

Sonoma County Landscape Management Annual Report



**Sonoma County Ag + Open Space, Sonoma County Community
Development Commission, Sonoma County Regional Parks, Sonoma
Water and Sonoma County Public Infrastructure**

Fiscal Year 2024/2025

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Cover photo: Prescribed burning in oak woodland is used to control invasive weeds and promote the health of native ecosystems

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Acronyms and Abbreviations

Ag + Open Space	Sonoma County Agricultural Preservation and Open Space District
AWM	Department of Agriculture/Weights & Measures
BAMSC	Bay Area Municipal Stormwater Collaboration
CDC	Community Development Commission
County	Sonoma County Board of Supervisors
DPR	California Department of Pesticide Regulation
EDRR	Early Detection and Rapid Response
fee lands	Properties owned by Ag + Open Space
GS	General Services
IPM	Integrated Pest Management
IPM Plan	Integrated Pest Management Plan
OWOW	Our Water Our World
Regional Parks	Sonoma County Regional Parks Department
SAC	Probation Department's Supervised Adult Crews
Sonoma Water	Sonoma County Water Agency
SPI	Sonoma Public Infrastructure (formerly Transportation and Public Works)

1. Introduction

On June 4, 2019, the Sonoma County Board of Supervisors (County), the Board of Directors of the Sonoma County Water Agency (Sonoma Water), the Board of Directors of the Agricultural Preservation and Open Space District (Ag + Open Space), and the Board of Commissioners of the Community Development Commission (CDC) adopted concurrent Resolution 19-0246 prohibiting the use of synthetic pesticides in sensitive areas and launching a transparent reporting program for pesticide use. This included a mandate to revise current IPM policies and establish areas of “no synthetic spray.”

Integrated Pest Management (IPM) is a system of managing pests using careful consideration and integration of all available pest control tools and techniques. The target pest, goals, and site conditions guide a systematic decision-making process on what control methods to use. IPM policy is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practice, and use of resistant varieties. A holistic IPM technique can lessen the need for pesticides.

IPM is a decision-making process for managing pests, which uses pest monitoring to determine if pest injury levels warrant treatment. If so, the treatment combines biological, cultural, mechanical, physical and/or chemical tools and other management practices to control pests in a safe, cost effective and environmentally sound manner that contributes to the protection of public health. This method uses extensive knowledge about pests, such as infestations, thresholds, life histories, environmental requirements and natural enemies to complement and facilitate biological and other natural control of pests. IPM involves the use of non-chemical pest control methods and the careful use of least-toxic chemical methods when non-chemical methods have been exhausted or are not feasible. When IPM is properly implemented, chemical controls are used only as a last resort. They are used as spot treatments and are chosen and timed to have the smallest negative impact on non-target organisms and the environment. All pesticides used by Sonoma County are registered with the U.S. EPA as required by Title 3 California Code of Regulations Section 6627 and reported to the (DPR) unless specifically exempt.

IPM applies to any pest including animals such as rodents or wasps, fungi such as mold, or other pathogens such as *Phytophthora quercina* which causes Sudden Oak Death. The vast majority of the County’s pest management activities apply to vegetation and weeds, however some departments conduct pest management other than weeds as addressed in this report.

In addition to managing pests, the IPM program provides outreach to the public through volunteer opportunities and education. Consistent with the Resolution, Sonoma County, Sonoma Water, Ag + Open Space, and the Community Development Commission prepare an annual report of pesticide use by these agencies. This document is the annual report combining the work of these agencies.

2. State Department of Pesticide Regulation Pesticide Reporting Requirements

The California Department of Pesticide Regulation (DPR) requires reporting of pesticide use in California for qualifying situations. As related to use by Sonoma County, Sonoma Water, Ag + Open Space, and the Community Development Commission, some uses are required to be reported to DPR, some are not. All agricultural uses are required to be reported; for the County of Sonoma, Regional Parks applications to parks, Ag + Open Space's applications to open space, rangeland, etc. and Sonoma Public Infrastructure's (SPI) applications to roadsides are all considered agricultural uses. For these applications the departments/agencies or their contractors submit records to the Sonoma County Department of Agriculture/Weights & Measures (AWM) which then forwards the data to DPR.

Additionally, a pest control business must submit a record of any application of pesticides (either on agricultural land or for structural use) to AWM who forwards them to DPR. The use is all reported on a monthly basis. Some uses are not reportable to DPR. This includes applications in an institutional setting (landscaping around government buildings), or applications of materials considered exempt from registration. These are materials that are generally regarded as safe and specifically listed by DPR. Examples of these exempt materials are cinnamon oil, clove oil and rosemary oil.

The County has tracked its pesticide use since 2007. Much of the initial reporting was glyphosate as this is of particular concern to the public. Glyphosate is a broad-spectrum systemic herbicide and crop desiccant. It is a compound used to kill weeds, especially annual broadleaf weeds and grasses. Glyphosate is the active ingredient in products such as Round Up and Aquamaster. Trends in pesticide use are shown in Figure 1 with similar tracking of glyphosate mirroring the trend of overall pesticide usage.

Herbicide use varies from year to year depending on weather, time, targeted weeds, new invaders, and new managed lands. In 2019, Sonoma County, and Sonoma Water, reviewed and updated IPM policies. In general, the use of herbicide including Glyphosate is decreasing on land managed by Sonoma County, Sonoma Water, Ag + Open Space, and the Community Development Commission. In future years, the newly adopted IPM policies, the implementation of no-synthetic spray zones, the use of non-synthetic chemicals, and ongoing manual or mechanical weed treatments will all impact the amount of herbicide use.

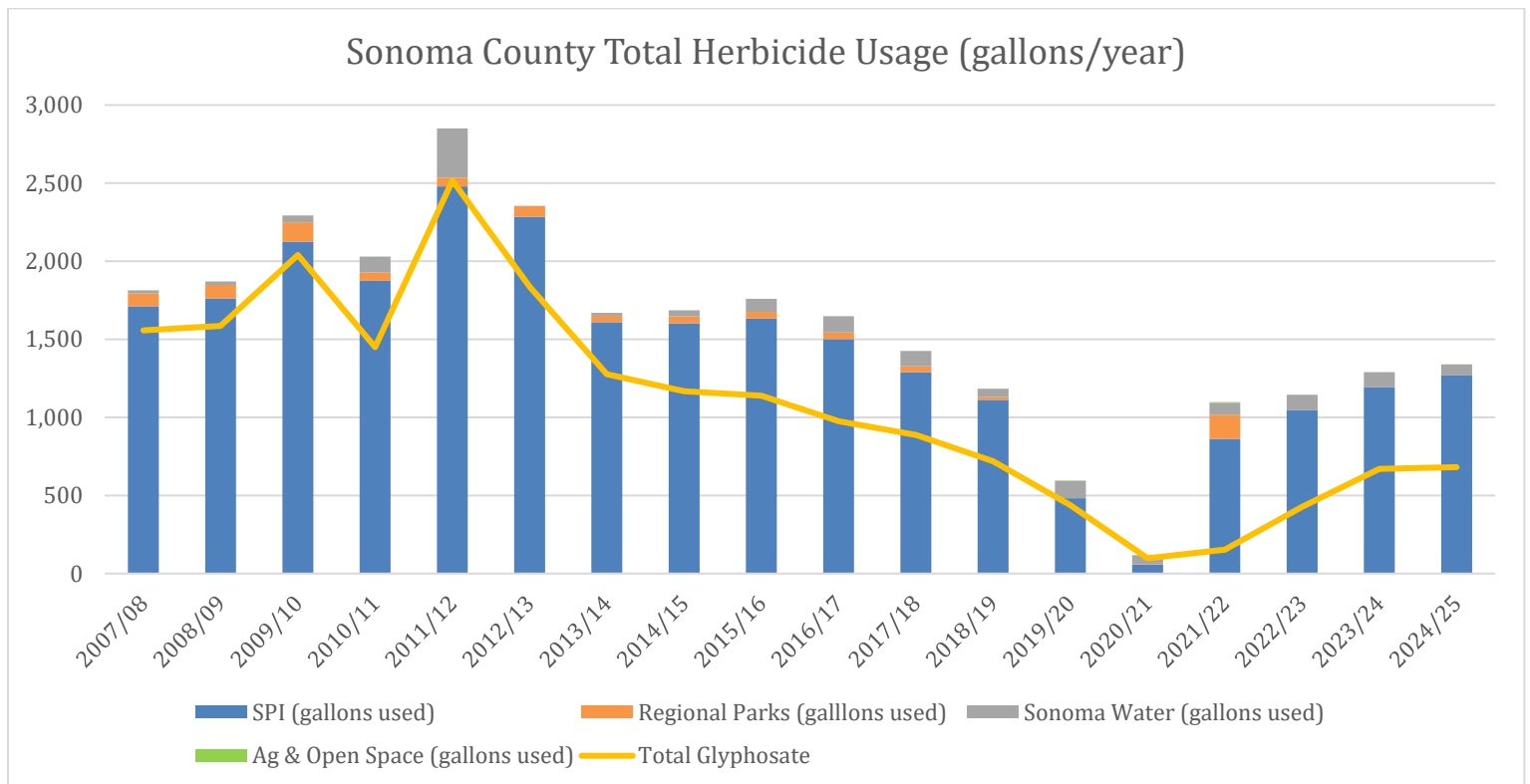


Figure 1 - Trend of Total Herbicide Use

3. Vegetation Management Summary- 2024/2025

Since the adoption of Resolution 19-0246 in June 2019, use of herbicides, including glyphosate, has decreased by Sonoma County Public Infrastructure, Sonoma County Regional Parks, Sonoma Water, Ag + Open Space, and the Community Development Commission. This is primarily due to the development and implementation of IPM plans and related policies, emphasizing the use of physical, biological, and mechanical controls over the use of chemical controls and establishing a policy that using chemicals for vegetation management should be implemented on a limited basis and when no other alternative is deemed feasible.

Herbicide use reached historic lows in FY 2019/20 and 2020/21. While this reflects successful IPM adoption, COVID-19 restrictions also played a major role. Social distancing protocols limited standard two-person herbicide application teams, prompting crews to use less effective methods.

Rainfall remains a key driver of vegetation growth and herbicide demand. Wet years increase vegetation management needs, while dry years reduce them. Intense rain events can also trigger rapid regrowth, requiring repeated treatment.

Although FY 2024/25 saw a rise in herbicide use compared to 2019–2021, glyphosate use (682 gallons) remains below pre-resolution levels (719 gallons in 2018/19). Of the 682 gallons, 640 were applied by SPI in response to heavy rainfall during the 2024–2025 wet season. While IPM practices and related

policies have reduced the overall use of herbicides, limited use continues to be a necessary practice. The amount of herbicide use will continue to vary year-to-year and between departments. Total rainfall will continue to play a primary factor in the need for herbicide use and account for future fluctuations.

4. Department/Agency Specific Vegetation Management Reports

4.1 Ag + Open Space

Properties owned by Ag + Open Space ('fee lands') are managed to preserve and enhance the health of natural ecosystems, paying particular attention to sensitive resources and habitats. Ag + Open Space maintains each property to protect the ecological health and conservation values of each property, in accordance with the original intent of its acquisition, until the property is conveyed to a new owner. Ag + Open Space does not intend to own and manage properties beyond the sunset of the agency's sales tax measure, but instead will convey fee title interest to other responsible entities for long term management while retaining a conservation easement interest in each property.

Ag + Open Space collaborates with partner agencies and organizations to coordinate and plan regional-scale natural resource management, apply for shared funding, and gather and share the best available spatial data and local expertise to support natural resource management planning and project implementation throughout the County. Ag + Open Space manages vegetation on its fee lands primarily through mowing, understory thinning and prescribed burning, removal of invasive species, native plant revegetation, and grazing.

Annual mowing typically occurs around structures and parking areas, along internal and access roads and the property perimeter if appropriate, and in areas where mowing is the preferred method for invasive species removal. Mowing only occurs after Ag + Open Space staff or a qualified consultant conduct a nesting bird survey in the area to be mowed to ensure no birds or nests are present. If nesting birds are present, an appropriate buffer zone is established, and mowing is postponed within this zone until the birds fledge and leave the nest.

Ag + Open Space utilizes understory thinning and the creation of shaded fuel breaks as tools where appropriate to reduce fuel loads while also enhancing habitat for native plants and animals. Shaded fuel breaks are typically developed along existing roads and are planned in coordination with Cal Fire to ensure their location is operationally effective and consistent with regional fuel break planning. Shaded fuel breaks retain overstory forest canopy while removing smaller understory material that may serve as ladder fuels and contribute to higher fire intensity. While they can be effective in slowing or stopping the spread of a non-wind-driven wildfire, their primary purpose is to allow safe access and appropriately prepared conditions for firefighting personnel to access an area for suppression activities or to use as a control line for a prescribed burn. Ag + Open Space works with Registered Professional Foresters and tribal, biological, and cultural resource consultants as needed to ensure shaded fuel breaks and other forest thinning activities are ecologically appropriate and avoid impacts to sensitive resources.

Ag + Open Space is planning to implement prescribed burns on some of its properties in coordination with Cal Fire. These activities are subject to permitting requirements from Cal Fire, the Bay Area Air Quality Management District, and other regulatory agencies. Prescribed burns are intended to

improve native species composition and habitat, reduce hazardous fuels, control invasive species, and improve and maintain resiliency of natural lands to wildfire, climate change, and other extreme events. Significant public outreach and community and tribal involvement will be undertaken prior to any planned burn, and educational outings are planned in conjunction with prescribed burning to enable the community to learn about and observe the goals and effects of prescribed fire firsthand.

4.1.1 Agricultural Use

Ag + Open Space leases out a portion of most of its properties for grazing or vegetable farming. The majority of leases are for grazing. Ag + Open Space uses grazing to support local agricultural producers, and as a tool to manage invasive plant species, reduce fuels, and enhance habitat for native plants and animals. Ag + Open Space has worked with a Certified Rangeland Manager to assess the grazing potential for all our fee lands. This assessment includes ranking the forage quality of the vegetation, evaluating access to the property, determining adequate stocking rates, recommending suitable livestock type, and advising on any need to limit grazing during particular seasons. Unfortunately, some Ag + Open Space-owned properties are difficult to access, lack infrastructure and water supply, have low forage production, or are subject to constraints related to sensitive habitats and protected species. Because of this, large-scale or property-wide grazing may not be suitable on some properties. However, Ag + Open Space endeavors to make grazing leases available whenever appropriate and plans to expand the use of short-duration, seasonally timed prescriptive grazing for vegetation and fuels management on a property-specific basis. Ag + Open Space will continue to engage with partner agencies, non- governmental organizations, and consultants that have expertise in livestock grazing and adaptive management approaches.

4.1.2 Invasive Species

Ag + Open Space takes aggressive action to identify and manage invasive species populations on its fee lands prior to transferring a property to the next owner for permanent conservation. Any invasive species occurrences observed during routine monitoring visits can be proactively managed in a manner tailored to the needs of each property. Control methods include but are not limited to: hand-pulling; seasonally timed mowing or grazing, including intensive rotational grazing; propane torch flaming during wet conditions; prescribed burning; and herbicide application. To the greatest extent possible, invasive plant control efforts are also designed to enhance habitat for native plants and animals and can include measures such as replanting with native vegetation to facilitate habitat restoration.

Ag + Open Space is committed to avoiding the use of synthetic pesticides in sensitive areas, and to support this commitment has compiled all known information regarding sensitive species and habitats that occur on its properties. Ag + Open Space implements an integrated approach in which synthetic pesticides are used conservatively and only as necessary, and Ag + Open Space will not use a synthetic pesticide unless: 1) there is no other option available to control an extreme infestation, 2) the environmental benefit is clear and outweighs the negative impacts of continued weed infestation, 3) only licensed professionals are involved in the application, 4) there is minimal risk of harmful exposure to humans or to sensitive resources, and 5) the application is part of an intentional strategy to transition over time to alternative methods of invasive species control such as mechanical removal, grazing, or prescribed burning.

If it is determined that a synthetic pesticide is appropriate to use in a specific situation, all precautions are taken to minimize exposure beyond the target species. For example, if synthetic pesticides will be used near a road that may be accessed by authorized persons such as volunteer patrollers or Ag + Open Space contractors, signs are posted at either end of the treated area to identify the date of

treatment, chemical name, and “no-entry” period per the product label recommendations. Staff works with licensed pest control advisors to select chemicals that are as narrowly specific to the target species as possible and that do not bio-accumulate in the environment, and treatment areas and application methods that could introduce synthetic pesticides into streams and other aquatic systems are avoided.

In addition to invasive plants, Ag + Open Space also monitors and manages for other pest types, including pathogens and insects. Ag + Open Space staff and contractors follow protocols to prevent the spread of pathogens such as Sudden Oak Death, and work with contractors to remove and relocate hives without the use of chemicals.

In Fiscal Year 2024-2025, Ag + Open Space focused on the management and control of the following target invasive plant species on its fee properties.

Yellow Star Thistle

This noxious weed spreads aggressively into grasslands and disturbed areas once introduced, displacing native species and destroying agricultural forage potential. Ag + Open Space is managing yellow star thistle infestations on several of its preserves. At Saddle Mountain, yellow star thistle threatens the integrity of otherwise healthy native perennial grasslands, and for several years staff worked with a licensed contractor to conduct spot treatment with broadleaf-specific herbicide to keep the infestations in check until there can be a transition to a combination of prescribed burning, seasonal grazing, and hand-pulling. Fortunately, past treatments appear to have been highly effective and in 2024 and 2025 the populations were managed by hand pulling. Ag + Open Space will continue to target known yellow star thistle populations at Saddle Mountain for significant control or eradication. Small populations of yellow star thistle at Ag + Open Space’s Oken and Keegan & Coppin and Haroutunian South properties were removed via hand-pulling and these sites will be closely monitored and managed in the coming year to prevent establishment of a wider infestation.

Purple Star Thistle and Distaff Thistle

These two invasive thistles are present on the Keegan-Coppin, Haroutunian South and Oken properties. At Keegan-Coppin, the infestation is relatively limited and in 2024, plants were removed via hand pulling. The Oken property came into Ag + Open Space ownership with a severe, widespread infestation of these two invasives, which had drastically reduced the amount of forage available for the commercial grazing operation that the property supports under a lease agreement. Several sequential years of broadleaf-specific herbicide application has substantially reduced invasive thistle populations on the property, and in 2025 it was possible to remove all thistles via hand pulling with no herbicide use necessary. It is hoped that manual removal continue to be effective in the coming years; however, seeds from these invasives can persist up to ten years in the soil, so it may take time to deplete this seedbank and herbicide use may be considered in the future if manual removal becomes ineffective. Since the Oken property borders a residential neighborhood, annual neighbor outreach has been a component of the thistle control project. Neighbors who have responded to outreach materials have been supportive of the project and have not expressed concerns that could not be addressed by further clarifying project details in follow-up conversations.

Broom

Broom infestations are of particular concern due to this species’ tendency to out-compete native vegetation and to increase fuel loading and associated wildfire risk. In January 2024, Ag + Open Space partnered with the Laguna de Santa Rosa Foundation to host a volunteer day at the Paulin Creek Preserve. During this volunteer day, volunteers pulled Broom in a specified location and re-planted

native species in the meadow area. In future years Ag + Open Space will continue to actively manage French broom at the Paulin Creek Open Space Preserve, using a combination of hand pulling, mechanical removal using weed wrenches, wet-season propane torch flaming, and herbicide spot treatment each year as appropriate. French broom has a long-lived seed bank so eight or more years of thorough annual control will be needed at this Preserve.

At the Saddle Mountain Preserve, there is a population of well-established Spanish broom plants adjacent to Weeks Creek, and small plants are beginning to establish along the riparian corridor. Ag + Open Space will be managing Spanish broom at this location primarily via manual removal, with a cut-stump herbicide treatment used on the larger plants.

Himalayan Blackberry

This species can be especially aggressive and problematic when it becomes established in riparian corridors and can overtake pastures and grassland areas if not managed. Significant infestations remain at our Oken property and at Saddle Mountain Open Space Preserve. Ag + Open Space began removing Himalayan blackberry within the riparian restoration areas at Oken in fall 2022, using a combination of mechanical removal and follow-up spot treatments intended to minimize use of chemicals. This was highly effective at reducing cover and minimal spot treatments are planned for fall 2025 to remove remaining resprouts in previously treated areas.

Oblong Spurge

This difficult-to-control invasive species was previously present in two known locations on the Saddle Mountain Open Space Preserve. However, since the 2020 Glass Fire, it has cropped up in numerous locations on the Preserve. Since then, Ag + Open Space has worked with a licensed contractor to spot-treat these new populations with herbicide, with a combination of hand-pulling near native seedlings and physical barrier protections employed to protect regenerating native species within the infestation areas. Heavily infested areas have been re-seeded with site-appropriate native species following spurge removal. No herbicide treatments were used on oblong spurge at the Saddle Mountain Preserve in FY 2024/2025; however, spot-treatments are planned for 2026 following mapping of known populations.

Teasel

One invasive teasel population exists within a grassland on the Saddle Mountain Open Space Preserve. For the past four years, Ag + Open Space has worked with the Sonoma County Youth Ecology Corps to manually remove plants and check the spread of this population, avoiding chemical use and providing educational and training opportunities for local youths.

A larger population of teasel occurs at the Haroutunian South property. This species is a short-lived perennial or biennial plant that grows to form dense stands of basal florets containing the persistent remains of previous years' plants. While not usually invading vernal pool bottoms, they do encroach vernal pool edges and will fully invade shallower or flashier wetlands, some of which occur at Haroutunian South and currently support rare plants. They also thrive in the adjacent upland habitat where they negatively impact grazing forage and wildlife while also reducing botanical diversity. In 2024, Ag + Open Space saw a great reduction in the teasel population at Haroutunian following the broadcast foliar application of glyphosate-based herbicide on rosettes in 2023. There were no chemical or manual treatments applied in 2024, but we will continue to monitor this population and determine what future management is needed.

Meadow foxtail and Harding grass

At Haroutunian South, our initial goals for management of these two species was to remove accumulated thatch, prevent seed set, and reduce vigor. The changes applied to the grazing infrastructure and practices in 2024 proved to be extremely effective in meeting these goals. In addition, the spring mowing of meadow foxtail significantly amplified the effects of the summer cattle grazing.

Meadow foxtail and Harding grass are two highly invasive perennial bunch grasses that invade wetlands, displace native species and grow to form dense mono-specific stands. The two plants are very similar in their growth habits as well as their appropriate management strategies; they differ slightly in that Harding grass has a later bloom period as well as having slightly larger plants. Meadow foxtail has greater coverage on-site compared to Harding grass, but Harding grass dominates the adjacent property along the southern site boundary. Both species are a high priority for management as they have the ability to invade rare plant wetland habitat; this has already occurred in the northern half of the site. At Haroutunian South, the species was overall less productive due to the grazing and early season mowing in 2024, resulting in an overall significant reduction of legacy thatch in wetlands and uplands.

Total Synthetic Herbicide Use on Ag + Open Space-owned Properties in 2024-2025

Total synthetic herbicide use on Ag + Open Space-owned properties from July 1, 2024 to June 30, 2025 was .71 gallons. This included approximately 0 gallons of glyphosate-based product. Note that these numbers describe the total volume of product used, not the total volume of active chemical within the product.

While eradication is the ideal goal of any invasive plant management project, all of the species discussed above require ongoing and often long-term efforts to control, as well as vigilance in detecting new infestations. Ag + Open Space is deeply committed to protecting the health and resiliency of our fee properties, and we understand adaptive management and the use of the least-toxic effective alternative as necessary corollaries to the care and protection of these lands and the plant, animal, and human communities that depend upon them.

4.2 Community Development Commission

The CDC is committed to the responsible good stewardship of agency owned and managed properties while working to ensure it meets the obligations of providing safe and sanitary housing, employing best practices at commercial properties, and effectively mitigating weeds and other pest and fire hazards. CDC is fully engaged with vendors in monitoring their use of pesticides and herbicides and use of the most suitable organic alternatives available and to further work on prevention measures to avoid issues from arising.

4.2.1 Use of Insecticides

The Community Development Commission (CDC) uses contract property managers who rely on licensed pest control companies to use their expertise to address known issues, especially those potentially effecting health and safety.

4.2.2 Use of Herbicides

In addition to measures that ensure safe and sanitary housing, the CDC is responsible for weed and other fire abatement measures. When practical, manual controls such as mowing, and debris removal are employed. For FY 2024-25 CDC reports no use of herbicides at CDC owned and managed

properties.

4.3 Regional Parks

The Sonoma County Regional Parks Department (Regional Parks) owns and/or manages over 19,000 acres across more than 60 parks, trails, and marinas throughout Sonoma County for natural resource protection and recreation. From multi-thousand acre working ranches to small neighborhood playgrounds and spanning from the Pacific Ocean to the Mayacamas Mountains and the baylands to the Mendocino County line, Regional Parks manages a vast range and diversity of landscapes that are emblematic of Sonoma County. Managing vegetation and biodiversity is an essential part of Regional Parks' mission, ensuring that Sonoma County Regional Parks and Open Space Preserves remain healthy and functional for future generations.

The purpose of this Vegetation Management Annual Report is to showcase the ongoing management of vegetation across the Sonoma County Regional Park system and report specifically on pesticide use as a part of that management.

Goals

- Report on vegetation management
- Comply with our Integrated Pest Management Plan (IPM Plan)
- Achieve greater transparency of the use of pesticides
- Document trends in pesticide use over time

4.3.1 Expanding Vegetation Management

Invasive species are one of the most significant threats to natural resources. Along with the fragmentation of habitats, invasive species can have devastating effects on ecosystems and their functions including increased risk of wildfire, decreased water infiltration, decreased native biodiversity, decreased forage quality, and general decline of the beauty of natural landscapes. Leaving invasive species unchecked can have dramatic economic and environmental costs.

Sonoma County has experienced significant wildfires over the last several years. Wildfire burn scars are often colonized by invasive species, not only becoming locations of weed invasion but if left untreated, the weeds then can become fuel for future fires. Broom species, for example, rapidly colonize after wildfires. More broom increases risk of future wildfire by serving as a ladder fuel that can push ground fires into the crowns of existing trees.

Regional Parks works through an Integrated Pest Management (IPM) Plan to articulate action thresholds and treat pest species. Regional Parks uses a framework and philosophy called Early Detection and Rapid Response (EDRR) to set priority invasive species and map and treat invasive species where they occur. Regional Parks utilizes the California Invasive Plant Council (CAL-IPC)

inventory which "categorizes plants as High, Moderate, or Limited, reflecting the level of each species' negative ecological impact in California." Regional Parks specifically targets weeds ranked as High priority and focuses on disturbed areas such as roads, trails, post-fire environments, and grazed areas in order to achieve the greatest ecological benefit with low operational costs. The majority of these high priority weed infestations have been markedly reduced, or wholly extirpated since the beginning of the EDRR program in 2019. As success on treating high priority plants and areas grows, Regional Parks staff are able to address lower priority, established invasive weed species. deploys a number of strategies to control invasive species. Annually, Regional Parks staff implement vegetation management using prescribed fire, grazing, mowing, weed whacking, hand-pulling, construction and maintenance of shaded fuel breaks, early detection and rapid response surveys and priority-driven treatment for invasive species, and limited use of pesticides across 19,000 acres and 60-plus parks, trails, and marinas.

2024/25 actions:

acres mowed: Over 400 annually

acres of shaded fuel breaks constructed or maintained: Over 200

Future actions:

As Regional Parks continues to grow, so does the need to expand vegetation management efforts. We anticipate the continued implementation of shaded fuel break work in strategic locations such areas that have experienced or are likely to experience wildfire.

4.3.2 Pesticide Use

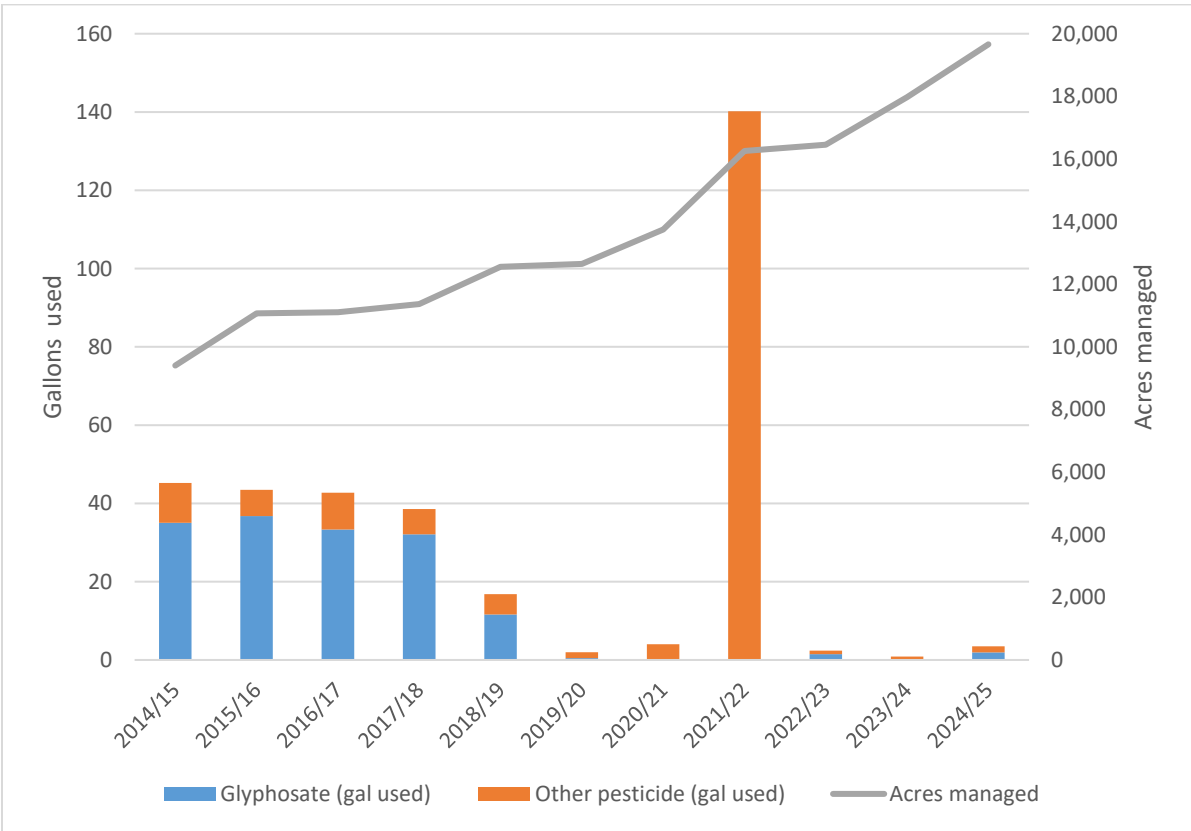
Regional Parks is committed to reducing the risk of exposure to toxins for both people and pets that use the County's parklands. Regional Parks eliminated the use of pesticides in playgrounds, parking lots, plazas, campgrounds, and other places where people and pets gather. Regional Parks maintains the use of synthetic pesticides to treat and control specific targeted pest invasions when other means of control are inadequate and the consequence of non-action are significant. All pesticide use is reported to the Sonoma County Agricultural Commissioner and the California Department of Pesticide Regulation.

As a result of the June 6, 2019 resolution, Regional Parks updated an Integrated Pest Management Plan (IPM Plan) and committed to eliminating the use of synthetic pesticides for routine, ongoing maintenance in playgrounds, parking lots, plazas and campgrounds. Regional Parks has tracked use of pesticides by staff since 2007 but has only tracked the use of pesticides by contractors since the IPM Plan update in 2019. Primarily, contractors have only been used to apply aquatic herbicide as aquatic application requires a higher level of applicator licensing.

From time to time, Regional Parks contracts with a private company to treat azolla – a floating water fern at Spring Lake Park Regional Park when the weed cannot be controlled mechanically.

For the last three years, Regional Parks used less than a gallon of synthetic herbicide throughout the

entire County Park system annually.



Use of Pesticides by Regional Parks Remains Extremely Low as Acreage Increases

Figure 2 - Use of pesticides over the last 10 years showing both glyphosate (blue) and all other active ingredients (orange) by Regional Parks relative to acres managed (grey line). Note herbicide increased when Regional Parks used pesticides to control Azolla at Spring Lake in 2021/22.

2024/25 actions:

Gallons synthetic pesticide used: 0.62

Gallons of glyphosate used: 0.77

Acres managed: 19,661

Future actions:

As Regional Parks maps and treats new weed invasions, acquires new lands, and invests in natural resource management, we anticipate an increase in all strategies of IPM control: biological, cultural, mechanical, physical, and chemical control. We anticipate the use and training of staff in non-synthetic chemical treatments, but that some amount of synthetic herbicides will remain a part of Regional Parks’ vegetation management.

4.3.3 Grazing

Grazing of public lands is a common practice throughout much of the nation and world. Grazing is an effective and efficient way to manage grasslands on a large scale to enhance biodiversity, reduce fire risk, and support local agriculture.

Grazing mimics the natural disturbance of large mammals such as bison or elk that used to dominate the Sonoma County landscape. Done correctly, grazing can benefit native biodiversity and improve habitat. Grazing animals are able to move over vast acreage as well as steep terrain that may be otherwise inaccessible for equipment such as mowers, however they require infrastructure such as fencing and water. Where fences have deteriorated over time, significant investment in fencing infrastructure is needed to contain grazing animals. Fencing also needs to remain as permeable as possible to wildlife. In combination with cross-fencing, proper and thoughtful development of water and distribution of water sources can help distribute grazing animals on the landscape and manage vegetation.

In fiscal year 2024/25, Regional Parks rested annual grazing at Taylor Mountain Regional Park and piloted sheep grazing at Ragle Ranch Regional Park.

2024/25 actions:

of parks grazed: 14

acres grazed: over 4600

Future actions:

Regional Parks anticipates expansion of grazing to include Carrington Coast Ranch Regional Park and expanding existing grazing within North Sonoma Mountain Regional Park as infrastructure such as fencing and water are developed



Figure 4 – Sheep grazing at Foothill Regional Park.

4.3.4 Upper Watershed Restoration and Carbon Sequestration

In 2024/25, Regional Parks expanded the beneficial reuse of thinned woody material to repair erosion and benefit water quality and salmonid habitat. Parks staff and contractors beneficially reused small trees, branches, another “slash” material to repair upper watersheds, sequester carbon, and improve water quality and quantity. Using a technique known as “gully stuffing” parks staff packed ephemeral streams with vegetation that would otherwise need to be chipped, burned, or hauled away.

Upper watershed drainages, now packed with woody vegetation, trap soil and slow water, effectively improve fish habitat downstream. The woody vegetation slowly decomposes, building soil and supporting the growth of riparian trees and shrubs. Carbon is sequestered both in soils and in the growth of robust riparian vegetation. This practice pairs the need to thin our forests with the need to re-hydrate the landscape, working together to support the return of healthy mature forests.

2024/25 actions:

sites treated: 4

Future actions:

Regional Parks anticipates expansion of pairing fuels reduction with upper watershed repair.



Figure 5 – Parks staff utilizing woody vegetation in an upper watershed restoration project.

4.3.5 Prescribed Fire

Prescribed is the intentional use of fire in an area. It is carefully planned and carried out under very specific weather and fuel moisture conditions called a “prescription.” Prescribed fire includes both broadcast burning and pile burning.

Prescribed fire is a vital element that has been missing from our landscapes for over 100 years. It is one of the many tools that can help reduce fuel loads, help protect our communities, and revitalize ecosystems. Regional Parks is implementing a multi-phased approach that includes creation of shaded fuel breaks along trails and roads to create an area of reduced fuel load for emergency responders to fight a wildfire directly or set a backfire to extinguish fuels in front of an approaching wildfire. These fuel breaks can also function as control lines during a prescribed fire.

In partnership with CAL FIRE and local fire districts, Regional Parks implemented a broadcast burning at Tolay Lake, Shiloh Ranch, Sonoma Valley, Carrington Coast Ranch, and Monte Rio Redwoods Regional Parks across hundreds of acres and 7 days of burning during 2024/25.

2024/25 actions:

of days of broadcast burning: 7

Future actions:

Regional Parks anticipates expansion of both pile and broadcast burning and continued use of prescribed fire as a routine treatment of vegetation.



Figure 6 – Parks staff broadcast burning at Shiloh Ranch Regional Park.

4.5 Sonoma Water

Sonoma Water is responsible for maintaining buildings and facilities for water supply, wastewater, and flood control across Sonoma County. In addition, Sonoma Water manages approximately 75 miles of engineered flood control channels and 100 miles of modified or natural channels for storm water conveyance and habitat enhancement. Sonoma Water uses a range of methods to meet its ongoing flood management requirements, as well as safely maintain vegetation around its various facilities, while also meeting multiple objectives such as resource protection and environmental sustainability. These methods include sediment removal, bank stabilization, and various vegetation management activities such as hand and mechanical removal, grazing, and prescribed burning. Sonoma Water uses the minimum amount of herbicide necessary to control invasive plant species that are problematic for its water supply, wastewater, and flood control facilities.

The goal of Sonoma Water's Stream Maintenance Program is the development of a shaded canopy over the flood control channels to reduce invasive plant species. Generally, Sonoma Water removes unwanted vegetation by hand and with equipment but may also employ selective herbicidal application. Sonoma Water uses herbicide to control invasive plant species that are problematic for its water supply, wastewater, and flood control facilities. Sonoma Water seeks to use the minimum amount of herbicide as necessary. Sonoma Water has identified "no synthetic spray" zones around its main campuses.

Sonoma Water has developed an Integrated Pest Management Plan (Plan). The goals of the Plan are to:

- Create and maintain:
 - Suitable visibility of and access to structures and property to allow for inspection, maintenance, and use.
 - Adequate flood control
 - Desirable aesthetics
 - Public access and enjoyment
 - Habitat
- Reduce fuel to prevent fire.
- Prevent unacceptable risks to employee and public health and safety.
- Comply with regulatory requirements.
- Reduce herbicide use where feasible.

Sonoma Water is committed to reducing herbicide use to the extent feasible. Over-reliance on or misuse of herbicides may result in an increased risk of adverse impacts to workers, the public, and the environment. In some cases, it can also lead to the development of herbicide resistance and exacerbate existing vegetation problems. To reduce herbicide use, Sonoma Water engages in the following practices:

- Properly identifying and monitoring target vegetation species
- Utilizing multiple control and prevention methods to manage nuisance vegetation.
- Identifying sites where herbicide use is necessary, can be reduced, or can be eliminated completely.

- Consideration of herbicides categorized as alternative or organic.
- Animal grazing

The following summarizes the type of facilities where herbicide use occurred, and the situation where it was applied for fiscal year 2024/2025.

4.5.1 Wastewater Facilities

Herbicide use at wastewater facilities includes application at access roads, grounds, reservoirs, and adjacent to appurtenant facilities, such as lift stations and solar panels. The reclamation storage reservoirs are inspected by the Department of Water Resources, Division of Safety of Dams, which require control of brush and weeds on reservoir embankments. Wastewater facilities where herbicides were applied include:

- 4.5.1.1 Airport/Larkfield/Wikiup Sanitation Zone
- 4.5.1.2 Geyserville Sanitation Zone
- 4.5.1.3 Russian River County Sanitation District
- 4.5.1.4 Occidental County Sanitation District
- 4.5.1.5 Sonoma Valley County Sanitation District

4.5.2 Water Supply Facilities

Herbicide use at water supply facilities includes application at access roads, grounds, and appurtenant structures including booster stations, storage tanks, and pump stations.

4.5.3 Flood Control

Sonoma Water's Stream Maintenance Program includes multiple objectives, such as resource protection and environmental sustainability, in addition to storm water management. Sonoma Water manages creeks and streams, so they evolve into waterways that not only provide flood protection but also riparian habitat and suitable water quality. This is accomplished through fostering the development of a mature riparian canopy. Specifically, trees that grow tall and branch over the creek creating shade which cools the water and deters bushes, brush and less desirable species of trees that reduce the water-carrying capacity of the creek.

Routine maintenance is required by Sonoma Water through regulations and permits issued to the agency. Maintenance activities include sediment management, bank stabilization, and vegetation management. Vegetation management activities include willow pruning and removal, blackberry removal, cattail removal, ludwigia removal, tree pruning and exotics removal, mowing, and tree planting. Vegetation management activities are overseen by biologists, certified arborist, or other qualified personnel.

Sonoma Water's use of herbicides at flood control facilities is limited to three applications:

- Gravel access road spraying: Gravel access roads are sprayed on Sonoma Water's properties to maintain access road integrity.
- Invasive Species Control
- Cut Stump Treatment: Application of concentrate directly to the cut stumps of non-native species.

4.5.4 Budget / Labor

Sonoma Water manages the vegetation on its properties (flood protection, grounds and facilities, dam safety, dry creek restoration, public requests, sediment removal, fire fuel reduction, etc.) with a combination of full-time and seasonal staff and does so with the least amount of herbicide use as possible. In some circumstances, the use of herbicides provides a more efficient and effective method of removal of undesirable plant species. Mechanical methods of vegetation removal only provide short term suppression and require more frequent maintenance intervals. Herbicide treatment, often times, will remain effective for a longer duration which decreases staff time and costs spent on one particular project area.

Furthermore, availability of annual field staff cannot support the time needed to mechanically manage the annual growth of seasonal weeds and invasive plant material- the time needed to replace what is currently accomplished through herbicide application will impact the labor needed in the other maintenance areas of the agency. Currently Sonoma Water is able to balance the management needs in many areas deemed responsible to the maintenance division: flood protection, grounds and facilities, dam safety, dry creek restoration, public requests, sediment removal, fire fuel reduction, controlling homeless encampments, etc. The annual budget would not be able to support the labor costs associated to annually remove undesirable vegetation from agency property to a level that is safe and effective.

4.5.5 Safety and Efficiency

Public safety on Sonoma Water's properties is a cornerstone to the agency's mission. Vegetation growth commonly occurs in unsafe growing environments and serves as a safety threat to those performing the maintenance. Areas that have loose rock and non-stable surfaces, tight access, traffic, and/or non-permeable surfaces all pose a safety risk. These areas are safer to manage with the aid of herbicide using the proper application method in order to permanently remove the plant type and eliminate the need to re-visit.

Furthermore, maintaining vegetation along recreational paths provides a safer level of visibility against trail traffic, predators, flooding issues, gravel roads, etc. From the use of herbicides, trail visibility can be maintained with less frequent maintenance intervals. Mechanical methods require more frequent treatment cycles which, due to the many miles of creek corridors, would not produce the same outcome achievable currently if it were the only method used.

Herbicide application provides more longevity to the absolute removal of the undesirable plant growth rather than mechanical practices that can only provide short term suppression and require more frequent maintenance attention. Mowing and pruning approaches cause vegetation to respond by rapidly replace lost growth quickly. Herbicide treatment will remain effective longer than mechanical treatments because of how plants respond to herbicide compared to mechanical treatment.

4.5.6 Restoration/Habitat

One of the main goals set out by Sonoma Water is to protect significant natural resources still present in watersheds. When necessary and no other feasible option exists, herbicide application is used to prevent new infestations of invasive species and work towards achieving sustained control over

existing populations. Creeks that were once thick with heavy invasive vegetation are now open and support a more diverse native habitat.

4.5.7 Herbicide Usage in Fiscal Year 2024/25

Sonoma Water uses a range of methods to meet its ongoing flood management requirements, as well as safely maintain vegetation around its various facilities, while also meeting multiple objectives such as resource protection and environmental sustainability. In FY24/25, a total of 67 gallons of concentrate was applied on access road, grounds, reservoirs, booster stations, storage tanks, pump stations; treat cut tree stumps and to control invasive species at wastewater, water and flood control facilities Sonoma Water manages and operates. Of the 67 gallons of concentrate, 41 gallons were products containing glyphosate. Sonoma Water saw a reduction in the use of herbicide in Fiscal Year 2024/25 compared to the previous fiscal years.

Factors that influence herbicide usage include precipitation variability (long or scattered rains will promote multiple growing periods, cause delays in application days, and can make for heavier vegetation once dry conditions are available) trained staff availability, expansion of maintained acreage or new capitol projects that add the usage totals, and introduction of new weeds, which require additional site visits and applications until factored into maintenance routes.

Despite these factors, Sonoma Water continues to use herbicide only when necessary and no other feasible option exists.

4.6 Sonoma County Public Infrastructure

In fiscal year 2024-2025, Sonoma County Public Infrastructure (SPI) used 1271 gallons and 427 pounds of product totaling 1021 gallons and 427 pounds of concentrate herbicide and 250 gallons of concentrate adjuvant. Although applicators do not spray into water, SPI used glyphosate registered for aquatic and terrestrial use this past year totaling 640 gallons of the overall 1271 gallons.

4.6.1 Airport

Vegetation management activities at the Airport are completed to ensure the safe navigation of airplanes landing in and departing from the Airport. Specifically, Airport staff manage vegetation to maintain site sign, taxiway, lighting, and runway visibility and minimize obstruction and debris that could interfere with aircraft operations. These management goals are consistent with FAA regulations. Preservation of asphalt integrity in and around hangars is also a management goal. In the year 2024/2025, approximately 76 gallons of concentrate herbicide, 66 pounds of dry concentrate herbicide, and 26 gallons of concentrate adjuvant were used.

4.6.2 Refuse

Vegetation management at refuse sites is conducted primarily for the purpose of preventing infrastructure damage and inaccessibility to operating equipment and maintaining regulatory compliance. Specifically, this includes objectives such as maintaining the integrity of landfill cover systems and access to groundwater sampling locations, gas and leachate wells, and associated appurtenances. Employee safety and fire prevention are also emphasized by managing vegetation occurring in and along access roads. In the year 2024/2025, approximately 6 gallons of concentrate herbicide and 4 gallons of concentrate adjuvant were used.

4.6.3 Right of Way

The right of way includes roadsides and road yards. The overarching goal of vegetation management along County roads is to maintain roadway and traveler safety, and to address fire risks. To accomplish this goal, several objectives have been established for road maintenance activities. These objectives include maintaining guardrail safety and visibility, road and sidewalk integrity, sign and signal light visibility, signal box accessibility, clear sightlines, and roadside drainage. In the year 2024/2025, approximately 939 gallons of concentrate herbicide, 361 pounds of dry concentrate herbicide, and 220 gallons of concentrate adjuvant were used.

4.6.4 General Services

General Services (GS) maintains many County property assets and assists front line Departments in contracting for goods and services essential to fulfilling their respective missions.

GS forces do not directly perform grounds maintenance work. Instead, grounds maintenance work is performed under contract with services providers or done in conjunction with project development. All such work is required to be performed in compliance with herbicide and pesticide contract specifications and use criteria that were developed to reflect the Board's Resolution, and GS strictly enforces the criteria through management and oversight of the applicable contract(s). GS will continue to ensure that the County's "No Synthetic Spray" zone policies are reflected and adhered to as to all

work, whether undertaken by County forces or by the department's maintenance or project contractors.

With regard to the County Administrative campus, Probation Department's Supervised Adult Crews (SAC) perform all regular grounds maintenance work and have been adhering to a "No Synthetic Spray" directive at the campus since 2020.

4.6.5 Training

SPI staff complete approximately 20 hours of approved DPR continuing education hours annually including Pesticide Applicators Professional Association and California Association of Pest Control Advisers courses.

5 Outreach and Education

Education and knowledge sharing strengthen the IPM programs.

5.5 Zero Waste Sonoma

Sonoma County is committed to keeping pesticides and other household toxic substances out of the environment. Proper disposal of pesticides is just as important as proper use. As part of the County's recycling program Zero Waste Sonoma (ZWS), toxic substances can be dropped off at Sonoma County's main landfill at 500 Mechem Road.

Zero Waste Sonoma publishes a Household Hazardous Waste guide for County residents annually. ZWS also holds household hazardous waste collection events that rotate through various locations in Sonoma County weekly. A roving collection service is also available for a fee, but is available to elderly and/or homebound Sonoma County residents free of charge.



Figure 10 - Household Toxic Facility Collection Center

5.6 Our Water Our World

The Our Water Our World (OWOW) program raises awareness of the connection between pesticide use and water quality and provides information to consumers at the point-of-purchase about IPM and less toxic alternatives to control pests. Sonoma County and Sonoma Water support the OWOW program in the Russian River watershed, Sonoma Creek watershed, and the Petaluma River watershed as part of a regional effort.

OWOW brings pesticide-related education and outreach to 18 nurseries and hardware stores throughout the County. Outreach includes print materials, special events, store employee training, and promotional labeling of environmentally friendly products.

The OWOW program includes:

- Twenty-two factsheets (including four in Spanish) are available to assist residents with finding non-toxic and less-toxic solutions for managing pests in and around the home. The factsheets are provided for specific pests and general pest control information.
- Stores are supplied with factsheets, shelf tags, literature rack display signage, "10 Most Wanted" brochures, "Pest or Pak Activity Guide for Kids," custom-designed product guide dispensers, and

two versions of product guides.

- Employee training and tabling events at participating stores. Training topics include pesticides impact to water quality, OWOW program overview, pesticide disposal, IPM techniques, beneficial insect identification, water conservation, benefits of mulch, water-wise plans pest highlights, invasive pest awareness, and the “Ask-the-Expert” website resource.
- Outreach and tabling events by OWOW to connect with store customers. Outreach includes assisting customers with less-toxic pest control options. OWOW services include mentoring and maintaining store materials.

5.7 Baywise.org

As a member of the Bay Area Municipal Stormwater Collaboration (BAMSC), Sonoma Water supports the BayWise.org website. The website is designed to educate Bay Area residents and businesses about simple, cost-effective ways to protect San Francisco Bay by preventing pollution at the source. The website also provides resources on how to find a local less-toxic certified pest control professional with links to EcoWise, GreenPro, and Green Shield.

The County has traditionally maintained the brochure stand with 21 different brochures on topics including less toxic pest control methods for a variety of common local pests. Historically, the pattern is that brochure consumption increases during the spring and summer season and decreases during the colder fall and winter season.

5.8 Streets to Creeks

Streets to Creeks is a regional outreach campaign consisting of targeted storm water messaging to promote the message that storm water drains to the County’s streams and rivers with no treatment. In 2025, the campaign was expanded from the Russian River watershed to the Petaluma River and Sonoma Creek watersheds thanks to funding from an Environmental Protection Agency Water Quality Improvement Fund grant and matching contributions from Sonoma Water.

The campaign encourages residents to adopt best management practices related to pollution prevention and has a variety of resources on its website that provide guidance on gardening and proper use of use and disposal herbicides and pesticides, encouraging use of non-toxic alternatives. Streets to Creeks is also a helpful resource for other pollution generating activities, including management of car washing, pet waste, power washing, erosion control, vehicle maintenance, yard care, ash cleanup, trash and general rain ready practices. The campaign includes PSAs in ads that are broadcast through Google digital advertising, YouTube, and on social media. The Street to Creeks material is also available in Spanish.

5.9 Municipal Stormwater Program

As part of the MS4 Permit obtained through the Regional Water Quality Board, Sonoma County and Sonoma Water are part of ongoing pesticide research and advocacy to improve water quality. The Phase II and Phase I Permittees made contributions to CASQA through BAMSC. CASQA conducted its activities on behalf of its contributors and its members and coordinated funding contributions and activities through its Pesticides Subcommittee, a group of stormwater quality agencies affected by pesticides or pesticides-related toxicity listings, TMDLs, or permit requirements, as well as others that are knowledgeable

about pesticide-related stormwater issues. FY 2024-25 was another productive year for the Subcommittee. The CASQA Pesticides Subcommittee's annual report for FY 2024-25 provides a comprehensive and detailed accounting of efforts to track and participate in relevant regulatory processes as well as accomplishments related to pesticides and stormwater quality and can be found.

