Sonoma County Landscape Management Annual Report

Sonoma County, Sonoma County Ag + Open Space, Sonoma County Community Development Commission, and Sonoma Water
Fiscal Year 2022/2023

December 2023
2550 Ventura Ave
Santa Rosa, CA 95403

Cover photo: Sheep grazing at Gualala Point Regional Park. Beneficial disturbance from grazing helps maintain coastal prairie habitat in the park.

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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
GSD	General Services Department
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 (SPI) (formerly Transportation and Public Works (TPW)) 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.

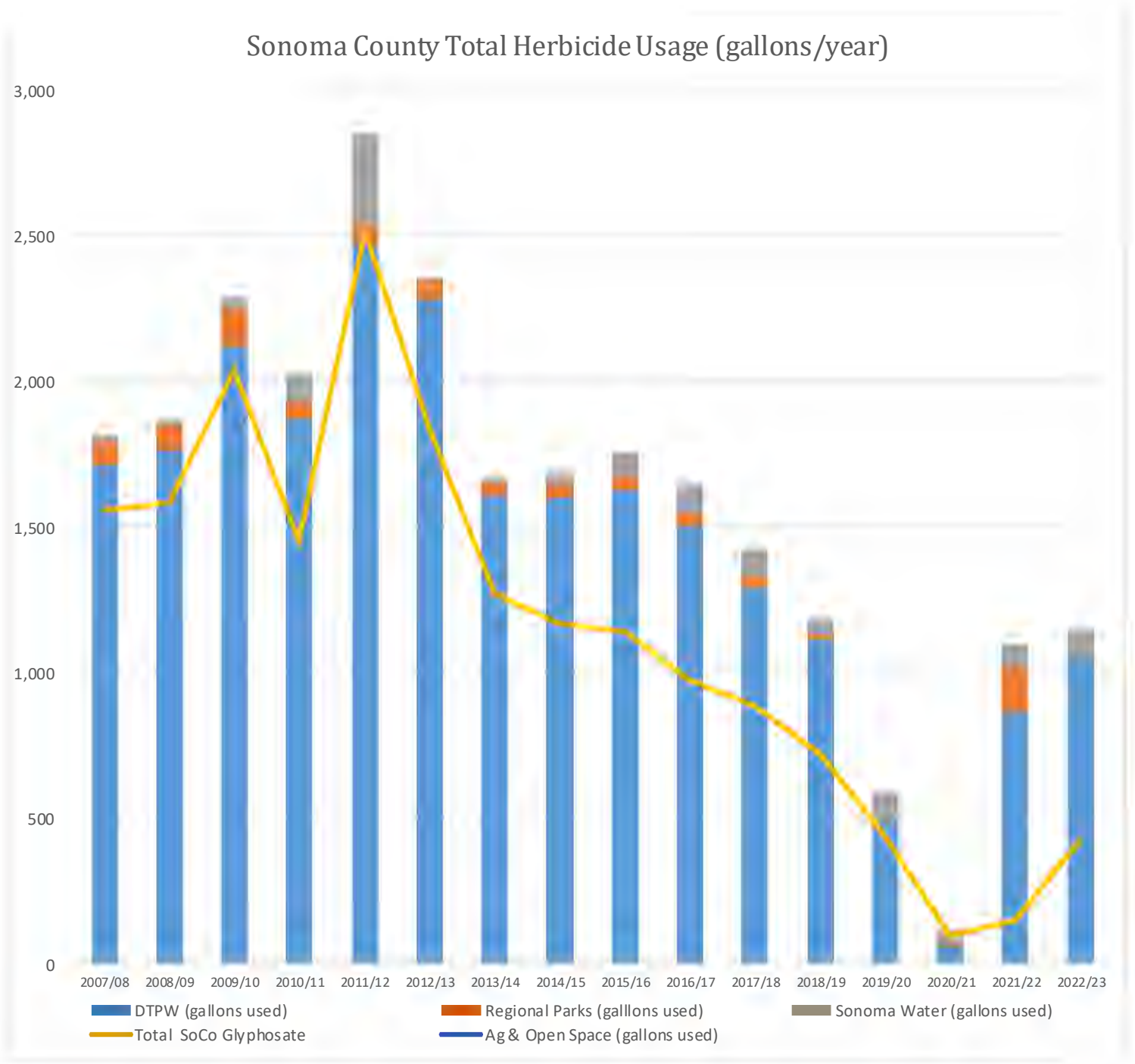

Figure 1 - Trend of Total Herbicide Use

3. Vegetation Management Summary- 2022/2023

Since the adoption of Resolution 19-0246 in June 2019, use of herbicides, including glyphosate, has decreased by Sonoma County, 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.

Over the course of the past 15 years of data collection, fiscal years 2019/2020 and 2020/2021 have shown historically low herbicide use. While some of this use can be attributed to effective IPM practices, unique circumstances and challenges presented during the past two years resulted in the overall decrease of herbicide use. COVID restrictions were the primary challenge with vegetation management options. Due to social distancing requirements, crews could not implement proper protocols for herbicide application, which involves a two-person team in a vehicle. While there was not necessarily a decreased need for herbicides during COVID, crews opted for less effective practices to adhere to restrictions.

Rainfall also plays a significant role in vegetation management needs. Rainy seasons with high rain fall will result in more vegetation removal needs, including the need to use herbicides for effective removal. Lower rain fall years will generally have less vegetation management activities. Additionally, short, intense rain events can also result in rapid and repetitive vegetation growth, keeping soils saturated for longer periods of time, resulting in frequent revegetation.

While the data shows there has been an uptick in herbicide usage, in FY 22/23, the overall use of Glyphosate remains lower than prior to Resolution 19-0246 being adopted. Total Glyphosate use in 2018/2019 was 719 gallons. Since adopting IPM practices County wide, use has decreased to 98 gallons in 2020/2021, 150 gallons in 2021/2022 and 427 gallons in 2022/2023. Of the 427 gallons applied in 2022/2023, 405 gallons were applied by SPI, in response to increased vegetation resulting from the heavy rainfall delivered during the 2022-2023 winter season.

While IPM practices and related policies have reduced the overall use of herbicides, the use of herbicides continues to be a necessary practice, even on a limited and reduced basis. The amount of herbicide use will continue to vary year-to-year and between departments. Total rainfall will continue to play a primary factor on 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 2022-2023, 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 has 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 only minimal treatment was needed in the previously treated grasslands in 2022 and 2023. Treatment methods included hand pulling and limited spot spraying. Ag + Open Space will continue to target known yellow star thistle populations at Saddle Mountain for significant control or eradication now that these areas have burned in the 2020 Glass Fire. In 2022, two small, new populations of yellow star thistle were found at Ag + Open Space's Oken property; these plants were removed via a combination of hand-pulling and spot spraying and these sites will be closely monitored in the coming year to prevent establishment of a wider infestation. A small amount of yellow star thistle is also present on the Keegan-Coppin property, which was removed in 2023 via hand pulling along with other invasive thistle species (see below).

Purple Star Thistle and Distaff Thistle

These two invasive thistles are present on the Keegan-Coppin and Oken properties. At Keegan-Coppin, the infestation is relatively limited and in 2023, plants were removed via hand pulling. While we anticipate using herbicide to spot-treat these populations in the coming year, ultimately, we hope that grazing and hand pulling will be adequate to control the existing invasive thistle populations on the property. 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. 2023 was the tenth year of broadleaf-specific herbicide application on the property. At this point the thistle infestation has been greatly reduced and the agricultural functionality of the property much improved, with spot treatments and hand pulling rather than widespread boom spraying increasingly possible. It is hoped that a transition to spot treatment and other methods of control will 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. 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.

French 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. Ag + Open Space is actively managing French broom on the Saddle Mountain and Paulin Creek Open Space Preserves, using a combination of hand pulling, mechanical removal using weed wrenches, wet-season propane torch flaming, and herbicide spot treatment each year as appropriate. Ag + Open Space plans to implement similar French broom management at Paulin Meadow (acquired by Ag + Open Space in late 2021) in the coming years. French broom has a long-lived seed bank so it is anticipated that eight or more years of thorough annual control will be needed on both of these Preserves. A known French broom population burned in the 2020 Glass fire on our Saddle Mountain Open Space Preserve, which stimulated a heavy broom seedling flush the following spring. Ag + Open Space has been treating this area with a combination of spot-spraying and hand pulling, with physical barriers such as plastic tubing being used during herbicide application to protect native seedlings in this regenerating area.

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. In 2023, Ag + Open Space worked with the Sonoma County Youth Ecology Corps to manually remove Himalayan blackberry on our Dogbane Preserve, avoiding chemical use and providing educational and training opportunities for local youths. 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.

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. Ag + Open Space has worked with a licensed contractor to spot-treat these new populations with herbicide; as with the French broom treatment, a combination of hand-pulling near native seedlings and physical barrier protections have been 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.

Teasel

One invasive teasel population exists within a grassland on the Saddle Mountain Open Space Preserve. For the past two 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.

Total synthetic herbicide uses on Ag + Open Space-owned properties from July 1, 2022 to June 30, 2023 was 490 ounces. This included approximately 58 ounces 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. CDC reports the use of 1.75 U.S. gallons of Fendona CS insecticide to manage/prevent insect infestations at the residential property located at 695, 697, 699 Russell Avenue Santa Rosa, CA 95403 for Fiscal Year (FY) 2022-23.

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 2022-23 CDC reports no use of herbicides at CDC owned and managed properties.

4.3 General Services

General Services Department (GSD) is committed to upholding the County's policies regarding employee safety, public safety, and protecting the environment. GSD maintains many County property assets and assists front line Departments in contracting for goods and services essential to fulfilling their respective missions.

GSD 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 GSD strictly enforces the criteria through management and oversight of the applicable contract(s). GSD 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.

4.4 Regional Parks

The Sonoma County Regional Parks Department (Regional Parks) owns and/or manages over 16,000 acres across 66 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 highlighting both the achievements, future actions, and challenges of vegetation management in Sonoma County Regional Parks.

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.

4.4.1 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 wildfire 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 where they occur. Regional Parks deploys a number of strategies to control invasive species.

Annually, Regional Parks staff implement vegetation management using prescribed fire, grazing, mowing, weed whacking, construction and maintenance of shaded fuel breaks, early detection and rapid

response surveys for invasive species, and limited use of pesticides across 16,000 acres and 66 parks, trails, and marinas.

2022/23 actions:

acres mowed: Over 400 annually

acres of shaded fuel breaks constructed or maintained: 125

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.

Figure 1 – Before (Left) and after (Right) images of a shaded fuel break implemented at Foothill Regional Park.

4.4.2 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 has 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.

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.

In FY 2021/22, Regional Parks contracted with a private company to treat the explosive growth of azolla – a

floating water fern at Spring Lake Park Regional Park. Via the contractor applicator, Regional Parks used 140 gallons of herbicide to treat Spring Lake (previous report). By contrast, Regional Parks used less than half of a gallon throughout the rest of the park system in FY 2022/23 (this report).

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

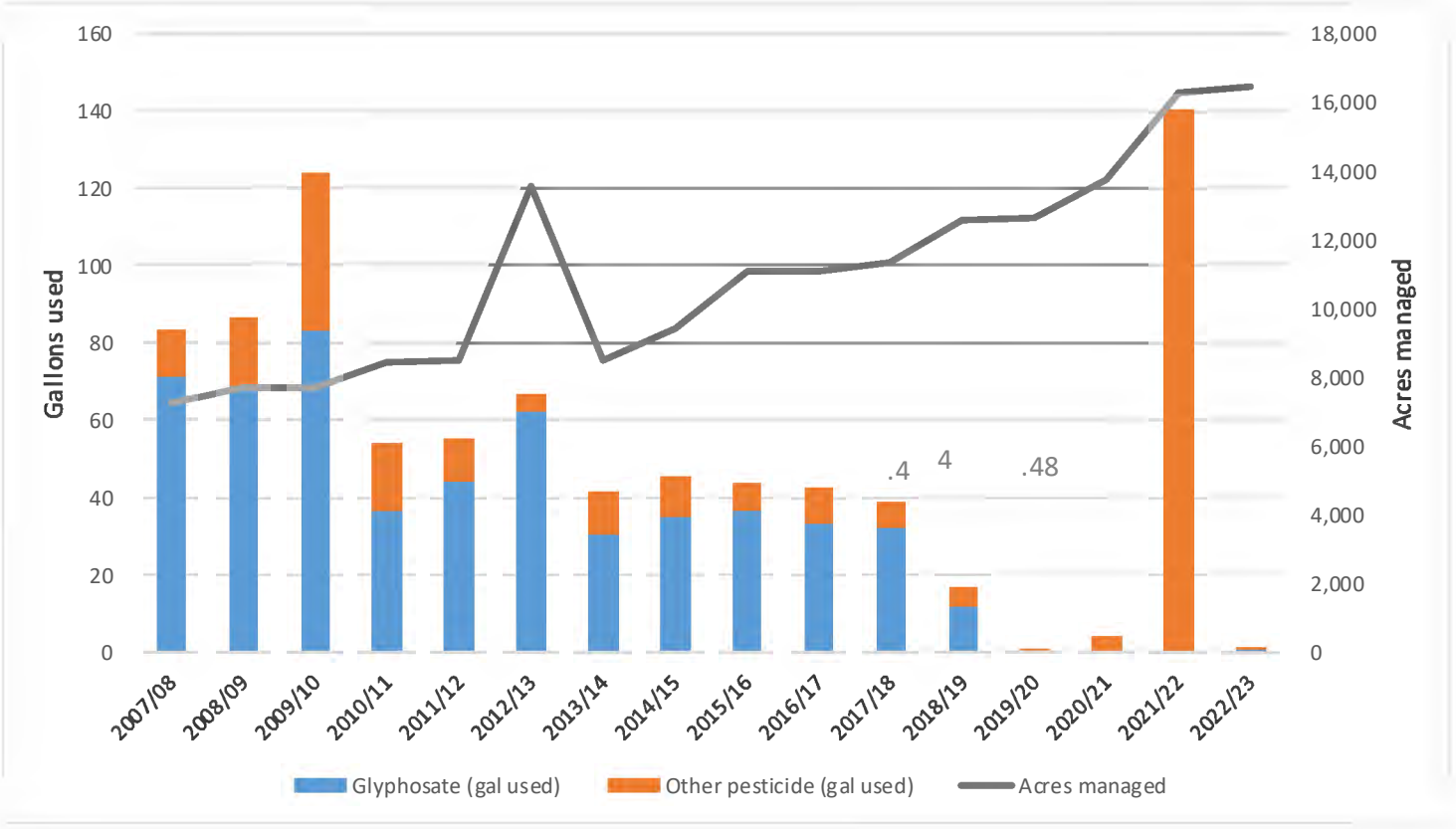

Figure 2 - Total use of pesticides over time (blue and orange bars) by Regional Parks relative to acres managed (grey line). Note: Acreage temporarily increased when Regional Parks managed Trione Annadel state park in 2012/13. Note herbicide increased when Regional Parks used chemical treatment to control Azolla at Spring Lake in 2021/22.

2022/23 actions:

Gallons synthetic pesticide used: 0.48
Gallons of glyphosate used: 0.3
Acres managed: 16,453

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.

4.4.3 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 2022/23, Regional Parks took over management of Wright Hill Regional Park and Open Space Preserve, adding an additional 1,200 acres of grazing and expanded grazed acreage at Taylor Mountain Regional Park by approximately 50 acres.

2022/223 actions:

# of parks grazed: 13

acres grazed: over 4600

Future actions:

Regional Parks anticipates expansion of grazing to include Carrington Coast Ranch Regional Parks as infrastructure such as fencing and water are developed.

Figure 4 – Sheep grazing at Foothill Regional Park.

4.4.4 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 built and burned over 200 piles of woody debris as part of a shaded fuel break and grassland restoration project at Gualala Point Regional

Park. Regional Parks also implemented a broadcast burn at Shiloh Ranch Regional Park to reduce wildfire risk, control invasive species, and re-introduce beneficial disturbance.

2022/23 actions:
# of burn days: 3

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 5 – Pile burning at Gualala Point 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 2022/2023.

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:

- Airport/Larkfield/Wikiup Sanitation Zone
- Geyserville Sanitation Zone
- Russian River County Sanitation District
- Occidental County Sanitation District

- 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, ludgwigia 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.

4.5.5 Safety

Public safety on Sonoma Water's properties is a cornerstone to the agency's mission. Maintaining the 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.

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 2022/23

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 2022, a total of 95 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. Sonoma Water saw an uptick in the use of herbicide in Fiscal Year 2022/23 compared to the previous fiscal years. Sonoma Water's continues to only use herbicide, when necessary and no other feasible option exists.

4.6 Sonoma County Public Infrastructure

In fiscal year 2022-2023, Sonoma County Public Infrastructure (SPI) used 807 gallons and 26.6 pounds of product totaling 610 gallons and 26.6 pounds of concentrate herbicide and 197 gallons of concentrate adjuvant. Although applicators do not spray into water, Transportation and Public Works used glyphosate and triclopyr registered for aquatic and terrestrial use this past year.

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 2022/2023, approximately 93 gallons of concentrate herbicide and approximately 44 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 2022/2023, approximately 1.5 gallons of concentrate herbicide, 0.6 pounds of dry concentrate herbicide, and approximately 0.7 gallons of concentrate adjuvant were used.

4.6.3 Right of Way

The right of way including 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 2022/2023, approximately 515.5 gallons of concentrate herbicide, 26 pounds of dry concentrate herbicide, and approximately 152.3 gallons of concentrate adjuvant were used.

4.6.4 Training

SPI staff completed approved DPR continuing education hours including a local Pesticide Applicators Professional Association seminar at the Santa Rosa Veterans Memorial Building.

5. Outreach and Education

Education and knowledge sharing strengthen the IPM programs.

5.1 Zero Waste Sonoma

Sonoma County is committed to keeping pesticides and other household toxic substances out of our environment. Proper disposal of pesticides is just as important as proper use. As part of the County's recycling program Zero Waste Sonoma, toxic substances can be dropped off at Sonoma County's main landfill at 500 Mecham Road. In FY22/23, the Household Hazardous Waste facility collected 1,208,215 pounds of HHW in FY 22-23. Of that, 119,683 pounds were poisons, which includes pesticides and herbicides.

Figure 10 - Household Toxic Facility Collection Center

5.2 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.

A consultant was retained to bring pesticide-related education and outreach to 16 nurseries and hardware stores throughout the watershed. Outreach included 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.

Figure 11 -Outreach Funded through Sonoma County Stormwater Program.

5.3 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.

5.4 Streets to Creeks

Streets to Creeks is a regional outreach campaign consisting of targeted storm water messaging to promote education that storm water drains to the Russian River with no treatment. The program includes targeting residents for proper practices related to pollution prevention including car washing, carpet cleaning, home improvement, leaves, painting, pet waste, power washing, erosion control, vehicle maintenance, yard care, ash cleanup, trash and general rain ready practices. The campaign includes PSAs in ads before movies in local movie theaters, radio ads, ads on Pandora, and on local billboards and includes a social media campaign. The Street to Creeks material is also available in Spanish.

5.5 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 knowledgeable about pesticide-related stormwater issues. FY 2022-23 was another productive year for the Subcommittee. The CASQA Pesticides Subcommittee's annual report for FY 2022-23 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 on the BAMSC website.