEMA insurance zone requirements.

SLR is also likely to affect the elevation and salinity of groundwater close to the Bay. Rising groundwater could have impacts on belowground infrastructure which may be subject to corrosion and buoyancy effects and could contribute to liquefaction. In the case of very low-lying areas, groundwater may result in surface flooding and long-term ponding.

Under current SLR predictions, the Palo Alto Baylands may be submerged by mid-century which would eliminate their ability to buffer upstream or Bayside flooding sources, attenuate storm surge or sequester carbon. The encroachment of Bay water may alter or eliminate habitat for endangered species that reside in

Palo Alto Baylands and the millions of birds that use the Palo Alto segment of the Pacific Flyway for seasonal migration. The recreational and inspirational services of the Palo Alto shoreline could change if Baylands trails, playing fields and golf course are surrendered to encroachment of San Francisco Bay.

The decisions that Palo Alto makes in future years to adapt to rising tides extend beyond the City's borders. Implications with built features such as levees will impact (help or imperil) adjacent communities and thus require close coordination with surrounding local and regional agencies.

PROCEDURES FOR POLICY IMPLEMENTATION

1. **The City will:**

    a) **conduct a SLR vulnerability assessment,** which will:

        i. identify critical and less-critical City infrastructure and ecosystem assets to manage risks given predicted SLR scenarios through 2100 and beyond;

        ii. Identify hazards and determine tolerable risks of the City and community members (risk = hazard x exposure x vulnerability; risk ($/year) = frequency (events/year) x consequences ($/event);

        iii. include an economic assessment of SLR vulnerability for public and private property and cost estimates for inaction;

        iv. engage community members in the process.

    b) **develop a multi-year SLR Implementation Plan** to coordinate internal and regional SLR planning, project funding and public outreach. The Plan will include a SLR adaptation plan and timeline which will:

        i. align with the intent and language of the City's various plans, policies and documents that intersect with SLR Policy and Plan (e.g., the Comprehensive Plan, Sustainability and Climate Action Plan, Local Hazard Mitigation Plan, Baylands Comprehensive Conservation Plan, Baylands Master Plan, Regional Water Quality Control Plant Long Range Facility Plan, Urban Water Management Plan, Recycled Water Strategic Plan, Parks Master Plan, etc.);

        ii. include a table of prioritized adaptation pathways to manage risks to natural and built assets based on the SLR Vulnerability Assessment. Adaptation pathways provide a menu of recommendations and logically staged phases for adaptation over time based on triggers related to SLR levels. Adaptation pathways factor in cost/benefits, the lengthy time to plan, fund and build response strategies and potential additional benefits of carbon sequestration, GHG reduction, wildlife protection and social equity;

iii. include a development plan for public and private property anticipated to be impacted by SLR which may include:
   a. changing the city zoning map and amending requirements, restrictions, or municipal codes to be stricter than state or federal requirements as necessary and when feasible to reduce risks;
   b. adding conditions of approval for project permits in areas where there is a SLR or groundwater intrusion risk;
   c. establishing geographic areas and/or triggers for requiring consideration of relocation;
   d. developing restrictions or additional criteria; and
   e. funding identification
   f. educate and engage community members in the process of SLR planning, including creating a SLR Task Force and meeting with stakeholders (e.g., realtors, property owners, etc.) to educate them about SLR and the options, tradeoffs, and costs, for resilience;

iv. address budget and funding considerations for additional or existing staff to perform SLR planning, adaptation and Capital Improvement Projects (CIPs);

v. provide guidance on managing and enhancing Baylands, creek and open space ecosystem services to mitigate SLR impacts through carbon sequestration and absorption. Examples of this include the use of horizontal levees, expanding or improving Baylands habitat; this guidance should consider the use of the Baylands Comprehensive Conservation Plan, and the concept of "Operational Landscape Units" developed by San Francisco Estuary Institute which delineate Bay shoreline ecosystem functions and services within the natural and built environment and not by jurisdictional boundaries, and;

vi. include the development of educational materials and technical assistance for staff and developers, including:
   a. a checklist and primer on SLR, risk and sharing risk, and planning guidance;
   b. technical and regulatory guidance to City engineers and public developers so that projects are designed based on accepted OPC SLR assumptions and which prompt design-standard revisions, and protect, adapt, retreat responses for threatened areas;
   c. a risk assessment process to be used during CIP site selection, planning and property purchases;
   d. a SLR and groundwater projection zone map which also shows the intersection of the FEMA flood zone and associated insurance requirements;

2. **Recognize policy limits:** This policy does not establish specific requirements for all projects because each site condition is unique, but instead provides expectations for developing guidance and tools to answer key building and infrastructure design and SLR response strategies. This policy also recognizes that not all codes and regulations that govern construction are yet synchronized with OPC SLR predictions, however Palo Alto will incorporate SLR guidance and planning into its own construction and planning process proactively for both public and private structures until regional standards are adopted for use.

Appendix 1: Policy Definitions and Related Terminology

Adaptation Pathway: "Pathways" in relation to adaptation is an approach designed to schedule adaptation decision-making. It identifies the decisions that need to be taken now and those that may be taken in future. The approach supports strategic, flexible and structured decision-making. The pathways approach allows decision makers to plan for, prioritize and stagger investment in adaptation options. Trigger points and thresholds help them identify when to revisit decisions or actions. Examples of pathways approaches can be translated into visual aids such as "route maps" that support communication and consultation with stakeholders. The adaptation pathway approach has been successfully applied in adaptation planning for infrastructure and water management projects, and broader cross-sector adaptation planning[4].

Baylands: Lands which are located between the lines of mean high tide and mean low tide (California Coastal Commission Sea Level Rise Policy Guidance).

Base Flood Elevation (1% annual chance flood): A flood that has a 1% probability of occurring in any given year. The 100-year floodplain is the extent of the area of a flood that has a 1% chance of occurring or being exceeded in any given year. This is indicated by the Special Flood Hazard Area (SFHA) on FEMA flood maps.

Baylands Comprehensive Conservation Plan: A plan currently being prepared by the City of Palo Alto that provides specific programs and projects to achieve the goals and policies of the Baylands Master Plan.

Baylands Master Plan: A plan prepared by the City of Palo Alto to provide a framework and guide for actions in the Baylands that seek to preserve the area's unique natural, recreational and flood-prevention resources.

Capital Improvement Program (CIP): The Capital Improvement Program (CIP) includes projects that help maintain or improve City assets, often called infrastructure. To be included in the City of Palo Alto Capital Budget, a project must meet the following criteria:

- Must have a minimum cost of $50,000 for each stand-alone unit or combined project.
- Must have a useful life of at least five to seven years (the purchase or project will still be functioning and not be obsolete at least five to seven years after implementation).
- Must extend the life of an existing asset or provide a new functional use for an existing asset for at least five years. Examples include extensive roof rehabilitations. These improvements are distinguished from ongoing maintenance work that may extend the life of the asset but is done on a routine basis.

Climate change: Any long-term change in climate conditions in a place or region, whether due to natural causes or as a result of human activity.

Comprehensive Plan: The City of Palo Alto Comprehensive Plan (or Comp Plan) is the primary tool for guiding land use and development in Palo Alto. The Plan fulfills the State requirement that the City adopt

[4] CoastAdapt. (2019). Retrieved from https://coastadapt.com.au/pathways-approach

a General Plan. The Plan provides a foundation for the City's development regulations, capital improvements program, and day-to-day decisions.

Critical infrastructure: City built assets with a long-projected life span (greater than 50 years) which if compromised by rising tides could potentially have catastrophic results on public health, safety or well-being, e.g., wastewater treatment facilities, stormwater infrastructure, levees or impoundments, bridges along major evacuation routes, airports, seaports, railroads, and major highways, EOC/Fire/Police/Healthcare, schools, homeless shelters, landfills and contaminated sites.

Less-critical Infrastructure: City assets that have an expected lifetime of 10-20 years or is replaceable and adaptable, or has limited interdependencies and limited consequences should the system fail or be inundated by water. Examples include isolated parks, unpaved trails.

Design life: The life expectancy of a project as determined during design. As opposed to useful life (see below).

Erosion: The wearing away of land by natural forces; on a beach, the carrying away of beach material by wave action, currents, or the wind , the loss of marsh due to the erosion of the marsh edge by waves. Development and other non-natural forces (e.g., water leaking from pipes or scour caused by wave action against a seawall) may create or worse erosion problems (California Coastal Commission Sea Level Rise Policy Guidance).

Facilities: All buildings, communications facilities, energy systems, industrial facilities, all transportation networks, water and wastewater systems, and parks.

Flood (or Flooding): Refers to normally dry land becoming temporarily covered in water, either periodically (e.g., tidal flooding, king tides) or episodically (e.g., storm surge or tsunami flooding).

Greenhouse gases (GHGs): Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include, carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons, hydrochlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride.

Green Stormwater Infrastructure (GSI): Infrastructure that uses vegetation, soils, and natural processes to manage stormwater runoff and reduce peak flows in flood control channels or creeks. Examples of GSI include landscape-based stormwater "biotreatment" using soil and plants ranging in size from grasses to trees; pervious paving systems (e.g., interlocking concrete pavers, porous asphalt, and pervious concrete); rainwater harvesting systems (e.g., cisterns and rain barrels); and other methods to capture and use stormwater as a resource.

Groundwater: The water found below the surface of the land and contained in the pore spaces of saturated geologic media (sand, gravel). Groundwater is either rain water that has seeped through the soil surface and by means of gravity of soil conditions drained from high to lower elevation areas. Groundwater can also come from the bay transferred via bay mud under the existing levees. Groundwater can be source of water found in wells and springs.

Hazard: A situation involving danger such as coastal flooding, earthquake rainfall and local flooding.

Local Hazard Mitigation Plan: The Federal Disaster Mitigation Act of 2000 (DMA) requires all cities, counties, and special districts to adopt a Local Hazard Mitigation Plan (LHMP) to receive disaster mitigation funding from the Federal Emergency Management Agency (FEMA). Hazard mitigation planning is the process used by state, local and tribal leaders to understand risks from natural hazards and develop long-term strategies to reduce the impacts of disasters on people, property, and the environment. The Palo Alto Local Hazard Mitigation Plan is updated every three years.

Mean Sea Level: The average relative sea level over a period, such as a month or a year, long enough to average out transients such as waves and tides.

Ocean Protection Council (OPC): The Council was created pursuant to the California Ocean Protection Act (COPA), which was signed into law in 2004 by Governor Arnold Schwarzenegger. The mission of the OPC is to "…ensure that California maintains healthy, resilient, and productive ocean and coastal ecosystems for the benefit of current and future generations. The OPC is committed to basing its decisions and actions on the best available science, and to promoting the use of science among all entities involved in the management of ocean resources." The OPC published the State of California Sea Level Rise Guidance Document and subsequent updates which provides an estimated range of predicted SLR and subsequent updates.

Operational Landscape Units: A delineated area that effectively provides specific ecosystem functions and services within the natural and built environment.

Pacific Flyway: A major north-south flyway for migratory birds in America, extending from Alaska to Patagonia. Every year, migratory birds travel some or all of this distance both in spring and in fall, following food sources, heading to breeding grounds, or travelling to overwintering sites.

Protect, adapt, retreat strategies: Responding to SLR generally involves three general concepts:

- **Protect:** Implementing strategies that reduce the risk of SLR impacts to land e.g., levees, horizontal levies, floodwalls, flood gates, and wetlands;
- **Adapt:** Adjusting to natural or human systems in response to actual or expected climatic stimuli or their effects, which minimizes harm or takes advantage of beneficial opportunities. This includes building any new or substantially-improved structures elevated above future flood levels or as structures that can be submerged without sustaining appreciable damage.
- **Retreat:** Surrendering an area partially, seasonally or completely to rising sea level;

Regional Water Quality Control Plant (RWQCP): Owned and operated by the Palo Alto, the Plant treats wastewater for the communities of Los Altos, Los Altos Hills, Mountain View, Palo Alto, Stanford University and the East Palo Alto Sanitary District. The mission of the RWQCP is to protect San Francisco Bay by

cleaning and treating wastewater before it is discharged.

Relative Sea Level: Sea level measured by a tide gauge with respect to the land upon which it is situated.

Risk: Often expressed as "hazard x exposure x vulnerability;" in terms of costs per year it can be expressed as "frequency (events/year) x consequences ($/event).

SAFER Bay Project Feasibility Report: SAFER (Strategy to Advance Flood protection, Ecosystem and Recreation along San Francisco Bay) has prepared a feasibility report that is in the review and comment phase. Once City staff comments are made and report revised as needed, the report will be available for public review and comment.

Sea level: The height of the ocean relative to land; tides, wind, atmospheric pressure changes, heating, cooling, and other factors cause sea level changes.

Sea level rise (SLR): Sea level can change, both globally and locally, due to (a) changes in the shape of the ocean basins, (b) changes in the total mass of water and (c) changes in water density. Factors leading to SLR under climate change include both increases in the total mass of water from melting land-based snow and ice, and changes in water density from an increase in ocean water temperatures and salinity changes. Relative SLR occurs where there is a local increase in the level of the ocean relative to the land, which might be due to ocean rise and/or land level subsidence.

Storm Surge: A rise above normal water level due to low atmospheric pressure associated with storms and the action of wind stress on the water surface.

Sustainability and Climate Action Plan (S/CAP): Palo Alto's plan to reduce the city and community's greenhouse gas emissions to meet climate protection goals and also consider broader issues of sustainability, such as sea level rise, land use and biological resources.

Sustainability Implementation Plans (SIPS): Specific actions needed to achieve S/CAP goals.

Useful life: The period over which a project is expected to be available for use by an entity. This period of time typically exceeds the design life (see above).

Threat and Hazard Identification and Risk Assessment (THIRA): A THIRA helps communities better understand the hazards from natural, technological, and human-caused threats that pose the greatest risk. The Palo Alto THIRA report is updated every two years.

Vulnerability: The extent to which a species, habitat, ecosystem, or human system is susceptible to harm from climate change impacts. More specifically, the degree to which a system is exposed to, susceptible to, and unable to cope with, the adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, as well as of non-climatic characteristics of the system, including its sensitivity, and its coping and adaptive capacity.

Vulnerability Assessment: A practice that identifies who and what is exposed and sensitive to change and how able a given system is to cope with extremes and change. It considers the factors that expose and make people or the environment susceptible to harm and access to natural and financial resources available to cope and adapt, including the ability to self-protect, external coping mechanisms, support networks, and so on.

Appendix 2–Departmental Responsibilities for Sea Level Rise Planning

The following table is a menu of potential actions to be confirmed in the plan for each department.

Lead Department	Responsibility
Administrative Services Department	1. Revise Purchasing Department construction solicitation templates and contract documents to include SLR and sustainability considerations. 2. Prioritize SLR planning and budget equal to other performance indicators for projects within projected SLR areas.
City Manager's Office	1. Implement the Sustainability and Climate Action Plan to reduce greenhouse gas emission contributions. 2. Include SLR update with annual Earth Day and Sustainability Implementation Plan reporting. 3. Consider development of key performance indicators to track if the City is meeting its SLR planning goals. 4. Provide outreach through City Manager Office communication channels about how the City is preparing for sea level rise in coordination with Public Works and Utilities Department outreach. 5. Prioritize SLR projects equal to other Council priorities.
Community Services/Open Space	Implement the recommendations of the 2019 Palo Alto Baylands Vulnerability Assessment for flood control, access, non-recreational features and facilities, habitats and wildlife where feasible, e.g.: 1. Seek funding to expand and enhance Baylands habitat to leverage wave attenuation, water absorption and other ecosystem services that mitigate SLR. 2. Develop climate-smart planting palettes that are projected to survive under changing climate conditions.
Office of Emergency Services	Continue to consider sea level rise in community risk assessments, such as Threat and Hazard Identification Risk Assessment and Local Hazard Mitigation Plan, with appropriate risk considerations and weighting.
Planning & Community Environment	1. Update zoning code and related requirements, such as design standards for public and private development based on OPC predictions.
Public Works–Airport	1. Plan for SLR to reduce risk of impacts to Airport operations. 2. Seek funding opportunities with the Federal Aviation Administration and Caltrans Division of Aeronautics.
Public Works–Interdepartmental	1. Coordinate groundwater management in recognition that SLR will push groundwater levels inland and closer to the surface. 2. Explore the interaction between groundwater, Sea Level Rise and Stormwater.

Public Works–Engineering	1. Plan, design, identify funding, build and maintain resiliency features in City planning and CIP projects per the City's Comprehensive Plan, e.g.: a) Manage the preparation of SAFER feasibility report and potential environmental review, funding, public outreach and construction of SAFER levees and related projects to mitigate SLR. b) Seek grants and other funding for design alternatives and structures that mitigate SLR. c) Build design alternatives and structures that mitigate SLR. 2. Manage the implementation of large-scale stormwater infrastructure rehabilitation projects to minimize flooding from upstream sources, e.g.: a) Construct the high priority projects identified through Storm Drain Master Plan and listed with the Stormwater Management Fee and consider integration of GSI Plan elements. b) Address FEMA regulations (flooding risks) and sea level rise associated with at least 100-year storm events for at least the design life of the structure. c) Manage stormwater rebate program and coordinate with development services, inspect project sites once completed and issue rebates to property owners for installed rainwater capture devices. d) Work with Development Services to help developers of private projects comply with SLR policy and plans and FEMA regulations. e) Implement County Hazard Mitigation Plan (FEMA). f) Implement Green Stormwater Infrastructure Plan requirements. g) Design new infrastructure to be flexible so that it may be incrementally enhanced as sea level rise increases
Public Works–Environmental Services	1. Coordinate internal discussions on SLR planning at a frequency that facilitates proactive planning, e.g., quarterly or as needed. 2. Manage SLR risks to allow for ongoing operations of the RWQCP and the sanitary landfill; 3. Seek opportunities and funding to enhance the Baylands ecosystem and build and nature-based features such as horizontal levees. 4. Maintain AB2516 Ocean Protection Council semi-annual report. 5. Conduct Public Outreach on SLR education and planning in

	coordination with the City Manager's Office and Utilities. 6. Prepare Policy updates. 7. Lead Green Stormwater Infrastructure planning and implementation.
Utilities	1. Execute energy portfolio-related actions in the SIPs Plan for Utilities-related asset protection from flooding, SLR and erosion. 2. Increase climate and SLR messages in ongoing water conservation public awareness campaigns in coordination with the City Manager's Office and Public Works–Watershed Protection.

Appendix 3–Ocean Protection Council 2018 Probabilistic Sea Level Rise Projections
*Rising Seas Report, State of California Sea Level Rise Guidance**

	Low Risk Aversion Likely Range (ft.) 66% Probability	**Medium-high Risk Aversion (ft.) 0.5% probability 1-in-200 chance**	**Extreme Risk Aversion (ft.)** (No probability yet available)**
	Use for less-critical infrastructure and services e.g., trails, playing fields, golf course that could potentially be surrendered to SLR.	*Use for critical infrastructure and services e.g., Regional Water Quality Control Plant, Municipal Service Center, Utilities infrastructure*	
2030	0.5	0.8	1.0
2040	0.8	1.3	1.8
2050	1.1	1.9	2.7
2060	1.5	2.6	3.9
2070	1.9	3.5	5.2
2080	2.4	4.5	6.6
2090	2.9	5.6	8.3
2100	3.4	6.9	10.2

SLR rates in this table show the upper-range predictions for how SLR may increase in future years and the SLR rate assumptions that should be used for different facilities and development. Probabilistic projections in the first two columns are with respect to a baseline of the year 2000, or more specifically the average relative sea level over 1991 - 2009. These numbers do not include impacts of El Niño, storms or other acute additions to sea-level rise.[5] The time period referenced should be based on the useful life of the structure. The low and medium-risk projections listed in this table may underestimate the likelihood of extreme sea-level rise, particularly under high greenhouse gas emissions scenarios which as the writing of this policy are projected to continue to increase.

Not all infrastructure and development need to be designed to withstand the most extreme SLR predictions. This table suggests the types of facilities that could be designed to withstand the low, medium or extreme risk scenarios. Buildings for which there is an extreme risk aversion (e.g. wastewater treatment facilities) require more extensive and thus more costly designs and retrofits.

*The relative SLR heights above as it relates to Palo Alto's shoreline can be viewed at *Adapting to Rising Tides Bay Shoreline Flood Explorer* online tool at https://explorer.adaptingtorisingtides.org/home.

** OPC guidance also includes an Extreme Risk Aversion scenario (aka H++ Scenario (Sweet et al 2017 Single scenario)). The probability of this scenario is currently unknown, but its consideration is important, particularly for high stakes, long-term decisions for critical infrastructure and given the uncertainties of projected GHG emissions discussed above.

[5] Ocean Protection Council. (2018). *State of California Sea-Level Rise Guidance 2018 Update.* Retrieved from http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf. Page 18.

January 2023: You are Essential to Clean Water Potential UBI

You Are Essential To Clean Water Potential

Urban sources are the largest contributers of pollution to local creeks and San Francisco Bay. However, you can help prevent stormwater pollution by following these tips that create a big impact and protect waterways:

Sweep up fallen leaves and place them in your green compost cart instead of blowing them into the street.

Give yourself a break – use a commercial car wash to avoid creating polluted runoff.

Avoid spraying pesticides in or around your house. Check out the less-toxic pest management techniques found on ourwaterourworld.org.

Dispose of old paints, pesticides, cleaners, or other household hazardous waste at the City's Household Hazardous Waste Station. More info on cityofpaloalto.org/hazwaste.

Pick up litter when you see it. Keep garbage and recycling carts tightly covered to prevent litter from being blown away or scattered by foraging animals.

Pick up pet waste, and dispose of it properly in the garbage. Pet waste can carry harmful bacteria and pathogens into creeks.

Avoid single-use disposables to reduce waste and litter. Some ideas include bringing your own reusable produce bag to the grocery store or switching to reusable snack packs. More info on cityofpaloalto.org/zwliving.

Make sure hired mobile businesses *(e.g., car detailers, carpet cleaners, and dog groomers)* **dispose of liquid waste** down a utility sink or toilet, and not into the street or storm drains.

Want to learn more pollution prevention tips and information?
Visit cityofpaloalto.org/watershed or call 650.329.2122.

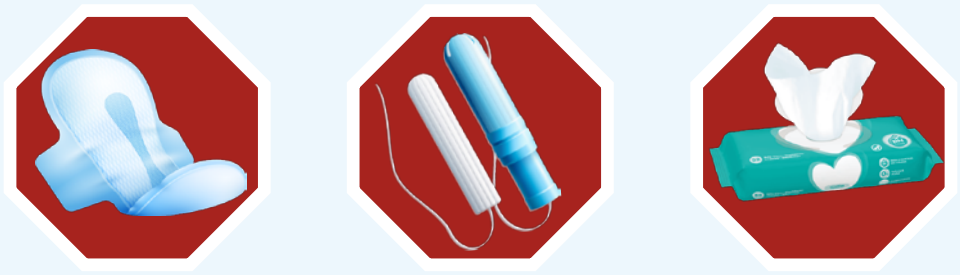
CITY OF PALO ALTO

REGIONAL WATER QUALITY CONTROL PLANT

Individuals with disabilities who require accommodations to access 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 the City's ADA Coordinator at (650) 329-2550 (voice) or email ada@cityofpaloalto.org. 1/23 ♻ *Printed on 100% post-consumer recycled paper, bleached without chlorine*

February 2023: Don't Rush to Flush UBI

Don't Rush to Flush!



Sanitary Pads | **Tampons & Applicators** | **Wipes of Any Kind**

...hair, contact lenses, cotton pads or swabs, diapers, medication, cat litter, toilet roll tubes, floss, cigarettes, cleaning chemicals, paints & pesticides; fats, oils, grease (FOG), razors, **or anything else.** Flushing items other than human waste and toilet paper can cause sewer backups into homes and streets, and pollution into creeks and the San Francisco Bay.

ONLY toilet paper and **human waste** should be flushed down the toilet.

Visit cleanbay.org or call 650.329.2122 for more information.

REGIONAL WATER QUALITY CONTROL PLANT

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♻ Printed on 100% post-consumer recycled paper, bleached without chlorine.

February 2023: Choose Chewables UBI

Choose Chewable Flea and Tick Control Meds for Your Pets

Topical flea and tick treatments (spot-on products and collars) contain toxic pesticides that can transfer onto hands, clothing, and indoor surfaces around your home. When washing pets, bedding, and clothing, these pesticides pass through wastewater treatment plants and pollute San Francisco Bay. House "bombs" and foggers also leave pesticide residue and have limited effectiveness.

Speak to your vet about using oral medications to control fleas and ticks. Visit baywise.org for more information for you and your vet, and to learn how to safely dispose of expired pet medications.

Reduce flea and tick problems before they start!

- **Fleas:** Make your own flea trap by placing soapy water in a shallow baking tray and leaving a lamp aimed at the tray overnight. Regularly vacuum floors, furniture, pet bedding and other fabrics. Use a flea comb dipped in soapy water to capture fleas.
- **Ticks:** Reduce ticks by regularly grooming and inspecting your pet, and aim to keep pets out of grassy areas.

To learn more about watershed protection, visit cleanbay.org or call 650.329.2122.

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March 2023: Smoking Ordinance UBI

NO BUTTS!

PALO ALTO'S PUBLIC SMOKING ORDINANCE MAKES MOST PUBLIC SPACES SMOKE-FREE

Smoking is not only a public health issue—it's also an environmental issue.

Cigarette butts are a top source of litter in our creeks and streets and seep toxic chemicals into waterways.

Smoking (including vape & marijuana products) is prohibited in:

- **PUBLIC SPACES** including indoor and outdoor dining areas, entryways, public events, recreation areas, service areas, commercial areas (e.g. University Ave and California Ave).
- **OUTDOOR SERVICE AREAS** (e.g. bus stops, ATMs, and ticket lines), places of employment, construction worksites, all City of Palo Alto facilities, parks, golf courses and open spaces.
- **25 FEET FROM** any doorway, window, opening, crack, or vent into an enclosed area.
- **APARTMENT BUILDINGS AND CONDOMINIUMS** with two or more units and common areas. Apartment complexes, condominiums and businesses can designate smoking areas if they are at least 25 feet away from any windows or doors and when cigarette disposal receptacles are provided to control litter.

For more information visit **cityofpaloalto.org/smokingordinance**.
For questions, email **smokingordinance@cityofpaloalto.org** or call **(650) 329-2122**.

Own a business, apartment or condominium building?
Visit cityofpaloalto.org/smokingordinance for information about FREE no smoking signs and window decals for your property.

For help quitting smoking, vaping, or chewing tobacco visit the California Smokers' Helpline at nobutts.org or call 1-800-NO-BUTTS for free, personalized, confidential quit services in five languages, free nicotine patches, apps and support.

CITY OF PALO ALTO

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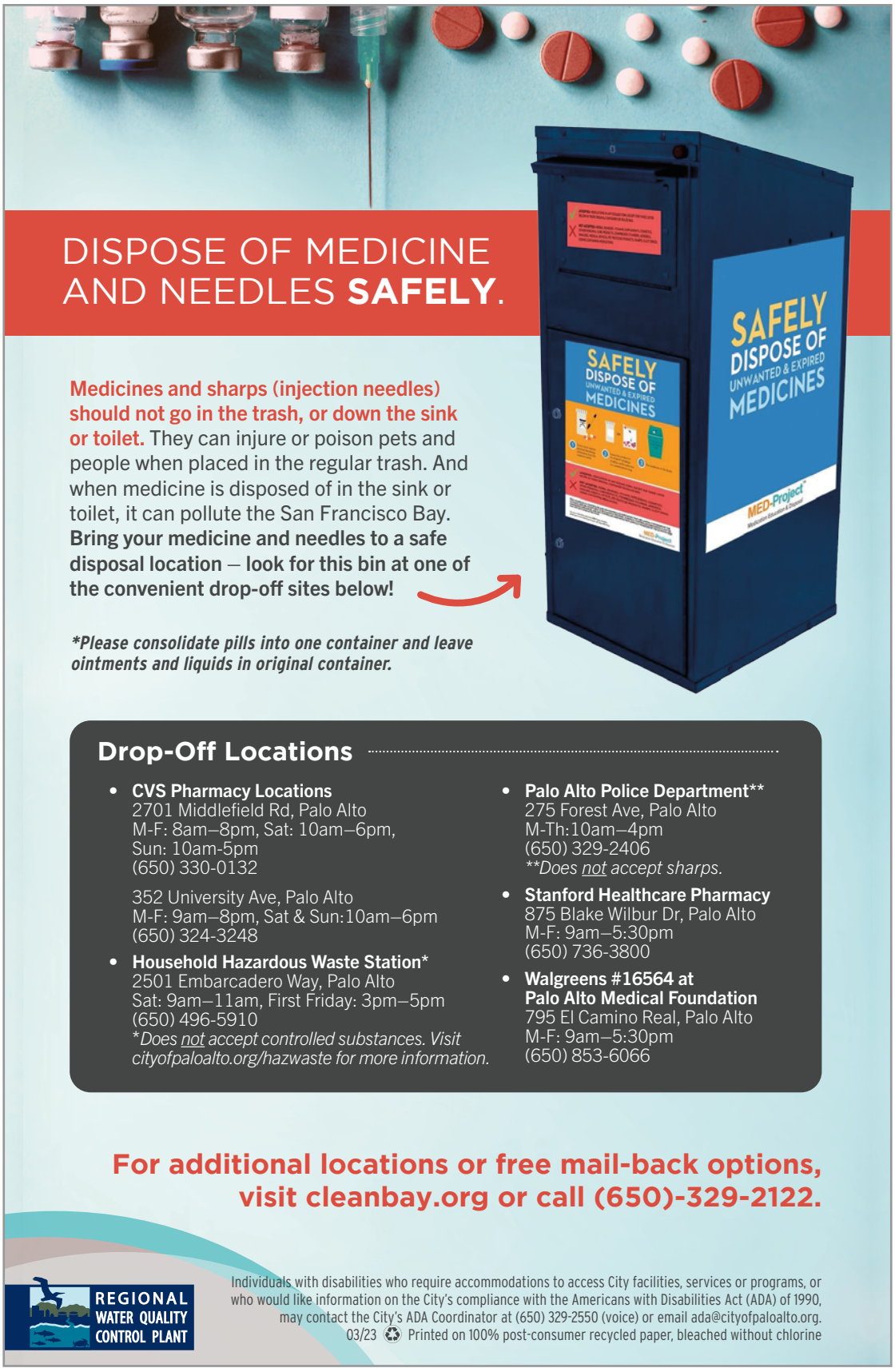
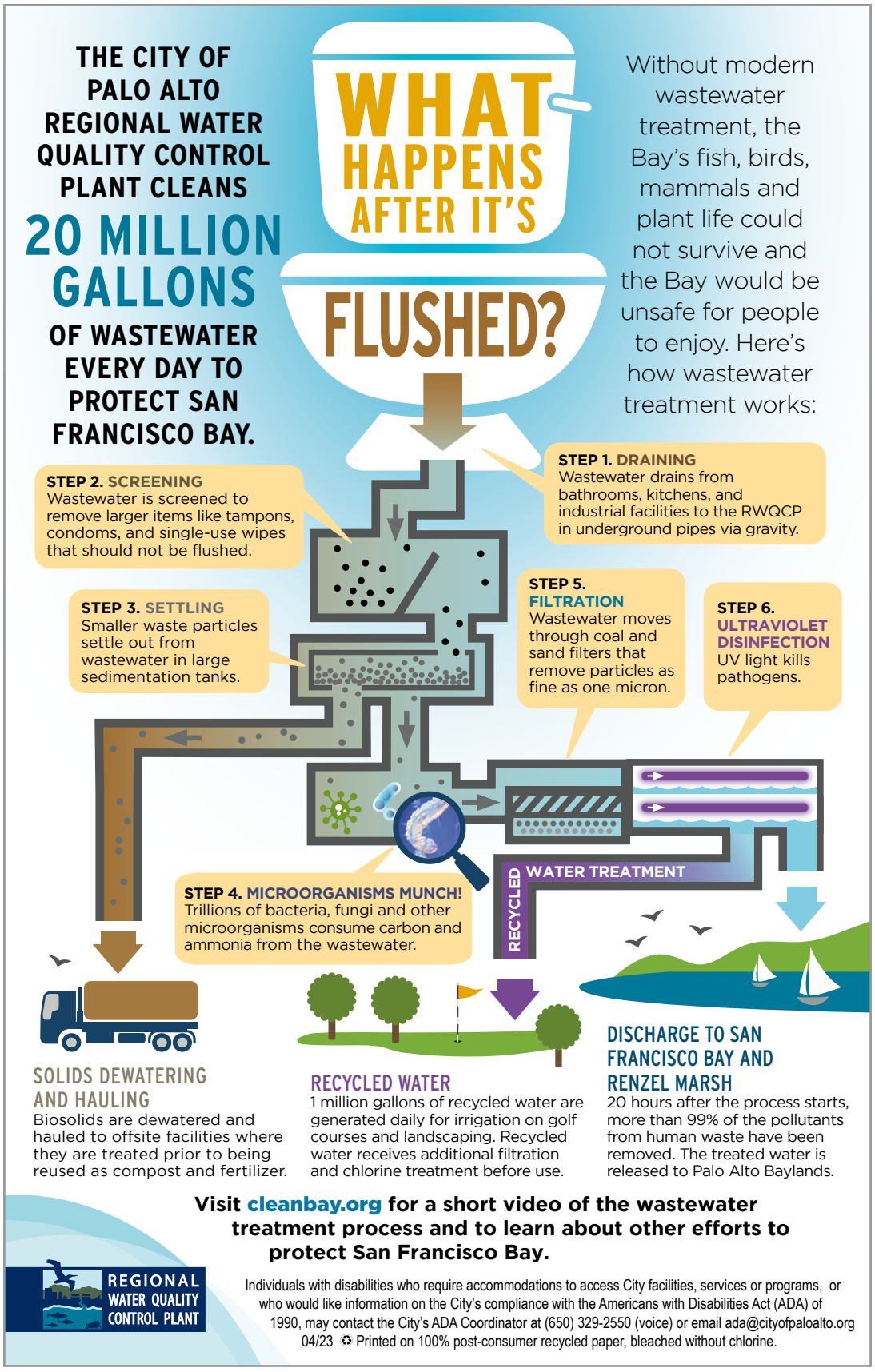
March 2023: Pharms and Sharps UBI

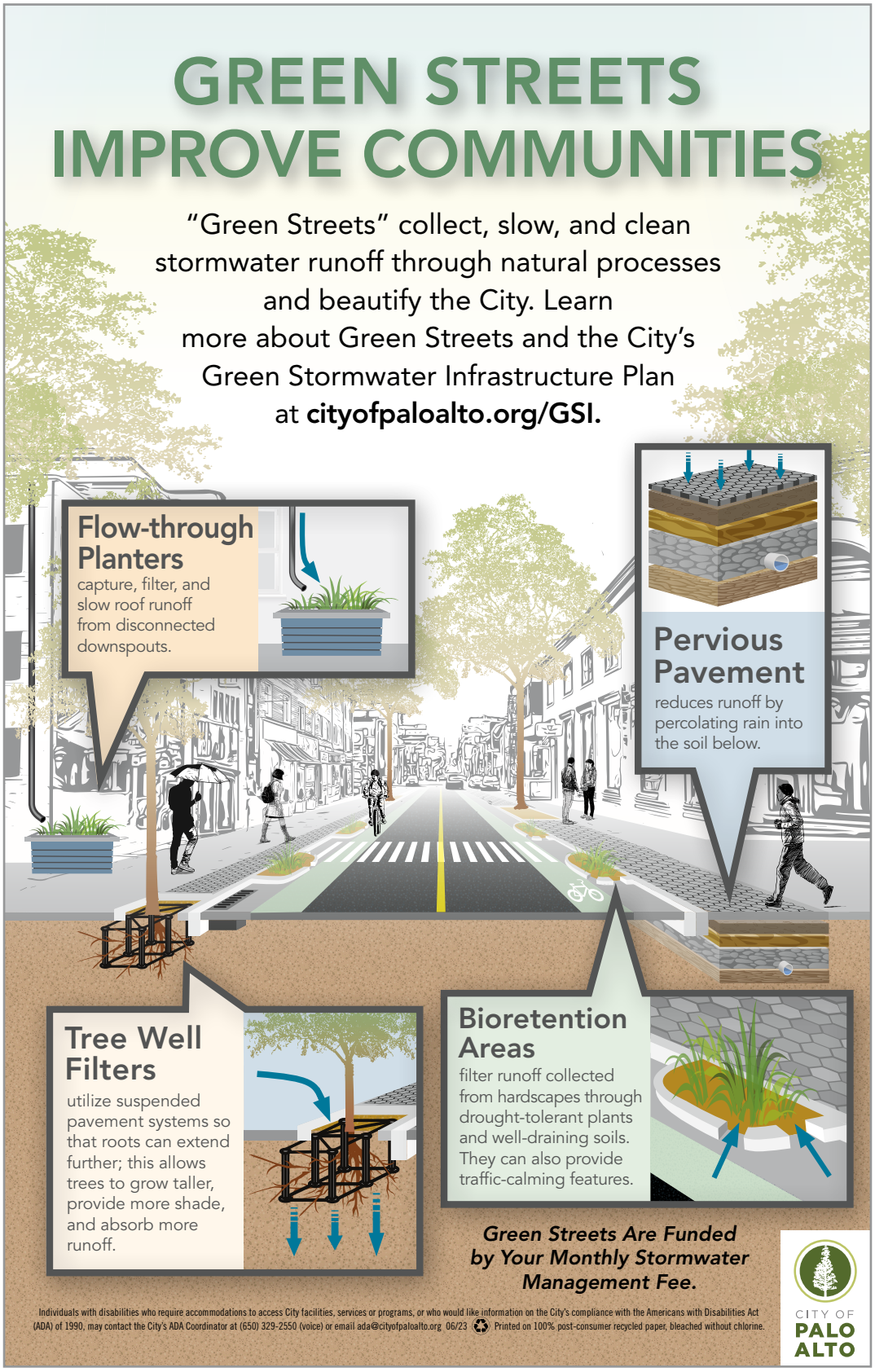


April 2023: What Happens After You Flush UBI



May 2023: Pool Cleaning UBI

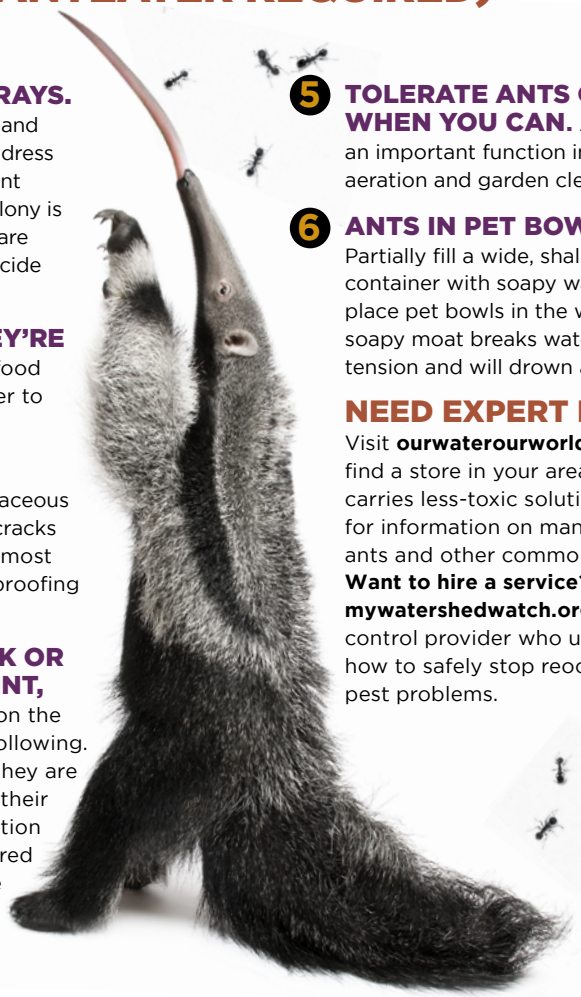
June 2023: Green Streets UBI



July 2023: Problems with Ants UBI

PROBLEMS WITH ANTS?

MANAGE SEASONAL ANTS LIKE A PRO. (NO ANTEATER REQUIRED)



1. **DON'T USE ANT SPRAYS.** Sprays expose your family and pets to pesticides. They address less than 1% of the actual ant infestation (most of the colony is underground), and sprays are a top source of creek pesticide pollution in the Bay Area.
2. **REMOVE WHAT THEY'RE AFTER.** Clean up ants, food and spills with soapy water to remove their scent trail.
3. **CAULK HOLES AND CRACKS.** Apply diatomaceous earth in wall openings or cracks before sealing. This is the most effective measure for ant proofing your home.
4. **IF YOU CAN'T BLOCK OR FIND AN ENTRY POINT,** place an ant bait station on the trail the ants have been following. Resist killing the ants as they are carrying the bait back to their nest. Remove the bait station when ants have disappeared so you don't attract more ants into your house.
5. **TOLERATE ANTS OUTSIDE WHEN YOU CAN.** Ants serve an important function in soil aeration and garden cleanup.
6. **ANTS IN PET BOWL?** Partially fill a wide, shallow container with soapy water and place pet bowls in the water. The soapy moat breaks water surface tension and will drown ants.

NEED EXPERT HELP?

Visit **ourwaterourworld.org** to find a store in your area that carries less-toxic solutions and for information on managing ants and other common pests. **Want to hire a service?** Visit **mywatershedwatch.org** for a pest control provider who understands how to safely stop reoccurring pest problems.

WWW.CLEANBAY.ORG / 650.329.2122

REGIONAL WATER QUALITY CONTROL PLANT

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September 2023: Storm Tips and Prep UBI

ARE YOU READY FOR WINTER STORMS?

Learn what to do before, during, and after storms of any size to help you stay comfortable and safe.

PROTECT YOUR FAMILY

- Visit cityofpaloalto.org/preparedness for help preparing family emergency plans and kits.
  - ✓ **Make sure your emergency plan includes** pets, neighbors who need extra help, and safe routes to high ground. Keep an emergency kit stocked and handy at home, work, and in the car.
  - ✓ **Emergency kits should include** drinking water, a first aid kit, essential medicines, food (remember special diets and pets), cash, a radio, flashlights, extra batteries stored in a water-tight plastic bag, and important documents (e.g. ID, passport, financial papers).
- **Turn around, don't drown.** Don't drive through standing water. It may be deeper than you think and your car may stall. Abandon your car if you are stuck in water.
- **Stay informed.** Keep the list of phone numbers on the reverse of this flyer handy on your refrigerator and in your phone.
  - ✓ Sign up at alertscc.com to have local emergency info sent to you via text or email.
  - ✓ Bookmark cityofpaloalto.org/storms for up-to-date local storm information.
- **Stay powered safely.**
  - ✓ In case of undetected gas leaks, use flashlights during a power outage—never lanterns, matches or candles.
  - ✓ Keep generators outside, away from the house and in open air to prevent carbon monoxide poisoning. Never run a generator in your garage or near an open window.

PROTECT YOUR PROPERTY

- **Know your flood hazard area and insure your property sufficiently.** Identify your flood zone designation at cityofpaloalto.org/floodzones. Homeowner insurance policies don't cover flood damage so purchase flood insurance if you are in a high-risk flood area.
- **If your property has been damaged by a storm,** check with the City's Development Center to see if you meet FEMA standards for "Substantial Damage and Improvement." For general questions, reach Public Works at **(650) 329-2151 ext. 8,** or email pwecips@cityofpaloalto.org. For any other questions regarding zoning, setbacks and planning application email planner@cityofpaloalto.org.
- **Clean out roof gutters, downspouts, landscape inlets and swales** to avoid clogged lines that could cause flooding. Ensure downspouts drain away from building foundations, sump pumps are connected and functioning, and garage flood vents are unobstructed so that flood water can flow freely.
- **Build responsibly** and follow building construction codes for any type of construction for your home.
- **Sandbag materials are available** at three Palo Alto locations beginning November 15. See the reverse side of this flyer for locations.

KNOW WHAT TO DO

- **DO NOT TURN GAS BACK ON YOURSELF.** Call City of Palo Alto Utilities for service at **(650) 329-2579**.
- **Don't handle live electrical equipment in wet areas.** If you have concerns about electrical wiring, power lines or equipment on your property, call **(650) 496-6914** to verify the safety.
- **Protect our creeks and the Bay.** Call **(650) 329-2413** to report hazardous material spills and illegal dumping in storm drains.

Persons with disabilities who require materials in an appropriate alternative format, auxiliary aids, or modifications to policies or procedures to access City meetings, programs, or services should contact the City's ADA Coordinator George Hoyt at (650) 329-2550 or by emailing ADA@cityofpaloalto.org.

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CITY OF PALO ALTO

RCES | Prepare for this year's winter weather!

GENERAL INFORMATION

- **Non-emergency Fire/Police:** **(650) 329-2413**
- **Public Safety Social Media** cityofpaloalto.org/stayinformed **(650) 329-2420** (recorded message)
- **Radio stations**
  - ✓ KCBS 740 AM/106.9 FM
  - ✓ KZSU 90.1 FM

CITY CREW SERVICES

- **Power outage & electrical problems** Palo Alto Electric Operations **(650) 496-6914**
- **Gas/water leaks and sewer spills** Palo Alto Utilities Dispatch **(650) 329-2579**
- **Blocked storm drains and mud slides** Palo Alto Public Works **(650) 496-6974** (weekdays 7am to 4pm) **(650) 329-2413** (after hours)
- **Fallen trees** Palo Alto Public Works **(650) 496-5953** (weekdays 7am to 4pm) **(650) 329-2413** (after hours)
- **Not sure which category your report belongs?** Report to Palo Alto **311**. Available 24-hours a day, 7 days a week. cityofpaloalto.org/311

KEEP THESE RESOURCES HANDY OR IN YOUR PHONE CONTACT LIST.

lto Office of Emergency Services
s and training for:
and Block Preparedness
ergency Response Teams
ications

/emergencyvolunteers

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CITY OF PALO ALTO

SECTION VI

October 2023: Water Rebates UBI

CAPTURE, CONSERVE, CONVERT!

Rebates for Rain Gardens, Rain Barrels, and Low-Water Landscapes

The City of Palo Alto and Valley Water landscape and water rebates help you save money on home projects while focusing on sustainability, efficiency, and conservation. Learn more at cityofpaloalto.org/waystosave.

RAIN GARDEN REBATE*

Receive **up to $600** by adding a rain garden to your yard to reduce stormwater runoff from your property. Rain gardens are a great addition when converting your lawn to a low-water use landscape. See Landscape Conversion Rebate for more information.

RAIN BARREL REBATE*

Collect rainwater from your downspout and receive **$70 per rain barrel** with a barrel size of 40 - 199 gallons.

CISTERN REBATE*

Similar to rain barrels, cisterns allow you to collect and use a larger amount of rainwater. You will receive **$1.00 per gallon** with a minimum cistern size of 200 gallons.

PERVIOUS PAVEMENT REBATE*

Receive **$1.50 per square foot** adding pervious pavement to your property (e.g., permeable pavers, porous asphalt, pervious concrete, or grid pavement).

For questions on Stormwater Rebates call (650) 329-2122 or email cleanbay@cityofpaloalto.org

TO LEARN MORE VISIT: cityofpaloalto.org/waystosave

**Funded by your monthly Stormwater Management Fee.*

CITY OF PALO ALTO

e, low-water-use landscape
eligible for the rebate.

EBATE
water to irrigate your

dscape Conservation or
vings.org
ssage at (408) 630-2554.

TDOOR SURVEY

provided by Palo Alto's partner
ervation, Valley Water.

avings.org
wise@valleywater.org
ce message at (408) 630-2000.

OW?
)% of water use can go toward
typical Palo Alto home.

S
Y!

e is required for hoses to water
d wash vehicles.

ective plumbing and irrigation
be repaired or replaced within a
riod.

ains or other decorative water
be recirculated.

nstead of a hose to clean hard
as sidewalks and driveways.

cityofpaloalto.org/311
sage at (650) 496-6968.

VISIT cityofpaloalto.org/water for more information on water use restrictions.

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October 2023: Water Rebates UBI

CASH BACK FOR A GREENER TOMORROW

Rebates for Rain Gardens, Rain Barrels, and Low-Water Landscapes

The City of Palo Alto and Valley Water offer water-wise rebates to Palo Alto commercial, institutional, industrial, and multi-family sites while focusing on sustainability, efficiency, and conservation. Learn more at cityofpaloalto.org/waystosave.

LANDSCAPE CONVERSION REBATE

Replace your high-water use turf with a beautiful low-water use landscape and receive **up to $4 per square foot**.

LAWN TO MULCH REBATE

Receive up to **$2 per square foot** for converting existing high-water-use landscape to mulch.

RAIN GARDEN REBATE*

Receive **up to $600** by adding a rain garden to your landscape to reduce stormwater runoff from your property. A great addition to your landscape conversion!

PERVIOUS PAVEMENT REBATE*

Receive **$1.50 per square foot** by adding pervious pavement to your property. (e.g., permeable pavers, porous asphalt, pervious concrete, or grid pavement).

TO LEARN MORE VISIT:
cityofpaloalto.org/waystosave

CITY OF PALO ALTO

0 per rain barrel with a barrel

use a larger amount of
um cistern size of 200 gallons.

REBATE
eceive **$4 per CCF saved,**
s that reduce water usage.

nts and mobile homes.
l tenant water usage.

fficient equipment.

r monthly Stormwater Management Fee.

NDSCAPE SURVEY

EARN MORE
savings.org
ervation@valleywater.org
ice message at (408) 630-2554

IS
AY!

water for construction uses is
d if non-potable water is available.

fountains or other decorative
atures must be recirculated.

cial car washes must use recycled
stems if economically feasible.

water for street sweepers/
is prohibited if non-potable
available. For more information
ou can get recycled water visit
oalto.org/recycledwater

nguished from edible gardens or landscapes that

HELP SAVE WATER BY REPORTING WATER WASTE: cityofpaloalto.org/311
EMAIL drought@cityofpaloalto.org or leave a voice message at (650) 496-6968.

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November 2023: **FOG UBI**

HOW TO PROPERLY DISPOSE OF FATS, OILS AND GREASE

PLUMBERS ARE NOT THE GUESTS YOU WANT TO INVITE OVER FOR THE HOLIDAYS.

Fats, Oils, and Grease (FOG) poured down your sink may cost you money, time and hassle—and they're also an environmental and public health issue. FOG builds up in sewer lines and clogs pipes causing backups in your home, and can spill raw sewage into streets, storm drains, and creeks. Repairing clogged pipes can cost hundreds of dollars to fix and thousands of dollars if the clog causes wastewater to spill out and damage bathrooms and floors.

TO PREVENT SEWER BACKUPS:

- Never pour grease down sink drains or into toilets.
- Try removing grease from plates and utensils by wiping oily dishes with a paper towel and place in your green compost cart.
- For small amounts of oil and grease, consolidate them into a compostable container such as a milk carton and place in your green compost cart—**cityofpaloalto.org/foodscraps**
- Don't pour grease or cooking oil down garbage disposals. Put baskets/strainers in sink drains to catch food scraps and other solids, and empty the drain baskets/strainers into your green compost cart.
- Bring large amounts of unwanted cooking oil (salad dressing, fryer oil) to the Household Hazardous Waste (HHW) Station—**cityofpaloalto.org/hazwaste**

WHAT TO DO WITH FOOD SCRAPS:

- Try composting produce scraps at home to reduce waste, create healthy soil and improve your garden—**cityofpaloalto.org/compost**
- Toss any meat scraps, bones or dairy products into your green compost cart.

HAVE A CLOGGED SEWER LINE? ALWAYS CALL US BEFORE CALLING A PLUMBER!

The City will need to check the line to make sure no other utility services will be damaged by clearing it. For more information on avoiding sewer backups and safety information, call us at **(650) 329-2579** or visit **cityofpaloalto.org/safeutility**

www.cityofpaloalto.org/safeutility • (650) 329-2579

CITY OF PALO ALTO UTILITIES

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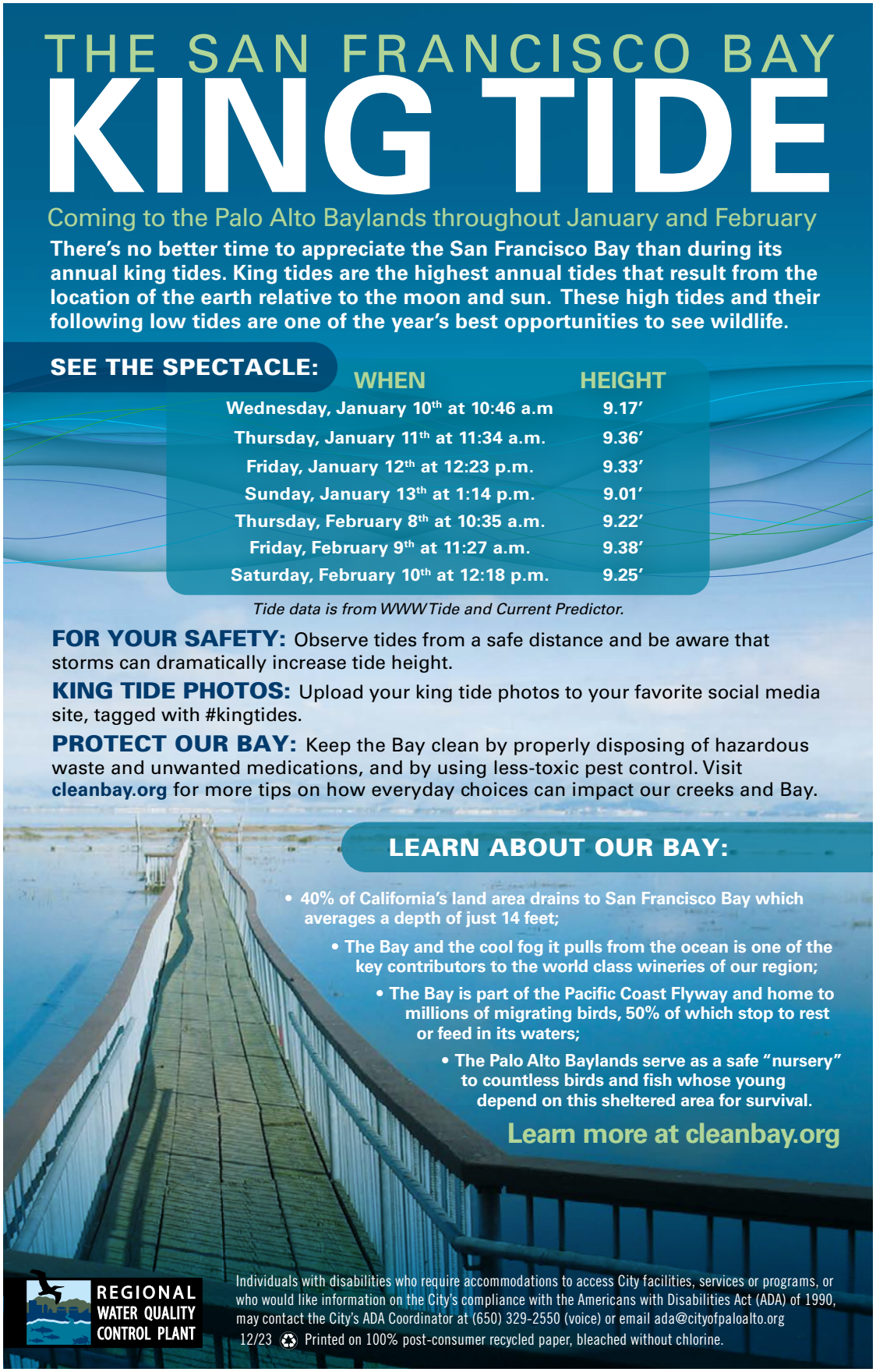
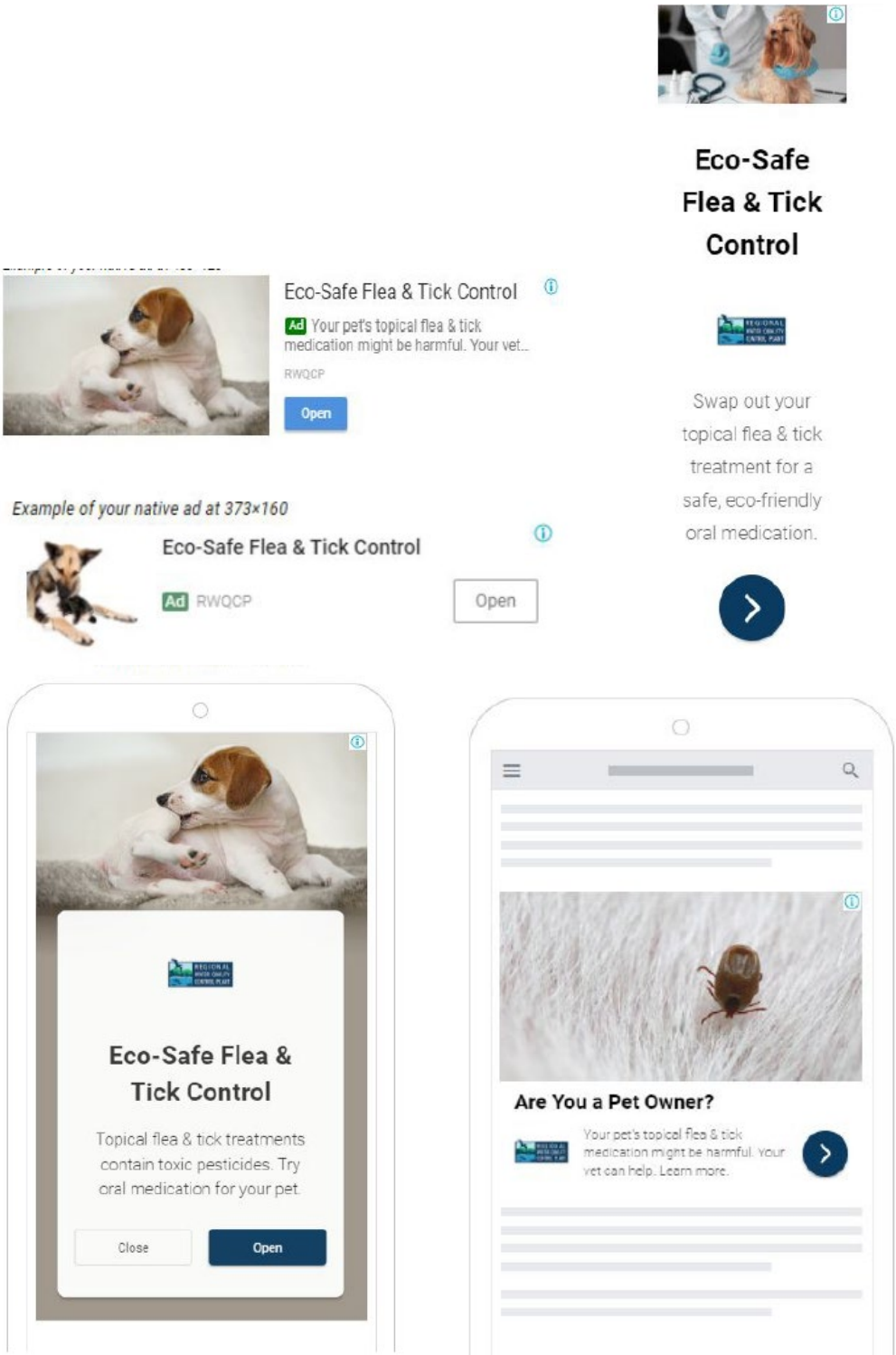
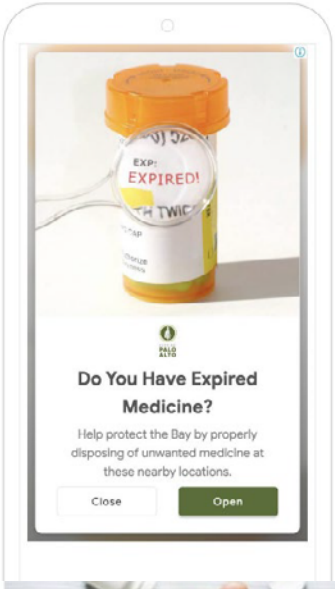
December 2023: **King Tide UBI**



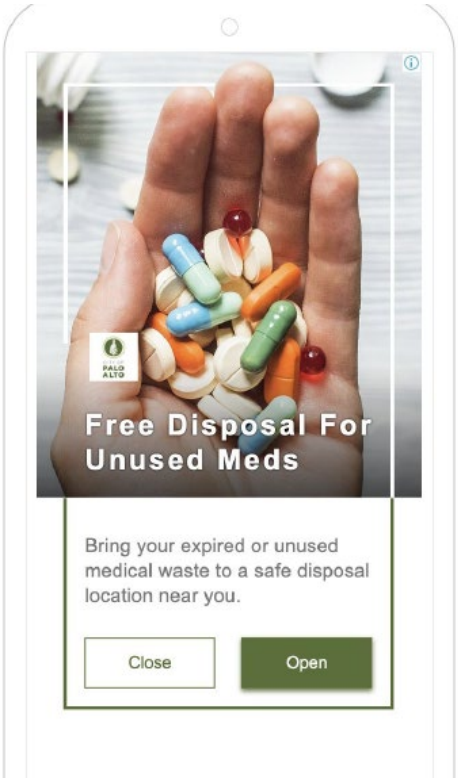
February 2023: Tick and Flea Control Google Display and Facebook Ad Examples



March 2023: Pharms and Sharps Google Display and Facebook Ad Examples



Example of your text ad at 300×250



Flea and Tick Brochure in English and Spanish

Prevent Fleas and Ticks

Ask your vet if chewable flea and tick medications are an option for your pet.

Chewable flea and tick medications may be a preferable alternative to topical treatments. Pesticides in spot-on treatments, collars, sprays, and foggers transfer onto you and indoor surfaces around your home. When washing pets, bedding, clothing, and your hands, these pesticides go down the drain and impact San Francisco Bay water quality.

The best defense is a good offense. Follow these tips to help reduce flea and tick problems before they start:

- **Fleas** - regularly vacuum floors, furniture, pet bedding and other fabrics. Use a flea comb dipped in soapy water to capture fleas.
- **Ticks** - regularly groom and inspect your pet for ticks and keep them out of tall grasses and shrubs during tick season.

For more information, visit baywise.org.

BACWA BAY AREA CLEAN WATER AGENCIES

Prevención de pulgas y garrapatas

Consulte a su veterinario si los medicamentos masticables contra pulgas y garrapatas son una opción adecuada para su mascota.

Los medicamentos masticables contra pulgas y garrapatas pueden ser una alternativa preferible a los tratamientos tópicos. Los pesticidas que se encuentran en tratamientos tópicos, collares, aerosoles y nebulizadores se transfieren a usted y las superficies del interior de su hogar. Cuando baña sus mascotas, lava la cama para mascotas, la ropa y las manos, estos pesticidas salen por el desagüe y tienen un impacto en la calidad del agua de la bahía de San Francisco.

La mejor defensa es un buen ataque. Siga estos consejos para ayudar a reducir los problemas de pulgas y garrapatas antes de que comiencen:

- **Pulgas:** pase la aspiradora de forma regular por pisos, muebles, cama lecho para mascotas y otras telas. Utilice un peine para pulgas mojado en agua jabonosa para atrapar las pulgas.
- **Garrapatas:** acicale regularmente a su mascota y haga una inspección regular de su mascota para detectar garrapatas. Manténgala alejada de la hierba alta y de los arbustos durante la temporada de garrapatas.

Para mayor información visite baywise.org.

BACWA BAY AREA CLEAN WATER AGENCIES

Dental Amalgam Program Best Management Practices Factsheet

DENTAL AMALGAM PROGRAM REQUIREMENTS

Your facility's sewers discharge to the Palo Alto Regional Water Quality Control Plant (the Plant). We need your help to reduce mercury that makes it to the Plant and, ultimately, the San Francisco Bay by complying with the federal and local regulations for dental amalgam. All dental practices that place amalgam within the service area of the Plant are required to comply. The Plant's service area includes the East Palo Alto Sanitary District, and cities of Los Altos, Los Altos Hills, Mountain View, Palo Alto and Stanford.

Compliance Checklist

- ☐ Submit a One-Time Compliance Report for ***new*** or ***transfer-of-ownership*** dental practices within ***90 days***. Contact **Pretreatment@cityofpaloalto.org** for submittal details.
- ☐ Submit requested addendum(s) to One-Time Compliance Report. Compliance reports and addenda are stored with the Regional Water Quality Control Plant, contact **Pretreatment@cityofpaloalto.org** for a copy.
- ☐ Install and maintain approved ISO 11143 or ANSI/ADA 108 certified amalgam separator.
- ☐ Repair or replace malfunctioning amalgam separators no more than 10 business days after the malfunction was discovered.
- ☐ Implement Best Management Practices (see reverse side for details).
- ☐ Keep training, disposal and equipment records on-site and available for inspection.

Amalgam Separator Requirements:

- ☐ Install ISO 11143 or ANSI/ADA 108 compliant amalgam separator that achieves at least 95% removal;
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Help Reduce Mercury Pollution with these Best Managemement Practices

1. Eliminate use of bulk elemental mercury. Bulk elemental mercury, also referred to as liquid or raw mercury, must be recycled or disposed of as hazardous waste. Use only pre-capsulated dental amalgam in the smallest appropriate size.
2. Properly manage chair-side traps. Clean and maintain chair-side traps in accordance with the manufacturer's instructions. Store the trap and its contents with amalgam waste. Never rinse traps in the sink or flush amalgam waste in the toilet.
3. Do not use bleach (sodium hypochlorite), peroxide, iodine, or chlorine-based products (i.e. oxidizing or acidic cleaners) to clean dental unit water lines, chair-side traps, and vacuum lines. These products have been shown to release the mercury in the amalgam. Use only non-chlorine, non-oxidizing, neutral line cleaners with a pH between 6 and 8.
4. Properly maintain and dispose of screens. Change vacuum pump filters and screens as needed or as directed by the manufacturer and store with amalgam waste. Seal and store filters in airtight containers along with screens and their contents (including any water that may be present) and dispose with amalgam waste as hazardous waste.
5. Maintain amalgam separators and vacuum systems according to manufacturer's recommendations. Keep written or digital records of amalgam separator inspections, as well as all documentation of amalgam equipment maintenance and repair for no less than three years.
6. Store amalgam waste in airtight containers. All contact and non-contact amalgam scrap must be salvaged and stored in a structurally sound, tightly closed, appropriately labelled container.
7. Properly recycle amalgam waste. Collect and recycle, or manage as hazardous waste, all waste amalgam, elemental mercury, broken or unusable amalgam capsules, extracted teeth with amalgam, amalgam-containing waste from chairside traps, screens, vacuum filters, instruments and collection devices.
8. Keep Records. All amalgam-related paperwork must be retained for no less than three years.
9. Train staff in proper handling, management, and disposal of mercury-containing materials. Maintain a training log and keep this log for at least three years.
10. Don't forget stormwater best management practices! Stormwater flows into streets and gutters picking up pollutants, such as oil, litter, and sediment, before it enters the storm drain system and travels to local creeks and the San Francisco Bay. Keep your parking lots, walkways, and refuse areas clean to help keep pollutants from entering our local waterways.

Horizontal Levee Project Photo Monitoring Site Signage

CITY OF PALO ALTO

Help Us Study This Restoration Area

Take a photo to help monitor progress here at the Palo Alto Horizontal Levee Project. This innovative green infrastructure project will restore native marsh habitat and educate the community on sea level rise resiliency.

1. 
Place device into the bracket

2. 
Take a photo of the view *without a filter*

3. PLACEHOLDER
Send us your photo using the QR code or email it to **CleanBay@CityofPaloAlto.org**

Learn more about the project at
CityofPaloAlto.org/HorizontalLevee

Best Management Practices Vehicle Service Facilities Sanitary Sewer Discharge Factsheet

REGIONAL WATER QUALITY CONTROL PLANT

OPERATED BY THE CITY OF PALO ALTO FOR THE EAST PALO ALTO SANITARY DISTRICT, LOS ALTOS, LOS ALTOS HILLS, STANFORD, MOUNTAIN VIEW, AND PALO ALTO

BEST MANAGEMENT PRACTICES
VEHICLE SERVICE FACILITIES SANITARY SEWER DISCHARGE

To reduce the amount of chemicals and metals introduced into the Palo Alto Regional Water Quality Control Plant and ultimately the Bay, your facility is required to follow the Best Management Practices (BMPs) outlined in this factsheet in addition to any requirements in an issued Industrial Waste Discharge Permit. Failure to implement BMPs is subject to enforcement and may result in fines.

Identify Sanitary Sewer Drains at Your Facility

- ☐ Identify all drains at your facility and their discharge points (e.g., sanitary sewer, drain connected to a sand/oil Interceptor or separator, drain connected to a blind sump).
- ☐ Place appropriate signs above shop sinks (for example, "Do Not Dump Chemicals or Hazardous Materials Down the Drain").

Prevent and Manage Spills

- ☐ Train employees, upon hiring and annually, on proper spill clean-up and document this training.
- ☐ Use funnels or pumps to transfer liquids and prevent spills.
- ☐ Fluid removal from autos must be indoors unless there is adequate secondary containment.
- ☐ Immediately clean up metal shavings and store in a sealed container for proper disposal.
- ☐ Dry sweep spills with absorbent before mopping. Dispose of absorbent properly. Discharge mop water in toilet or sink.
- ☐ Use drip pans to temporarily capture spills or leaks.
- ☐ Collect and transfer spilled materials/liquids to the appropriate waste container.

Properly Store and Manage Materials and Wastes

- ☐ Minimize the amount of hazardous materials stored on site and be sure to properly dispose of hazardous wastes. Hazardous wastes cannot be disposed into the sanitary sewer.
- ☐ Segregate and label wastes. Drain oil filters before disposal/recycling. Consider recycling engine fluids and batteries.
- ☐ Keep hazardous material and waste container lids closed when not in use.
- ☐ Provide secondary containment for waste that can spill into a sanitary sewer or storm drain, and ensure those containers are large enough to hold the spilled material.
- ☐ Do not dispose of spent parts cleaning solution, including aqueous and wastewater from closed-loop flushing systems, down the sanitary sewer or storm drain.
- ☐ Do not discharge engine degreasing solutions or wastewater to the sanitary sewer or storm drain.

Treatment System Maintenance (if Applicable)

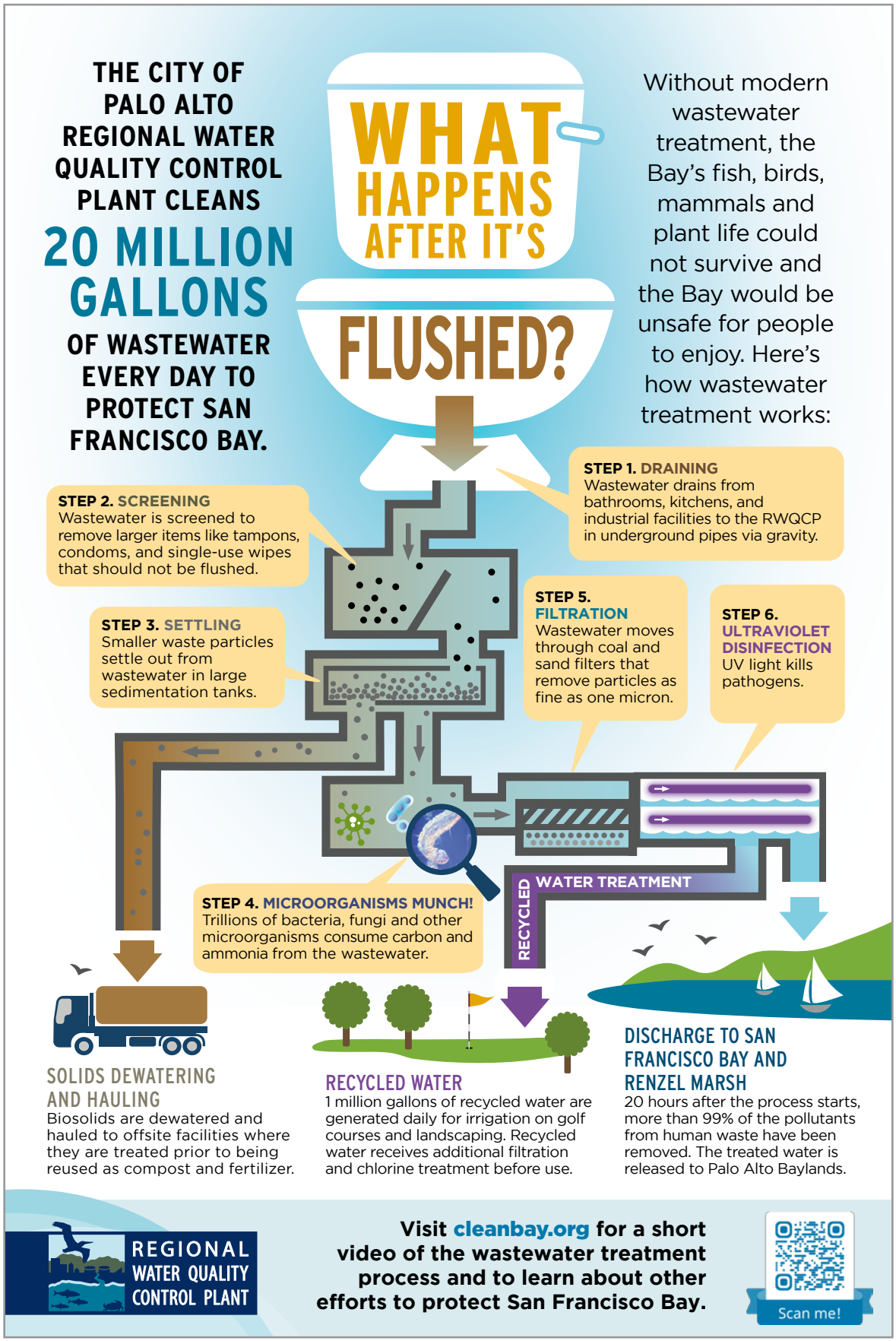
- ☐ Maintain sand/oil separator or other treatment system so that it is in proper working order at all times.
- ☐ Clean and pump the sand/oil separator at least once every 6 months using a licensed and permitted waste hauler.
- ☐ Maintain access to the treatment system to allow for inspection and maintenance.
- ☐ For sand/oil separators, ensure that accumulated oils and solids do not exceed 25% of the unit's capacity.
- ☐ If accessible, periodically inspect the sample box for the accumulation of solids and other pollutants.

Wash Pad Operations, Including Wash Tunnels (if Applicable)

- ☐ Wash vehicles/equipment on an adequately sized wash pad connected to the sanitary sewer.
- ☐ Prevent stormwater from entering the wash pad and wash water from leaving the wash pad (e.g., install a roof over the wash pad area; install berms around the wash pad).
- ☐ Wash pad shall be connected to an approved oil/water separator or other approved treatment system.
- ☐ Do not perform vehicle maintenance in the wash pad area (e.g., oil changes).
- ☐ Do not perform engine washing in the wash pad area.
- ☐ Store concentrated chemicals away from wash pad drains or provide secondary containment for the chemicals.

For more information call the Regional Water Quality Control Plant at **(650) 329-2122,** email **Pretreatment@CityofPaloAlto.org**, or visit **CleanBay.org**

What Happens After It's Flushed Poster

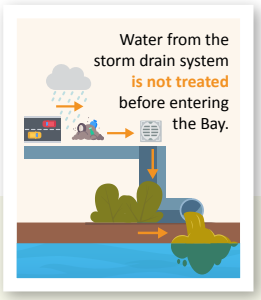


Food Facilities Stormwater Pollution Prevention Factsheet

CITY OF PALO ALTO

GENERAL POLLUTION PREVENTION FOR YOUR BUSINESS

Stormwater flows into streets and gutters picking up pollutants, such as oil, litter, and sediment before it enters the storm drain system and travels to local creeks and the San Francisco Bay. **Stormwater is not treated.** Sanitary sewers take water from indoor plumbing to a treatment plant for pollutant removal before it is discharged to the Bay, however, even this system is regulated and you are required to follow minimum standards. Following the regulations for both storm drains and sanitary sewers will keep your business compliant. To learn more information on requirements for sanitary sewer discharges, contact **Pretreatment@CityofPaloAlto.org**.



BEST MANAGEMENT PRACTICES (BMPs)

Refuse Containers

- ☐ Locate all refuse (trash, recycling and compost) handling, storage, and disposal areas away from storm drain inlets or creeks and ensure proper labeling.
- ☐ Keep dumpster lids closed at all times and keep areas free of debris.
- ☐ Do not pour any FOG or oily waste into dumpsters.
- ☐ Keep dumpsters in good condition and ensure that leaks are not occurring. Visit **greenwasteofpaloalto.com** to learn more about commercial trash services provided by the City and to replace leaking dumpsters.

Storm Drain Inlets

- ☐ Clearly mark storm drain inlets with the words "No Dumping - Flows to Bay" or equivalent.
- ☐ Annually inspect and clean out all storm drain inlets on your property with a vacuum or shovel before the rainy season. Storm drain inlets at sites where sediment and other debris are generated or stored may need to be monitored, cleaned, and maintained at a higher frequency.

Outside Areas

- ☐ Keep outdoor areas and refuse areas free of trash, sediment, washwater, cigarette butts and any other potential pollutants.
- ☐ If any paved areas are cleaned with water, washwater will need to be contained, captured, and reused, or properly disposed of in a private sanitary sewer cleanout.
- ☐ Cleaning solutions, fluids that cannot be recycled, and absorbent materials used for clean up may need to be disposed of as hazardous waste. To learn more visit **cityofpaloalto.org/hazwaste**.
- ☐ If cigarette smoking is allowed in outdoor areas of the property, the property owner or operator shall provide ashtrays and keep smoking areas clean. To learn more about the City's smoking ordinance visit **cityofpaloalto.org/smokingordinance**.
- ☐ Periodically inspect, clean, and maintain building rooftops and rain gutters.

Spill Response

- ☐ Keep spill kit updated, labeled, and easily accessible. Include spill response plan/directions.
- ☐ Clean up surface residues that can wash into a storm drain inlet before rain events.
- ☐ Contain spills and protect nearby storm drain inlets immediately.
- ☐ Manage spills by dry-mopping or using absorbent material. Sweep up waste immediately with a broom or wet/dry mop and dispose of properly.

Documentation and Record Keeping

- ☐ Keep maintenance and BMP training documentation on site and available upon request by City staff.

CITY OF PALO ALTO

For more information, call the City of Palo Alto Watershed Protection Group at **(650) 329-2122**

is securely closed and area is free of spills or leaks.

Make sure dumpster lids are closed at all times and refuse areas (trash, recycling and compost) are kept clean.

N PREVENTION

NT PRACTICES (BMPs)

Oils and Grease (FOG) is prohibited to ublic or private sanitary sewer, storm nd, street, public right-of-way, or into eans any substance such as a vegetable t is used in, or is a by-product of, the ration process.

food that contains FOG into any drain not e Control Device (GCD).

out by an authorized liquid waste hauler.

unts of FOG or oily waste in a waste oil/

curely on level ground or in a contained om tipping over.

spect your grease storage areas.

s onsite and provide to City staff upon

inspect and maintain rooftop grease t.

ollution by keeping refuse containers and ered, clean and free of FOG, food residue,

nerated from cleaning FOG- such as wash mats, filters, and garbage a GCD.

ning soap, bleach, or disinfectants into a e sanitary sewer. Never dump any liquid let or street.

enclosures free from debris. If using a shared dumpster, work with other business owners to keep the area clean.

- ☐ For spills, use "dry clean-up methods" such as sweeping, absorbent or dry mopping first. After removing residue, use a mop and bucket and discharge wash water into the sanitary sewer or a GCD if it contains grease.
- ☐ If wet cleaning methods are used, contain all wash water so it does not enter the storm drain inlet and dispose of it properly.

Employee Training

- ☐ Train all employees on BMPs, pollution prevention, and spill clean-up methods.
- ☐ Maintain training records on site.

CITY OF PALO ALTO

For more information, call the City of Palo Alto Watershed Protection Group at **(650) 329-2122**

Toilet Toss Game Concept

Toilet Toss Game

APPENDIX J: 2023 PUBLIC OUTREACH EVENTS

DATE	EVENT DESCRIPTION	REACH
01/21/2023	**King Tide Walk at the Baylands -** Attendees learned about sea level rise and local shoreline conditions.	47
04/15/2023	**BioBlitz** - Citizen science event at Byxbee Park and Baylands Nature Preserve, topics tied to the Horizontal Levee Project and Green Stormwater Infrastructure.	41
04/22/2023	**Earth Day Resource Fair and Pollinator Garden Tours** - Earth Day tabling event, topics included integrated pest management and stormwater rebates.	100
05/06/2023	**May Fete Parade** - Annual event for agencies, city departments, and groups to promote and share their programs and work	200
05/20/2023	**National River Cleanup Day** - Cleanup of Adobe and Matadero Creeks	22
06/29/2023	**Rain Garden Workshop** - Workshop was hosted by BAWSCA, topics included green stormwater infrastructure and stormwater rebates.	14
07/15/2023	**Palo Alto Municipal Services Center Day** - City departments to showcase their programs and services to the community. RWQCP topics included what not to flush down the toilet and stormwater rebates.	112
09/23/2023	**National Coastal Cleanup Day** - Cleanup of Adobe and Matadero Creeks.	50
09/30/2023	**Rain Barrel Workshop** - Workshop hosted by BAWSCA on how to install a rain barrel at home.	47
	GRAND TOTAL	633

Front and back cover photograph of Palo Alto Baylands Nature Preserve by Don DeBold, via Flickr